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Guide on Valuing Unpaid Household Service Work

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Guide on Valuing Unpaid Household Service Work

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Preface

Economists have long pointed out the pitfalls that could arise when unpaid household work is excluded from macroeconomic analyses. Placing monetary values on activities carried out in the household is, however, not straightforward since the work is unpaid and often produces intangible services.

To meet the need for methodological guidance on these issues, the Conference of European Statisticians established a Task Force in 2014. The Task Force on Valuing Unpaid Household Service Work chaired by the Office for National Statistics of the United Kingdom worked through 2015 and 2016 to develop the present Guide.

The Guide is based on the experience of UNECE member countries and other countries participating in the work of the Conference of European Statisticians. It guides national statistical offices on selecting and applying methods for valuing own-use production work of services, and on compiling Household Satellite Accounts.

The implementation of the Guide's recommendations would improve international comparability of statistics on unpaid household service work. While the publication mainly targets national statistical authorities, it also provides useful information for policymakers, researchers and other users of these data.

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The chapters of the Guide have been discussed and agreed by the entire Task Force. Some organizations took the primary responsibility of compiling certain chapters, as follows: chapters 1 and 5 by the United Kingdom Office for National Statistics (ONS), chapters 2, 3 and 6 by Statistics Canada, and chapter 4 by ONS, Istat (Italy), Statistics Finland and the University of Helsinki.

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Acronyms / Abbreviations

ABS	Australian Bureau of Statistics
ASHE	Annual Survey of Hours and Earnings, United Kingdom
ATUS	American Time Use Survey
CAPI	Computer Assisted Personal Interview
CATI	Computer Assisted Telephone Interview
CES	Conference of European Statisticians
CISSTAT	Interstate Statistical Committee of the Commonwealth of the Independent States
CoE	Compensation of employees
COICOP	Classification of Individual Consumption According to Purpose
CPA	Classification of Products by Activity
CPS	Current Population Survey, United States
EEH	Survey of Employee Earnings and Hours, Australia
Eurostat	European Union Statistical Office
ES	Earnings Survey
FSO	Federal Statistical Office, Switzerland
GDP	Gross Domestic Product
GNP	Gross National Product
GOS	Gross Operating Surplus
GSS	General Social Survey, Canada
GVA	Gross Value Added
HETUS	Harmonized European Time Use Survey
HHFCE	Household Final Consumption Expenditure
ICATUS	International Classification of Activities for Time Use Statistics
ICLS	International Conference of Labour Statisticians
ILO	International Labor Organization
IMF	International Monetary Fund
INEGI	National Institute of Statistics and Geography, Mexico
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of all economic activities
LFS	Labour Force Survey
MDL	Moldovan Leu, Currency
MNW	Measuring National Well-Being programme, United Kingdom
MTUS	Multinational Time Use Survey
NACE	Statistical classification of economic activities in the European Community
NOGA	General Classification of Economic Activities
NPI	Non-Profit Institutions
NPISH	Non-Profit Institutions Serving Households
OECD	Organisation for Economic Co-operation and Development
ONS	Office for National Statistics, United Kingdom
OPCS	Office of Population Censuses and Survey, United Kingdom
PIM	Perpetual Inventory Method
RC	Replacement Cost approach
RC-G	Replacement Cost, Generalist approach
RC-S	Replacement Cost, Specialist approach
RTC	Return To Capital
SEPH	Survey of Employment, Payroll and Hours, Canada
SESS	Swiss Earnings Structure Survey

SLFS	Swiss Labour force Survey
SNA	System of National Accounts
SOEP	German Socio-Economic Panel
SVW	Survey on Volunteer Work, Moldova
SWI	Swiss Wage Index
TUS	Time Use Survey
UNECE	United Nations Economic Commission for Europe
UNSD	United Nations Statistics Division
VAT	Value Added Tax
ZEMIS	Central Migration Information, Switzerland

Chapter 1 Introduction, Overview and Main Conclusions

1.1 Why this Guide?

1. In 2013, UNECE published Guidelines for Harmonizing Time-Use Surveys that identified unpaid work as one of the areas where information from time diary surveys is vitally important for informed policymaking, and for which other sources do not provide adequate data. A lack of information on unpaid household service work might lead to misinformed policy conclusions. For instance, an increase in services, such as childcare or long-term care provided by the government or private sector, increases the quantity of goods and services produced in a country. In fact, this would simply reflect that the production of the same service takes place in another institutional sector instead of the household sector.

2. Some countries have started to value these activities through a Household Satellite Account, which provides important information on the economy and society. However, there is currently no general agreement on the methodological choices in resolving the measurement challenges. The relevant international guidance - for instance "Household Production and Consumption - Proposal for a Methodology of Household Satellite Accounts" (Eurostat, 2003) - dates back for more than a decade. It is therefore necessary to revisit the existing national experience and provide guidelines on these issues. Further need for updated guidance emerges from the 2013 "Resolution concerning statistics of work, employment and labour underutilization" of the International Conference of Labour Statisticians (ICLS). The Resolution provides operational concepts, definitions and guidelines for distinct forms of work, which have implications on the classification and analysis of activities related to unpaid household service work.

3. To meet the need for methodological guidance on these issues, the Bureau of the Conference of European Statisticians in 2014 established a **Task Force** for developing guidance on valuing unpaid household service work. The Task Force worked through 2015-2016 to develop the present Guide.

4. The **objective** of the Guide is to provide guidance to national statistical offices on selecting and applying methods for valuing own-use production work of services, and on compiling Household Satellite Accounts. The remaining element of unpaid household service work – the production of services for other households, or more simply volunteering – is considered to entail a number of different, and complex methodological challenges considered too great to be dealt with in this Guidance. Implementation of the Guide's recommendations would improve international comparability of statistics on unpaid household service work.

5. The Guide is based on the experience of UNECE member countries and other countries participating in the work of the Conference of European Statisticians[1]. A summary of current practices of UNECE countries in valuing unpaid household service work is presented in Annex 1.1

1.2 Importance of unpaid household service work

6. Placing monetary values on activities carried out in the household is not straightforward since the work is unpaid and often produces intangible services. Related measurement challenges include the question of multitasking as, for example, it is possible to prepare a meal, watch over a small child and help an older child with their homework all at the same time. Furthermore, there is a question about the borderline with household service work and leisure – some people would regard gardening as a chore while others see it as leisure.

7. Conventional economic statistics, such as national accounts and employment measures, are largely designed to measure the market economy and in most countries exclude unpaid household service work. Economists have argued for many years that ignoring these services introduces biases in various areas of economic analysis.[2] Pigou (1920), for instance, noted, "If a man marries his housekeeper or his cook, the national dividend is diminished". Similarly, Mitchell et al. (1921), Kuznets (1944), and Clark (1958) pointed out by not taking into account income in kind provided by productive household activities significantly underestimates national income. The services that result from own-use production work of services are unarguably a source of utility to households and contribute to their economic well-being. Nordhaus and Tobin (1972) contended that unpaid household service work contributes to economic welfare, which conventional gross national product (GNP) does not properly measure.

8. The measurement of unpaid household service work has particular relevance in the field of feminism economics. Weinrobe (1974) noted that measured growth rates are biased upwards as more women move into the labour market. This is because only the ensuing changes in market production are taken into account with no allowance for the resulting decline in unpaid household service work. Further, Walker and Gauger (1973) argued that conventional statistics grossly understate the economic contribution of women to production because women perform about two thirds of all housework. In the 1980s, feminist economists criticised the shortcomings of traditional labour and production statistics. These statistics, they argued, do not consider unpaid domestic work and therefore under-estimate women's

[1] The Conference of European Statisticians is composed of national statistical organizations in the UNECE region (for UNECE member countries, see http://www.unece.org/oes/nutshell/member_states_representatives.html) and includes in addition Australia, Brazil, Chile, Colombia, Japan, Mexico, Mongolia, New Zealand and Republic of Korea. The major international organizations active in statistics in the UNECE region also participate in the work, such as the statistical office of the European Commission (Eurostat), the Organization for Economic Cooperation and Development (OECD), the Interstate Statistical Committee of the Commonwealth of the Independent States (CIS-STAT), the International Monetary Fund (IMF) and the World Bank.

[2] Ezra Seaman (1846) spoke of adding various services, including "ordinary domestic labour" to estimated income, and this treatment of all services raised income by about one-third. In 1852, however, he excluded from the "rank of productive industry, housekeeping, the labour of domestic servants," and other services, on the basis that they are not material products.

contribution to the economy, since women perform most of housework (Goldschmidt-Clermont, 1982; Chadeau, 1985).

9. More recently, the Stiglitz-Sen-Fitoussi Report (2009) made it clear that traditional macro-economic indicators, such as the gross domestic product (GDP), do not provide a robust measure of the economy. At the international level, it has been widely recognised that a proper recognition and valuation of unpaid household service work would allow a better assessment of the economic and social impact of policy options. Measuring unpaid household service work helps to uncover hidden aspects of the economy raising vital policy issues that have long remained invisible. For instance, an increase in industrialization can lead to a shift in the consumption of market-based services where they were previously produced in the home. This is likely to result in under-estimation of material well-being before industrialization and an overestimation of economic growth during the transition period. Indeed, current measures of well-being focusing only on market activities are not fully reliable when there is a significant amount of unpaid work or in cases where there is switching between paid and unpaid work (Weinrobe, 1974). Finally, several own-use production work of services activities, such as formal or informal education, health care and bearing children represent human capital formation and are important to ensure the sustainability of well-being and economic growth (Fraumeni, 2005).

1.3 Overview of the Guide

10. The Guide discusses the concept of unpaid household service work, focuses on identifying methodological and implementation issues with measuring own-use production work of services, and the challenges associated with both the measurement of labour input and the subsequent valuation. The Guide provides recommendations aimed at producing estimates that are consistent with national accounting concepts and comparable across economies. The Guide limits the production boundary to own-use production work of services recognising that the measurement and valuation of the provision of services for other households – essentially volunteering –require separate guidance. Finally, the Guide provides examples of how own-use production work of services has been measured in selected country-specific contexts, before concluding with some examples of more detailed analysis, and suggestions for further research areas.

1.3.1 Chapter 2: Concepts and definitions

11. Chapter 2 focuses on the concepts and definitions related to unpaid household service work. Discussions of unpaid household service work begin in the context of the System of National Accounts (SNA) production boundary, outlining how unpaid household service work sits outside of this.

12. Next follows a formal definition of unpaid household service work, underpinned by the framework established at the 19th International Conference of Labour Statisticians. Unpaid household service work consists of two elements – own-use production work of services and volunteer work. Own-use production work of services is activity to provide services for own final use, whereas volunteer work is non-compulsory activity to provide services for others. As iterated earlier, this guidance is focusing on own-use production work of services. The Guide recommends that the measurement and valuation of volunteer services be considered as an area for future research work.

13. Chapter 2 next discusses how the third party criterion largely guides the definition of unpaid household service work. According to Hawrylyshyn (1977), unpaid household service work is regarded as 'those economic services produced in the household and outside the market, but which could be produced by a third person hired on the market without changing their utility to the members of the household'. Following this is a definition of the full set of activities that should be included when measuring own-use production work of services.

14. Chapter 2 concludes by outlining the main approaches to valuing own-use production work of services –the input and output approaches. While the detailed methodology is left to Chapter 3, this section of guide describes the preferred conceptual framework. This is to value own-use production work of services using the input (sum of costs) approach, using the gross generalist wages.

1.3.2 Chapter 3: Methodological approaches

15. Chapter 3 provides detailed accounts of some of the core methodologies regarding the methodological approaches to measuring own-use production work of services. It begins with a discussion on the collection of data – primarily time-use data to feed into the input approach. Guidance has already been drafted on time-use data by United Nations Statistics Division[3] (UNSD), United National Economic Commission for Europe[4] (UNECE) and Eurostat. This Guide references these documents without repetition.

16. Next, the chapter provides details of the various options available under the input approach to valuing own-use production work of services. The main source of information to value the time spent on own-use production work of services are wage rates. However, countries need to decide on the appropriate wage rate approach. There are two main choices here: the opportunity cost approach- valuing time at the wage rate of the person performing the work – or the replacement cost – valuing the work at the wage rates of professionals in the market. Within the replacement cost approach, further options are available. All work can be valued using generalist wages (e.g., housekeeper), or specialist wages for each individual activity (e.g., chef wages for preparing meals, child-minder wages for looking after children etc.). A relatively new approach, currently trialled in countries including Mexico, Canada and Australia, is the hybrid approach. This usually involves valuing household activities using generalist wages, and then more complex work, such as caring for children and adults using the specialist wage. The Guide recognises the relative merits of each individual approach and recommends valuing the time spent on own-use production work of services using generalist wages before tax (gross).

17. Following the estimation of compensation for labour input, further calculations are required to estimate the sum of all costs. These include the return to capital, which recognises the productive capacity of, for instance, household appliances in delivering own-use production work of services. Further adjustments are required for the treatment of taxes and benefits, and intermediation consumption.

18. The chapter concludes with a description of the output approach. This approach differs significantly from the input approach; the starting point is measuring the volume of services produced rather than the time spent providing them. While this Guide prefers the output approach conceptually, it considers that the data requirements are too difficult to overcome to

[3] Guide to producing statistics on time use, UNSD, 2005.
[4] Guidelines for harmonizing time-use surveys, UNECE, 2013.

be a recommended approach. Nonetheless, the Guide provides an example for own-use production work of childcare services, and describes an approach to measuring the number of hours that care providers allocated to childcare. The estimated volume of services is then valued using the nearest market equivalent prices. Using the example of childcare, the chapter discusses the relative merits of different prices – in this case, live-in nannies compared with child-minders. The chapter concludes by comparing results from the input and output approaches.

1.3.3 Chapter 4: The structure of household satellite accounts

19. Chapter 4 outlines how countries should construct a household satellite account – an accounting framework for measuring own-use production work of services that is consistent with national accounts, allowing robust comparisons with traditional market-based activity.

20. The chapter first defines the SNA production boundary of which the own-use production work of services sits outside. The Guide then proposes a simplified satellite account, maintaining the established SNA production boundary. In other words, it incorporates the physical units of own-use production work of services – measured in hours – without valuation, and therefore does not affect headline macroeconomic variables such as GDP.

21. Chapter 4 then proposes a second table that extends this production boundary by including the value of own-use production work of services. This requires a number of adjustments to the existing SNA framework. First, the table reconsiders households' final consumption expenditure as inputs to the production of own-use production work of services. For instance, household expenditure on flour is reclassified as intermediate consumption of the production of meals for own-consumption. Furthermore, household appliances such as vacuum cleaners are reclassified as productive capital in the cleaning of homes, requiring an estimation of depreciation and return on investment.

22. Further adjustments are required for the receipt and payment of taxes and benefits directly related to the production own-use production work of services. In some countries, households receive direct benefits for looking after children, or disabled people. This framework treats this activity as a form of subsidy, and accounts for it when calculating the output and gross value added (GVA) of the own-use production work of caring services.

23. Overall, this proposed supply and use table provides a framework for estimating the GVA of own-use production work of services in a manner that is comparable with traditional economic activity. This allows a number of useful and informative analyses. First, the value of activity produced within the home compared directly to that taking place in the market. Further, it provides a measure of "extended-GDP" – that is, conventional GDP plus the value of own-use production work of services.

24. Following this, the chapter describes the process for producing an extended sequence of accounts for the household sector. By doing so, it recognises the production and consumption of own-use production work of services as a form of income in-kind, thereby proposing an alternative measure of household disposable income. This allows a different take on tradition economic analyses of inequalities and poverty - further explored in Chapter 6.

1.3.4 Chapter 5: Implementation and measurement challenges

25. Chapter 5 explores many of the challenges surrounding implementation and measurement that countries may face when measuring own-use production work of services. The first section of the chapter presents a range of alternative solutions to the measurement of labour inputs. In doing so, it examines the various choices in collecting information on time-use. For instance, should data be recorded via a full time-diary, or less resource-intensive stylized questions? The chapter recommends a full diary approach when possible, but does suggest that a light time-diary is a promising alternative if resources are constrained.

26. This chapter then defines the full classification of activities for countries implementing a light diary. The categories recommended within Resolution I of the 19th ICLS are regarded too broad. Instead, the Guide lists a more detailed set of activities based the International Classification of Activities for Time Use Statistics (ICATUS 2016) developed by the UN Statistics Division. This classification is the result of many years of consultations with Member States that provided inputs/comments on national and regional experiences.[5] ICATUS 2016 was endorsed by the UN Statistical Commission (UNSC) in March 2017 for use as an international statistical classification. The Guide recommends that countries use these activities in designing future time-use surveys.

1.3.5 Chapter 6: Reporting

27. Chapter 6 describes a range of possible indicators concerning own-use production work of services that are useful for policy setting. It suggests a series of general indicators ranging from the number of hours devoted to own-use production work of services, to comparisons of GDP per capita with and without own-use production of services included. Finally, the chapter concludes by providing specific recommendations regarding the periodicity and breakdowns of measures. This Guide recommends that countries should aim to produce measures of own-use production work of services at least every 5 years. Further, to ensure comparability, countries are encouraged to harmonise reference periods, and publish on years ending in 5 and 0. In terms of breakdowns, the Guide recognises the importance of the gender dimension in own-use production work of services. It recommends that, at a minimum, measures of own-use production work of services are broken down by sex. In addition, measures should be disaggregated by age and household composition.

1.3.6 Chapter 7: Country-specific case studies

28. Chapter 7 presents a range of country case studies providing examples of issues raised within the Guide. The examples from Canada (section 7.1), Australia (section 7.2), Mexico (section 7.4), Republic of Moldova (section 7.5) and United Kingdom (section 7.8) describe national approaches to measuring and valuing own-use production work of services. The rest of the case studies focus on specific issues, in particular United States (section 7.3) describes the effect on income inequality, Finland (section 7.6) focuses on the relation with disposable income, Switzerland (section 7.7) discusses different assumptions of wages and Italy (section 7.9) analyses the measuring consumption of fixed capital for own-use production work of

[5] UNSD. ICATUS 2016: https://unstats.un.org/unsd/statcom/48th-session/documents/BG-3h-ICATUS-2016-13-February-2017-E.pdf

services. The examples of the United States (section 7.10), Finland (section 7.11), and Switzerland (section 7.12) discuss survey issues summarised below. The last example of Mexico (section 7.13) provides experience with connections between satellite accounts.

29. United States, Finland and Switzerland provide a number of country-specific examples regarding the collection of time-use information. The first example provides an account from the United States who have implemented a continuous, annual, time-use survey since 2003, by combining the annual American Time Use Survey (ATUS) and the Multinational Time Use Survey (MTUS). While this approach requires overcoming a number of challenges, the fact that it provides annual estimates allows frequent estimates of own-use production work of services.

30. Following the United States case study is an account of a light-diary approach, developed and tested by Finland. Attempting to overcome the lack of timeliness of full time diaries, the Finnish light diary classified 35 main activities – considerably less than the 146 categories in a full-scale survey. Furthermore, respondents were asked to record only one main activity so that the data collection be minimised. Nonetheless, the light dairy was designed so that is was comparable with previous full-diaries. Overall, testing a light-diary provided some useful and informative results. For instance, despite low response rates (17%), the light-diary provided estimates that were close to those obtained from the full-diary. However, respondents reported difficulty in recording just one main activity, and therefore, it is recommended that future light-diaries allow for the recording of at least one addition parallel activity.

31. Switzerland outlines their experience of using a module on the Labour Force Survey (LFS) to measure labour input. Using this module, approximately two thirds of the LFS sample was surveyed regarding time spent on housework, caring, domestic tasks and voluntary work. The case study identified numerous advantages with this LFS modular approach. For instance, it was relatively low budget, meaning that Swiss decision-makers have had access to good quality information on domestic and family workload since 1997. Furthermore, because the module is attached to an employment survey, it enables comparisons of time spent in paid work and own-use production work of services for the same individuals. However, the survey was limited to only one person per household. This means that while the results provide some insight into households management (main responsibility for housework and childcare), it did not inform on the volume of own-use production work of services completed by all the members of a household together. Furthermore, there were issues of recall - individuals may not have remembered all of their unpaid activities on the reference day. Finally, the results relied on respondents correctly distinguishing categories of own-use production work of services- some might describe playing with children as childcare, and others as leisure.

32. The example of Mexico outlines how different satellite accounts can overlap in the phenomena that they are attempting to measure. For instance, the provision of help or care to other households may be captured in both household satellite and health satellite accounts. Recognising these linkages helps avoid duplication and achieve results that are consistent across satellite accounts. It can also promote synergies and knowledge sharing between teams working on different accounts.

1.3.7 Chapter 8: Current and future research work

33. Chapter 8 concludes the Guide by reporting areas of existing and ideas for future research regarding the measurement of unpaid household service work. The chapter begins

with a long-standing issue – the treatment of simultaneous activities. Simultaneous activities take place in parallel with each other, such as looking after children while cooking a meal. There are numerous solutions to recording the time spent in simultaneous activities. For instance, one could record secondary activities in a separate table, or count both the primary and secondary in total.

34. Even if an agreement is reached on measuring the time spent on primary and secondary activities, issues arise when attempting to value this time. For instance, valuing time using a specialist wage is problematic for someone who spends an hour both cooking and looking after a child. This adds weight to valuing the time spent on own-use production work of services using the generalist wage approach, but still issues will arise if one of the simultaneous activities is not household work. All of these issues taken together imply the direction of further research and thought towards to the treatment of simultaneous activities.

35. Chapter 8 then discusses some of the issues regarding the measurement of volunteer work. As stated earlier, the Guide focuses primarily on methodologies for the measurement and valuation of own-use production work of services. The measurement of volunteer work entails a whole set of measurement and valuation challenges many of which are similar to those addressed in this guide. While some guidance relevant to volunteer work exists (see ILO, 2011), the Task Force considers this as an area for follow up activities.

36. Next, the chapter focuses on research carried out in other countries that provide more in-depth analysis than this Guide recommends as a minimum. First, there is a summary of analysis carried out in Finland examining the relationship between household disposable income and the own-use production work of services. The Guide states that economic theory suggests poorer people should consume more unpaid household service work due to their reduced ability to contract these services in the market. However, testing this hypothesis proves the opposite, at least in this Finnish example. The authors conclude that income does not explain the amount of own-use production work of services taking place. A more important explanatory variable is the availability of good alternatives for outsourcing own-use production work of services.

37. The chapter explores further the relationship between own-use production work of services and household income. It presents a case study from the United States using measures of own-use production work of services to estimate income in-kind, and then derive several measures of inequality. Their results are enlightening. First, all of the inequality measures suggest that extended income is more equally distributed than money income. They conclude that virtually all of the difference in measured inequality between the two measures is due to the addition of a large constant - the average value of own-use production work of services - to money income.

1.4 Main conclusions

38. The Guide shows that it is possible to derive estimates of the value of own-use production work of services, and construct a satellite account to show the impact on GDP, consumption, and household disposable income.

39. In valuing own-use production work of services, statistical agencies have a range of options in terms of both measuring the inputs and valuation. In particular, countries face a choice of:

- The input or output approach to measuring the physical units of own-use production work of services.
- How best to collect information on the inputs to own-use production work of services.
- Which wage rates to use for valuing own-use production work of services if using the input approach? Replacement or opportunity cost? Generalist or specialist wages?
- How should products be reclassified as intermediate consumption or household capital in the process of performing own-use production work of services?

40. For estimating the physical units of own-use production work of services, the Guide recommends the input over the output approach. The output approach has some attractive features, such as measuring directly the volume of services produced, and is more consistent with traditional national accounting exercises. However, the data burden required is significant, and nearly almost difficult to achieve in practice. Relatively more straightforward is the collection of time-use data, and thereby, the recording of labour input into own-use production work of services. This approach allows a more refined level of analysis, and this Guide recommends disaggregating estimates of own-use production work of services by sex, age, and household composition. In terms of age limits, the Guide states that countries should measure and report for those aged 15 years as a minimum, but recognises that national priorities may require measuring the work of children aged younger than 15 years.

41. While the collection of time-use data is more achievable than measuring the direct output of own-use production work of services, it is still not a trivial task. Full time-use surveys are resource intensive, requiring both considerable respondent and data coding burdens. The Guide outlines a number of alternative solutions to the full time diary surveys. Light diaries, for example, which require a less detail of recorded activities, are a promising alternative that countries could implement on a more frequent basis to supplement less-timely full diary approaches. Whatever method countries decide to collect time-use data, the Guide recommends harmonisation of reference periods across countries by collecting information on time-use in every year ending 5 and 0.

42. Following the collection of labour input into own-use production work of services, countries face a range of options in terms of valuation. First, the Guide recommends the replacement wage over the opportunity cost. Internationally, the latter approach is discounted as it can lead to counterintuitive results, for instance, that an hour spent looking after a child is more valuable when carried out by a lawyer compared to a secretary. Arguably, the skills required for these occupations have little bearing in the care of children, or other forms of household work.

43. The next question regards the choice of wage rates - generalist versus specialist wages. As outlined in Chapter 3, while there are attractive features to both approaches, the Guide recommends the generalist wage approach. This approach best accounts for the fact that the productivity of household members are unlikely to match those of specialist workers, and therefore the quality of service per hour of work is likely to be less. Furthermore, it is more useful for overcoming some of the issues raised by simultaneous activities. The generalist wage approach requires only one wage rate to value an hour of childcare combined with cleaning, rather than some combination of two rates under the specialist approach.

44. Once arriving at a measure for the value of labour input countries can then compile a household satellite account. The Guide recommends undertaking this in two stages. The first stage is to add to the traditional supply and use framework of the national accounts information from time-use surveys and breakdowns of activities, enabling the comparison of

own-use production work of services with their counterparts in the market. This first stage does not alter the production boundary described in the SNA, and merely records the time invested in the own-use production work of services.

45. The second stage extends the production boundary by including the value of own-use production work of services. This involves the reallocation of products from final consumption expenditure to intermediate consumption and household capital using the tables in the annex of Chapter 4 as a guide. Furthermore, countries need to account for the depreciation of household capital, following a straight-line depreciation perpetual inventory model, and estimate a return on the capital using the interest rate on debt securities. Finally, an adjustment is required for the existing taxes and benefits related to the direct provision of own-use production work of services.

46. The Guide describes the derivation of a full sequence of accounts for the household sector. Using information already existing in national accounts, this involves a series of adjustments, recognising the consumption of own-use production work of services as an income in-kind, to arrive at an adjusted value for household disposable income. While not explicitly recommended, countries can use this information to analyse a number of issues relating to income inequalities and poverty.

47. Finally, the Guide recommends a number of areas for further research work. Firstly, there is still no satisfactory method for dealing with the issue of simultaneous activities – when people do more than one activity at the same time. Secondly, volunteering, that is, the provision of services for other households entails a number of measurement challenges out of the scope of this Guide. A further guidance document could address the measurement and valuation of volunteering services.

1.5 Summary of recommendations

48. This section provides a brief summary of all the Guide's recommendations grouped into four themes: General measurement, household satellite account, reporting, and further research recommendations.

General measurement recommendations

1. **Measuring own-use production work of services** – The Guide recommends measuring the volume of own-use production work of services using the **input approach.**
2. **Valuing own-use production work of services –** The Guide recommends valuing the labour component of own-use production work or services using the **replacement generalist approach** selecting an appropriate **gross wage (i.e. before-tax) rate**.

Household satellite account recommendations

3. **Constructing a simplified household satellite account** – The Guide recommends constructing a simplified household satellite account as a first stage. This adds to the traditional supply and use framework by just adding information on the labour component of own-use production work of services.
4. **Reallocating final consumption expenditure to intermediate consumption and household capital –** Using the table in Annex 4.1, the Guide recommends

reallocating elements of final consumption expenditure towards intermediate consumption and household capital. This reflects the bundle of goods and services required to enable the production of own-use production work of services.

5. **Estimating capital services –** This Guide recommends measuring the consumption of fixed capital using the perpetual inventory method, and estimating the return on capital using a selected interest rate – the Guide suggest the interest rate for government bonds.

6. **Reconciling for taxes and subsidies –** The Guide recommends estimating the value of taxes and subsidies involved in the direct provision of own-use production work of services.

7. **Estimating gross value added and value of output –** The Guide recommends estimating the value of gross value added and output as:

$$\begin{aligned} &Gross\ value\ added \\ &= imputed\ compensation\ for\ labour\ input + taxes - subsidies \\ &+ consumption\ of\ fixed\ capital + return\ to\ capital \end{aligned}$$

$$Output = gross\ value\ added + intermediate\ consumption$$

8. **Constructing a household satellite account with extended production boundary –** The Guide recommends using all the variables estimated above to construct a household satellite account with extended production boundary.

Reporting own-use production work of services

9. **Age bands –** The Guide recommends that measures of own-use production work of services **should at least cover the population aged 15 and over.** However, countries can measure and report at lower age thresholds depending on national priorities, as long as the age group "15 and over" is clearly identifiable to enable international comparison.

10. **Periodicity –** The Guide recommends that countries aim to measure and report own-use production work of services **every 5 years**, and to ensure international consistency, in **years ending in 0 and 5**.

11. **Breakdown –** The Guide recommends that countries report estimates of own-use production work of services by **sex, age, and household composition**.

Further research

12. **Simultaneous activities** – The Guide recommends applying more research to the issue of simultaneous activities to ensure consistent treatment.

13. **Volunteering** – The Guide recommends producing a separate guidance document for the measurement of volunteering activities.

Annex 1.1: UNECE survey on national practices on valuing unpaid household service work

49. In April 2015, based on a questionnaire designed by the Task Force on valuing unpaid household service work, UNECE conducted a survey on national practices among the CES member countries. Responses were received from the following 33 countries: Armenia, Australia, Austria, Belarus, Brazil, Canada, Colombia, Croatia, Czechia, Finland, Georgia, Hungary, Israel, Japan, Latvia, Lithuania, Mexico, Montenegro, New Zealand, Norway, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, South Africa, Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, United Kingdom, and United States.

50. The survey provided a comprehensive overview of countries' activities and plans in measuring unpaid household service work and was considered a useful step in identifying good practices and in developing recommendations. The key findings are the following :

- 17 countries compile estimates of the value of unpaid household service work: Armenia, Australia, Canada, Colombia, Finland, Hungary, Japan, Mexico, New Zealand, Norway, Russian Federation, Spain, Sweden, Switzerland, the former Yugoslav Republic of Macedonia, United Kingdom, and United States.
- The following 11 countries declared measuring the value of unpaid household work on regular basics: Australia, Colombia, Finland, Hungary, Mexico, New Zealand, Norway, Russian Federation, Spain, Switzerland, and the former Yugoslav Republic of Macedonia.
- The frequency of measurement varied widely across countries;
- Most countries opt for a mix of monetary and physical values;
- 87% of countries used a time-use survey;

51. In terms of methodologies used by the countries, it was noted that although the most widely used approach was the input approach, there was no single approach that was seen as preferable. The analysis showed that most countries first measure physical units, and then embark on measuring monetary values.

52. From the responded countries only Finland, Spain, and United States construct a full sequence of household satellite accounts.

Chapter 2 Concepts and Definitions

2.1 Introduction

53. This chapter articulates the conceptual framework underlying unpaid household service work. The chapter begins by outlining how the concept of unpaid household service work fits within the broad framework of the SNA core accounts, how it contrasts with the underlying production boundary, and it formulates the suite of concepts that structure households' unpaid work.

54. This conceptual framework revolves around the so-called third party criterion, the set of activities that define households' unpaid work, labour input and its related concepts, the alternate valuation methods and the necessary caveats due to the absence of consensus in some areas.

2.2 SNA production boundary and general production boundary

55. The central framework of the 2008 System of National Accounts (2008 SNA) does not include the services produced by household for own consumption. The exclusion of these services is established in the SNA production boundary, defining which productive activities should be accounted for in the compilation of national accounts.

56. Economic activities, along with their related goods and services, covered under the 2008 SNA forms a kind of domain of definition. The 2008 SNA makes the distinction between the general production boundary and the restricted production boundary. In generic terms, the general production boundary covers production activities which entails the combination of labour, capital, and goods and services to produce outputs of goods or services under the control of a well-defined institutional unit that uses inputs (§6.24). In contrast, the restricted production boundary prescribes a more restrictive boundary, particularly in relation to unpaid activities within households (§6.26). While the production of goods within households is included in the 2008 SNA, the production of services is excluded with the exception of owner-occupied housing and the production of domestic and personal services by employing paid domestic staff. The main reasons for the exclusion of the main part of non-market services produced within households are summarised in § 6.30: *"…, the reluctance of national accountants to impute values for the outputs, incomes and expenditures associated with the production and consumption of services within households is explained by a combination of factors, namely the relative isolation and independence of these activities from markets, the extreme difficulty of making economically meaningful estimates of their values, and the adverse effects it would have on the usefulness of the accounts for policy purposes and the analysis of markets and market disequilibria."*

57. One of the more fundamental criticisms faced by the SNA concerns the above non-recognition of services provided within households as being part of the production boundary, thus not adding to output, value added and GDP. Consequently, GDP growth may be overestimated in times of an increasing participation in the labour market, which often

coincides with a substitution of own-use production work of services towards purchasing the relevant services on the market.

58. The Report by the Commission on the Measurement of Economic Performance and Social Progress, more commonly referred to as the Stiglitz-Sen-Fitoussi Report (Stiglitz, Sen and Fitoussi, 2009), also acknowledges this point of critique, as part of recommendation 5: *"Broaden income measures to non-market activities"*, using the following rationale: *"… for many of the services people received from other family members in the past are now purchased on the market. This shift translates into a rise in income as measured in the national accounts and may give a false impression of a change in living standards, while it merely reflects a shift from non-market to market provision of services. Many services that households produce for themselves are not recognized in official income and production measures, yet they constitute an important aspect of economic activity"*. However, the Stiglitz-Sen-Fitoussi Report does not propose to change the central framework of the SNA. Instead, it suggests to compile *"comprehensive and periodic accounts of household activity as satellites to the core national accounts"*, to complement the picture.

2.3 Defining own-use production work of services

59. In the context of the input valuation approach of own-use production work of services, it is necessary to measure the time spent in providing those services. However, before discussing the source data, which are the focus of Chapter 3, it is important to establish the conceptual underpinnings of the concept of work to establish a consistent scope for the unpaid household service work activities and, by extension, aid in ensuring the comparability of the statistics.

60. The 19th ICLS establishes the relevant framework. The framework is outlined in Resolution I of the Conference (*Resolution concerning statistics of work, employment and labour underutilization*).

61. For decades, statistics on the measurement of the labour force have been guided by standards established at the 13th ICLS in 1982. The framework did not include forms of work outside the SNA production boundary but within the general production boundary. This gap is particularly relevant to the subject matter of this report as it meant unpaid household service work was not identified within the framework and, therefore, frequently not measured.

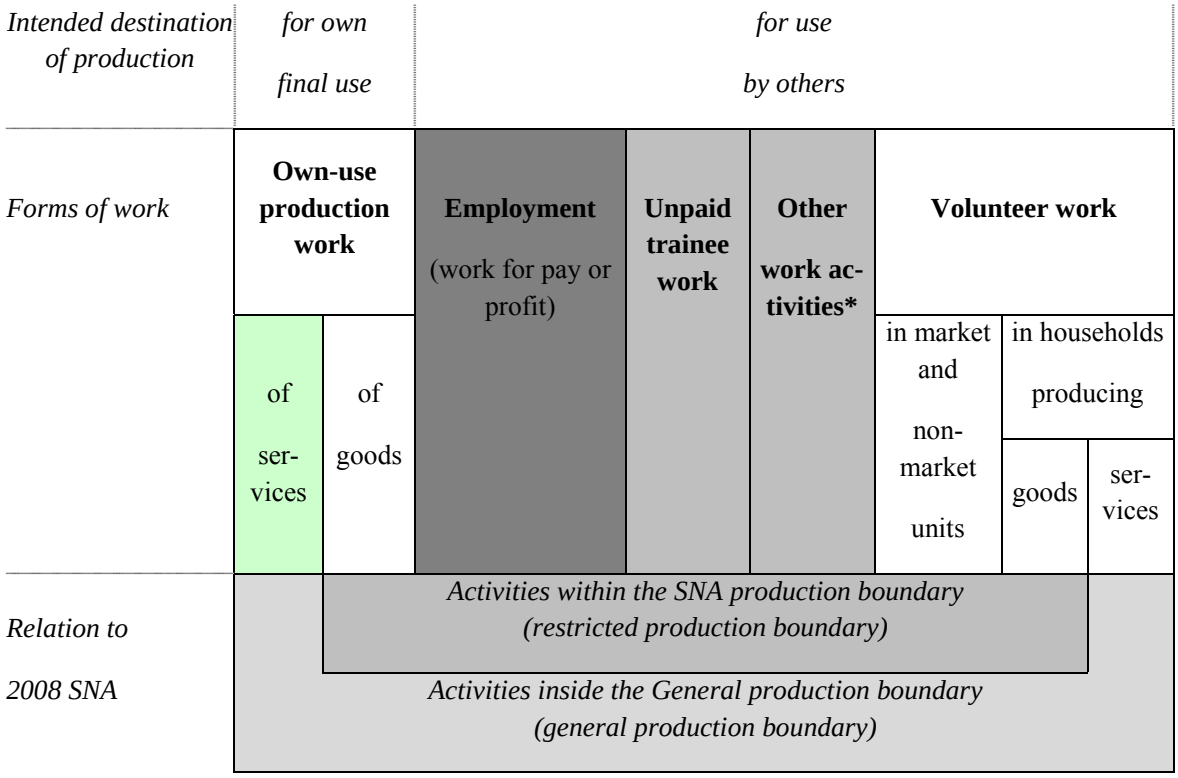
62. To address the limitations that exist in the 1982 framework, a new resolution was agreed at the 19th ICLS. This resolution placed the emphasis on concepts that are the focus of the present chapter, and various measurement issues of relevance to the measurement of work activities, which are left to Chapter 3. Among the key changes agreed were:

- A definition for the concept of work, which covers all productive activities including those outside the SNA production boundary but within the General production boundary.
- A framework that distinguishes between different forms of work ranging from the intended destination of the production (own use or use by others) to other characteristics of the work. Within this framework, employment is more narrowly defined as work for pay or profit. Figure 2.1 outlines this framework.

- Employment (as now defined) remains the reference point for labour force statistics and unemployment. However, additional labour underutilization indicators are defined to supplement statistics on unemployment.

63. Figure 2.1 below shows how the different work activities identified in the framework align with the SNA and General Production Boundary. The Guide focuses on measuring own-use production work of services, the box highlighted in green.

Figure 2.1
Forms of work framework and relationship to SNA, 2008



Source: ILO (2013). Available from http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_230304.pdf

64. Aligning the definitions used in this Guide to the forms of work framework allows the measurement of a consistent scope of activities. Theoretically 'unpaid household service work' (the subject of this guide) can cover two of the forms of work identified in the framework namely "own-use production work of services" and "volunteer work of services".

65. "Own-use production work of services" (or own use provision of services) is defined in the framework as activity to provide services for own final use. This covers a wide range of household services ranging from cooking and cleaning to childcare or caring for elderly family members. An important element of the definition relates to the meaning of 'own final use'. The standards clarify this as covering activities where household members, or family members living in other households, consume the produced services.

66. The standards define "Volunteer work of services" as any unpaid, non-compulsory activity to provide services for others. In the case of volunteer work production "for others" refers to work performed:

a) through, or for organizations comprising market and non-market units (i.e. organization based volunteering) including through or for self-help, mutual aid or community-based groups of which the volunteer is a member
b) for households other than the household of the volunteer worker or of related family members (i.e. direct volunteering)

67. These two forms of work can involve very similar activities and, the recipient of the services in question identifies the boundary between them. As an illustration, the definitions consider cooking meals and bringing them to an elderly relative at their home as own-use production work of services, while doing the same activity but for the benefit of a non-family member in another household is volunteer work.

68. Therefore, in measuring unpaid household service work it is recommended that in addition to identifying the type of activity and the time involved, the nature of the intended recipient(s) must be clearly delineated in order to allow the activities to be separated between own use provision of services and volunteer work.

69. The distinctions between own-use production work of services and volunteer work mean that they may require alternative approaches both from a measurement and valuation point of view. The development of this guide has focused on the measurement and valuation of own-use production work of services. It is very important that the scope of activities covered by any estimates should be transparent, using appropriate methods. Following this Guide will allow the development of estimates of own-use production work of services; nonetheless, much of the guidance will also be of relevance for volunteer work. The Task Force considers that measurement and valuation of volunteer work is a subject that would benefit from future work to provide specific guidance. Chapter 8 discusses this further.

70. In addition to defining the concepts, the resolution covers various issues of relevance to the measurement of work activities. These include:

- Population coverage – recommended as usual residents for the purpose of statistics of work.
- Age limits – different age limits will be relevant depending on the country context and the particular policy needs (e.g., if the working activities of children need to be measured). However, data should at least cover the population aged 15 and over, and ensure that this age group is clearly identifiable to ensure international comparability.

71. The design of any survey used to collect statistics of work must take these issues (along with many others) into account. They will be particularly relevant in comparing statistics from different sources. It is generally expected that measurement will be undertaken through household surveys. Chapter 3 and Chapter 5 discuss the issue of measurement of work activities in more detail.

72. An important element of the definition of work from the 19th ICLS is the concept of the third party criterion. Hawrylyshyn (1977) describes this in a form that appeals for its combination of economic theory guidance and common sense. Hawrylyshyn regards unpaid household service work as “those economic services produced in the household and outside the market, but which could be produced by a third person hired on the market without changing their utility to the members of the household”.

73. This so-called third party criterion is central to the assessment of whether services are recorded as work or just leisure. At the core of this distinction is the difference between productive and non-productive unpaid household service work. Under this view, an activity is

productive only to the extent that it can be delegated to another person. For example, activities such as cleaning, house maintenance, laundry and footwear care, shopping and household management, providing help to other households and volunteer work comply with this criterion, which make them in scope for the measurement and valuation of unpaid household service work. In contrast, activities that do not lend themselves to exchange and benefit only the person doing it such as watching a movie are excluded. Similarly, the output of goods (clothing, hunting, fishing, collection of firewood), even though carried out with unpaid work and for own consumption purpose, is not considered to be part of the activities to be measured, owing to the fact that they are already accounted for as part of the SNA core accounts.

74. The Guide emphasises that households may be of any size and therefore unpaid household service work should be measured in single-persons households if someone can be hired to perform the activities. However, the single-person hours dedicated to self-care health grooming and providing therapies are excluded.

75. Overall, activities that do not involve producing services, such as self-administered personal care and activities that another person cannot perform on one's own behalf are considered to be outside the scope of work as defined in the standards from the 19th ICLS.

76. Although activities covered by the concept of unpaid work are adequately delineated, some exceptions still exist. For example, some productive activities (e.g., educating oneself and self-administered personal care) despite the fact that they comply with the third person criterion are excluded, while others that can be viewed as leisure (e.g., gardening, playing with children) are included.

77. The definition of a household within this guidance is generally consistent with the SNA. Using this definition, the household is a group of people – or a person living alone - sharing the same house, pooling all or part of their income and assets, and collectively consuming certain types of goods and services (mainly housing and food). However, household labourers (e.g. nannies, chefs, etc.) living within in a household are excluded. Further, all households residing in the national territory are included. However, in contrast to the SNA, the definition of household does not include people living together in hospitals, asylums, convents, prisons, etc.

2.4 What activities should be included?

78. Many international institutions have detailed the activities that they consider part of own-use production work of services. In addition, the Task Force in charge of putting together this Guide compiled an inventory of activities considered under the wide range of existing national practices. Table 4.1 translates the results of these efforts into the set of recommended activities. While this set of activities represents the common denominator across international practices, countries should not view this list as exhaustive or as operational guidance for data collection. Cultural differences may lead to a variance in the delineation of normal own-use production work of service activities that could be contracted to the market. Members of the international community should adopt a flexible approach, which strives to meet international guidelines all the while reflecting the local peculiarities in their own national program. Similarly, the approach must be forward looking to guarantee that measures of own-use production work of services keep up with the changing environment such as the offload of some market activities to own-use production work of

services activities (e.g., self-serve gas stations, banking and other online services). Existing classifications on time-use, as discussed further in Chapter 3 and Chapter 5, are an important reference point in designing data collection and dissemination programmes.

2.5 Valuing own-use production work of services

2.5.1 Introduction

79. One of the most important issues to consider when including own-use production work of services activities within the production boundary concerns the valuation of the relevant services. Given that directly observable market prices for these services are not available, economist statisticians have to impute a price from otherwise observable data. Two methods for inferring the value of own-use production work of services are commonly utilized: the input valuation approach and the output valuation approach. While this section provides a brief overview of both methods, Chapter 3 discusses them more in detail. Here, one should acknowledge that both methods could reinforce each other, by comparing the results of both methodologies.

80. The output and input approaches basically use the same elements – intermediate consumption, taxes less subsidies on production, consumption of fixed capital (or depreciation), and (net) operating surplus. The calculation for each approach is presented below.

Output-based method

$$
\begin{aligned}
&Value\ of\ outputs\ (quantity\ x\ price) at\ market\ equivalent\ prices\\
&\quad - intermediate\ consumption\\
&\quad = gross\ value\ added\\
&\quad - consumption\ of\ fixed\ capital - other\ taxes\ on\ production\\
&\quad + other\ subsidies\ on\ production - return\ to\ capital\\
&\quad = imputed\ compensation\ for\ labour\ input
\end{aligned}
$$

Input-based method

$$
\begin{aligned}
&Imputed\ compensation\ for\ labour\ input\ (units\ of\ time\ valued\ at\ suitable\ wages)\\
&\quad + other\ taxes\ on\ production - other\ subsidies\ on\ production\\
&\quad + consumption\ of\ fixed\ capital\ +\ return\ to\ capital\\
&\quad = gross\ value\ added\\
&\quad + intermediate\ consumption\\
&\quad = value\ of\ output\ (sum\ of\ costs)
\end{aligned}
$$

2.5.2 The input valuation approach

81. As defined by Chadeau (1992) “the input approach consists of imputing a money value to labour inputs directly. Fixed capital consumption, Gross Operating Surplus, net indirect taxes and intermediate consumption are then added to obtain an estimate for the value of market household production”. Under this approach, the goal is to arrive at a market-equivalent price using a type of costs-based approach to the valuation of the relevant services,

where the value of output equals the sum labour, capital and intermediate goods and services. Often non-labour inputs are ignored, as these inputs are already counted as personal expenditure on goods and services in GDP. However, different from applying this methodology to government services where actual salaries and wages are paid, the use of the cost-based methodology in the case of own-use production work of services is more problematic, the main reason being that for the main part of the costs involved, i.e. labour input, no actual payments are involved. Therefore, one needs to impute a value for compensation of employees.

82. The Guide recommends making use of the input method to valuing own-use production work of services in view of the availability of information on the labour, capital and other materials. Implementation of the input valuation approach requires information about time use of respondents, the use of household equipment and associated capital flows, and the intermediate consumption of goods and services used by households in the production process.

83. Furthermore, the Guide recommends that valuation be based on the replacement cost generalist approach (RC-G) which consists of taking market wage rates from similar paid work occupations and applying them to the hours spent doing own-use production work of services activities. This valuation method uses hourly earnings of individuals who are engaged in similar activities in the market sector to value the amount of time spent on own-use production work of services. Schreyer and Diewart (2014) also argue for a replacement cost as a way of valuing labour input into own-use production work of services. Their theoretical findings lent "support to giving preference to a replacement- cost valuation, as long as the purpose is measuring the value of household production". Bridgman (2016a) extends this analysis to an environment with capital durables and show that the financial rate of return is the correct imputation for capital services. Replacement costs should be based on gross wages (i.e. before-tax) and includes fringe benefits (such as sick leave, paid vacations), and an estimate of employers' social security contributions. The rationale behind the additions to wages is that households pay for these supplements if they buy market substitutes rather than making such products themselves.

84. Own-use production work of services requires various consumer durables, such as kitchen appliances or transport equipment. It is then "preferable to estimate a value of the capital services that can be derived from using the capital goods over their entire service life, instead of using numbers on the annual purchases". These households' consumer durables expenses, treated as current expenditures in the core SNA accounts, are capitalized.

85. The Guide recommends that gross operating surplus (GOS) be included to value own-use production work of services. Moreover, the Guide recommends that the best methodology to estimate GOS is the so-called capital services methodology outlined in more detail in Chapter 3.

2.5.3 The output valuation approach

86. In this approach, the value of services produced by own-use production work of services activities is set equal to the price paid for similar services traded on the market. The output is then calculated by the number of units produced times the relevant market prices. For example, if a factory makes one million toy cars in a year and sells them for £3 each then the total output equals £3 million. For market services, businesses would normally do this calculation themselves and report the total monetary value of the turnover directly (which is then needs adjusted for the changes in the value of inventories of finished products).

87. The application of the output valuation technique in valuing own-use production work of services looks simple and straightforward in theory, but in practice it shows to be quite challenging; there is very limited data on the volume of own-use production work of services produced. It may be feasible to find suitable equivalent market prices for own-use production work of services. It may be more problematic to adjust for differences in quality. Furthermore, the services will not be truly similar, in the sense that having a dinner outdoors is not equivalent to cooking meals at home. Taking care of one's own children is different from the services provided by a nanny or childcare. It is with these considerations in mind, and the greater availability of time-use data, that the Guide recommends measuring own-use production work of services using the input approach.

88. With the challenges involved with developing estimates of the value of own-use production work of services it is likely that established methods of quality assurance will be required to limit the impact of methodological/data driven bias. Where the output valuation technique relies on different data sources to the input valuation technique, it may then be triangulated with the input valuation technique to improve the accuracy of valuations of own-use production work of services.

89. In absence of a time-use survey, the primary data source for producing input technique valuations, the output valuation technique represents a good alternative approach for valuing own-use production work of services. It can be timely to produce, highly comparable with market equivalent services, and represent an effective method of capturing market equivalent values without having to estimate a range of individual components.

90. However, if the output valuation is used in isolation, any understanding of the hours of own-use production work of services undertaken is lost and without a record of the working hours it is not possible to calculate the productivity levels associated with own-use production work of services (output per hour worked or output per worker) (See Holloway, 2002). In addition, because the output method creates a 'catch all' valuation of output, little is known about the person producing own-use production work of services, limiting the potential policy application of any results. The combination of input and output-based estimates produced in parallel could offer interesting insights into the division of macro totals of own-use production work of services. The Guide encourages more countries to adopt this approach.

Annex 2.1: Background to Resolution I of the 19th ICLS

91. For decades, standards established at the 13th ICLS in 1982 have guided statistics on the measurement of labour force. Of particular note is that these standards included definitions of a number of key concepts including:

- **Economically active persons:** all persons who furnish the supply of labour for the production of economic goods and services as defined in the SNA during a specified time-reference period. It can be broken down into persons in employment and unemployed persons.
- **Persons in employment:** People at work or; not at work but with a job or business
- **Unemployed persons:** People who were not in employment and were seeking and available for work.

92. A key feature of the 1982 framework is that it created a direct link between the SNA production boundary and employment, whereby employment was all activity that provided labour input to production. In theory, this created the benefit that labour input measured on this basis (i.e. employment) would correspond to output measured using the SNA and, therefore, be usable as a denominator in productivity measurement etc.

93. While these standards provided a basis for consistent measurement of economic activity over a long period, various deficiencies arose against user needs, which led to increasing calls over the years for an update to the framework. Among the most important issues arising were:

94. The concept of employment was too wide given the inclusion of various forms of own-use production work of services. This created a mismatch between policymakers needs and the coverage of the statistics.

95. The concept of unemployment was too narrow to account for all forms of labour underutilization.

96. The framework did not include forms of work outside the SNA production boundary but within the general production boundary. This gap is particularly relevant to the subject matter of this report as it the framework did not identify own-use production work of services and, therefore, were not frequently measured.

Chapter 3 Methodological Approaches

3.1 Introduction

97. The present chapter deals with the methodology that leads to the estimation of the value of own-use production work of service. The methodology underlying the estimation of the own-use production work of service is structured along four major building blocks:

a) The primary source data and the target population
b) The classification of activities
c) The imputation of the value of own-use production work of services based on the replacement cost approach (RC)
d) The imputation of the estimates for the non-labour components (GOS, taxes less subsidies, intermediate consumption)

98. The chapter comprises an annex of existing practices of a sample of countries.

3.2 Data and coverage

99. The Time Use Survey (TUS) is the widely regarded as the best source of information to measure own-use production work of services (labour time inputs to own-use production work of services). The reasons for this are discussed and emphasized in the guidance already produced by United Nations Statistics Division (UNSD) (UN, 2005), UNECE (2013) and Eurostat (2009). This Guide does not repeat the detailed guidance on the completion of time-use surveys contained in those documents. Thus, countries that do not have an existing TUS in place for the measurement of time spent on own-use production work of services are strongly encouraged to set this program in motion.

100. Much of the guidance available focuses on identifying the best methodology to undertake a one off data collection. However, it would be highly beneficial if alternative methodologies could be used in household surveys to collect this information due to the relative cost and complexity of completing a dedicated TUS. Both the UN Guide (2005) and the UNECE Guidelines (2013) briefly discuss the idea of combining different approaches to provide a time series of data on time-use. One combined approach, which is worthy of consideration, is an infrequent full TUS (perhaps every ten years) complemented by a light diary approach combined with another survey in between (perhaps every 5 years). While the lighter set of data will not provide for as rich analysis of time, it will allow for updates of key indicators on time spent on different activities. This would be compatible with the purpose of valuation of own-use production work of services and involve lower cost than an approach that requires the production of a full TUS.

101. Further research is required on the suitability of light approaches as a replacement or supplement for estimates from full time-use surveys. At the time of writing of this guide, various international agencies including the ILO and UNSD are considering developing and testing alternative approaches to time-use data collection including light diary approaches. The focus of such work would be on assessing the relative quality and burden of these different approaches which could inform further how countries can collect time use data, not

just on a one off basis but as a time-series in the most efficient manner possible while maintaining data quality.

102. In addition to carefully selecting and designing the data collection instrument, a wide range of other methodological choices (such as collection mode, weighting methodology etc.) need to be carefully considered. UN Guide (2005) and the UNECE Guidelines (2013), as well as Chapter 5 of this Guide provide further detail on these issues.

103. When measuring forms of work, the Guide aligns with ILO recommendations about measuring and reporting by age group. The ILO stress that data should at least cover the population aged 15 and over. National priorities could warrant applying a lower age threshold, for example, if there is high national demand for data on work by children. Such national adaptations can be made as long as the age group '15 years and over' is clearly identifiable to enable international comparisons. The target population also entails the following exclusions for conceptual and operational reasons: foreign diplomatic personnel and members of their households who did not qualify as national residents; members of foreign defence forces (and their dependants); all persons living in collective dwellings (e.g., prisons, hospitals).

104. The subdivision of the population into groups should be guided by principles such as relevance, reliability (sample size) and comparability across time and space. Possible groups are sub-national residence, gender, family status, number of children, labour force status, and age of the youngest child.

3.3 Classification of activities to be measured

105. The Resolution I of the 19th ICLS has identified the range of activities covered by own use provision of services as:

a) household accounting and management, purchasing and/or transporting goods;
b) preparing and/or serving meals, household waste disposal and recycling;
c) cleaning, decorating and maintaining one's own dwelling or premises, durables and other goods, and gardening;
d) childcare and instruction, transporting and caring for elderly, dependent or other household members and domestic animals or pets, etc.;

106. For the purposes of data collection, a more detailed classification than the one presented in the resolution is required. Even though several classifications are developed covering activities performed in the home and for oneself, until recently there was no single agreed international standard. Such a classification (ICATUS 2016) was endorsed by UN Statistical Commission in March 2017.

107. Another classification available is the Harmonized European Time Use Survey (HETUS) prepared by Eurostat, which is subject to revision with reference to ICATUS 2016.[6] The UNECE Guidelines (2013) include recommendations for a broad activity classification of time use based on assessments of ICATUS and HETUS, and on policy needs. Chapter 5 presents more detail on these classifications.

[6] Eurostat. 2009. Harmonized European time use surveys: 2008 Guidelines. Luxembourg.

108. Various different approaches have been taken in surveys to converting these classifications into an activity list for data collection. In 2015, the ILO commenced a series of pilot studies in follow-up to the 19th ICLS. Within these pilot studies, the following breakdown of activities is being used through stylized questions:

- planning the household finances or paying bills
- cooking, serving meals, washing dishes or arranging food supplies
- washing, ironing, mending clothing or household linen
- doing other housework or yard work, such as cleaning, weeding, cutting grass
- shopping for the household
- doing household maintenance or repairs in your dwelling such as painting, decorating, installing fixtures or fittings
- looking after children 17 years or younger who live in this household
- providing care, help or assistance to adult persons who live in this household because of an illness, disability or old age

109. Conclusions on the ease of reporting using this breakdown are not yet available but it represents one possible operationalization of a list of activities within own use provision of services. The ILO will release further guidance on the measurement issues surrounding these activities as they continue their work.

110. The choice of activity list is closely linked to the data collection approach. With a full diary, there is no pre-defined activity list so the classification is used for coding purposes and no further amendment is needed. For a light time-use diary, the recommendation is that the activities cover the full day comprehensively but the list should involve no more than 30 activities. For stylized questions, the list needs to be relatively short to ease respondent burden.

111. In addition to identifying the type of own-use production work of services activity, it is also necessary to indicate the recipient of the service (it must be a household or family member including the single-person households carrying out the activity) and that the activity is unpaid. Only under the combination of these elements is it possible to classify the activity as own use provision of services.

112. The remainder of this chapter assumes that a time-use survey, with the appropriate classifications, is the source of data to estimate the volume of own-use production work of services. As already noted the design of a TUS involves many methodological choices. Chapter 5 discusses these in further detail.

3.4 Valuation techniques – the input and output valuation approaches

113. There are two methods for valuing economic outputs of own-use production work of services: the input summation of inputs (indirect valuation) and the output evaluation (direct valuation). The input approach, which consists in measuring the volume of inputs as an indicator of the volume of output, is seen as more realistic to implement. The output approach is recognised as being the best approach to estimating own-use production work of services and being conceptually consistent with the valuation of market production. However, the output method is difficult to implement due to the lack of detailed information on the outputs of households and on prices of goods and services of similar type and quality on the market.

3.4.1 The input approach

114. The following section builds upon proposals outlined in section 2.5.1 detailing various approaches to measuring each of the components in the input approach.

115. To estimate a reliable value of own-use production work of services, countries need to proceed with a number of complementary steps. First, average daily minutes spent of household work recorded in the TUS will be considered for each demographic sub-groups (i.e. groups of females and males classified according to their age group, marital status, whether they were employed or if they have children) to generate average weekly hours spent on own-use production work of services activities. Second, the average hourly wage rate based on the imputed wage rate is applied to the average weekly hours to arrive at the weekly value of own-use production work of services. Third, these average amounts are then multiplied by the number of weeks in a year, applied to the population in each demographic sub-group and summed to provide annual estimates of the value of own-use production work of services. Table 3.1 provides guidelines on the input-based method.

Table 3.1
Input-based method: condensed guidelines

Calculation	Component	Definition / description	Details in chapter
*	Time	Target Population own-use production work of services, activities Time use data	3.2 2.3 and 3.3 3.2 and 5
*	Wage	Wage rate: e.g., national LFS recommended: replacement cost and generalist wage	3.4.1.1
=	**Imputed compensation for labour input**		
+	Taxes		3.4.1.3 and 4.2.2.3
-	Subsidies		3.4.1.3 and 4.2.2.3
+	Consumption of fixed capital	Decline of durables used for household service work	4.2.2.2 and annex 4.3
+	Return to capital	Theoretical "profit"	3.4.1.2 and 4.2.2.2
=	**Gross value added**		
+	Intermediate consumption	Raw materials, energy, equipment etc. used for household service work	4.2.2.1, annex 4.1 and annex 4.2
=	**Value of output (sum of costs)**		

3.4.1.1 Imputed compensation for labour input

116. Historically, one of the main challenges with valuing own-use production work of services has been the lack of available data for wages. With wages disaggregated by occupation, there are only a few different occupations available that may be used to provide a market equivalent wage rate. Now there are far more detailed data sources available, which can provide wage data for a wide range of occupations. This evolution of available wage data

has allowed many more own-use production work of services to be valued than was historically possible.

117. Wage data for most countries is available from their national LFS. Other countries may have access to administrative data on pay, for example, Canada have the monthly Survey of Employment, Payrolls and Hours (SEPH) which provides the principal input to labour income statistics and the United Kingdom have the Annual Survey of Hours and Earnings (ASHE) which takes a 1% sample of income tax records.

118. Time use surveys often collect wage data; however, it is important to consider which estimates of wages are most reliable. Self-reported surveys, including TUSs and LFSs may be liable to some self-reporting bias and where changes in the level of wages often drive estimates of the value of own-use production work of services over time, it is necessary to start with the very best quality data source available. However, the same self-reporting concerns should not detract from the excellent ability of 24-hour time diaries to record participant activity with limited error as shown by Juster and Stafford (1991) who, as stated earlier in this section, found time diary accuracy to compare favourably to alternate data sources.

3.4.1.1.1 Opportunity cost and replacement cost approaches

119. National accounts guidelines recommend the imputation at the price of some equivalent marketed good or service or, as a second best approach, imputation at the cost of inputs. Valuing the labour component of own-use production work of services requires market-based wage rate. While actual hours worked can be measured with some precision by activity, there is a variety of approaches to choose from to value these hours. The choice of the imputed wage rate has a significant bearing on the valuation and, indeed, is the critical factor in any subsequent comparisons between paid and own-use production work of services comparisons. Currently the two main approaches taken include:

- The opportunity cost method - the person's actual employed wage rate to value own-use production work.
- The replacement cost method - using market wage rates from similar paid work occupations and applying them to the hours of own-use production work of services. This is **the recommended approach**.

3.4.1.1.2 The opportunity cost method

120. With this method, paid market work and unpaid household work trade off against one another. The assumption is that time spent in one sector is seen to be at the expense of time spent in the other. The opportunity cost method to valuing own-use production work of services is based on the premise that when an individual engages in own-use production work of services, activities that could be done instead along with all associated monetary and non-monetary benefits are given up.

121. The use of an opportunity cost wage also implies that the value of own-use production work of service might be vastly different depending on who is performing the task – a common criticism of the opportunity cost method. Preparing meals, for example, is likely to require the same level of skill whether the individual is a labourer or a doctor, but one has a much higher wage rate than the other. An added complication arises for unemployed people who have no equivalent market wage. A further weakness of the opportunity cost method is the assumption that people can always choose whether to spend an extra hour on paid work or on another activity. Finally, the aim should be to measure what households actually produce instead of what they might have produced on the market instead.

3.4.1.1.3 Replacement cost approach

122. The premise of the replacement cost method is that the time spent on unpaid activities can be valued at the hourly earnings of individuals who are engaged in similar activities in the market sector. It is assumed that household members and their "replacements" are equally productive. The assumption behind this approach is that households save money by deciding to perform the activity themselves. The amount they save, and hence the value to the household of doing the work, is the cost of purchasing the same services in the market or hiring someone else to perform the activity.

123. There are still many choices available within the replacement cost approach. A specialist wage could be used which would be of a higher rate paying a premium for skills which allow them to carry out the work. Alternatively a generalist wage could be used which represents workers with less skills and little training is needed to perform their duties.

Replacement cost specialist variant

124. For the specialist variant, the replacement costs of unpaid activities are imputed based on hourly earnings of people employed in matched occupations. With this variant, the wage rate varies according to activity, as workers in different occupations are assumed to undertake the different activities. For example, childcare activities require a different wage rate than house maintenance activities, which are different again from repair services. In this variant of the replacement cost method, wage rates paid to specialized workers employed in the market sector are used (e.g., the wages of a cook in a restaurant for food preparation activities). The major problem with this variant is that the working conditions and productivity of the replacement worker will vary significantly from those of the unpaid household worker. From a practical perspective, it is unlikely that market replacements exist for all household activities to be valued.

Replacement cost general method variant

125. In this variant of replacement cost method, the wage rate used is that of a general housekeeper. This approach appears to be the most appropriate given (i) working conditions are similar for many activities, if not the same, as those faced by the producer of own-use production work of services; and (ii) a general housekeeper is more likely to perform the majority of the tasks that are typically carried out in a household. Even so, there will still be a number of household productive tasks that a housekeeper would be unlikely to carry out and applying the single wage rate may lead to inappropriate valuations.

126. Some countries, such as Australia, Canada and Mexico, have developed a hybrid replacement cost, that combines the cost general method (household workers wage rate) to assess usually tasks performed by a housekeeper like cleaning the house or preparing meals; and the cost specialist (wage rates employed in the individual function approach) in order to estimate the services that can be hired in the market, like plumbing or mechanical workshops.

127. The RC-G approach considers household members and their "replacements" as equally productive and requiring limited skills to perform their tasks. In the RC-G approach uses paid domestic employees wage rates to value the bulk of housework because paid domestic employees work in the same setting and under the same conditions as households' members. However, the duties of domestic staff do not include all household work thus some studies adopt hourly wage rates of specialised workers (RC-S) for specific activities such as care of children because they are better suited for valuation.

128. In Canada, the estimates based on the RC-G in Jackson and Chandler's (1995) study is obtained through a hybrid approach combining the two variants of the RC. All household work except childcare is valued at the cost for 'other domestic work'; childcare is valued at the cost for 'physical care of children and other own-use production work of services activities at the same costs as with the specialist variant. This is also the case of Australia (1997) and Mexico (2003-2015) who provided an example where a hybrid approach is adopted, applying the generalist variant for low-skilled labour and a specialist wage rate for specialized services such as plumbing and gardening. The suitability of this approach needs further exploration and testing against other methods.

3.4.1.1.4 Gross or net wages?

129. Another choice to make is whether to use gross wage rates (that is including overtime and before tax and deductions) or to use net wage rates. Ultimately, it is the intended use of these statistics that will guide this decision. If the estimates are primarily used to compare the value of own-use production work of services to paid work then gross wages represent the best choice as that would be most consistent with the core National Accounts practice. Alternatively, if the primary purpose of valuing own-use production work of services is to record the benefit of these services to the individual or household that receives them then it may be more effective to use net wages to extend estimates of household income for example.

130. Using net wages to extend measures of household disposable income may be useful if, for example, addressing the recommendation 5 of the Stiglitz et al. (2009) *Report by the Commission on the Measurement of Economic Performance and Social Progress, which* seeks to broaden income measures to own-use production of service work. Furthermore, by developing extended household disposable income estimates to include own-use production of service work also complements recommendation 3 of the same report (Stiglitz et al., 2009) which emphasizes the household perspective.

3.4.1.1.5 Sensitivity tests

131. Sensitivity tests to imputed costs need to be carried with other methods to assessing the difference made to the estimation of value of own-use production work of services. Indeed, the choice of the imputed wage rate has a significant bearing on the valuation and, indeed, is the critical factor in any subsequent comparisons between paid and own-use production work of services. As stated by Jackson and Chandler (1995) "*among the international studies with broad coverage of the population, estimates range from 25% to 70% of GDP or GNP and the variation by valuation method is almost as great"*. This finding confirms the latest results obtained by Statistics Canada, which indicated that the value of own-use production work of services varied from 33% of GDP (with RC-G) to 52% (gross opportunity cost).

3.4.1.1.6 Accounting for the differences in quality between paid and unpaid work?

132. In addition to considering which wage to select there are still further quality or 'hedonic' considerations related to the application of wage rates. Varjonen et al. (1999) have suggested that skills develop when carrying out specific and repetitive own-use production work of services activities such as housework and therefore suggest that no adjustment is needed. Conversely, United States guidelines recommend that adjustments are applied (Abraham and Mackie, 2005). Therefore, due to these complexities it is suggested that every time a wage rate is applied the question should be asked – 'does the quality of the service produced match that which would be provided by a market equivalent service?' If the answer is no, then that wage rate needs to be reduced.

133. If a wage rate needs to be quality adjusted based on differing levels of service provided by the market and households then there is currently little agreement on how best to carry out this adjustment (Hamunen et al., 2012). This area requires further research and statisticians, researchers and economists are encouraged to experiment with wage adjustments until they have what can be considered as a sensible result, based on a set of reasonable and clear assumptions.

3.4.1.2 Return to capital

134. Estimating the return to capital (RTC) is not straightforward, however, as with taxes and subsidies, it is required to ensure that the services produced by own-use production work of services activities are not be under- or over-valued compared to estimates made using an output valuation (which implicitly includes an estimate for RTC.) One possibility to arrive at an estimate of imputed RTC is to model it based on the amount of RTC recorded in industries or services similar to the own-use production work of services.

135. United Kingdom, for example, have explored estimates of RTC by applying a mark-up to compensation of employees, based on a similar mark-up observed in the national accounts for 'Activities of Households as employers of domestic personnel', as follows:

$$\frac{\text{RTC}(paid) * CoE(unpaid)}{CoE(paid)} = imputed\ \text{RTC}(unpaid)$$

136. An alternative method, recommended within this Guide, is to apply the so-called capital services methodology. As with the market production, own-use production work of services requires capital goods (durables), thus it is important to include capital service flows when valuing. Capital services consist of the costs related to the depreciation of a capital good with a service life greater than one year in each year of the good life and a return on the invested capital. The Perpetual Inventory Method (PIM) is suitable for estimating these two elements of the capital services. However, a sufficiently long time series of investments in the relevant consumer durables and information about their service lives is required necessary to apply the PIM. In this proposal, the imputation of capital service flows consist to: i) identify durables goods (goods with a service life greater than one year (such as household appliances, motor vehicles and some types of furniture) and estimating their service lives in order to generate an estimate of the depreciation of these consumer capital goods, and ii) calculate a return on the invested capital of these consumer durables. This methodology takes into account the capital intensity of the related services, and arrives at a more appropriate measure of depreciation costs. Concerning the return to the invested capital, one needs to make an assumption on the interest rate to be applied. Here, we suggest using the interest rate for government bonds to reflect risks on investments.

137. Thoen (1993) accounted for service flows both from durables and semi-durables goods using an opportunity cost method. The market rate of return is used to derive the service flows from these capital goods. Then rationale behind the use of the opportunity cost method is explained as follows: if a household durable is rented on the market, the rental price would include depreciation (d), operating expenses (such as automobile insurance, property insurance applying to household contents) associated with durable/semi-durable goods k (O_k), and a normal rate of return (r). "The rate of return cost is the rate of return included in the rental price or the investment income forgone by purchasing the durable good".

138. Thoen expressed the opportunity cost method to measuring capital service flows as follows:

$$e_k^s = (r + d)S_k + O_k$$

where S_k is the stock of durable / semi durable good k.

3.4.1.3 Reconciling for taxes and subsidies

139. Although own-use production work of services is, by nature, not sold on the market, and therefore, taxes on products and services are generally not relevant. However, there are some forms of taxes and subsidies that should be accounted for. Generally, if a household pays tax or receives a benefit for the use or ownership of a product or asset that is used in own-use production work of services, then part or all of that tax burden should be reallocated to the household satellite account. Similarly, if a benefit is paid for the direct provision of own-use production work of services, this should be recorded as a subsidy for that production. Countries should be careful that the benefit is actually connected to production. For instance, some countries pay a benefit to households with children regardless of whether that household actually cares. The issue of taxes and subsidies is covered in greater detail during the compilation of the household satellite account in Chapter 4.

3.4.1.4 Estimating the intermediate consumption related to own-use production work of services

140. Examining household expenditure is often the best way of recording intermediate consumption related to own-use production work of services. For example, if a household buys washing powder then it is highly likely they will use it during the own-use production work of laundry services. On this basis, household expenditure surveys can provide estimates of the level of intermediate consumption used in the own-use production work of services.

141. Other data sources may be necessary to accurately estimate intermediate consumption such as electricity or water consumption by household appliance. Such data sources can then be used in conjunction with household expenditure data to split costs related to services such as household utilities. Those costs can then be split between different own-use production work of services activities, general leisure or other purposes.

142. Low-level aggregations of household expenditure may also provide the necessary splits to make accurate estimates of intermediate consumption for own-use production work of services activities. Indeed household expenditure data may exist to 5-digit Classification of Individual Consumption According to Purpose (COICOP) level in some countries.

143. The annexes in Chapter 4 provide a full list of products that are reallocated to intermediate consumption.

3.4.1.5 Final considerations when using the input valuation

144. From reading to this point, it should be clear that there are various alternatives to measuring own-use production work of services activities using the input valuation. In addition, the data sources may vary considerably.

145. One positive outcome of this Task Force guidance would be that the valuation of own-use production work of services becomes more widely practiced internationally and implemented in a consistent manner. This in turn would help to realize the benefits related to

understanding the value of own-use production work of services, while also helping to further develop agreement on how best to use the input valuation technique.

146. Another positive outcome would be for new research to focus on reconciling differences between the input and output approaches for valuing own-use production work of services.

3.4.2 The output approach

147. The following section describes the process and detailed considerations when applying the output valuation process. It will outline how the valuation can relate to the input valuation technique and finish by drawing conclusions about best practice and some limitations and assumptions.

3.4.2.1 Measuring the volume of own-use production work of services

148. The first stage of the output approach is to establish the volume of units produced. In the case of own-use production work of services, examples include the number of hours that children are cared for, the number of miles driven by households providing own-use production of travel services work, or the number of meals provided. The Guide provides a case study from the United Kingdom on their approach to measuring a number of outputs on own-use production work of services. However, to illustrate how the output method works this section provides a brief description of how a country might measure the output of own-use production work of childcare services.

149. Estimating the volume of own-use production work of childcare services produced requires establishing the total number of cared-for – whether paid or unpaid. This is the relatively easy part if countries produce population statistics broken down by age. It is then necessary to calculate the number hours that each child is receiving childcare for (childcare hours received per child rather than childcare hours given per caregiver). One approach to this is to sum all the hours which children spend in formal care - by collecting data from formal care institutions (likely to be administrative data sources such as school census reports) - and assuming that the remaining time is own-use production work of childcare services. Countries should also be aware that children can be left unsupervised, neither receiving formal care nor own-use production work of childcare services. Therefore, an estimate of time left unsupervised needs to be included in the calculation. The age of the child is likely to be a main determinant in assessing the amount of time left alone.

150. Using this process, the output approach establishes how many children are looked after first and then how many hours of childcare each child received. If in the example, two children were being looked after during the childcare giver's one hour of childcare then using the output approach this would be considered as two child hours of childcare received. That differs from the input valuation that establishes the number of hours of own-use production work of childcare services provided by caregivers, but not how this time relates to children themselves. For example, a childcare provider may report caring for children for 1 hour in a day; however, this does not indicate how many children they were looking after during that time.

3.4.2.2 Market equivalent pricing

151. Once establishing the total number of hours of own-use production work of childcare services, they can be valued by applying an appropriate market price. For example, if a child attends a nursery for 4 hours of the day, how much would that time cost per hour? If a nanny is contracted to look after children, what is the rate that nanny would charge per child and per hour?

152. When making this choice it is important to recognize what costs are factored into the market price. In the example of a nursery, then a small element of the cost per child contains overheads such as paying for electricity or renting the building. In the example of a nanny, the wage costs are likely to represent a higher proportion of the price as the nanny is only likely to be looking after a couple of children at a time whereas a nursery assistant may be looking after more children at any one time.

153. Given that providers of own-use production work of childcare services to children are most likely to do so when they are at home, the wages of a live-in-nanny looks like the nearest market equivalent. However, careful consideration should dictate these decisions. To illustrate the point, Table 3.2 lays out the components that are included in a market price and shows how each price applies to the two examples of a nanny and a nursery.

Table 3.2
Components captured while using the output valuation and their relationship to gross value added and output

Component	Description in the context of own-use production work of services	Example 1 Market price charged for a live-in-nanny from a nanny agency per child hour	Example 2 Market price charged by a nursery per child hour
Imputed compensation for labour input	The market equivalent cost of the labour involved in the production of own-use production work of services. (Included in market equivalent price)	The majority of the price charged by a live-in-nanny would go towards their wages and pension contributions/benefits where applicable	Normally a smaller proportion of the price per child would go towards the wages of the nursery staff and their pension contributions/benefits
+ Gross Operating Surplus	The return to capital of household assets and the consumption of capital (Included in market equivalent price)	An element of the price that the nanny charges will go back to the nanny agency as profit	An element of the price per child may be counted as profit if run by a private company
+ other taxes - subsidies on production	The value of taxes and subsidies based on market equivalent services (Included in market equivalent price)	An element of the price also covers any taxes or subsidies for which the nanny agency is liable.	An element of the price also covers any taxes or subsidies for which the nursery is liable.
= Gross Value Added	The sum value of the above components (Included in market equivalent price)	Gross Value Added of the nanny agency - Intermediate consumption of the nanny agency	Gross Value Added of the nursery - Intermediate consumption of the nursery

Component	Description in the context of own-use production work of services	Example 1 Market price charged for a live-in-nanny from a nanny agency per child hour	Example 2 Market price charged by a nursery per child hour
+ Intermediate Consumption	The value of goods and services which are consumed in the production of own-use production work of services (Included in market equivalent price)	A small part of the price will cover the costs of the nanny agency utilities and other goods and services consumed in the provision of the nanny service.	Given that all the children are cared for on the premises of the nursery, intermediate consumption costs are likely to represent a higher proportion of the price charged per child hour.
= Output	Sum of all components (and is what is calculated in its entirety when multiplying the volume of units of a good or service with the respective price)	Total output of the nanny agency = The number of children the nanny looks after x the number of hours the children are looked after x the price per child hour set by the nanny agency	Total output of the nursery = The number of children the nursery looks after x the number of hours the children are looked after x the price per child hour set by the nursery

3.4.2.3 Considering how best to value – market equivalent pricing or efficient market pricing?

154. The market rate at which own-use production work of services is valued is likely to provide a high valuation in practice. This high valuation aims to reflect the worth of that activity regardless of whether it would be feasible to create a market service big enough to carry out that activity. Therefore, taking this approach does not take into account affordability. Whether that is an issue or not depends on how one approaches the valuation of own-use production work of services and for which purpose she has in mind for the final valuation.

155. If asking the question – 'how much would own-use production work of services be worth if it were all contracted out to the market?' then it may be sensible to make the valuation using market prices which would be affordable for the majority of those households providing the own-use production work of services. For example, if all own-use production work of childcare services were contracted to the market, then it may be more likely that children are cared-for in groups, perhaps 20 at a time and looked after by one adult. It would be less likely that each individual household with children would employ a live-in nanny.

156. However, the drawback here is that the value of the childcare may be understated. An alternative perspective would suggest that just because it is not affordable to contract out the work for some, does not necessarily diminish the value that household gains from it and so one might question whether market feasibility should feature as a consideration when choosing market prices.

157. Beyond feasibility, when considering if a market price is suitable to value a specific type of own-use production quality, then assessments around quality of service are required. If a parent at home schools their children but does not have the knowledge to explain the syllabus effectively, is it appropriate to value the own-use production work of services they are providing at the market hourly rate for private lessons? Quality adjustment is required in

cases where a market service is higher or lower value to own-use production work of services.

158. Once a suitable market price has been found then it can be applied to the units of own-use production work of services to obtain the total output valuation, following the basic formula:

$$\underline{Total\ output\ value} = \underline{Units\ of\ own\text{-}use\ production\ work\ of\ services} \times \underline{Adjusted\ market\ equivalent\ price\ per\ unit}$$

3.4.2.4 Estimating intermediate consumption and gross value added

159. To get an estimate of the GVA from own-use production work of services using the output valuation approach, it is again necessary to produce estimates of intermediate consumption (as described in the input valuation section). The process is identical for both input and output valuation techniques (see section 3.4.1.4). The value of intermediation consumption is deducted from the value of total output to derive GVA.

3.4.3 Comparison between the output and input approaches

160. Countries will often rely on their time use data for different purposes. This can result in the higher chance that an output valuation will require further expensive data collection and therefore make the input valuation more appealing (Hamunen et al., 2012). The output-based method and the input-based method are both theoretically viable ways to estimate own-use production work of services. This section will summarise the advantages and disadvantages of each method.

161. Even if the elements of the two approaches were almost the same, it cannot be concluded that they would lead to the same result. In the output approach, the starting-point is the market value of the products. The costs of production (intermediate consumption, consumption of fixed capital, other taxes on production minus subsidies) are subsequently subtracted, to arrive at the balancing item "mixed income", which consists of remuneration for the labour input and a net return on capital invested or net operating surplus.

162. In the input approach, as previously discussed, an imputed estimate of return to capital (net of depreciation) is added to the sum of the value of labour plus the consumption of capital and other taxes less subsidies on production to obtain an estimate of GVA. By subsequently adding intermediate consumption, one arrives at an estimate of total output.

163. Harvey and Mukhopadhyay (2005) presented output-based estimates for Canada for 1992. The methodology accounts for compatibility with the SNA by excluding certain activities that are already included in the SNA GDP.[7] Later this year, United Kingdom will also have estimates for own-use production work of services for year 2014 using both the input and the output valuation techniques. It will be interesting to see how these estimates depart from one another.

[7] For example, the user cost of dwelling for each activity was subtracted from the value of output because they are already accounted for in GDP. Similarly, certain outputs such as garden vegetables are already included in GDP and as such, were not added as an output.

Table 3.3
Comparison of input and output approaches for Canada, 1992

Method	Value (billions of 1992 CAN$)
Unpaid work estimates – input approach (Statistics Canada, 1995)	
Opportunity cost before tax	374.1
Opportunity cost after tax	221.1
Replacement cost - specialist	296.6
Replacement cost - generalist	234.5
Unpaid work estimates – output approach (Harvey and Mukhopadhyay, 2005)	
Output basis – meal preparation, housekeeping, clothing care, child care	289.6
Output basis – same activities as above, plus volunteer work and education	326.9

Source: Statistics Canada (1995); Harvey and Mukhopadhyay (2005); Gee (2015).

164. Table 3.3 shows a comparison of estimates using the output approach with estimates using various alternative input output approaches for the year 1992. The replacement cost-generalist input method recommended by Statistics Canada includes volunteer work and is approximately 39 per cent lower than the comparable value of unpaid household service work using the output-based method (326.9 billion versus 234.5 billion).

165. Fitzgerald and Wicks (1990) argued that the difference between the two approaches is mainly a productivity issue: if households were more productive than firms, then the market wages would underestimate the household output, and vice versa. However, it is more likely that firms are more productive than households for most activities because of their access to greater stocks of physical capital. Furthermore, estimates found using the output method should be higher because they include returns to other factors than solely labour. This justifies why GOS should be included in the input approach input.

166. Both the output and input approach have advantages and shortcomings. In theory, the preference between the output and input approaches is often set to the former method. The main reason for this is that the SNA uses the output method when computing market production. Therefore, it gives possibilities for making direct comparisons with the activities in market production. The output approach also makes the measurement of the productivity of own-use production work of services possible, and guarantees the inclusion of all the inputs, such as labour, capital and raw materials (Folbre, 2008). Moreover, by measuring the output directly, the output approach avoids the problem of simultaneous activities in time-use surveys.[8]

167. However, the output approach also presents several methodological issues. Estimating both the volume and the value of the outputs requires defining and dividing activities into categories with substantively different outputs. The level of disaggregation performed at this

[8] However, treating each output separately, e.g., the care for each child and, at the same time, allocating the full working time to each of the simultaneous activities, may make the returns to labour derived from the calculations difficult to interpret. The return to labour by activity can then be much lower in the case of activities that are often performed simultaneously. In these cases, a low return to labour does not necessarily mean low productivity. To overcome this issue, one may want to split inputs relating to simultaneous output.

stage is frequently limited by data availability and may heavily influence the results (Eurostat, 2003). Too few categories would result in estimates that heavily depend upon the output value and lack realistic comparability with the services on the market. It is also sometimes difficult to find a representative output to each activity (e.g., passive childcare).[9]

168. The aggregation of activities should also take into account the difficulties related to finding the cost of the nearest market equivalent. For example, most people cooking a meal would not produce the same quality of product as a Michelin-starred chef.

169. As is the case with the input valuation approach, another problem arises when choosing between a number of similar alternatives, such as hiring a baby sitter or using a day care service. Either alternative could be equally viable but would involve different prices on the market, resulting in differing estimates that could heavily influence the final result. Moreover, the value of the services can be measured at either basic prices - before taxes and subsidies - or market prices. Most studies use the latter approach (Harvey and Mukhopadhyay, 2005).

170. Researchers have spoken for the output method and made proposals for practical solutions to data gathering and calculations (Ironmonger and Soupourmas, 2009; Harvey and Mukhopadhyay, 1996). Abraham and Mackie (2005) recommended that "nonmarket accounts should measure the value and quantity of outputs independently from the value and quantity of inputs whenever feasible."

171. The limitations of the output approach mentioned above imply that a well-managed input approach would be a preferable method (Abraham and Mackie, 2005). Most exercises have applied this latter approach, which also implies that its strengths and weaknesses are now well recognised and documented. The availability of time use data has made it relatively easy to value time spent on own-use production work of services by a suitable wage or wages. Besides time use data, few additional data sources are needed (national accounts and wage data), which are already available in official statistics in many countries for other purposes. However, the results depend heavily on the choice of wage rate working time concept as a basis for the hourly wages (actual working hours, paid hours). Comparisons between national studies may not tell much of the real value of own-use production work of services in the countries in question when those results are based on different assumptions and methodologies.[10] Moreover, the input approach raises the issue of how to deal with secondary activities: should the researcher only consider primary activities, or should they count and include simultaneous activities? Chapter 8 discusses this in more detail, and the Guide recommends the issue as an area warranting further research.

[9] Fitzgerald and Wicks (1990) accounted for this issue by measuring the output in hours and estimating the cost that it would take to hire someone to come to the house and perform the activity.

[10] A careful comparison was made between Germany and Finland. Originally, Germany used net wages and Finland gross wages. When the wage concept was made the same, the difference in the values narrowed clearly and the rest of the difference could be easily explained (Rüger and Varjonen, 2008).

Chapter 4 The Household Satellite Account

4.1 Introduction to the household satellite account

172. This chapter concerns the measurement of own-use production work of services in a satellite accounting system. According to the SNA, satellite accounts are extremely useful for research purposes, by allowing more focus for analysis on particular sectors of the economy. There are two standard types of satellite account. The first does not extend the SNA production boundary, but focuses in more detail on a specific sector or industry, providing more detail than international standards require. For instance, a tourism satellite account provides an analytical framework for more detailed analysis of the demand and supply of tourism-related products and industries – all within the SNA production boundary. The second type of satellite account goes a step further and extends the boundaries of production, consumption, or capital formation beyond the conventional SNA definitions.

173. The SNA states that while unpaid household service work should be excluded from the SNA production boundary, it is possible to include them within a satellite account. This chapter describes a methodology for doing exactly this: constructing a household satellite account in two main stages. The first stage is to adapt slightly the traditional supply and use framework – enlarging it with observed data according to TUSs, to arrive at a more integrated accounting of time use in physical units (hours). The second stage actually values and fully integrates unpaid household service work into the SNA. In this framework, the inclusion of own-use production work of services - which is currently out of the scope of official national accounts estimates - extends the production boundary of the 2008 SNA. The envisaged framework deals with all the changes, including the reallocation of household final consumption expenditure to intermediate consumption, to arrive at a fully consistent recording of unpaid household service work.

174. Before going into detail of preparing a household satellite account, it is worth recognising that the restricted production boundary defined above already includes some own-use provision of goods and services by households. Examples are, but not limited to:

a) Housing services produced by those occupying the dwelling they own
b) Agricultural products retained by farmers
c) Household services produced by employing paid staff.
d) Dwellings, or extensions to the dwelling

4.2 Developing a household satellite account

4.2.1 A simplified satellite account for own-use production work of services

175. The first stage of developing a full household satellite account for own-use production work of services is to add further extensions and breakdowns to the traditional supply and use framework of the national accounts. The satellite account proposed in this section does not require the extension of the production boundary and related imputations of output and value added discussed in Chapter 3. Its compilation is limited to the addition of information from

time-use surveys – the total number of hours devoted to own-use production work of services and paid work, education and leisure. Furthermore, it provides more detailed breakdowns of activities, enabling a comparison between the value of own-use production work of services with their counterparts in the market.

176. The first extension relates to adding data on time spent on various household activities, thus supplementing data on (paid) employment. Time use surveys is the main source of this required data, although not always in the preferred detail. In the example presented in this chapter, own-use production work of services is broken down into the main activities defined in Chapter 2.

177. The second extension relates to adding more detailed breakdowns of industries that are substitutes for own-use production work of services. Doing so, one could monitor and analyse shifts between these services, and own-use production of services work. In this respect, one could think of activities and services related to restaurants, taking care of children, elderly, and other people within or outside the same household, personal transport, and cleaning and general maintenance of dwellings. Table 4.1 highlights the own-use production work of services, and the market counterparts that should be included in the proposed supply and use tables.

Table 4.1
Own-use production work of services activities, and their market counterparts

Own-use production work of services activity	Sub activity	Central Product Classification Version 2.1				International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4	
		Group	Description	Class	Subclass	Description	Class
Housing	Provision of housing						8129
	Cleaning	853	Cleaning services	8531	85310	Disinfecting and exterminating services	8129
				8532	85320	Window cleaning services	8121
				8533	85330	General cleaning services	8129
				8534	85340	Specialized cleaning services	8130
	Gardening	859	Other support services	8597	85970	Landscape care and maintenance services	9523
	Repair	872	Repair services of other	8721	87210	Repair services of footwear and leather goods	9529
				8722	87220	Repair services of watches, clocks and jewellery	9529
				8723	87230	Repair services of garments and household textiles	9524
				8724	87240	Repair services of furniture	9529 (3313)
				8729	87290	Maintenance and repair services of other goods	
Nutrition	Plan meals and shopping	980	Domestic services	9800	98000	Domestic services	9700

Own-use production work of services activity	Sub activity	Central Product Classification Version 2.1				International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4	
		Group	Description	Class	Subclass	Description	Class
	Prepare, serve and wash up meals	980	Domestic services	9800	98000	Domestic services	5610
		633	Food serving services	6331	63310	Meal serving services with full restaurant services	5610
				6332	63320	Meal serving services with limited services	5621
				6339	63391	Event catering services	5629
					63392	Contract food services for transportation operators	5629
					63393	Other contract food services	5610
					63399	Other food serving services	
Clothing	Buy clothing or material to make clothing	980	Domestic services	9800	98000	Domestic services	
	Laundry - washing and ironing	971	Washing, cleaning and dyeing services	9711	97110	Coin-operated laundry services	9601
				9712	97120	Dry-cleaning services (including fur product cleaning services)	9601
				9713	97130	Other textile cleaning services	9601
				9714	97140	Pressing services	9601
				9715	97150	Dyeing and colouring services	8890
Care	Child care	935	Other social services without accommodation	9351	93510	Child day-care services	8510
		921	Pre-primary education services	9210	92100	Pre-primary education services	8510

Own-use production work of services activity	Sub activity	Central Product Classification Version 2.1				International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4	
		Group	Description	Class	Subclass	Description	Class
		922	Primary education services	9220	92200	Primary education services	8521
		923	Secondary education services	9231	92310	Lower secondary education services, general	8522
				9232	92320	Lower secondary education services, technical and vocational	8521
				9233	92330	Upper secondary education services, general	8522
				9234	92340	Upper secondary education services, technical and vocational	8730
		932	Residential care services for the elderly and disabled	9322	93222	Residential care services for young disabled persons	8720
		933	Other social services with accommodation	9330	93301	Residential care services for children suffering from mental retardation, mental health illnesses or substance abuse	8790
					93302	Other social services with accommodation for children	8810
		934	Social services without accommodation for the elderly and disabled	9349	93492	Other social services without accommodation for disabled children	8710
	Adult care	932	Residential care services for the elderly and disabled	9321	93210	Residential health-care services other than by hospitals	8730
				9322	93221	Residential care services for the elderly	8730
					93223	Residential care services for disabled adults	8720
		933	Other social services with accommodation	9330	93303	Residential care services for adults suffering from mental retardation, mental health illnesses or substance abuse	8790

Own-use production work of services activity	Sub activity	Central Product Classification Version 2.1				International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4	
		Group	Description	Class	Subclass	Description	Class
		934	Social services without accommodation for the elderly and disabled	9341	93304	Other social services with accommodation for adults	8810
					93411	Vocational rehabilitation services for persons with disabilities	8890
					93412	Vocational rehabilitation services for unemployed persons	8810
					93491	Other social services without accommodation for the elderly	9609
	Pet care	861	Support and operation services to agriculture, hunting, forestry and fishing	8612	86129	Other animal husbandry services	4921
Transport	Performing transportation services on own account	641	Local transport and sightseeing transportation services of passengers	6411	64111	Urban and suburban railway transport services of passengers	4921
					64112	Urban and suburban scheduled road transport services of passengers	4921
					64113	Mixed mode urban and suburban transportation services of passengers	4922
					64114	Local special-purpose scheduled road transport services of passengers	4922
					64115	Taxi services	4922
					64116	Rental services of passenger cars with operator	4922

Own-use production work of services activity	Sub activity	Central Product Classification Version 2.1				International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4	
		Group	Description	Class	Subclass	Description	Class
					64117	Road transport services of passengers by man- or animal-drawn vehicles	4922
					64118	Local bus and coach charter services	4922
					64119	Other land transportation services of passengers, n.e.c.	5021
				6412	64121	Inland water transport services of passengers by ferries	5021
					64122	Inland water transport services of passengers on cruises	5021
					64129	Other inland water transport services of passengers	4911
				6413	64131	Sightseeing services by rail	4922
					64132	Sightseeing services by land, except rail	5011 5021
					64133	Sightseeing services by water	5110
					64134	Sightseeing services by air	4911
		642	Long-distance transport services of passengers	6421	64210	Interurban railway transport services of passengers	4922
				6422	64221	Interurban scheduled road transport services of passengers	4922
					64222	Interurban special-purpose scheduled road transport services of passengers	4922
					64223	Long-distance bus and coach charter services	5011
				6423	64231	Coastal and transoceanic water transport services of passengers by ferries	5011

Own-use production work of services activity	Sub activity	Central Product Classification Version 2.1				International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4	
		Group	Description	Class	Subclass	Description	Class
					64232	Coastal and transoceanic water transport services of passengers on cruise ships	5011
					64239	Other coastal and transoceanic water transport services of passengers	5110
				6424	64241	Domestic scheduled air transport services of passengers	5110
					64242	Domestic non-scheduled air transport services of passengers	5110
					64243	International scheduled air transport services of passengers	

178. The distinction between time spent on own-use production work of services activities and time spent on leisure may not be that clear cut. Some will consider gardening as a drag, while others will view this activity as a way to spend leisure time. Similarly, "many view cooking - and then eating – as a most enjoyable leisure activity, not a chore that is easily substitutable with a meal in a fast food restaurant" (Stiglitz, Sen and Fitoussi, 2009). A similar line of reasoning could be applied to taking care of children. This Guide proposes to simply ignore the potential problems with the distinction between own-use production work of services and leisure time, thus following the perception and the allocation of time chosen by the households. Solving this problem would require further research and much more time than has been available for preparing this report.

179. Table 4.2 provides an illustrative example of how the proposed (extended) use table should look. Table 4.2 is a concise version of the proposed full table located in Annex 4.4. For instance, it only highlights two own-use production work of services activities, and a much reduced list of products. However, it illustrates how the time spent on various activities has been included as additional rows at the bottom of the table. A further step in developing the simplified satellite accounts relates to having more detailed breakdowns for some of the products, the rows in the use table, which are relevant for own-use production of services work. This does not only relate to the intermediate inputs, such as those for the preparation of meals, but also to consumer durables such as transport vehicles, and equipment for preparing meals. Such information would also constitute important building blocks for the compilation of a full-fledged satellite account for own-use production work of services with an extended production boundary.

180. In the core accounts, household final consumption expenditure (HHFCE) is categorized by products or by purpose (CPA or COICOP classification). However, in the Household Satellite Accounts framework, some expenditure on goods and services is actually intermediate consumption required for own-use production work of services. For instance, households consume some purchased food without further preparation - such as crisps and snacks - and should remain as HHFCE. However, some food, for instance flour and vegetables are much more likely to form the inputs of preparing a meal, and are therefore intermediate consumption in own-use production work of food services. In other words, goods consumed or transformed during the production process are reconsidered as intermediate consumption. In addition, the household satellite account should treat household durables as fixed assets, and therefore the consumption of fixed capital on household durables used for production are input costs. The first simplified satellite account, does not alter the SNA production boundary, and as such, does not make the HHFCE transformations described above.

181. All in all, one would thus arrive at an extended use table, as depicted in Table 4.2, and elaborated upon in more detail in Annex 4.4. Table 4.2 shows that the only information relating to own-use production work of services recorded are the number of hours. For instance, in this example, there were a total of 32,737 million and 1,379 million hours of own-use production work of transport and adult care services respectively. Importantly, Table 4.2 does not value these hours, nor does it extend the production boundary. However, already some useful analyses are possible regarding the comparison of time spent performing own-use production work of services, and their market counterparts.

182. Of course, countries which have opted to measure own-use production work of services using the output approach will not have information on the hours worked in own-use production work of services. As such, there will be little for these countries to add to Table 4.2 aside from the information already contained within their national supply and use tables.

183. If compiled over a longer period, say every five years, Table 4.2 could provide valuable insights into shifts between own-use production of services work and the purchase of similar services on the market. The analysis of shifts in hours spent on paid employment and hours spent on own-use production work of services could be supplemented by a more detailed analysis of changes in consumption behaviour, for example shifts in the purchase of products for preparing meals at home to purchasing meals at restaurants, etc. Whatever the case, the data in this type of satellite table would constitute an indispensable element in producing a satellite account: extending the production boundary by including monetary estimates of own-use production work of services. This is the topic of the next section.

Table 4.2
Simplified use table at purchasers' prices (excluding extension of the production boundary)

£billions	Manufacturing	Transport and storage	Of which: Passenger land transport	Own-use production work of travel services	Human health and social work activities	Of which: Residential care activities	Own-use production work of adult care services	…	**Total intermediate uses**	Final consumption expenditure by households	…	Gross capital formation	Total exports	Total final uses at purchasers' prices	**Total use at purchasers' prices**
Agriculture, forestry and fishery products	9.7	0.1	0.0	-	0.0	0.0	-		**14.0**	14.2		1.0	2.1	17.3	**31.3**
Ores and minerals; electricity, gas and water	17.9	6.7	1.7	-	2.1	0.6	-		**86.0**	48.4		-0.6	12.5	60.3	**146.2**
of which: Water supply and miscellaneous services relating to the dwelling	-	-	-	-	-	-	-		**-**	7.3		-	-	-	**-**
of which: Electricity, gas and other fuels	-	-	-	-	-	-	-		**-**	14.5		-	-	-	**-**
of which: Operation of personal transport equipment	-	-	-	-	-	-	-		**-**	25.9		-	-	-	**-**
Food products, beverages and tobacco; textiles, apparel and leather products	15.8	0.6	0.2	-	2.1	0.6	-		**46.7**	95.2		0.8	14.7	110.6	**157.3**
of which: Food products for the preparation of home meals	-	-	-	-	-	-	-		**-**	71.4		-	-	-	**-**
…															
Other transportable goods, except metal products, machinery and equipment	120.2	4.0	1.0	-	18.0	5.3	-		**252.2**	125.5		32.3	137.8	307.1	**559.3**
of which: Glassware, tableware and household utensils	-	-	-	-	-	-	-		**-**	0.6		-	-	-	**-**
of which: Tools and equipment for house and gardens	-	-	-	-	-	-	-		**-**	1.0		-	-	-	**-**
…															
Metal products, machinery and equipment	18.7	1.3	0.3	-	0.5	0.1	-		**31.4**	36.8		19.2	46.7	102.7	**134.1**
of which: Household appliances	-	-	-	-	-	-	-		**-**	5.8		-	-	-	**-**
of which: Transport equipment	-	-	-	-	-	-	-		**-**	30.2		0.6	-	-	**-**
Constructions and construction services	2.0	2.1	0.5	-	0.8	0.2	-		**89.5**	1.3		102.6	2.1	106.1	**195.5**
of which: Maintenance and repair of the dwelling	-	-	-	-	-	-	-		**-**	1.2		-	-	-	**-**
….															
Own-use production work of clothing services	-	-	-	-	-	-	-		**-**	-		-	-	-	**-**
Own-use production work of travel services	-	-	-	-	-	-	-		**-**	-		-	-	-	**-**
Own-use production work of meal services	-	-	-	-	-	-	-		**-**	-		-	-	-	**-**
Own-use production work of housing services	-	-	-	-	-	-	-		**-**	-		-	-	-	**-**
…															
Total	**228.5**	**64.2**	**15.9**	**-**	**56.5**	**16.6**	**-**		**1078.8**	**844.7**		**226.9**	**383.7**	**1766.7**	**2845.5**
									Total						
Compensation of employees	81.9	37.6	6.5	-	68.2	26.9	-		**674.5**	-		-	-	-	**-**
Other taxes on production minus other subsidies on production	12.5	4.0	8.2	-	2.4	8.2			**52.6**	-		-	-	-	**-**
Consumption of fixed capital	19.1	10.0	2.9	-	3.6	1.5	-		**187.9**	-		-	-	-	**-**
Operating surplus and mixed income, net	23.3	7.5	2.2	-	18.1	7.4	-		**364.0**	-		-	-	-	**-**
Return to capital	23.3	7.5	2.2	-	18.1	7.4	-		**364.0**	-		-	-	-	**-**
Imputed comp for labour to own-use production work of services	-	-	-	-	-	-	-		**-**	-		-	-	-	**-**
Value added, gross	**136.7**	**59.1**	**19.8**	**-**	**92.2**	**43.9**	**-**		**1279.1**	**-**		**-**	**-**	**-**	**-**
Output	**365.2**	**123.4**	**35.7**	**-**	**148.8**	**60.5**	**-**		**2357.9**	**-**		**-**	**-**	**-**	**-**
million hours	-	-	-	-	-	-	-		**Total hours**	-		-	-	-	**-**
Hours worked in paid employment	5,004	2,173	913	-	6,154	1,127	-		**43,207**	-		-	-	-	**-**
Hours worked on education and training	-	-	-	-	-	-	-		**14,423**	-		-	-	-	**-**
Hours worked in own-use production work of services	-	-	-	32,737	-	-	1,379		**104,925**	-		-	-	-	**-**
Leisure time	-	-	-	-	-	-	-		**118,203**	-		-	-	-	**-**
Other activities n.e.c.	-	-	-	-	-	-	-		**140,379**	-		-	-	-	**-**

* Please note that the sub classification of COICOP-groups is only an approximation, for illustrative purposes. Not the whole COICOP (sub)group may fall within the perimeters of the main heading of the use table.

4.2.2 A Satellite Account for own-use production work of services with an Extended Production Boundary

184. This section further elaborates Table 4.2 by including the own-use production work of services, over and beyond the services that are already included in the SNA, such as services from owner-occupied housing and the production of domestic and personal services by employing paid domestic staff. The various sets of changes in the recording and the valuation of own-use production of services work are discussed. Subsequently, this section details the impact on traditional GDP and other macro-economic indicators. Table 4.3 illustrates a simplified version of the final table, drawing on the same numerical example provided in Table 4.2**.** Annex 4.5 provides the table in its entirety.

185. The first step in the process is to change the recording of the items in final consumption expenditure of households that are used as intermediate consumption in the own-use production work of services. As noted shortly, this process includes shifting relevant items away from the column representing final consumption expenditure of households to intermediate consumption in the columns of the respective activities. The first-order impact is a lowering of GDP. However, later on, this will be compensated by the additional output of own-use production work of services. This is calculated as the sum of: intermediate consumption, other taxes less other subsidies on production, consumption of fixed capital or depreciation, imputed "mixed income" for the time spent on own-use production work of services activities, and imputed return to capital. The following sections will discuss each of these additional items in turn.

4.2.2.1 Estimation of intermediate consumption and gross fixed capital formation

186. The household satellite account extends the production of the SNA, and recognises own-use production work of services as activities in their own right. As a result household final consumption expenditure needs is divided into three parts: intermediate consumption, acquisition less disposals of fixed assets, and final consumption of goods and services. The SNA clarifies the boundary line between fixed assets and intermediate consumption. Expenditures on durable producer goods that are small, inexpensive and used to perform relatively simple operations may be treated as intermediate consumption when such expenditures are regular and small compared with expenditures on machinery and equipment. Examples of such goods are hand tools such as saws, spades, knives, axes, hammers, screwdrivers, and so on. However, countries may treat tools as fixed assets where they account for a significant part of the stock of producers' durable goods (SNA 2008, 6.225). Fixed capital in households is an important factor in understanding changes in the productivity of household.

187. Annex 4.1 provides a list of products, and acts as a guide for reallocating from household final consumption expenditure to intermediate consumption, by each specific activity. This allocation is largely based on the work undertaken in the United Kingdom by Holloway et al. (2002).[11] The Guide recognises that production processes, and the supply of certain products will differ by country. However, the Guide recommends that all countries

[11] Household satellite account (experimental) methodology, Sue Holloway, Sandra Short and Sarah Tamplin. Office for National Statistics, United Kingdom, 2002.

adhere to the allocations described here as best as possible. This will ensure consistency and comparability across countries. Of course, it is possible that some goods or services can be used for final consumption, intermediate consumption and fixed capital formation for own-use production work of services. In these cases, countries will need to assign a quota allotment for each type. For instance, 60% of fruit is final consumption, and 40% for intermediate consumption.

188. In respect of travel services, the most significant candidates to break out are petrol, regular maintenance and (purchased) repair services. In this case, however, one cannot allocate the full amount of the relevant products to the production of own-use production work of services, as a significant part of the transport services relates to paid employment and leisure. One could possibly compile more detailed estimates of the various categories based on transport statistics covering data on kilometres travelled for various purposes. For instance, in the United Kingdom, the National Travel Survey provides information on the number of miles travelled in private vehicles by purpose of trip. The proportion of miles travelled on trips categorised as own-use production work of services are used to determine the amount of petrol expenditure that should be considered as intermediate consumption.

189. In the case of repair and maintenance of consumer durables and dwellings, especially the intermediate consumption for the purpose of "do-it-yourself" activities related to dwellings may be quite significant. Here, one needs to make a distinction between major renovations, which are typically recorded as part of investments, and regular maintenance and small repairs. In the latter case, national accounts make a distinction between "… more substantial repairs, such as re-plastering walls or repairing roofs, carried out by owners, (which) are essentially intermediate input into the production of housing services …" (2008 SNA, § 6.36), and minor repairs which are typically done by tenants. In the current SNA, intermediate goods used for the former type of maintenance would end up as intermediate consumption of housing services, whereas goods used in the latter type are recorded as final consumption expenditure. Therefore, two adjustments are required: moving part from intermediate consumption of housing services, and moving part of final consumption expenditures.

190. Another complication is that not all relevant goods may actually be used in the production of own-use production work of services as, for example, a hired professional may be responsible for some of the purchased goods. Given that it is quite difficult to disentangle the relevant transactions in the SNA, Table 4.2 and Table 4.3 make no allowance for these goods.

191. When it comes to the distinction of consumer durables, Annex 4.3 presents the products, service life, and activities that they should be allocated to. This is based on previous work undertaken by Eurostat (2003) which in turn leans heavily on United Kingdom's household satellite account (2002). The list includes COICOP-items such as 05.3 - Household appliances; 05.4 - Glassware, tableware and household utensils; 05.5 - Tools and equipment for house and garden. A problem in relation to this categorisation is that significant one-off purchases, for example fully-equipped kitchens, may be recorded as a non-distinguishable part of purchases of dwellings. Furthermore, when renting a dwelling, the use of these appliances may be included, as part of the rentals paid, as well. The other important category of consumer durables concerns transport equipment (item 07.1), for which the same point on the partial allocation, as discussed above, is relevant.

4.2.2.2 Estimation of consumption of fixed capital and return on invested capital

192. The second step is a more complicated one. After recording consumer durables used in the production of own-use production work of services, the consumption of fixed capital is accounted for in the activities in which these consumer durables are used. The shift from consumption to investment does not affect GDP. However, the introduction of capital services will increase GDP, by adding to the value of own-use production work of services.

193. Capital services are related to the use of various consumer durables in own-use production work of services, such as household appliances, motor vehicles and some types of furniture. As these goods typically have a service life which goes beyond one year, it is preferable to estimate a value of the capital services that can be derived from using the capital goods over their entire service life, instead of using numbers on their annual purchases. Capital services consist of the costs related to the depreciation of the relevant equipment and a return on the invested capital. They should both be estimated by applying the Perpetual Inventory Method (PIM).[12] The PIM is in widespread international use for purposes of estimating the value of consumption of fixed capital, and this Guide recommends its use in the context of own-use production work of services.

194. According to this method, the gross capital stock is calculated as the sum of past purchases, adjusted for price changes and for the retirement of the durables after the end of their service life. Application of the PIM requires three key pieces of information: (i) the value of capital formation each year (ii) the length of service life and (iii) the change in the prices of the fixed assets. Finally, there are two commonly used depreciation functions applied in a PIM: the geometric and the straight-line depreciation model. In the geometric model, the value declines in absolute terms more sharply during the early part of the service life and then slows towards the end. Under this approach, the whole initial value of the asset is never exhausted. In the straight-line model, a constant amount of value is deducted each year so that goods have no value left when they are withdrawn from the stock. For household durables, the latter model is more appropriate, because household goods usually serve in full capacity until they break and require replacement.

195. The derivation of the return on capital is required following the calculation of the consumption of fixed capital. As explained in Chapter 3, the recommended approach for estimating the return on capital used in own-use production work of services is to apply the interest rate on debt securities issued by central government.

4.2.2.3 Estimation of taxes and subsidies

196. The penultimate adjustment in compiling a satellite account for own-use production work of services with an extended production boundary is the adjustment required for taxes and subsidies. In the SNA, taxes paid, and subsidies received by households are recorded in the household sector accounts as a stage of the redistribution of income. However, this household satellite account framework recognises that some taxes and subsidies are directly related to the own-use production work of services.

197. By their very nature, own-use production work of services are not sold on the market, and therefore, taxes on products and services are generally not relevant. However, there are some forms of taxes on production that should be accounted for, in so far and for the share that they are linked to the production of the service for own final use by the household. For

[12] Perpetual Inventory Method http://www.oecd.org/std/productivity-stats/43734711.pdf

example, some countries may extract taxes based on the ownership or use of land, buildings, or other structures, which in turn are used for own-use production work of services. Similarly, there may taxes on the use of fixed assets (vehicles, machinery, and equipment) for purposes of production, whether such assets are owned or rented. Finally, certain licenses – for instance payments on the ownership or use of vehicles and for hunting or fishing could in some cases be considered a form of taxation.

198. Subsidies can be classified into two main types – subsidies for products, and for production. Subsidies for products are not related to own-use production work of services, and therefore require no treatment. On the other hand, there are, in effect, subsidies provided for own-use production work of services. These payments need to be directly linked to the productive activity and may be recorded as social benefits in cash in the SNA.

199. As every country administers its own system of taxes and benefits it is not possible to prescribe exactly which taxes and subsidies to include in own-use production work of services. However, as a rule, if a household pays tax or receives a benefit for the use or ownership of a product or asset that used in own-use production work of services, then part or all of that tax burden should be reallocated to the household satellite account. Similarly, if a benefit is paid for the direct provision of own-use production work of services, this should be recorded as a subsidy for that production. Countries should be careful that the benefit is actually connected to production. For instance, some countries pay a benefit to households with children, regardless of whether that household actually cares for the children or not. Countries should not regard these as subsidies on production.

4.2.2.4 Valuing labour input to own-use production work of services

200. The final step consists of attributing a value to the hours spent on own-use production work of services activities, based on the valuation techniques presented in Chapter 3. Assuming countries have adopted the input approach, using time use data and a valuation technique, the resulting value of labour input is added to the row of "imputed compensation for labour input" of the relevant activities. The balancing item, "mixed income", is normally used for the production of goods and services of small-unincorporated enterprises, where the resulting operating income from the enterprise typically consists of a mixture of (implicit) compensation for labour input of the owner and family members, and an operating surplus. In the case of own-use production work of services, the similarity is quite significant, as it would include the imputed compensation for time spent on own-use production work of services activities and the return to capital for the wealth invested in the capital stock of consumer durables. It is preferable, however, to keep both items separate, as is done in Table 4.3, in order not to lose information.

201. As outlined in Chapter 3, the output approach is an alternative to the input approach for valuing own-use production work of services. In this case, it is not the value of labour input that is directly measured, rather the volume of services provided. Output is estimated by valuing the volume of services provided at market prices, which is inserted into the relevant row in the proposed supply and use framework. Countries that adopt the output approach but require an estimate for the labour input can do so by residual using the equation below. This section also provides a worked example in paragraph 204:

$$\begin{aligned} &Imputed\ compensation\ for\ labour\ input \\ &\quad = Output - Intermediate\ consumption - Taxes\ less\ subsidies \\ &\quad - consumption\ of\ fixed\ capital - return\ to\ capital \end{aligned}$$

202. Table 4.3 presents the satellite account for own-use production work of services with an extended production boundary. First, it highlights that the 1,379 million hours worked in own-use production work of adult care services are now valued at £11.8bn using a notional housekeepers' wage rate of a £8.55. Also, Table 4.3 demonstrates the allocation of final consumption expenditure by households into intermediation consumption of own-use production work of services. For instance, £18.1bn of fuel (recorded in operation of transport equipment) is now accounted for in the production of own-use production work of transport services. As a result, £25.9bn of final consumption expenditure of fuel in Table 4.2 reduces to £7.8bn in Table 4.3.

203. The intermediate consumption columns also record all of the inputs from other own-use of production work of service activities. For instance, in the own-use production work of adult care services there are £32.1bn of own-use travel services – reflecting the transportation element of adult care - and £15.4bn of meal services. Further, in the example, there is -£1.3bn under "Other taxes on production minus other subsidies on production", reflecting subsidies for adult care. As indicated in Annex 4.3 there is no consumption of fixed capital or return to capital associated with adult care. As such, the calculated gross value added is simply the imputed compensation for labour input to own-use production work of adult care services added together with the subsidies, equalling £10.5bn. Adding this with £49.9bn of intermediation consumption generates £60.3bn of output.

204. Table 4.3 shows that the output of own-use production work of travel services amounts to £323.1bn, comprising of £300.4bn of gross value added and £22.7bn of intermediate consumption. Countries that use the input approach will have generated the value of gross value added by adding together estimates of consumption of fixed capital, return to capital, and imputed compensation for labour. However, as explained earlier, countries that adopt the output approach can derive estimates of the imputed compensation for labour input through a residual process. Using the figures in Table 4.3, this would be achieved by subtracting intermediate consumption (£22.7bn), consumption of fixed capital (£19.6bn), and return to capital (£1.0bn) from output (£323.1bn), which equals £279.8bn for the labour input. This means that theoretically, countries could obtain a value of labour input without needing to conduct a time-use survey. However, this is a macro total and provides little information – such as gender and age dimensions – about the people doing the work. Further, as discussed in Chapter 3, carrying out the output approach poses many challenges, which is why this Guide recommends the input approach and time-use data collection.

205. Section 4.2.4 will explain the principle changes to the traditional national account headline measures. Before that, the Guide will explain the final step of developing a full sequence of extended household sector accounts.

Table 4.3
Simplified use table at purchasers' prices (impact of extending the production boundary)

£billions	Manufacturing	Transport and storage	Of which: Passenger land transport	Own-use production work of travel services	Human health and social work activities	Of which: Residential care activities	Own-use Production work of adult care services	…	**Total intermediate uses**	Final consumption expenditure by households	…	Gross capital formation	Total exports	Total final uses at purchasers' prices	**Total use at purchasers' prices**
Agriculture, forestry and fishery products	9.7	0.1	0.0	-	0.0	0.0	-		**14.0**	14.2		1.0	2.1	17.3	**31.3**
Ores and minerals; electricity, gas and water	17.9	6.7	1.7	-	2.1	0.6	-		**112.9**	48.4		-0.6	12.5	60.3	**173.2**
of which: Water supply and miscellaneous services relating to the dwelling	-	-	-	-	-	-	-		**2.8**	1.8		-	-	1.8	**7.3**
of which: Electricity, gas and other fuels	-	-	-	-	-	-	-		**6.2**	2.4		-	-	2.4	**14.5**
of which: Operation of personal transport equipment	-	-	-	18.1	-	-	-		**18.1**	7.8		-	-	7.8	**25.9**
Food products, beverages and tobacco; textiles, apparel and leather products	15.8	0.6	0.2	-	2.1	0.6	-		**120.3**	23.8		0.8	14.7	39.3	**157.3**
of which: Food products for the preparation of home meals	-	-	-	-	-	-	-		**71.4**	-		-	-	-	**71.4**
…															
Other transportable goods, except metal products, machinery and equipment	120.2	4.0	1.0	-	18.0	5.3	-		**265.0**	125.5		32.3	137.8	307.1	**572.1**
of which: Glassware, tableware and household utensils	-	-	-	-	-	-	-		**0.6**	5.2		-	-	5.2	**5.8**
of which: Tools and equipment for house and gardens	-	-	-	-	-	-	-		**0.3**	0.0		0.2	-	0.2	**0.6**
…															
Metal products, machinery and equipment	18.7	1.3	88.9	-	0.5	0.1	-		**32.7**	8.3		37.2	20.7	34.3	**45.7**
of which: Household appliances	-	-	-	-	-	-	-		**0.7**	0.2		1.2	-	1.3	**2.0**
of which: Transport equipment	-	-	-	-	-	-	-		**-**	7.9		21.7	-	29.6	**29.6**
Constructions and construction services	2.0	2.1	0.5	-	0.8	0.2	-		**89.5**	1.3		102.6	2.1	106.1	**195.5**
of which: Maintenance and repair of the dwelling	-	-	-	-	-	-	-		**1.8**	1.2		-	-	1.2	**4.8**
….															
Own-use production work of clothing services	-	-	-	-	-	-	-		**0.2**	4.2		-	-	-	**-**
Own-use production work of travel services	-	-	-	-	-	-	32.1		**105.9**	214.9		-	-	-	**-**
Own-use production work of meal services	-	-	-	-	-	-	15.4		**33.9**	308.5		-	-	-	**-**
Own-use production work of housing services	-	-	-	-	-	-	1.7		**45.7**	123.6		-	-	-	**-**
…															
Total	**228.5**	**64.2**	**105.6**	**22.7**	**56.5**	**16.6**	**49.9**		**1444.3**	**1995.7**		**288.9**	**375.1**	**1712.5**	**3002.4**
									Total						
Compensation of employees	81.9	37.6	6.5	-	68.2	26.9	-		**674.5**						
Other taxes on production minus other subsidies on production	12.5	4.0	8.2	-	2.4	8.2	-1.3		**39.2**						
Consumption of fixed capital	19.1	10.0	2.9	19.6	3.6	1.5	-		**166.0**						
Operating surplus and mixed income, net	23.3	7.5	2.2	280.8	18.1	7.4	11.8		**1261.8**						
Return to capital	23.3	7.5	2.2	1.0	18.1	7.4	-		**365.0**						
Imputed comp for labour to own-use production work of services	-	-	-	279.8	-	-	11.8		**896.8**						
Value added, gross	**136.7**	**59.1**	**19.8**	**300.4**	**92.2**	**43.9**	**10.5**		**2141.5**						
Output	**365.2**	**123.4**	**125.4**	**323.1**	**148.8**	**60.5**	**60.3**		**3585.8**						
million hours	-	-	-	-	-	-	-		**Total hours**						
Hours worked in paid employment	5,004	2,173	913	-	6,154	1,127	-		**67,716**						
Hours worked on education and training	-	-	-	-	-	-	-		**14,423**						
Hours worked in own-use production work of services	-	-	-	32,737	-	-	1,379		**104,925**						
Leisure time	-	-	-	-	-	-	-		**118,203**						
Other activities n.e.c.	-	-	-	-	-	-	-		**140,379**						

* Please note that the sub classification of COICOP-groups is only an approximation, for illustrative purposes. Not the whole COICOP (sub)group may fall within the perimeters of the main heading of the use table.

4.2.3 Sequence of extended household accounts

206. This section describes the derivation of the extended household sector accounts by combining: a) own-use production work of services accounts and b) SNA household sector accounts. One of the main benefits of deriving an extended sequence of accounts is the enhanced insight provided into traditional national account variables such as disposable income, and the savings ratio. The example is based on fictional data, and is limited to a subset of own-use production work of services activities – those relating to housing, meal preparation, and care and laundry. The first step requires collating information from SNA household sector accounts, similar to the information reported in Table 4.4.

Table 4.4
Example of household sector accounts

Household sector accounts			
Production account		**Use of disposable income account**	
Output	2,892	Disposable income	8,027
Intermediate consumption	1,206	Individual consumption expenditure	8,216
Value added, gross	1,686	Adjustment for the change in pension entitlements	7
Consumption of fixed capital	624	Saving	-182
Value added, net	1,062		
		Use of adjusted disposable income account	
Generation of income account		Adjusted disposable income	10,803
Value added, net	1,062	Actual individual consumption	10,992
Compensation of employees	96	Adjustment for the change in pension entitlements	7
Taxes on production and imports	40	Saving	-182
Subsidies on production	-165		
Operating surplus/Mixed income	1,091	**Capital account**	
		Saving	-182
Allocation of primary income account		Gross fixed capital formation	1,006
Operating surplus/Mixed income	1,091	Consumption of fixed capital	-624
Compensation of employees	8,098	Net acquisition of non-produced assets	-4
Property income, received	894	Changes in inventories	-3
Property income, paid	236	Acquisition of valuables	6
Balance of primary incomes	9,847	Capital transfers, receivable	25
		Capital transfers, payable	-51
Secondary distribution of income account		Net lending (+)/net borrowing(-)	-589
Balance of primary incomes	9,847		
Current transfers, received	2,936		
Current transfers, paid	4,756		
Disposable income	8,027		
Redistribution of income in kind account			
Disposable income	8,027		
Social transfers in kind	2,776		
Adjusted disposable income	10,803		

207. The process of compiling an extended sequence of accounts involves gathering the relevant information from the SNA accounts, and combining with Household Satellite Accounts estimates. The aim is to combine all forms of household production, both SNA, and non-SNA, to derive measures of total extended household output, and later, adjusted disposable income. Table 4.5 presents the first step - simply reporting household production, and distinguishing them by whether they are SNA or non-SNA activities.

Table 4.5
Household production account, version 1: SNA and non-SNA production estimated separately

Primary function	**Household housing services (SNA and non-SNA)**		**Household meal preparation (SNA and non-SNA)**		**Own-use production work of laundry services**	**Own-use production work of care services (child, adult, and pet)**	**Total**		
Production account	SNA	non-SNA	SNA	non-SNA	non-SNA	non-SNA	**Total SNA**	**Total non-SNA**	**Total household production**
Imputed compensation for labour input to own-use production work of services		2,034		1,982	707	941	0	5,664	5,664
Imputed rent of owner-occupied dwellings and own-account construction	525						525	0	525
Production of agricultural products for own use, hunting, fishing etc.			11				11	0	11
Taxes on production and imports	36	3	1	4	1	2	37	10	47
Subsidies on production						-94	0	-94	-94
Value added, net	**561**	**2,037**	**12**	**1,986**	**708**	**849**	**573**	**5,580**	**6,153**
Consumption of fixed capital	361	240	5	75	24	24	366	363	729
Value added, gross	**922**	**2,277**	**17**	**2,061**	**732**	**873**	**939**	**5,943**	**6,882**
Intermediate consumption	616	996	8	822	77	105	624	2,000	2,624
Output	**1,538**	**3,273**	**25**	**2,883**	**809**	**978**	**1,563**	**7,943**	**9,506**

208. Table 4.5 highlights both the SNA and non-SNA components of own-use production work of meal services. For instance, the imputed compensation for labour input to own-use production work of meal services is £1,982m (outside of SNA production boundary) compared with £11m production of own-use agricultural products (inside SNA production boundary). Similarly, own-use production work of housing services constitutes £2,034m of

production outside of the SNA boundary (activities such as cleaning and 'do-it-yourself'), and £525m of activity within the production boundary (imputed rentals and own-account construction).

209. Table 4.6 continues the example by combining both SNA and non-SNA elements of household meal preparation so that total output from the household sector is £2,908m and gross value added is £2,078m.

Table 4.6
Household production account, version 2: SNA and non-SNA production combined for household meal services

Primary function	**Household housing services (SNA and non-SNA)**		**Household meal preparation (SNA and non-SNA)**	**Own-use production work of laundry services**	**Own-use production work of care services (child, adult, and pet)**	**Total**		
Production account	non-SNA	SNA	SNA + non-SNA	non-SNA	non-SNA	**Total SNA (adjusted when calculating extended accounts)**	**Total non-SNA**	**Total household production**
Imputed compensation for labour input to own-use production work of services	2,034		1,982	707	941	0	5,664	5,664
Owner-occupied dwellings, own-account construction		525				525	0	525
Agricultural products for own use, hunting, fishing etc.			11			11	0	11
Taxes on production and imports	3	36	5	1	2	37	10	47
Subsidies on production					-94	0	-94	-94
Value added, net	**2,037**	**561**	**1,998**	**708**	**849**	**573**	**5,580**	**6,153**
Consumption of fixed capital	240	361	80	24	24	366	363	729
Value added, gross	**2,277**	**922**	**2,078**	**732**	**873**	**940**	**5,942**	**6,882**
Intermediate consumption	996	616	830	77	105	623	2,001	2,624
Output	**3,273**	**1,538**	**2,908**	**809**	**978**	**1,563**	**7,943**	**9,506**

Table 4.7
Sequence of extended accounts

USES										RESOURCES								
	Household production											Household production						
		Housing													Housing			
Total, extended household accounts	Total	Imputed rent of owner-occupied dwellings and own-account construction	Other own-use production work of housing services	Own-use production work of meal services	Own-use production work of laundry services	Own-use production work of care services (child, adult, and pet)	Adjustments (SNA-non-SNA)	Household accounts by SNA	Transactions and balancing items	Household accounts by SNA	Adjustments (SNA-non-SNA)	Own-use production work of care services (child, adult, and pet)	Own-use production work of laundry services	Own-use production work of meal services	Other own-use production work of housing services	Imputed rent of owner-occupied dwellings and own-account construction	Total	Total, extended household accounts
									Production account									
									Output	2,892	-1,563	978	809	2,908	3,273	1,538	9,506	10,835
3,207	2,624	616	996	830	77	105	-623	1,206	Intermediate consumption									
7,628	6,882	922	2,277	2,078	732	873	-940	1,686	Value added, gross									
987	729	361	240	80	24	24	-366	624	Consumption of fixed capital									
6,641	6,153	561	2,037	1,998	708	849	-574	1,062	Value added, net									
									Generation of income account									
									Value added, net	1,062	-574	849	708	1,998	2,037	561	6,153	6,641
5,760	5,664	0	2,034	1,982	707	941	0	96	Compensation of employees									
49	47	36	3	5	1	2	-38	40	Taxes on production and imports									
-259	-94	0	0	0	0	-94	0	-165	Subsidies on production									
1,091	536	525	0	11	0	0	-536	1,091	Operating surplus/Mixed income									
									Allocation of primary income account									
									Operating surplus/Mixed income	1,091	-536						536	1,091
									Compensation of employees	8,098	0						5,664	13,762
236								236	Property income	894								894
15,511	6,200						-536	9,847	Balance of primary incomes									

USES										RESOURCES								
	Household production											Household production						
		Housing													Housing			
Total, extended household accounts	Total	Imputed rent of owner-occupied dwellings and own-account construction	Other own-use production work of housing services	Own-use production work of meal services	Own-use production work of laundry services	Own-use production work of care services (child, adult, and pet)	Adjustments (SNA-non-SNA)	Household accounts by SNA	Transactions and balancing items	Household accounts by SNA	Adjustments (SNA-non-SNA)	Own-use production work of care services (child, adult, and pet)	Own-use production work of laundry services	Own-use production work of meal services	Other own-use production work of housing services	Imputed rent of owner-occupied dwellings and own-account construction	Total	Total, extended household accounts
									Secondary distribution of income account									
									Balance of primary incomes	9,847	-536						6,200	15,511
4,747	-47						38	4,756	Current transfers	2,936	0						-94	2,842
13,606	6,153						-574	8,027	Disposable income									
									Redistribution of income in kind account									
									Disposable income	8,027	-574						6,153	13,606
									Social transfers in kind	2,776								2,776
16,382	6,153						-574	10,803	Adjusted disposable income									
									Use of disposable income account									
									Disposable income	8,027	-574						6,153	13,606
13,714	9,506						-4,008	8,216	Individual consumption expenditure									
									Adjustment for the change in pension entitlements	7								7
-101	-3,353						3,434	-182	Saving									
									Use of adjusted disposable income account									
									Adjusted disposable income	10,803	-574						6,153	16,382
16,490	9,506						-4,008	10,992	Actual individual consumption									

USES										RESOURCES								
	Household production											Household production						
		Housing													Housing			
Total, extended household accounts	Total	Imputed rent of owner-occupied dwellings and own-account construction	Other own-use production work of housing services	Own-use production work of meal services	Own-use production work of laundry services	Own-use production work of care services (child, adult, and pet)	Adjustments (SNA-non-SNA)	Household accounts by SNA	Transactions and balancing items	Household accounts by SNA	Adjustments (SNA-non-SNA)	Own-use production work of care services (child, adult, and pet)	Own-use production work of laundry services	Own-use production work of meal services	Other own-use production work of housing services	Imputed rent of owner-occupied dwellings and own-account construction	Total	Total, extended household accounts
									Adjustment for the change in pension entitlements	7								7
-101	-3,353						3,434	-182	Saving									
									Capital account									
									Saving	-182	3,434						-3,353	-101
1,450	1,113	664	333	67	33	16	-669	1,006	Gross fixed capital formation									
-987	-729	-361	-240	-80	-24	-24	366	-624	Consumption of fixed capital									
-4								-4	Net acquisition of non-produced assets									
-3								-3	Changes in inventories									
6								6	Acquisition of valuables									
									Capital transfers, receivable	25								25
									Capital transfers, payable	-51								-51
-589	-3,737						3,737	-589	Net lending (+)/net borrowing(-)									

210. The final stages involve deriving the full sequence of accounts from the combined information contained within household sector accounts and Household Satellite Accounts. For each of accounts detailed in Table 4.7, and explained more below, transactions on own-use production work of services are added to corresponding transactions in the SNA sector accounts, and then overlapping transactions subtracted. Overlapping transactions include the imputed rents of owner-occupied dwellings that belong to the scope of production in the SNA. Therefore, subtracting these transactions avoids double accounting when deriving extended household sector accounts. In the example provided there is a column - "Total" - for household satellite account calculations, "Household accounts by SNA" for sector accounts for S.14 and "Adjustments (SNA-non-SNA)" for own-use production work of services already included in SNA calculations. The result of calculations is in the column "Total, extended household accounts". The sequence of household sector accounts starts from production accounts and continues up to the capital accounts. For each account, the right-hand side highlights the resources, while the left-hand side of accounts displays the uses. The balances between resources and uses, called balancing items, form the opening resource for the next account.

211. On the production account, outputs are shown as resources and the uses are intermediate consumption and consumption of fixed capital. The balance of resources and uses is net value added, which is recorded as opening resources in the next account, generation of income account.[13]

212. The generation of income account shows the breakdown of net value added on the use side. These are compensation of employees, taxes on production, subsidies on production (which is negative) and as a balancing item, net operating surplus. Due to the application of input method in the valuation of household services, in most household activities, operating surpluses deviate from zero only in activities that belong to the scope of SNA production such as agriculture, fishing and own-account housing.

213. On the next account, allocation of primary income account, compensation of employees and property income received by households are added to operating surplus on the resource side. Compensation of employees consists of wages and salaries as well as related social contributions that households receive from the other sectors of the economy. The use side contains only property incomes payable by households. The difference between the resources and uses is the balance of primary incomes. Note that in the example provided, own-use production work of services is not shown by activity due to the incomes that are not related to own-use production work of services but are receivable/payable by households overall.

214. On the secondary distribution of income account, current transfers are added to the balance of primary incomes on the resource side and current transfers payable by households appear on the use side. The result is disposable income. In resources, current transfers to own-use production work of services are negative because government assistance for childcare is recorded as subsidies to own-use production work of services, and therefore, moved from current transfers to the generation of income account. A similar adjustment is made on the use side due to extending the production boundary to cover own-use production work of services. In the SNA, some payments (e.g., payments related to private cars) made by households to government are sub-divided into current transfers and taxes on production

[13] When using input method for calculating own-use production work of services, the output is actually the sum of costs: value added, net + consumption of fixed capital + intermediate consumption (instead of the value added, net being the balancing item), but these figures are already received in the own-use production work of services calculations and can be added in here as such.

depending whether they are related to household consumption or business. As a result of the extension of the production boundary, the share of taxes on production increases, which is reflected as negative transaction on the use side of the account.

215. The redistribution of income account has no direct connection with own-use production work of services. Social transfers in kind such as health and education services received freely or at reduced prices are simply added to disposable incomes to end up to adjusted disposable income.

216. The opening resource of the use of disposable income account is disposable income, which is the balancing item of the secondary distribution of income account. Adjustment for the change in pension entitlements from the SNA core accounts is added to it. The uses are the individual consumption expenditure from the SNA core system and own-use production work of services. To end up to extended household consumption expenditure, outputs of activities already belonging to the SNA production boundary (such as owner-occupied housing) have to be subtracted as well as those expenditures within the SNA household consumption that are related to own-use production work of services. Those are products used in intermediate consumption (ingredients for food preparation, detergents, etc.) and products belonging to gross fixed capital formation in the extended household accounts (household machinery, etc.), otherwise a double counting would occur in the system.). Intermediate consumption can be extracted from the production account and gross fixed capital formation appears in the last account, capital account. The balancing item is saving.

217. For the adjusted disposable income account, the opening resource is adjusted disposable income extracted from the redistribution of income in kind account. Adjustment for the change in pension entitlements is added again to resources. On the use side, the SNA actual individual consumption consists of household consumption expenditure and social transfers in kind. Compared to the previous account, saving remains unchanged because the only difference between the accounts is that social transfers in kind are added to both sides of the adjusted disposable income account.

218. For the capital account, the relevant transactions for the extended household accounts are gross fixed capital formation and consumption of fixed capital. Capital acquired for own-use production work of services, recorded here by activity, is added to the SNA gross fixed capital formation and capital included in both sets (acquisition of dwellings particularly) is subtracted to end up to extended gross fixed capital formation of households. Consumption of fixed capital is extracted from the production account. Net lending/ net borrowing of the extended household accounts equals net lending/ net borrowing in the core accounts - the additional own-use production work of services has neutral effect because of being produced for own use and the other changes in accounts are basically only reallocations of transactions. A sequence of household sector accounts is presented in Table 4.4, based on the numerical example provided in Table 4.2 and Table 4.3.

4.2.4 Impact on national account variables

219. Overall, the impact on GDP of extending the production boundary with own-use production work of services equals the total of imputed mixed income and the total capital services from consumer durables. Final consumption expenditure of households will increase because of the additional consumption of own-use production work of services. On the other hand, it decreases because of the alternative recording of goods and services used during own-use production of services work, which adds to intermediate consumption, and the shifting of consumer durables to gross fixed capital formation.

220. Going further down the SNA, primary income of the household sector increases in par with the increase of GDP. Households' gross saving increases in line with the balance of the changes in disposable income and final consumption expenditure, and equals the increase in investments, thus leaving net lending/net borrowing unaffected.

221. It is clear that the extension of the production boundary not only affects GDP, but also disposable income, final consumption and investments. Unless clearly distinguished, this may hamper a comparison with micro-data from income surveys of households, in which a much more traditional concept of income is applied. In this respect, it is also important to acknowledge the (additional) problems in interpreting income developments of households. Looking at a micro-level, extending the production boundary, may actually lead to a quite counterintuitive increase of income, when someone, for example, gets unemployed, receives say 70% of his previous income as a social benefit, and starts doing additional work at home. Also at a macro-level, something similar could happen, for example in the aftermath of an economic crisis with quickly increasing rates of unemployment, although clear evidence of such an event was not found in the numbers after the 2008 crisis, as the available numbers on hours worked on own-use production work of services activities were inconclusive.

Annex 4.1: Allocation of COICOP codes to intermediate and final consumption, and household capital

COICOP Classification	Commodity	Intermediate consumption	Final consumption	Household Capital
01.1.1	Bread and cereals (ND)	X	X	
01.1.2	Meat (ND)	X		
01.1.3	Fish (ND)	X		
01.1.4	Milk, cheese and eggs (ND)	X		
01.1.5	Oils and fats (ND)	X		
01.1.6	Fruit (ND)	X		
01.1.7	Vegetables (ND)	X	X	
01.1.8	Sugar, jam, honey, chocolate and confectionery (ND)	X	X	
01.1.9	Food products n.e.c. (ND)	X		
01.2.1	Coffee, tea and cocoa (ND)	X		
01.2.2	Mineral waters, soft drinks, fruit and vegetable juices (ND)		X	
02.1.1	Spirits (ND)		X	
02.1.2	Wine (ND)		X	
02.1.3	Beer (ND)		X	
02.2.0	Tobacco (ND)		X	
02.3.0	Narcotics (ND)		X	
03.1.1	Clothing materials (SD)	X		
03.1.2	Garments (SD)		X	
03.1.3	Other articles of clothing and clothing accessories (SD)	X	X	
03.1.4	Cleaning, repair and hire of clothing (S)		X	
03.2.1	Shoes and other footwear (SD)		X	
03.2.2	Repair and hire of footwear (S)		X	
04.1.1	Actual rentals paid by tenants (S)	X		
04.1.2	Other actual rentals (S)		X	
04.2.1	Imputed rentals of owner-occupiers (S)			
04.2.2	Other imputed rentals (S)			
04.3.1	Materials for the maintenance and repair of the dwelling (ND)	X		
04.3.2	Services for the maintenance and repair of the dwelling (S)	X		
04.4.1	Water supply (ND)	X		
04.4.2	Refuse collection (S)	X		
04.4.3	Sewerage collection (S)	X		
04.4.4	Other services relating to the dwelling n.e.c. (S)	X		
04.5.1	Electricity (ND)	X		
04.5.2	Gas (ND)	X		
04.5.3	Liquid fuels (ND)	X		
04.5.4	Solid fuels (ND)	X		
04.5.5	Heat energy (ND)	X		
05.1.1	Furniture and furnishings (D)			X
05.1.2	Carpets and other floor coverings (D)			X
05.2.0	Household textiles (SD)	X		
05.3.1	Major household appliances whether electric or not (D)			X
05.3.2	Small electric household appliances (SD)	X		
05.3.3	Repair of household appliances	X		
05.4.0	Glassware, tableware and household utensils (SD)	X		
05.5.1	Major tools and equipment (D)			X

COICOP Classification	Commodity	Intermediate consumption	Final consumption	Household Capital
05.5.2	Small tools and miscellaneous accessories (SD)	X		
05.6.1	Non-durable household goods (ND)	X		
05.6.2	Domestic services and household services (S)	X		
06.1.1	Pharmaceutical products (ND)		X	
06.1.2	Other medical products (ND)		X	
06.1.3	Therapeutic appliances and equipment (D)		X	
06.2.1	Medical Services (S)		X	
06.2.2	Dental services (S)		X	
06.2.3	Paramedical services (S)		X	
06.3.0	Hospital services (S)		X	
07.1.1	Motor cars (D)			X
07.1.2	Motor cycles (D)			X
07.1.3	Bicycles (D)			X
07.1.4	Animal drawn vehicles (D)			X
07.2.1	Spare parts and accessories for personal transport equipment (SD)	X		
07.2.2	Fuels and lubricants for personal transport equipment (ND)	X		
07.2.3	Maintenance and repair of personal transport equipment (S)	X		
07.2.4	Other services in respect of personal transport equipment (S)	X		
07.3.1	Passenger transport by railway (S)		X	
07.3.2	Passenger transport by road (S)		X	
07.3.3	Passenger transport by air (S)		X	
07.3.4	Passenger transport by sea and inland waterway (S)		X	
07.3.5	Combined passenger transport (S)		X	
07.3.6	Other purchased transport services (S)		X	
08.1.0	Postal services (S)		X	
08.2.0	Telephone and telefax equipment (D)		X	
08.3.0	Telephone and telefax services (S)		X	
09.1.1	Equipment for the reception, recording and reproduction of sound and pictures (D)		X	
09.1.2	Photographic and cinematographic equipment and optical instruments (D)		X	
09.1.3	Information processing equipment (D)		X	
09.1.4	Recording media (SD)		X	
09.1.5	Repair of audio-visual, photographic and information processing equipment (S)		X	
09.2.1	Major durables for outdoor recreation (D)		X	
09.2.2	Musical instruments and major durables for indoor recreation (D)		X	
09.2.3	Maintenance and repair of other major durables for recreation and culture (S)		X	
09.3.1	Games, toys and hobbies (SD)		X	
09.3.2	Equipment for sport, camping and open-air recreation (SD)		X	
09.3.3	Gardens, plants and flowers (ND)	X		
09.3.4	Pets and related products (ND)		X	
09.3.5	Veterinary and other services for pets (S)		X	
09.4.1	Recreational and sporting services (S)		X	
09.4.2	Cultural services (S)		X	
09.4.3	Games of chance (S)		X	
09.5.1	Books (SD)		X	
09.5.2	Newspapers and periodicals (ND)		X	

COICOP Classification	Commodity	Intermediate consumption	Final consumption	Household Capital
09.5.3	Miscellaneous printed matter (ND)		X	
09.5.4	Stationery and drawing materials (ND)		X	
09.6.0	Package holidays (S)		X	
10	Education		X	
10.1.0	Pre-primary and primary education (S)		X	
10.2.0	Secondary education (S)		X	
10.3.0	Post-secondary non-tertiary education (S)		X	
10.4.0	Tertiary education (S)		X	
10.5.0	Education not definable by level (S)		X	
11.1.1	Restaurants, cafés and the like (S)		X	
11.1.2	Canteens (S)		X	
11.2.0	Accommodation services (S)		X	
12.1.1	Hairdressing salons and personal grooming establishments (S)		X	
12.1.2	Electric appliances for personal care (SD)		X	
12.1.3	Other appliances, articles and products for personal care (ND)	X	X	
12.2.0	Prostitution (S)		X	
12.3.1	Jewellery, clocks and watches (D)		X	
12.3.2	Other personal effects (SD)	X	X	
12.4.0	Social protection (S)		X	
12.5.1	Life insurance (S)		X	
12.5.2	Insurance connected with the dwelling (S)	X		
12.5.3	Insurance connected with health (S)		X	
12.5.4	Insurance connected with transport (S)	X	X	
12.5.5	Other insurance (S)		X	
12.6.2	Other financial services n.e.c. (S)		X	
12.7.0	Other services n.e.c. (S)		X	

Annex 4.2: Allocation of intermediate consumption to own-use production work of services activities

		Own-use production work of service activity				
COICOP Classification	**Commodity**	**Care services**	**Nutrition services**	**Clothing services**	**Travel services**	**Housing services**
01.1.1	Bread and cereals (ND)		X			
01.1.2	Meat (ND)		X			
01.1.3	Fish (ND)		X			
01.1.4	Milk, cheese and eggs (ND)		X			
01.1.5	Oils and fats (ND)		X			
01.1.6	Fruit (ND)		X			
01.1.7	Vegetables (ND)		X			
01.1.8	Sugar, jam, honey, chocolate and confectionery		X			
01.1.9	Food products n.e.c. (ND)		X			
01.2.1	Coffee, tea and cocoa (ND)		X			
03.1.1	Clothing materials (SD)			X		
03.1.3	Other articles of clothing and clothing access			X		
04.1.1	Actual rentals paid by tenants (S)					X
04.3.1	Materials for the maintenance and repair					X
04.3.2	Services for the maintenance and repair					X
04.4.1	Water supply (ND)					X
04.4.2	Refuse collection (S)					X
04.4.3	Sewerage collection (S)					X
04.4.4	Other services relating to the dwelling n.e.c.					
04.5.1	Electricity (ND)					X
04.5.2	Gas (ND)					X
04.5.3	Liquid fuels (ND)					X
04.5.4	Solid fuels (ND)					X
04.5.5	Heat energy (ND)					
05.1.3	Repair of furniture, furnishings and floor cov.					X
05.2.0	Household textiles (SD)					X
05.3.2	Small electric household appliances (SD)		X			
05.3.3	Repair of household appliances (S)		X	X		X
05.4.0	Glassware, tableware and household utensils (S		X			
05.5.2	Small tools and miscellaneous accessories (SD)					X
05.6.1	Non-durable household goods (ND)		X	X		X
05.6.2	Domestic services and household services (S)					X
07.2.1	Spare parts and accessories for personal transport				X	
07.2.2	Fuels and lubricants for personal transport equipment				X	
07.2.3	Maintenance and repair of personal transport equipment				X	

		Own-use production work of service activity				
COICOP Classification	**Commodity**	**Care services**	**Nutrition services**	**Clothing services**	**Travel services**	**Housing services**
07.2.4	Other services in respect of personal transport				X	
09.3.3	Gardens, plants and flowers (ND)					X
12.1.3	Other appliances, articles and products for personal care	X				
12.3.2	Other personal effects (SD)	X				
12.5.2	Insurance connected with the dwelling (S)					X
12.5.4	Insurance connected with transport (S)				X	

Annex 4.3: Allocation of household capital to own-use production work of services activities

COICOP classification	Description	Divided into:	Principal function	Asset life length
05.1.1	Furniture & furnishings		Own-use production work of housing services	15
05.1.2	Carpets etc.		Own-use production work of housing services	10
05.3.1	Major household appliances	Cookers	Own-use production work of nutrition services	12
		Microwaves	Own-use production work of nutrition services	7
		Fridges & freezers	Own-use production work of nutrition services	11
		Dishwashers	Own-use production work of nutrition services	9
		Washing machines & driers	Own-use production work of clothing services	9
		Fires, showers, vacuum cleaners etc.	Own-use production work of housing services	8
05.5.1	Major tools & equipment		Own-use production work of housing services	7
07.1.1	Motor cars	New	Own-use production work of transport services	13
		Second hand	Own-use production work of transport services	11
07.1.2	Motor cycles		Own-use production work of transport services	10
07.1.3	Bicycles		Own-use production work of transport services	9

Annex 4.4: Use table at purchasers' prices (excluding extension of the production boundary)

£billions	Manufacturing	Of which: Manufacture of wearing apparel	Own-use production work of clothing services	Transport and storage	Of which: Passenger land transport	Own-use production work of travel services	Accommodation and food service activities
Agriculture, forestry and fishery products	9.7	0.1	-	0.1	0.0	-	0.8
Ores and minerals; electricity, gas and water	17.9	0.1	-	6.7	1.7	-	1.5
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.4)	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	15.8	0.1	-	0.6	0.2	-	16.5
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	120.2	0.7	-	4.0	1.0	-	1.2
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	-	-	-	-	-	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	-	-	-	-
Metal products, machinery and equipment	18.7	0.1	-	1.3	0.3	-	0.1
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	2.0	0.0	-	2.1	0.5	-	0.8
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	8.8	0.1	-	22.6	5.6	-	1.7
Financial and related services; real estate services; and rental and leasing services	11.2	0.1	-	4.4	1.1	-	1.9
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	8.6	0.1	-	4.9	1.2	-	1.9
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	15.7	0.1	-	17.5	4.3	-	5.4
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	-	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**228.5**	**1.4**	**-**	**64.2**	**15.9**	**-**	**31.8**
Compensation of employees	81.9	0.5	-	37.6	6.5	-	23.4
Other taxes on production minus other subsidies on production	12.5	-0.1	-	4.0	8.2	-	3.3
Consumption of fixed capital	19.1	0.1	-	10.0	2.9	-	2.1
Operating surplus and mixed income, net	23.3	0.1	-	7.5	2.2	-	8.2
Return to capital	23.3	0.1	-	7.5	2.2	-	8.2
Imputed compensation for labour input to own-use production work of services	-	-	-	-	-	-	-
Value added, gross	**136.7**	**0.7**	**-**	**59.1**	**19.8**	**-**	**37.0**
Output	**365.2**	**2.1**	**-**	**123.4**	**35.7**	**-**	**68.8**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	5,004	36	-	2,173	913	-	1,944
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	-	-	251	-	-	32,737	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Of which: Restaurants	Own-use production work of meal services	Real estate activities excluding imputed rents	Imputed rents of owner-occupied dwellings	Own-use production work of housing services by renters	Administrative and support service activities	Of which: General cleaning of buildings
Agriculture, forestry and fishery products	0.3	-	-	-	-	0.0	0.0
Ores and minerals; electricity, gas and water	0.6	-	0.1	0.7	-	1.0	0.0
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.4)	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	6.1	-	0.0	-	-	0.6	0.0
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	0.5	-	0.5	0.1	-	2.5	0.0
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	-	-	-	-	-	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	-	-	-	-
Metal products, machinery and equipment	0.0	-	0.1	0.0	-	1.4	0.0
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	0.3	-	9.7	5.4	-	0.5	0.0
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	0.6	-	0.5	-	-	3.5	0.1
Financial and related services; real estate services; and rental and leasing services	0.7	-	6.6	13.5	-	3.3	0.1
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	0.7	-	0.8	0.3	-	2.6	0.0
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	2.0	-	5.2	1.2	-	28.7	0.5
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	-	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**11.8**	**-**	**23.5**	**21.3**	**-**	**44.2**	**0.7**
Compensation of employees	8.8	-	9.1	-	-	33.5	2.3
Other taxes on production minus other subsidies on production	0.4	-	-0.6	-4.4	-	2.1	-0.7
Consumption of fixed capital	0.8	-	12.6	42.7	-	11.7	0.3
Operating surplus and mixed income, net	3.0	-	22.2	74.9	-	12.6	0.4
Return to capital	3.0	-	22.2	74.9	-	12.6	0.4
Imputed compensation for labour input to own-use production work of services	-	-	-	-	-	-	-
Value added, gross	**12.9**	**-**	**43.2**	**113.2**	**-**	**59.9**	**2.4**
Output	**24.7**	**-**	**66.7**	**134.5**	**-**	**104.1**	**3.1**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	795	-	578	-	-	2,834	283
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	-	24,658	-	-	-	-	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Own-use production work of cleaning services	Education	Of which: Pre-primary and primary education and secondary	Human health and social work activities	Of which: Residential care activities	Own-use production work of adult care services	Of which: Other social work activities without accommodation
Agriculture, forestry and fishery products	-	0.0	0.0	0.0	0.0	-	0.0
Ores and minerals; electricity, gas and water	-	1.2	0.3	2.1	0.6	-	0.8
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.4)	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	-	0.7	0.2	2.1	0.6	-	0.8
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	-	3.8	0.9	18.0	5.3	-	6.5
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	-	-	-	-	-	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	-	-	-	-
Metal products, machinery and equipment	-	0.1	0.0	0.5	0.1	-	0.2
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	-	0.5	0.1	0.8	0.2	-	0.3
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	-	2.2	0.5	6.3	1.9	-	2.3
Financial and related services; real estate services; and rental and leasing services	-	0.5	0.1	2.5	0.7	-	0.9
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	-	2.3	0.6	2.9	0.9	-	1.1
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	-	12.9	3.1	21.2	6.2	-	7.7
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	-	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**-**	**24.2**	**5.8**	**56.5**	**16.6**	**-**	**20.5**
Compensation of employees	-	64.5	20.7	68.2	26.9	-	28.0
Other taxes on production minus other subsidies on production		1.2	-2.3	2.4	8.2		-10.1
Consumption of fixed capital	-	9.4	2.5	3.6	1.5	-	1.1
Operating surplus and mixed income, net	-	0.3	0.1	18.1	7.4	-	5.5
Return to capital	-	0.3	0.1	18.1	7.4	-	5.5
Imputed compensation for labour input to own-use production work of services	-	-	-	-	-	-	-
Value added, gross	**-**	**75.5**	**21.0**	**92.2**	**43.9**	**-**	**24.5**
Output	**-**	**99.6**	**26.8**	**148.8**	**60.5**	**-**	**45.1**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	-	5,565	4,346	6,154	1,127	-	656
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	15,085	-	-	-	-	1,379	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Own-use production work of childcare services	Other service activities	Of which: Repair of personal and household goods	Own-use production work of repairing services	Of which: Washing and (dry) cleaning of textile and fur products	Own-use production work of laundry services	Of which: Other personal service activities n.e.c.
Agriculture, forestry and fishery products	-	0.0	0.0	-	0.0	-	0.0
Ores and minerals; electricity, gas and water	-	0.3	0.0	-	0.0	-	0.1
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.4)	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	-	0.4	0.0	-	0.0	-	0.1
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	-	1.0	0.0	-	0.0	-	0.3
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	-	-	-	-	-	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	-	-	-	-
Metal products, machinery and equipment	-	0.1	0.0	-	0.0	-	0.0
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	-	0.3	0.0	-	0.0	-	0.1
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	-	0.7	0.0	-	0.0	-	0.2
Financial and related services; real estate services; and rental and leasing services	-	0.8	0.0	-	0.0	-	0.2
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	-	1.3	0.0	-	0.0	-	0.3
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	-	6.4	0.2	-	0.2	-	1.8
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	-	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**-**	**11.2**	**0.3**	**-**	**0.4**	**-**	**3.1**
Compensation of employees	-	13.7	0.2	-	0.2	-	0.2
Other taxes on production minus other subsidies on production		0.3	0.2		0.5		4.5
Consumption of fixed capital	-	1.0	0.0	-	0.0	-	0.3
Operating surplus and mixed income, net	-	11.4	0.3	-	0.5	-	3.6
Return to capital	-	11.4	0.3	-	0.5	-	3.6
Imputed compensation for labour input to own-use production work of services	-	-	-	-	-	-	-
Value added, gross	**-**	**26.5**	**0.8**	**-**	**1.3**	**-**	**8.7**
Output	**-**	**37.7**	**1.1**	**-**	**1.7**	**-**	**11.7**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	-	660	50	-	49	-	114
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	16,443	-	-	887	-	6,993	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Own-use production work of pet care services	Activities of households as employers	Of which: other activities of households as employers of domestic	Own-use production work of gardening services	Own-use production work of meal planning and shopping services	Of which: other activities of households as employers of domestic	Rest of the economy
Agriculture, forestry and fishery products	-	-	-	-	-	-	3.3
Ores and minerals; electricity, gas and water	-	-	-	-	-	-	54.3
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.4)	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	-	-	-	-	-	-	10.1
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	-	-	-	-	-	-	100.9
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	-	-	-	-	-	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	-	-	-	-
Metal products, machinery and equipment	-	-	-	-	-	-	9.0
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	-	-	-	-	-	-	67.4
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	-	-	-	-	-	-	56.7
Financial and related services; real estate services; and rental and leasing services	-	-	-	-	-	-	60.2
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	-	-	-	-	-	-	53.9
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	-	-	-	-	-	-	157.6
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	-	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**573.5**
Compensation of employees	-	4.6	3.8	-	-	0.8	338.0
Other taxes on production minus other subsidies on production	-	-0.0	-0.1		-	-0.8	31.9
Consumption of fixed capital	-	-	-	-	-	-	75.7
Operating surplus and mixed income, net	-	0.3	0.2	-	-	-	185.2
Return to capital	-	0.3	0.2	-	-	-	185.2
Imputed compensation for labour input to own-use production work of services	-	-	-	-	-	-	-
Value added, gross	**-**	**4.9**	**3.9**	**-**	**-**	**-**	**630.8**
Output	**-**	**4.9**	**3.9**	**-**	**-**	**-**	**1204.3**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	-	58	58	-	-	58	18,237
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	1,978	-	-	1,775	2,740	-	104,925
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Total intermediate uses	Final consumption expenditure by households	Final consumption expenditure by non-profit organisations	Final consumption expenditure by government	Gross capital formation	Total exports	Total final uses at purchasers' prices	Total use at purchasers' prices
Agriculture, forestry and fishery products	**14.0**	14.2	-	-	1.0	2.1	17.3	**31.3**
Ores and minerals; electricity, gas and water	**86.0**	48.4	-	-	-0.6	12.5	60.3	**146.2**
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.4)	**-**	7.3	-	-	-	-	-	**-**
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	**-**	14.5	-	-	-	-	-	**-**
of which: Operation of personal transport equipment (COICOP 07.2.)	**-**	25.9	-	-	-	-	-	**-**
Food products, beverages and tobacco; textiles, apparel and leather products	**46.7**	95.2	-	-	0.8	14.7	110.6	**157.3**
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	**-**	71.4	-	-	-	-	-	**-**
of which: Clothing and footwear (COICOP 03.)	**-**	3.2	-	-	-	-	-	**-**
of which: Household Textiles (COICOP 05.2.0)	**-**	2.0	-	-	-	-	-	**-**
Other transportable goods, except metal products, machinery and equipment	**252.2**	125.5	-	11.5	32.3	137.8	307.1	**559.3**
of which: Glassware, tableware and household utensils (COICOP 05.4)	**-**	0.6	-	-	-	-	-	**-**
of which: Tools and equipment for house and gardens (COICOP 05.5)	**-**	1.0	-	-	-	-	-	**-**
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	**-**	3.2	-	-	-	-	-	**-**
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	**-**	25.1	-	-	-	-	-	**-**
Metal products, machinery and equipment	**31.4**	36.8	-	-	19.2	46.7	102.7	**134.1**
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	**-**	5.8	-	-	-	-	-	**-**
of which: Transport equipment (COICOP 07.1)	**-**	30.2	-	-	0.6	-	-	**-**
Constructions and construction services	**89.5**	1.3	-	-	102.6	2.1	106.1	**195.5**
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	**-**	1.2	-	-	-	-	-	**-**
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	**103.0**	129.5	-	2.1	0.6	27.3	159.5	**262.4**
Financial and related services; real estate services; and rental and leasing services	**104.9**	240.6	0.2	-	7.0	52.0	299.7	**404.7**
of which: Actual Rent paid by tenants (COICOP 4.1.1)	**-**	24.2	-	-	-	-	-	**-**
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	**-**	11.4	-	-	-	-	-	**-**
Business and production services	**79.5**	62.4	-	2.1	32.2	27.1	123.7	**203.3**
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	**-**	1.5	-	-	-	-	-	**-**
Community, social and personal services	**271.8**	90.9	42.3	253.3	31.7	61.4	479.6	**751.4**
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	**-**	9.2	-	-	-	-	-	**-**
of which: Other personal effects (SD) (COICOP 12.3.2)	**-**	4.6	-	-	-	-	-	**-**
Own-use production work of clothing services	**-**	-	-	-	-	-	-	**-**
Own-use production work of travel services	**-**	-	-	-	-	-	-	**-**
Own-use production work of meal services	**-**	-	-	-	-	-	-	**-**
Own-use production work of housing services	**-**	-	-	-	-	-	-	**-**
Own-use production work of cleaning services	**-**	-	-	-	-	-	-	**-**
Own-use production work of adult care services	**-**	-	-	-	-	-	-	**-**
Own-use production work of childcare services	**-**	-	-	-	-	-	-	**-**
Own-use production work of repairing services	**-**	-	-	-	-	-	-	**-**
Own-use production work of laundry services	**-**	-	-	-	-	-	-	**-**
Own-use production work of pet care services	**-**	-	-	-	-	-	-	**-**
Own-use production work of gardening services	**-**	-	-	-	-	-	-	**-**
Own-use production work of meal planning and shopping services	**-**	-	-	-	-	-	-	**-**
Total	**1078.8**	**844.7**	**42.5**	**268.9**	**226.9**	**383.7**	**1766.7**	**2845.5**
Compensation of employees	**674.5**	-	-	-	-	-	-	**-**
Other taxes on production minus other subsidies on production	**52.6**	-	-	-	-	-	-	**-**
Consumption of fixed capital	**187.9**	-	-	-	-	-	-	**-**
Operating surplus and mixed income, net	**364.0**	-	-	-	-	-	-	**-**
Return to capital	**364.0**	-	-	-	-	-	-	**-**
Imputed compensation for labour input to own-use production work of services	**-**	-	-	-	-	-	-	**-**
Value added, gross	**1279.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Output	**2357.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
million hours	**Total hours**	-	-	-	-	-	-	**-**
Hours worked in paid employment	**43,207**	-	-	-	-	-	-	**-**
Hours worked on education and training	**14,423**	-	-	-	-	-	-	**-**
Hours worked in own-use production work of services	**104,925**	-	-	-	-	-	-	**-**
Leisure time	**118,203**	-	-	-	-	-	-	**-**
Other activities n.e.c.	**140,379**	-	-	-	-	-	-	**-**

Note: Please note that the sub classification of COICOP-groups is only an approximation, for illustrative purposes. Not the whole COICOP (sub)group may fall within the perimeters of the main heading of the use table.

Annex 4.5: Use table at purchasers' prices (impact of extending the production boundary)

£billions	Manufacturing	Of which: Manufacture of wearing apparel	Own-use production work of clothing services	Transport and storage	Of which: Passenger land transport	Own-use production work of travel services	Accommodation and food service activities
Agriculture, forestry and fishery products	9.7	0.1	-	0.1	0.0	-	0.8
Ores and minerals; electricity, gas and water	17.9	0.1	-	6.7	1.7	-	1.5
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	18.1	-
Food products, beverages and tobacco; textiles, apparel and leather products	15.8	0.1	2.2	0.6	0.2	-	16.5
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	2.2	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	120.2	0.7	-	4.0	1.0	-	1.2
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	-	-	-	-	-	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	-	-	-	-
Metal products, machinery and equipment	18.7	0.1	-	1.3	88.9	-	0.1
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	2.0	0.0	-	2.1	0.5	-	0.8
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	8.8	0.1	-	22.6	5.6	18.1	1.7
Financial and related services; real estate services; and rental and leasing services	11.2	0.1	-	4.4	1.1	2.3	1.9
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	2.3	-
Business and production services	8.6	0.1	-	4.9	2.3	-	1.9
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	15.7	0.1	-	17.5	4.3	2.3	5.4
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	-	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**228.5**	**1.4**	**2.2**	**64.2**	**105.6**	**22.7**	**31.8**
Compensation of employees	81.9	0.5	-	37.6	6.5	-	23.4
Other taxes on production minus other subsidies on production	12.5	-0.1	-	4.0	8.2	-	3.3
Consumption of fixed capital	19.1	0.1	0.2	10.0	2.9	19.6	2.1
Operating surplus and mixed income, net	23.3	0.1	2.1	7.5	2.2	280.8	8.2
Return to capital	23.3	0.1	-	7.5	2.2	1.0	8.2
Imputed compensation for labour input to own-use production work of services	-	-	2.1	-	-	279.8	-
Value added, gross	**136.7**	**0.7**	**2.4**	**59.1**	**19.8**	**300.4**	**37.0**
Output	**365.2**	**2.1**	**4.6**	**123.4**	**125.4**	**323.1**	**68.8**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	5,004	36	-	2,173	913	-	1,944
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	-	-	251	-	-	32,737	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Of which: Restaurants	Own-use production work of meal services	Real estate activities excluding imputed rents	Imputed rents of owner-occupied dwellings	Own-use production work of housing services by renters	Administrative and support service activities	Of which: General cleaning of buildings
Agriculture, forestry and fishery products	0.3	-	-	-	-	0.0	0.0
Ores and minerals; electricity, gas and water	0.6	-	0.1	0.7	27.0	1.0	0.0
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4	-	-	-	0.2	2.5	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	0.4	5.8	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	6.1	71.4	0.0	-	-	0.6	0.0
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	71.4	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	0.0	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	0.7	0.8	-	-
Other transportable goods, except metal products, machinery and equipment	0.5	-	0.5	0.1	3.8	2.5	0.0
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	0.6	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	0.1	0.1	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	-	0.1	-	0.0	0.1	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	3.8	3.8	-	-
Metal products, machinery and equipment	0.0	0.1	0.1	0.9	0.3	1.4	0.0
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	0.1	-	0.2	0.3	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	0.3	-	9.7	5.4	-	0.5	0.0
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	0.1	1.7	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	0.6	-	0.5	-	-	3.5	0.1
Financial and related services; real estate services; and rental and leasing services	0.7	-	6.6	15.2	19.2	3.3	0.1
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	16.9	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	1.7	2.3	-	-
Business and production services	0.7	0.8	0.8	1.8	1.6	2.6	0.0
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	0.2	0.1	-	-
Community, social and personal services	2.0	-	5.2	2.9	2.3	28.7	0.5
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	25.4	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**11.8**	**97.6**	**23.5**	**27.1**	**54.1**	**44.2**	**0.7**
Compensation of employees	8.8	-	9.1	-	-	33.5	2.3
Other taxes on production minus other subsidies on production	0.4	-	-0.6	-4.4	0.0	2.1	-0.7
Consumption of fixed capital	0.8	0.2	12.6	0.3	0.3	11.7	0.3
Operating surplus and mixed income, net	3.0	210.8	22.2	74.9	0.0	12.6	0.4
Return to capital	3.0	0.0	22.2	74.9	0.0	12.6	0.4
Imputed compensation for labour input to own-use production work of services	-	210.7	-	-	-	-	-
Value added, gross	**12.9**	**211.0**	**43.2**	**70.9**	**0.4**	**59.9**	**2.4**
Output	**24.7**	**308.6**	**66.7**	**98.0**	**54.5**	**104.1**	**3.1**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	795	-	578	-	-	2,834	283
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	-	24,658	-	-	-	-	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Own-use production work of cleaning services	Education	Of which: Pre-primary and primary education and	Human health and social work activities	Of which: Residential care activities	Own-use production work of adult care services	Of which: Other social work activities without
Agriculture, forestry and fishery products	-	0.0	0.0	0.0	0.0	-	0.0
Ores and minerals; electricity, gas and water	-	1.2	0.3	2.1	0.6	-	0.8
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-	-	-	-	-	0.0
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	-	0.7	0.2	2.1	0.6	-	0.8
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	-	3.8	0.9	18.0	5.3	-	6.5
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	0.2	-	-	-	-	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	-	-	-	-
Metal products, machinery and equipment	-	0.1	0.0	0.5	0.1	-	0.2
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	-	0.5	0.1	0.8	0.2	-	0.3
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	-	2.2	0.5	6.3	1.9	-	2.3
Financial and related services; real estate services; and rental and leasing services	-	0.5	0.1	2.5	0.7	-	0.9
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	0.2	2.3	0.6	2.9	0.9	-	1.1
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	-	12.9	3.1	21.2	6.2	-	7.7
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	-	32.1	-
Own-use production work of meal services	-	-	-	-	-	15.4	-
Own-use production work of housing services	-	-	-	-	-	1.7	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	0.7	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**0.2**	**24.2**	**5.8**	**56.5**	**16.6**	**49.9**	**20.5**
Compensation of employees	-	64.5	20.7	68.2	26.9	-	28.0
Other taxes on production minus other subsidies on production	-	1.2	-2.3	2.4	8.2	-1.3	-10.1
Consumption of fixed capital	-	9.4	2.5	3.6	1.5	-	1.1
Operating surplus and mixed income, net	128.9	0.3	0.1	18.1	7.4	11.8	5.5
Return to capital	-	0.3	0.1	18.1	7.4	-	5.5
Imputed compensation for labour input to own-use production work of services	128.9	-	-	-	-	11.8	-
Value added, gross	**128.9**	**75.5**	**21.0**	**92.2**	**43.9**	**10.5**	**24.5**
Output	**129.1**	**99.6**	**26.8**	**148.8**	**60.5**	**60.3**	**45.1**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	-	5,565	4,346	6,154	1,127	-	656
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	15,085	-	-	-	-	1,379	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Own-use production work of childcare services	Other service activities	Of which: Repair of personal and household goods	Own-use production work of repairing services	Of which: Washing and (dry-) cleaning of textile and fur	Own-use production work of laundry services	Of which: Other personal service activities n.e.c.
Agriculture, forestry and fishery products	-	0.0	0.0	-	0.0	-	0.0
Ores and minerals; electricity, gas and water	-	0.3	0.0	-	0.0	-	0.1
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	0.0	0.0	-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	-	0.4	0.0	-	0.0	-	0.1
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	-	1.0	0.0	0.3	0.0	1.3	0.3
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	-	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	0.0	-	-	0.1	-	0.1	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	-	-	-	0.3	-	1.3	-
Metal products, machinery and equipment	-	0.1	0.0	-	0.0	0.1	0.0
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	0.1	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	-	0.3	0.0	-	0.0	-	0.1
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	-	0.7	0.0	-	0.0	-	0.2
Financial and related services; real estate services; and rental and leasing services	-	0.8	0.0	-	0.0	-	0.2
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	0.0	1.3	0.0	1.5	0.0	0.2	0.3
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	0.7	-	-	-
Community, social and personal services	5.5	6.4	0.2	-	0.2	-	1.8
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	1.8	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	0.9	-	-	-	-	-	-
Own-use production work of clothing services	0.2	-	-	-	-	-	-
Own-use production work of travel services	41.7	-	-	-	-	-	-
Own-use production work of meal services	18.5	-	-	-	-	-	-
Own-use production work of housing services	13.5	-	-	-	-	5.1	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	5.3	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**84.8**	**11.2**	**0.3**	**1.7**	**0.4**	**6.6**	**3.1**
Compensation of employees	-	13.7	0.2	-	0.2	-	0.2
Other taxes on production minus other subsidies on production	-12.1	0.3	0.2	-	0.5	-	4.5
Consumption of fixed capital	-	1.0	0.0	-	0.0	-	0.3
Operating surplus and mixed income, net	140.5	11.4	0.3	7.6	0.5	59.8	3.6
Return to capital	-	11.4	0.3	-	0.5	-	3.6
Imputed compensation for labour input to own-use production work of services	140.5	-	-	7.6	-	59.8	-
Value added, gross	**128.4**	**26.5**	**0.8**	**7.6**	**1.3**	**59.8**	**8.7**
Output	**213.2**	**37.7**	**1.1**	**9.3**	**1.7**	**66.4**	**11.7**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	-	660	50	-	49	-	114
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	16,443	-	-	887	-	6,993	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Own-use production work of pet care services	Activities of households as employers:	Of which: other activities of households as employers of domestic personnel	Own-use production work of gardening services	Own-use production work of meal planning and	Of which: other activities of households as	Rest of the economy
Agriculture, forestry and fishery products	-	-	-	-	-	-	3.3
Ores and minerals; electricity, gas and water	-	-	-	-	-	-	54.3
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4	-	-	-	-	-	-	-
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	-	-		-	-	-	-
of which: Operation of personal transport equipment (COICOP 07.2.)	-	-	-	-	-	-	-
Food products, beverages and tobacco; textiles, apparel and leather products	-	-	-	-	-	-	10.1
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	-	-	-	-	-	-	-
of which: Clothing and footwear (COICOP 03.)	-	-	-	-	-	-	-
of which: Household Textiles (COICOP 05.2.0)	-	-	-	-	-	-	-
Other transportable goods, except metal products, machinery and equipment	2.5	-	-	5.0	-	-	100.9
of which: Glassware, tableware and household utensils (COICOP 05.4)	-	-	-	-	-	-	-
of which: Tools and equipment for house and gardens (COICOP 05.5)	-	-	-	0.1	-	-	-
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	0.0	-	-	0.0	0.0	-	-
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	2.5	-	-	5.0	-	-	-
Metal products, machinery and equipment	-	-	-	-	-	-	9.0
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	-	-	-	-	-	-	-
of which: Transport equipment (COICOP 07.1)	-	-	-	-	-	-	-
Constructions and construction services	-	-	-	-	-	-	67.4
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	-	-	-	-	-	-	-
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	-	-	-	-	-	-	56.7
Financial and related services; real estate services; and rental and leasing services	-	-	-	-	-	-	60.2
of which: Actual Rent paid by tenants (COICOP 4.1.1)	-	-	-	-	-	-	-
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	-	-	-	-	-	-	-
Business and production services	0.0	-	-	0.1	0.0	-	53.9
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	-	-	-	-	-	-	-
Community, social and personal services	-	-	-	-	-	-	157.6
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	-	-	-	-	-	-	-
of which: Other personal effects (SD) (COICOP 12.3.2)	-	-	-	-	-	-	-
Own-use production work of clothing services	-	-	-	-	-	-	-
Own-use production work of travel services	-	-	-	-	32.1	-	-
Own-use production work of meal services	-	-	-	-	-	-	-
Own-use production work of housing services	-	-	-	-	-	-	-
Own-use production work of cleaning services	-	-	-	-	-	-	-
Own-use production work of adult care services	-	-	-	-	-	-	-
Own-use production work of childcare services	-	-	-	-	-	-	-
Own-use production work of repairing services	-	-	-	-	-	-	-
Own-use production work of laundry services	-	-	-	-	-	-	-
Own-use production work of pet care services	-	-	-	-	-	-	-
Own-use production work of gardening services	-	-	-	-	-	-	-
Own-use production work of meal planning and shopping services	-	-	-	-	-	-	-
Total	**2.5**	**-**	**-**	**5.1**	**32.1**	**-**	**573.5**
Compensation of employees	-	4.6	3.8	-	-	0.8	338.0
Other taxes on production minus other subsidies on production	-	-0.0	-0.1	-	-	-0.8	31.9
Consumption of fixed capital	-	-	-	-	-	-	75.7
Operating surplus and mixed income, net	16.9	0.3	0.2	15.2	23.4	-	185.2
Return to capital	-	0.3	0.2	-	-	-	185.2
Imputed compensation for labour input to own-use production work of services	16.9	-	-	15.2	23.4	-	-
Value added, gross	**16.9**	**4.9**	**3.9**	**15.2**	**23.4**	**-**	**630.8**
Output	**19.4**	**4.9**	**3.9**	**20.3**	**55.5**	**-**	**1204.3**
million hours	-	-	-	-	-	-	-
Hours worked in paid employment	-	58	58	-	-	58	18,237
Hours worked on education and training	-	-	-	-	-	-	-
Hours worked in own-use production work of services	1,978	-	-	1,775	2,740	-	-
Leisure time	-	-	-	-	-	-	-
Other activities n.e.c.	-	-	-	-	-	-	-

£billions	Total intermediate uses	Final consumption expenditure by households	Final consumption expenditure by non-profit organisations	Final consumption expenditure by government	Gross capital formation	Total exports	Total final uses at purchasers' prices	Total use at purchasers' prices
Agriculture, forestry and fishery products	**14.0**	14.2	-	-	1.0	2.1	17.3	**31.3**
Ores and minerals; electricity, gas and water	**112.9**	48.4	-	-	-0.6	12.5	60.3	**173.2**
of which: Water supply and miscellaneous services relating to the dwelling (COICOP 04.4.1 to 04.4.	**2.8**	1.8	-	-	-	-	1.8	**7.3**
of which: Electricity, gas and other fuels(COICOP 04.5.1 to 04.5.5)	**6.2**	2.4	-	-	-	-	2.4	**14.5**
of which: Operation of personal transport equipment (COICOP 07.2.)	**18.1**	7.8	-	-	-	-	7.8	**25.9**
Food products, beverages and tobacco; textiles, apparel and leather products	**120.3**	23.8	-	-	0.8	14.7	39.3	**157.3**
of which: Food products for the preparation of home meals (COICOP 01.1.1 to 01.2.1)	**71.4**	-	-	-	-	-	-	**71.4**
of which: Clothing and footwear (COICOP 03.)	**2.2**	0.9	-	-	28.6	26.0	55.6	**57.8**
of which: Household Textiles (COICOP 05.2.0)	**1.5**	-0.1	-	-	-	-	-0.1	**1.5**
Other transportable goods, except metal products, machinery and equipment	**265.0**	125.5	-	11.5	32.3	137.8	307.1	**572.1**
of which: Glassware, tableware and household utensils (COICOP 05.4)	**0.6**	5.2	-	-	-	-	5.2	**5.8**
of which: Tools and equipment for house and gardens (COICOP 05.5)	**0.3**	0.0	-	-	0.2	-	0.2	**0.6**
of which: Goods and services for routine household maintenance COICOP(05.6.1 AND 05.6.2)	**0.7**	2.5	-	-	-	-	2.5	**3.2**
of which: Other recreational items and equipment, gardens and pets (COICOP 09.3.3)	**16.6**	8.5	-	-	-	-	8.5	**25.1**
Metal products, machinery and equipment	**32.7**	8.3	-	-	37.2	20.7	34.3	**45.7**
of which: Household appliances (COICOP 05.3.1 to 05.3.3)	**0.7**	0.2	-	-	1.2	-	1.3	**2.0**
of which: Transport equipment (COICOP 07.1)	**-**	7.9	-	-	21.7	-	29.6	**29.6**
Constructions and construction services	**89.5**	1.3	-	-	102.6	2.1	106.1	**195.5**
of which: Maintenance and repair of the dwelling (COICOP 04.3.1 and 04.3.2)	**1.8**	1.2	-	-	-	-	1.2	**4.8**
Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	**121.1**	124.0	-	2.1	21.7	27.3	175.2	**296.3**
Financial and related services; real estate services; and rental and leasing services	**128.1**	247.8	0.2	-	7.0	52.0	307.0	**428.8**
of which: Actual Rent paid by tenants (COICOP 4.1.1)	**16.9**	7.3	-	-	-	-	7.3	**24.2**
of which: Insurance (COICOP 12.5.2 AND 12.5.4)	**-**	-	-	-	-	-	-	**-**
Business and production services	**85.4**	82.7	-	4.1	55.1	44.5	186.4	**341.7**
of which: Repair of furniture, furnishings and floor coverings (COICOP 05.1.3)	**1.0**	27.3	-	-	0.7	9.6	37.6	**38.6**
Community, social and personal services	**283.6**	90.9	42.3	253.3	31.7	61.4	479.6	**760.5**
of which: Other appliances, articles and products for personal care (ND) (COICOP 12.1.3)	**-**	-	-	-	-	-	-	**-**
of which: Other personal effects (SD) (COICOP 12.3.2)	**-**	-	-	-	-	-	-	**-**
Own-use production work of clothing services	**0.2**	4.2	-	-	-	-	-	**-**
Own-use production work of travel services	**105.9**	214.9	-	-	-	-	-	**-**
Own-use production work of meal services	**33.9**	308.5	-	-	-	-	-	**-**
Own-use production work of housing services	**45.7**	123.6	-	-	-	-	-	**-**
Own-use production work of cleaning services	**-**	129.1	-	-	-	-	-	**-**
Own-use production work of adult care services	**-**	61.6	-	-	-	-	-	**-**
Own-use production work of childcare services	**-**	222.6	-	-	-	-	-	**-**
Own-use production work of repairing services	**-**	8.6	-	-	-	-	-	**-**
Own-use production work of laundry services	**6.0**	60.3	-	-	-	-	-	**-**
Own-use production work of pet care services	**-**	19.4	-	-	-	-	-	**-**
Own-use production work of gardening services	**-**	20.3	-	-	-	-	-	**-**
Own-use production work of meal planning and shopping services	**-**	55.5	-	-	-	-	-	**-**
Total	**1444.3**	**1995.7**	**42.5**	**271.0**	**288.9**	**375.1**	**1712.5**	**3002.4**
Compensation of employees	**674.5**							
Other taxes on production minus other subsidies on production	**39.2**							
Consumption of fixed capital	**166.0**							
Operating surplus and mixed income, net	**1261.8**							
Return to capital	**365.0**							
Imputed compensation for labour input to own-use production work of services	**896.8**							
Value added, gross	**2141.5**							
Output	**3585.8**							
million hours	**Total hours**							
Hours worked in paid employment	**67,716**							
Hours worked on education and training	**14,423**							
Hours worked in own-use production work of services	**104,925**							
Leisure time	**118,203**							
Other activities n.e.c.	**140,379**							

Note: Please note that the sub classification of COICOP-groups is only an approximation, for illustrative purposes. Not the whole COICOP (sub)group may fall within the perimeters of the main heading of the use table.

Chapter 5 Implementation and Measurement Challenges

5.1 Introduction to the chapter

222. Chapter 5 examines issues surrounding the measurement of own-use production work of services and discusses various approaches to collecting to information on the measurement of inputs. This chapter then highlights a range of possible indicators for own-use production work of services, and how they might be useful for policymakers. Finally, the Guide provides recommendations regarding the frequency of production and the level of detail for estimates of own-use production work of services.

5.2 The measurement of inputs

5.2.1 Alternative sources for measuring labour input

223. The guidance within Chapter 3 noted the general preference that a dedicated TUS is used as the source for information on labour input through own use provision of services work. However, the term "time-use survey" does not refer to a single narrow set of methodologies, and applies to many different approaches, some of which are discussed below.

224. It is generally assumed that a household survey will measure the labour input to own use provision of services. There is not yet any widely applicable alternative (e.g., big data, administrative data) which achieves comprehensive, high quality measures of time spent on those activities. Some other options, such as experience sampling and direct observation, do exist but will not be suitable for measurement of own use provision of services so they are not considered further in this report.

225. However, it is worth discussing the alternative methodologies that could be used in household surveys to collect information on the time use and the associated strengths and weaknesses. The primary reason for this is the relative cost and complexity of completing a dedicated TUS of the type outlined in the guides. This cost and complexity largely accounts for the relative rarity of dedicated TUSs both in the developed and developing worlds, albeit the focus on them and their coverage is increasing over time. The availability of alternative, less costly, methods which could produce comparable results to time-use surveys would offer the potential to increase the coverage of information on time spent in own use provision of services. It would be particularly beneficial if these methods could be implemented as add-ons to existing surveys, which would offer a substantial cost saving versus a full stand-alone time-use survey.

5.2.2 Methodological choices in designing a survey to measure time use

226. In broad terms, the main choices which have to be made in designing survey instrument for the measurement of time use are:

- **Approach to data recording:** The options here are a diary versus stylized questions.
    - ***Diary approach***: Diary approaches are most typical used in TUSs but various approaches have been taken. Diaries generally cover the full 24 hour period of a day but can vary from presenting a full timeline with the activities to be recorded against each time period using fixed intervals (ranging from 5 minutes to 60 minutes), or a more stylized approach which asks respondents to record the start and end time of each activity performed. A further variation relates to whether a list of activities is presented to the respondent (referred to as a light diary in the guides) or the respondent can enter activities as open ended text which will be subsequently coded (referred to as a full diary).
    - ***Stylized questions***: This approach involves asking the respondent to report time spent on activities retrospectively using a set of pre-defined activities.
    - ***Recording of secondary/simultaneous activities***: Depending on the measurement objectives of the survey it may be desired to record secondary activities and this is an important consideration in the choice of approach to data recording. For example, light diaries create complications for the recording of secondary activities that tend to be more easily incorporated in full diaries.
- **Data collection mode:** Diary approaches can involve either personal interviews or diaries being left behind and subsequently collected. Stylized questions will generally involve a personal interview (by telephone or face to face). Web collection is an emerging option - not yet extensively used for time use data - offering clear potential both for stylized questions or diary approaches.
- **Reference period:** Generally, diaries will involve recording activities over a one-day period. This can either be based on recall (yesterday diary) or be completed for the day after the interview (tomorrow diary). The reference period for stylized questions will be a retrospective period as defined for the survey in question (generally 1 or 7 days before the interview). Data collection should also take into account the seasonality of own-use production work of services, such as gardening and childcare which are likely to take place during summer months and holiday weeks respectively.

227. The range of different options outlined above create a wide range of possible approaches to capturing information on time spent on own use provision of services. To simplify the task of discussing these alternatives, this chapter will assess three approaches illustrative of the range of options available - from a full time-use survey to stylized questions in a general-purpose household survey. These approaches are:

a) A full time use survey involving a full diary and designed primarily to capture information on time use.
b) A light diary used through a household survey that has not been designed primarily to capture information on time use (e.g., a labour force survey).

c) A household survey on any purpose including stylized questions on time spent on a pre-defined list of activities (e.g., an income and expenditure survey with questions on time spent on household services).

5.2.3 Summary assessment of different approaches

228. Both the UN Guide (2005) and the UNECE Guidelines (2013) discuss the data quality and cost implications of different approaches in differing levels of detail. The main conclusions are summarised in Table 5.1 below:

Table 5.1
Assessment of different approaches to collection information on time use

Approach	Comments on data quality	Comments on respondent burden and cost
Full TUS (best practice approach identified in UNECE Guidelines (2013))	Generally considered to be the best quality. Open-ended recording of activities and times gives the greatest flexibility in analysis. The full diary also makes recording of secondary activities easier versus a light time diary. The additional contextual information collected in the personal interview allows for an in- depth analysis of time use and its impact on the household. Where the particular interest is understanding use of time, an additional benefit is that a range of supplementary questions to support analysis can be added through personal interviews administered additionally to the diary. A concern can arise for respondents with low literacy, as they are required to write out all their activities accurately enough to allow subsequent coding of those activities.	Respondent burden is high in this approach as the full survey is dedicated to detailed measurement of time use and the respondent must record all activities. Cost is also high as a dedicated survey is used and will generally not meet other measurement objectives without creating even higher burden on the respondent and risking data quality. Even after data collection, the processing of data is resource intensive due to the open-ended information on activities that must be coded to allow for analysis.

Approach	Comments on data quality	Comments on respondent burden and cost
Light time diary with a household survey	Considered to give good quality information but limited to a pre-defined set of activities. The UN Guide (2005) suggests that an upper limit of 30 activities should be covered and these activities could be limited to those of interest for a specific purpose. However, evidence suggests that a bias may arise if the list of activities does not comprehensively cover each 24 hour period so this needs to be borne in mind in designing the list of activities. The quality of data will be dependent on how well the respondents are able to relate their activities to the list presented, so careful testing of the activity list will be needed. A benefit of a light time diary could be the use of the same set of activities across countries thereby aiding the comparability of the statistics produced without requiring a major coding effort. A standard classification (ICATUS 2016)	Respondent burden is lower than a full TUS that attempts to cover all activities over a 24-hour period. When considered globally, although attaching a light time use diary to a household survey designed for another purpose does increase overall respondent burden, the burden is lower than two separate dedicated surveys, although this Guide does recognise that there will be some increase in responder burden. This approach can also be easier for respondents with low levels of literacy. Cost is also lower as the diary is attached to a survey being performed for another purpose. Depending on the approach chosen, cost could still be relatively high if repeat visits are required to collect diaries. Processing of the data is substantially less resource intensive than a full diary given that the activities are pre-coded.
Stylized questions in a household survey	Both the UN Guide (2005) and the UNECE Guidelines (2013) outline the quality concerns surrounding the use of stylized questions quoting evidence from different studies. A number of studies note an overestimation of time spent in gainful and domestic work when stylized questions are used. This is of clear concern to any efforts to value own use provision of services. The relative lack of detail collected will also limit the analytical value of the data. However, if the main measurement objective is to obtain information on total time spent on different pre-defined activities then stylized questions could prove sufficient for this purpose if other quality concerns could be addressed.	Respondent burden is the lowest of the different approaches as the information is collected during a personal interview through a relatively short set of questions that only ask for total amount of time spent over a given period. Cost is the lowest of the different options, as separate diaries do not need to be printed and no repeat visits will be required. Depending on the approach taken to the light diary approach the cost difference may be very large or relatively small. The amount of data to be processed will also generally be the least of the different approaches.

229. While a dedicated time-use survey incorporating a full diary is desirable to give the highest quality results, a light time diary attached to a household survey is a promising alternative. However, as is always the case, care is needed in the design of the instrument and the mode of application. Specific recommendations for light time diary approaches are:

- The number of pre-coded activities should be sufficient to respond to data needs, but should also cover all activities to avoid the effects of social desirability.
- The recording of at least one parallel activity with respondents indicating which activity they regard as the primary one.
- Assistance from interviewers is needed to assure data quality

230. As mentioned in Chapter 3, a number of international agencies are interested in developing and testing alternative time use collection approaches to develop further evidence on their relative strengths and weaknesses. The Task Force encourages such work as it can provide a basis for reviewing and updating existing guidance, particularly with reference to the comparability of different approaches and how they may be used to supplement each other over time.

231. Such evidence as is available suggests that stylized questions cannot be recommended as an approach to generate high quality estimates of time spent on own use provision of services. In addition to carefully selecting and designing the data collection instrument, a wide range of other methodological choices (such as collection mode, weighting methodology etc.) will need to be carefully considered. The UN Guide (2005) and the UNECE Guidelines (2013) provide further detail on these issues.

5.2.4 Classification of activities to be measured

232. In the case of a full diary, the issue of the range of measured activities does not arise. However, the coding of activities still needs to allow analysis of the data, assignment to a classification and subsequent estimation of values by application of an appropriate price or cost estimate. A light time diary and stylized questions will both involve the pre-coding of activities. Therefore, despite the different approaches a clear classification of activities is required regardless of the data collection approach chosen. Furthermore, application of a common classification will be critical to comparability of data across countries.

233. The International Classification of Activities for Time Use Statistics (ICATUS) – endorsed by the United Nations Statistical Commission in March 2017 - is a common classification for the main international reference. Another classification available is the Harmonized European Time Use Survey (HETUS) prepared by Eurostat.[14] The UNECE Guidelines (2013) include recommendations for a broad activity classification of time use based on assessments of ICATUS and HETUS, and on policy needs. Plans are developed to update HETUS with reference to ICATUS for future rounds of time use surveys in Europe.

234. One clear benefit of ICATUS 2016 is that it has been developed with reference to the forms of work framework agreed at the 19th ICLS, creating a clear correspondence between the different forms of work and ICATUS.

235. At the top level, ICATUS includes nine activity domains as outlined in Table 5.2.

[14] Eurostat. 2009. Harmonized European time use surveys: 2008 Guidelines. Luxembourg.

Table 5.2
ICATUS 2016 classification – top level

1 – Employment and related activities
2 – Production of goods for own final use
3 – Unpaid domestic services for household and family members (own-use production work of services)
4 – Unpaid care giving services for household and family members (own-use production work of care services)
5 – Unpaid volunteer, trainee and other unpaid work
6 – Learning
7 – Socializing and communication, community participation and religious practice
8 – Culture, leisure, mass media and sports practices
9 – Self-care and maintenance

236. There is a clear link between the forms of work framework and the first five categories at the top level of ICATUS 2016. Own use provision of services is split between category three and category four while volunteer work is part of category five.

237. At the next level of ICATUS the delineation of the forms of work becomes clear with volunteer work being covered by two categories (51 – unpaid direct volunteering for other households and 52 – unpaid community – and organization-based volunteering). As such anyone applying ICATUS 2016 down to at least the second digit level will be able to separately identify own use provision and services and volunteer work from other activities.

238. This Guide recommends to use ICATUS 2016 as the primary classification for collection and reporting of time use data.

Annex 5.1: Comparison of existing and recommended international activity classifications for measuring time use (mapped to ICATUS 2016)

ICATUS 2016	HETUS	UNECE
MD1 – Employment and related activities	1 – Employment 1/ 910 – Travel to/from work	Employment Travel
MD2 – Production of goods for own final use	62 – Productive exercise 311– Food preparation, baking and preserving (also includes activities under ICATUS, MD3) 333 – Handicraft and producing textiles 341 – Gardening (also includes activities under ICATUS, MD3) 342 – Tending domestic animals 351 – House construction and renovation 353 - Making, repairing and maintaining equipment	
MD3 – Unpaid domestic services for household and family members (own-use production work of services)	312 – Dish washing 32 – Household upkeep 331 – Landry 332 – Ironing 339 – Other or unspecified making of and care for textiles 342 – Tending domestic animals 343 – Caring for pets 344 – Walking the dog 349 – Other or unspecified gardening and pet care 352 – Repairs to dwelling 353 – Making, repairing and maintaining equipment 354 – Vehicle maintenance 359 – Other or unspecified construction and repairs	Housework Meal preparation Travel

	361– Shopping 362 – Commercial and administrative services 369 – Other or unspecified shopping and services 37 – Household Management	
MD4 – Unpaid care giving services for household and family members (own-use production work of care services)	38 – Childcare 39 – Help to an adult family member 423 – Care of own children living in another household 424 – Other childcare as help to another household 425 – Help to an adult of another household 429 – Other or unspecified informal help to another household 938 – Travel related to childcare	Childcare Caring for adults and people with disability Travel
MD5 – Unpaid volunteer, trainee and other unpaid work	41 – Organisational work 421 – Construction and repairs as help 422 – Help in employment and farming 424 – Other childcare as help to another household 425 – Help to an adult of another household 429 – Other or unspecified informal help to another household 939 – Travel related to other household care 940 – Travel related to voluntary work and meetings	Volunteering - organization based (may be formal or informal organizations) Direct volunteering - for other households or other people generally Travel
MD6 – Learning	2 – Study 920 – Travel related to study	Education Travel
MD7 – Socializing and communication, community participation and religious practice	432 – Religious activities 439 – Other or unspecified participatory activities 51 – Social life	Culture and leisure participation Travel

	713 – Correspondence 723 – Communication by computing 950 – Travel related to social life	
MD8 – Culture, leisure, mass media and sports practices	52 – Entertainment and culture 53 – Resting-Time out 61 – Physical exercise 63 – Sports related activities 711 – Arts (visual, performing, literary) 712 – Collecting 719 – Other or unspecified hobbies 722 – Information by computing 729 – Other or unspecified computing 73 – Games 8 – Mass media 960 – Travel related to other leisure 998 – Unspecified leisure time	Culture and leisure participation Crafts and hobbies Sports participation Reading Travel
MD9 – Self-care and maintenance	0 – Personal Care 121 – Lunch break 363 – Personal services	Sleeping Personal care Travel

MD = Major Division

Notes: 1/ HETUS, under employment, has category *121 Lunch break*. Breaks during employment in ICATUS 2016 are restricted to hours actually worked within the production boundary. Longer meal breaks such as lunch are beyond the production boundary, and therefore, considered under *921 Eating meals/snack* and *922 Drinking other than with meal or snack* (ICATUS 2016 (page 131): https://unstats.un.org/unsd/statcom/48th-session/documents/BG-3h-ICATUS-2016-13-February-2017-E.pdf).

Chapter 6 Reporting

6.1 Indicators of own-use production work of services for policy setting

239. Understanding processes and dynamics within own-use production work of services is crucial for policymakers. This is due to their responsibility to formulate effective social policies that act as adequate incentives to the population. Therefore, it is indispensable to provide them with meaningful indicators that optimally reflect reality. This section presents a summary of such indicators. By and large, indicators are grouped into general indicators - indicators that can be applied to any household function - and specific - ones that apply to particular functions only. This analysis was established based on six country replies to the "UNECE Questionnaire on Unpaid Household Service Work"[15]: Australia, Canada, Finland, New Zealand, United Kingdom and United States. Indicators published by OECD were also considered.

6.1.1 General indicators

240. As mentioned above, general indicators are applicable to own-use production work of services in general as well as to any of its specific functions. Among these are housing, nutrition, clothing, adult and childcare and transport. Overall, general indicators fall into five broad categories: hours, value, inputs, consumption and taxes. The analysis will consider these individually in order to identify reliable key indicators.

6.1.1.1 Output

6.1.1.1.1 Hours

241. To date, various country publications have used the hours spent on own-use production work of services activities as indicators (e.g., United Kingdom, Canada, and New Zealand) and OECD. Table 6.1 summarises the most frequently used indicators.

Table 6.1
Indicators for measuring physical volume of own-use production work of services

Indicator	Source
Total hours devoted to own-use production work of services activities per year/month/week/day	Australia, Canada, New Zealand, Switzerland, United Kingdom, United States
Average hours per year/month/week/day per person	Canada, Switzerland, United Kingdom, United States, OECD

[15] The publications suggested by Colombia, Hungary, Japan, Mexico and Norway within the "UNECE Questionnaire on Unpaid Household Service Work" could not be included as they were only available in the respective national language.

Indicator	Source
(Average) hours devoted to own-use production work of services activities/(average) hours spent on formal working activities	Australia, Canada, OECD
(Average) hours devoted to specific areas or total own-use production work of services activities	Australia, Canada, OECD
Ratio of output produced by household compared to market. E.g., ratio of informal to formal childcare hours.	United Kingdom

242. On the one hand, these indicators can be used with respect to own-use production work of services in general. For example, Australia reported in 2006 that the total unpaid own-use production work of services amounted to 25.23 hours per week on average. On the other hand, the application to specific household functions is also possible, such as the United Kingdom stating that people provided 8.1 billion hours of adult care in 2014. These numbers are particularly useful for policymakers as they give them an overview of how the population distributes its time. This, in turn, allows them to uncover adverse patterns and shape appropriate policies in return.

6.1.1.1.2 Value

243. Another category of indicators is the value of own-use production work of services. Those indicators are summarised in Table 6.2 below.

Table 6.2
Indicators for measuring the value of own-use production work of services

Indicator	Source
Total value of own-use production work of services (as percentage of GDP)	Australia, Canada, Finland, United Kingdom, United States, OECD
Value of own-use production work of services per person (as percentage of GDP per capita)	Canada
GDP (per capita) with/without own-use production work of services (per person)	Finland, OECD, United Kingdom
Average annual growth in GDP (per capita) including own-use production work of services	OECD, United Kingdom

244. These indicators are universally acknowledged. In its working paper "Incorporating Estimated of Household Production of Non-Market Services", the OECD highlights that as of 2011 the value of own-use production work of services as a percentage of GDP was approximately 50% in Finland and 40% in Canada according to the opportunity cost

approach (OECD, 2011b). Again, these indicators have also been utilized in narrower contexts: In particular, the United Kingdom household laundry service GVA (output minus intermediate consumption) in 2014 was equal to £82.8 billion, i.e. 4.6% of GDP. Furthermore, the OECD states that annual GDP growth including own-use production work of services (in terms of 2008 prices) in the United States between 1975 and 2008 was 2.7% when considering the replacement cost approach in comparison to a growth of 3.1% when considering official GDP statistics. Similarly, the United Kingdom Household Satellite Account (2016) highlights that including own-use production work of services within GDP increases its average annual growth 0.3 percentage points between 2005 and 2014, from 3.5% to 3.8%.

6.1.1.2 Inputs

245. The inputs into own-use production work of services can also derive meaningful indicators. In this regard, the labour invested is pivotal.

6.1.1.2.1 Labour

246. The labour devoted to own-use production work of services does not receive real-market compensation. Still, indicators taking into account the foregone wage bill are meaningful (Table 6.3).

Table 6.3
Indicators for measuring labour devoted to own-use production work of services

Indicator	Source
Value of labour costs in own-use production work of services (by opportunity or replacement cost approach) (as percentage of GDP/total wage bill)	Finland, Switzerland, OECD
Average wage rate of persons engaged own-use production work of services activities e.g., $/hr (as a percentage of the wages of all employed workers/workers of a specific sector)	Australia, Canada, Finland, Switzerland, United States
Difference between the average hourly wages of all workers and of persons engaged in own-use production work of services activities	United States

247. For example, the United States estimated that the average wages of household workers engaged in own-use production work of services as a percentage of the wages of all employed workers has declined gradually over time and was slightly below 30% as of 2009. This amounts to a difference of approximately $20 per hour in absolute terms. Australia provides detailed statistics with respect to this indicator as well, utilizing the replacement cost approach (Table 6.4).

Table 6.4
Average weekly hours and wage rate by household function, 2006

	Average weekly hours (hr)	Wage rate ($/hr)
Food and drink preparation and clean up	5.64	17.92
Laundry, ironing and clothes care	2.03	15.33
Other housework	2.89	17.56
Gardening, lawn care and pool care	1.63	17.62
Pet care	0.58	21.93
Home maintenance	1.02	20.75
Household management	1.05	21.07
Associated communication	0.13	23.54
Associated travel	3.38	18.23
Child care	4.13	18.73
Purchasing of goods and services	2.74	20.51
Total unpaid household work	**25.23**	**18.47**
Adult care	0.18	17.97
Volunteer work	2.07	19.77
Associated communication	1.02	23.22
Associated travel	0.34	18.23
Total unpaid volunteer and community work	**2.61**	**19.47**
Total unpaid work	**27.84**	**18.57**

Source: Australian Bureau of Statistics (ABS) Time Use Survey (TUS), 2006 and Survey of Employee Earnings and Hours (EEH), 2006

6.1.1.2.2 Consumption

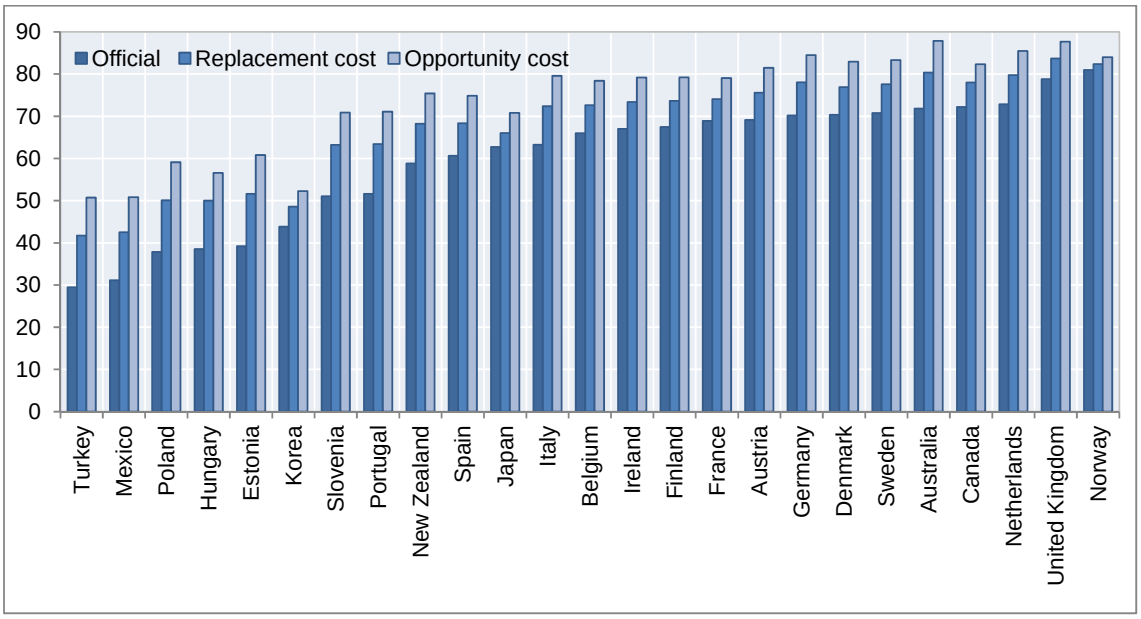
248. In addition to the production side of own-use production work of services, its consumption side may also be considered. The following indicators are available:

Table 6.5
Indicators for measuring household consumption of own-use production work of services

Indicator	Source
Household consumption of own-use production of services work (as percentage of GDP)	OECD
Household consumption of own-use production of services work relative to the consumption of market goods and services	Finland

249. As becomes evident from the indicated sources, very few reports have referred to this type of indicator. OECD (2011b) presents the total consumption of own-use production of services work in various countries in 2008 (Figure 6.1).

Figure 6.1
Total household consumption of own-use production of services work, 2008
(Purchasing power parities, United States = 100)



Source: OECD (2011b).

250. As indicated above, one may also consider the consumption ratio of own-use production of services work to market services. For instance, Finland reports that households produce and consume €32 billion of own-use production work of meal services. This is 57% of overall meal production, reflecting more produced within the home as opposed to having meals outside the house.

6.1.1.2.3 Taxes

251. Another approach to investigate the size and nature of own-use production work of services is to consider the taxes involved. Finland, for instance, suggested this strategy in its 2001 report. More specifically, the following indicators could be developed (see Table 6.6).

Table 6.6
Tax based indicators for measuring own-use production work of services

Indicator
Foregone labour taxes (as percentage of total tax base)
Foregone profit taxes (as percentage of total tax base)
VAT on intermediate goods used for own-use production work of services

252. Persons engaging in own-use production work of services are not paid. However, for policymakers, it is valuable to get an impression of the scale of the foregone labour tax base. Similar reasoning can be applied to companies and their respective profit taxes to be deducted if hired for providing real-market services.

253. In addition, individuals pay VAT on intermediate goods that they subsequently used for own-use production work of services activities. These purchases add to the government's budget, however, since the persons engaging in own-use production work of services are final consumers they do not reimburse VAT, which can lead to a higher value in calculating their services.

6.1.2 Specific indicators

254. As already mentioned, in addition to general indicators of own-use production work of services, there is a range of indicators that are specific to the household function. This section intends to give an overview of these (see Table 6.6).

Table 6.7
Specific indicators of own-use production work of services

Own-use production work of service activity	Indicator	Comment
Housing	Tax on property	
	Interest on mortgage and amortization	
Nutrition	Number of visits to the supermarket	The number of visits to supermarkets conveys an impression on the time spent on own-use production work of services.
Adult Care	Time spent in/value of informal adult care service relative to formal services	Used to assess government policy on adult caring.
	Number of adults who do not live in formal care arrangements	These two indicators are indicative for how many elderly persons still live in their home and are hence more dependent on support from their family. National panel surveys could provide this information.
	Number of older generation friendly apartments	
	Tax-efficient expenses for informal adult care	
Childcare	Time spent in/value of informal child care service relative to formal services	Used to assess government policies on child care, and initiatives aimed at increasing participation rates of mothers
	Percentage of parents with parental leave or flexible work arrangements	National panel surveys could provide this information. For example, the German national panel (SOEP) asks the following question: "Was your career interrupted by the birth of one or more children, e.g., maternity leave or parental leave?"

Own-use production work of service activity	Indicator	Comment
Transport	Total trip miles per year/month/week/day (per person) exercising own-production work of services	
	Amount of money spent on insurance/taxes for vehicles	

6.2 Periodicity

255. There are two main factors that should determine the frequency of production of measures of own-use production work of services. These are their usefulness to policymakers, and the availability of data. Regarding the former, if measures of own-use production work of services are deeply rooted in policy decisions in a country, then it is clearly advantageous to produce estimates on a regular – annual or biennial - basis. This will enable improved assessment of policy initiatives, and more timely analysis of well-being.

256. It is also possible that some aspects of own-use production work of services are more useful than others. In this case, it might more suitable for countries to produce different aspects of own-use production work of services at different frequencies. For instance, countries might measure of the value of informal childcare annually and the value of laundry services every 5 years. This approach is less suitable for countries that use a single source, such as a TUS - it makes more sense to measure all own-use production work of services at the same time. However, for those that adopt the output approach, such as the United Kingdom, there is more scope to choose when to produce measures of different activities of own-use production work of services.

257. The availability of data will largely dictate the ability to measure own-use production work of services. Countries that adopt an input methodology will rely on time-use surveys that can be expensive to implement. The standard approach seems to be conducting a time-use survey every 5-10 years with estimates of the value of own-use production work of services following a similar cycle. This is not frequent enough to accurately reflect societal changes, and countries should aim to measure own-use production work of services every 2-3 years. Countries are encouraged to explore options, already outlined in this chapter to overcome the constraints imposed by relying on expensive, and infrequent full-scale time-use survey. An alternative approach, for those countries reliant on TUSs every 10 years or so, is to explore alternative sources of information to benchmark against. For instance, while the United Kingdom largely favours an output approach, it measures the value of home maintenance and upkeep using an input approach. Hours spent cleaning, for instance, are collected annually using stylised questions on household surveys. These estimates are then modelled using information from the most recent TUS conducted in 2000.

258. Finally, measures of own-use production work of services are more useful when they are internationally comparable. The recommendations of this Guide act to improve the

international consistency of estimates of own-use production work of services. To aid comparability it is recommended that countries harmonise reference periods. While countries should aim to release periodically as described above, they should also aim to publish in years ending in 5 and 0. This enables a much richer degree of analysis of own-use production work of services.

6.3 How should measures of own-use production work of services be broken down?

259. Headline measures of own-use production work of services, described in detail in 5.3, are important to aid policy development and assess well-being. However, the degree to which headline measures are disaggregated is equally as important. For instance, measures of own-use production work of services are closely linked to issues relating to gender inequality, emphasising the need to disaggregate by gender. Furthermore, countries should aim to present own-use production work of services by age, and household composition. This should apply to both the hours of input, or units of output, and the value of production. This task is more easily undertaken using the input approach to measuring own-use production work of services. The units of input are usually measured via a survey that will typically include a wide-range of variables relating to the individual and the household. It is not so straightforward with the output approach that is usually measured from the top-down. Typically, output based measures provide more information on the consumer than the provider of the service. For instance, in an output approach to measuring own-use production work of childcare services, it is relatively straightforward to analyse by the age of the children being cared for, but less is known about who is providing the care. This is one of the drawbacks of the output approach, described in more detail in Chapter 3.

260. Beyond the indicators mentioned above, countries are encouraged to provide further breakdowns to enable a richer level of analysis. This includes measuring own-use production work of services by ethnicity, income distribution, education level, region, and age of children.

Chapter 7 Case Studies

261. This section provides case studies from Australia, Canada, Finland, Italy, Mexico, Republic of Moldova, Switzerland, United Kingdom and United States. It contains a description of the coverage, methods and results. Future international comparisons require a common definition, comparable measurement and valuation methods and the same reference year.

7.1 Measuring and valuing unpaid household service work – Canada's experience

7.1.1 Measuring own-use production work of services using a time-use survey

262. Information on the time spent on unpaid household service work in Canada comes from Statistics Canada's General Social Survey (GSS), an annual household survey with a different theme each year and repeated content every fifth year. So far, five time-use surveys have been conducted via the GSS program and a survey is currently in the field for 2015, with results expected in autumn 2017.

263. The GSS covers all persons aged 15 years and over living in private households in Canada, excluding residents of the Yukon and the Territories and full-time residents of institutions. Imputations were made to extend coverage (imputed time use data for the Territories). Until 1998, the stratified sample size for each Time-Use Survey (TUS) was approximately 10,000 respondents, one from each sampled household selected through a random digit dialling technique.

264. Since 1992, the TUS has been conducted though the entire year to capture seasonal variation in the use of time. Respondents' time use is collected by way of a retrospective 24-hour diary for one pre-designated day of the week. The interview takes place no more than 48 hours following the designated day and the sample is distributed across days of the week to ensure an equal representation of weekdays and weekends. Only primary activity was taken in account because it was unclear how to approach secondary activity. Each respondent is requested to report each activity as it occurred in chronological order, including a description of the activity, when it started and ended, where it took place, with whom and in certain instances for whom. Unpaid household service work includes domestic chores (including repairs and maintenance), help and care of children and adults of the household, shopping, household management, transportation and travel related to household work, and other unpaid work (volunteer work and related travel for other households and non-profit organizations).

265. In the 1998 edition of the TUS, interviewers coded activities as they were reported with the help of computer-generated menus showing the most commonly occurring activities. For the 2005 TUS, a 'where were you' component of the diary was added, the sample size was increased to 15,390 and it was administered via computer assisted telephone interviewing.

266. An in-depth redesign of the GSS program started in 2010 as a result of 'the increase in cell-phone-only households, the resistance to answer an increasing number of surveys, and

rising costs for data collection'. Information was, for the first time, collected on simultaneous activities. Respondents were asked to include all activities, regardless of duration, and to report how long did each activity last. The ongoing 2015 GSS is using a new telephone sampling frame and it has fielded its first multi-mode (internet and telephone) collection.[16]

267. Several updates and extensions have been carried out since the early study in this area, when TUS data become available. Estimates on unpaid household service work are made for 1981, 1986, 1992 and 1998 with improved source data and refined definitions and methods introduced at each stage. All studies carried out on valuation of unpaid household service work covered only primary activity and focused on labour inputs.

268. In the early nineties, Thoen (1993) from Statistics Canada developed preliminary estimates for the value of own-use production work of services in Canada for 1981 and 1986, using an input approach. This exploratory study attempted to build an extended Input Output model (Supply-Use tables) which includes own-use production work of services. In addition to labour inputs, the services of consumer durables in the own-use production work of services process, depreciation, indirect taxes and intermediate consumption were taken into account. Statistics Canada took data on time-use and national accounts data as a starting point. About 600 commodities were reviewed and allocated to activities. Furthermore, calculations on the services of consumer durables were integrated in the input output tables. In the allocation process, goods like electricity that are used in several own-use production work of services activities were allocated mainly with the information on the time spent for the activities concerned. In most cases, time seems to be the best approximation for the allocation process. General overhead costs of the household were identified separately, but subsequently allocated to activities'.[17]

269. In the mid-nineties, previous estimates of the value of unpaid household service work were revised and a sensitivity analysis of the estimates to various assumptions was carried out (Jackson and Chandler, 1995). The estimates were put on a comparable footing to analyse longer-term trends in unpaid household service work. Findings shed light on the considerable variation in the estimates of unpaid household service work depending of the valuation method, on differences in unpaid productive tasks undertaken by men and women, highlighting the significant role of women in the own-use production work of services and the continuing evolution of these differences over time.

270. Prior to 1992, Statistics Canada's estimates on the value of unpaid household service work were compiled based on population counts, time use averages for specific demographic groups, and imputed hourly cost for each activity by persons in each group (22 activities and 52 groups). The average time spent on primary unpaid household service work activities were broken down by group and activity. The population were subdivided into groups defined by province of residence, sex, family status, labour force status, number of children and age of the youngest child, if any. The average time on unpaid household service work was multiplied by 365 /60 to convert minutes per day to hours per year. This average time was then multiplied by population count (by group and activity) to obtain aggregate annual hours. The formula for the value of unpaid household service work involved estimating a value of each activity for specific demographic groups and aggregating these values.

[16] The frame contains also various administrative sources provided to Statistics Canada (see online documentation on the GSS time use survey).
[17] International Conference on the Measurement and Valuation of Unpaid Work: Proceedings. Statistics Canada. http://publications.gc.ca/collections/collection_2016/statcan/CS89-532-1994-eng.pdf.

271. Estimates of the value of unpaid household service work for 1998, along with a reworking of previously published estimates for 1992, were prepared directly using individual-level information from the TUS so that they can be compared and analysed along far more dimensions. The formula used in previous analyses still applies but in this case, the summation is across all survey respondents and the number of persons in each population group is replaced with the weight of each respondent in the survey. The average annual hours spent on each unpaid household service work activity by persons in each population group is replaced with the annualized time reported by type of unpaid household service work by each respondent. The imputed hourly cost for each activity by population group is replaced with a cost imputed to each respondent.

7.1.2 Comparing valuations based on the opportunity cost and replacement costs approach

272. Statistics Canada focused on the measurement and the valuation of labour inputs to own-use production work of services using two variants of both opportunity cost and replacement cost for valuing unpaid household service work. Depending on the method of valuation of unpaid household service work, this resulted in widely differing estimates. The use of different sources of data would have probably had an additional impact on results.

7.1.2.1 Methodology used for the opportunity cost valuation

273. For both opportunity and replacement approaches, the hourly wages used to estimate the value of unpaid household service work were derived from Statistics Canada's census of population using annual employment earnings, weeks worked and weekly hours of persons employed in Canada. The annual hours of paid work were computed as weeks worked multiplied by hours worked the week before the census.

274. In order to calculate opportunity cost estimates, custom tabulations drawn from the census were required. The required tabulations contained data on employment income of the population 15 years and over, who have employment income not equal to zero, number of weeks worked greater than zero and who were employed in the reference week. The tabulations showed counts, total employment income and total annual hours of work, by age group and sex, total annual hours of work and number of persons, by selected occupations, by sex, in Canada and in the provinces and territories. Opportunity costs for valuing unpaid household service work were derived from average annual employment income, weeks worked, and weekly hours, by province and sex.

275. Average hourly earnings were based on the annual employment income of persons who were employed at the time of the Census and had worked the previous year. This includes all employees and self-employed in all industries in all occupation working full-and part-time and full- and part-year (Jackson and Chandler, 1995). Since the census reports income for the previous year, hourly earnings were indexed for inflation to correspond with the reference year for the TUS. The index used is the fixed-weighted average index of hourly earnings by province and territory calculated from the Survey of Employment, Payrolls and Hours.

Before-tax variant of the opportunity cost

276. In this variant of the opportunity cost, employer's contributions for Employment Insurance and Canada / Quebec Pension Plan were added to average hourly earnings.

After-tax variant of the opportunity cost

277. In Canada, the opportunity costs after taxes are net of the marginal income tax. The average hourly earnings are reduced by an amount equivalent to the combined federal and provincial marginal tax applicable at various levels of taxable income for a single taxpayer with no dependants obtained from the National Finances (Jackson and Chandler, 1995, p.45).

7.1.2.2 Methodology used for the market replacement cost approach

278. For the purpose of calculating replacement cost estimates, census tabulations were required with data on annual employment income of population 15 years and over with employment income greater than 0, who are classified as full-year full-time (40 weeks, 40 hours a week) and employed in the reference week, showing total employment income, total annual hours of work and number of persons, by selected occupations, by sex for Canada, provinces and territories. Replacements costs were then derived from average annual employment income, weeks worked, and weekly hours, by province and activity. A single replacement cost is calculated for women and men.

Specialist variant of the replacement cost approach

279. With the specialist variant, the replacement costs of unpaid household service work activities are imputed based on hourly earnings of people employed in matched occupations even though the working conditions and productivity of the replacement worker vary significantly from those of the provider of unpaid household service work.

Generalist variant of the replacement cost approach

280. With the replacement cost generalist approach, all unpaid housework service work done in Canada for members of the household or for other households (except childcare) and community work is valued at the wage rate of personal services occupations. Childcare is valued at childcare occupations wage rate (at the cost of physical care of children). Other unpaid household service work activities (volunteer work for non-profit organizations) are valued at the wage rate for occupations in welfare and community services.

281. For both variants of the replacement cost method (specialist and generalist), hourly earnings in personal services and childcare occupations were adjusted upward by 15% to account for board and lodging.

282. While Statistics Canada compiles estimates based on four methods of valuation, each based on the notion of replacement cost and opportunity cost, the generalist variant of replacement cost is the preferred method.

283. Table 7.1 compares results from all four methodologies. It shows that the value of own-use production work of services is highest when applying the opportunity cost before tax methodology. However, once taxes are accounted for, the opportunity cost approach has the lowest valuation. The value of own-use production work of services is lower when valued using the replacement cost generalist approach compared with the specialist approach. This reflects the fact that wage rates of specialists tend to be higher than the generalist wage rates.

7.1.2.3 Comparing results

Table 7.1
Value of own-use production work of services using different methods

Method	Value (billions of 1992 CAN$)
Opportunity cost before tax	374.1
Opportunity cost after tax	221.1
Replacement cost – specialist	296.6
Replacement cost – generalist	234.5

Source: Statistics Canada, 1995

7.2 Measuring and valuing unpaid household service work – Australia's experience

284. In May 2014, Australia prepared a paper on Unpaid Work and the Australian Economy, looking at the overall value and growth of unpaid household service work conducted by households in Australia, including comparisons with other countries. The paper explores the contribution of individual activities to the total value of unpaid household service work, and the impact the inclusion of each activity into the production boundary would have upon GDP.

7.2.1 Measuring own-use production work of services using the replacement hybrid approach

285. The 2006 TUS was the principal statistical base for deriving the estimates of the value of unpaid household service work. These were compiled using the individual function market replacement cost method, using male and female wage rates. A gross wages concept was used based on weekly ordinary time earnings, which is inclusive of cash wages and salaries, and related income tax. It does not include social security contributions (i.e. superannuation and worker compensation), as such data are not available in Australia by occupation on a per-hour per-employee basis. Hourly wage rates were obtained by dividing weekly ordinary-time earnings by ordinary-time hours paid for. Only TUS activities classified as being primary activities were included in the study.

286. To estimate the value of unpaid household service work, Australia preferred a hybrid of the generalist and specialist replacement cost approach. The generalist replacement cost approach values the time spent on own-use production work of services by household members according to the cost of hiring a housekeeper to undertake the tasks. The key assumption underlying this approach is that household members and housekeepers are equally productive in performing household work, which may or may not be true. For example, a housekeeper is likely to be more productive at cleaning than a household member who may also be looking after small children at the same time. Alternatively, a housekeeper may clean more quickly but less thoroughly than the household member. Use of this

approach also assumes that there is a well-established labour market for persons who undertake all household tasks, which was not the case in Australia at the time.

287. The replacement cost hybrid method is an attempt to refine the approach, whereby activities normally carried out by a housekeeper are valued using a housekeeper's wage rate, and those activities not within a housekeeper's job description are valued according to the specialist replacement approach. This is an attempt to better represent the actual outside employment a household would get in to complete activities categorised as household work in this study. It would appear to be appropriate for the Australian situation given that Australians typically hire housekeepers to clean house interiors, manage laundry and occasionally prepare meals, while they hire specialists to carry out childcare, household maintenance, and gardening tasks.

288. Only a selection of occupational wage rates were used, based on the following rules:

- The occupations chosen were those that would be directly affected by an increase in demand when a particular type of own use production work of service activity was transferred to the market.
- Of the occupations selected, only those deemed most similar to the type own use production work of service activity under consideration were selected.

289. These rules were considered appropriate as it can be argued, for example, that if people start eating out more, demand for cooks and kitchen hands, whose work are most similar to the own-use production work of nutrition services, would increase. If the selection process resulted in a group of occupations being matched to an unpaid work category, a weighted average of the earnings for each occupation in the group was taken, based on weights derived from the TUS activity data. This was possible because the two-day diary of the current time-use survey provides data at a detailed activity level, to which appropriate occupation codes could be allocated.

7.2.2 Results

290. Both market replacement cost and opportunity cost figures were prepared. The latter allow for international comparison, and to illustrate the impact the choice of valuation method has upon the results. The results of the opportunity cost methods were consistently higher than the estimates produced using the market replacement valuation methods.

291. The paper notes that the value of unpaid household service work depends on the scope of the activities included, and the distinctions between paid work, unpaid household service work and leisure are still subject to worldwide debate and refinement. Defining certain activities as productive can be contentious, especially when activities may contain elements of both work and leisure. For example, a person outside the household unit can be employed to perform volunteer care for a sick, frail, disabled adult or child - which qualifies as unpaid household service work under the third party criterion. In comparison, activities such as a grandparent spending time with their grandchild, or organising and attending rehearsals for a school play, contain strong leisure components. In practice, people generally do not hire someone else to undertake such activities on their behalf, therefore failing the third person criterion. The treatment of activities that may border on leisure substantially impacts the estimates produced. Some would argue that such caring activities should not be classified as work or leisure but something else - they are activities that satisfy biological and cultural codes of behaviour to ensure desirable outcomes for the whole of society. Despite these reservations, the paper included caring in the scope of unpaid household service work.

292. Defining paid work had its complexities also - for example, travel to and from work was excluded from unpaid household service work in the Australian study because it was deemed not possible to hire someone to travel to work on one's behalf and it is clearly associated with paid employment rather than unpaid household service work.

293. The results of the 2014 study show that if the production boundary was extended to include only own-use production work of services, it would have greater impact upon the value of GDP than if volunteer and community work was included.

294. Despite food and drink preparation and clean up having one of the lowest activity wage rates, it was the largest contributor to the total value of own-use production work of services due to the fact the largest portion of time was dedicated to this activity weekly. Communication associated with volunteer and community work contributed the least in terms of value and time to total unpaid household service work despite having one of the highest wage rates.

295. International comparisons in the paper show that the value of unpaid household service work conducted in Australia relative to GDP ranks second highest overall, using either of the valuation methods. In 2006, the value of unpaid household service work ranged from $416 billion to $586 billion, which represents 41.6% to 58.7% of GDP for that year. In terms of unpaid household service work relative to GDP, these results place Australia at the higher end of the international standings.

296. More detail of the assumptions and processes used in this study is available in the Explanatory Notes section of the publication "Spotlight on National Accounts" (Australian Bureau of Statistics, 2014).

7.3 How does on-use production work of services affect measured income inequality? – United States

7.3.1 Introduction

297. This section provides an example of further analysis examining the role of own-use production work of services on income inequality. This is based on a paper by Harley Frazis and Jay Stewart[18] of U.S. Bureau of Labour Statistics. The standard approach to measuring income inequality is to compute an inequality statistic (such as the Gini coefficient or coefficient of variation) for a measure of individual earnings or household money income. However, this approach ignores own-use production work of services, which is a substitute for market produced goods and services. To illustrate, suppose that individual A earns $1,000 per week and pays $100 per week for services, while individual B earns $900 per week and does the same services him/herself. Individual A will be higher in the income distribution, even though the value of what they have produced is the same.

[18] The views expressed here are those of the authors and do not necessarily reflect the views of the U.S. Department of Labor or the Bureau of Labor Statistics.

7.3.2 Data

298. To estimate the effect of including own-use production work of services on measured inequality in the United States, the authors used time-diary data from the 2003 American Time Use Survey (ATUS). The ATUS interviews one person per household about the day before the interview and collects information on the amount of time spent in over 400 detailed activities. It also collects information about time spent looking after children under 13 while doing other activities (secondary childcare). Detailed information on earned and unearned income is available for about one-third of ATUS respondents.[19]

299. The sample consists of single-adult households where the respondent is age 25-64 (no spouse or unmarried partner present), and married couples where both spouses are between 25 and 64. Households with other adult (18+) family members were excluded, and children's contributions to income and own-use production work of services were ignored.

7.3.3 Valuing own-use production work of services using the replacement generalist and specialist approach

300. Two alternative definitions of own-use production work of services were used. The first definition includes housework (including shopping) and care of household members done as a primary activity. The second definition adds childcare done as a secondary activity.[20] The replacement-cost approach to value own-use production work of services was used, by means of the market wage for the activity. Either a generalist wage, specifically the average wage for housekeepers, or specialist wages that correspond to the different household activities were used. The specialist wages were estimated from wage data from the Current Population Survey (CPS) by using the mean wage for the detailed occupation that most closely resembles the activity. Both money income and the value of own-use production work of services using an equivalence scale to account for variation in household size were adjusted.

301. Empirically, the choice of wage made little difference, because most own-use production work of services time was relatively low-value. The value of own-use production work of services was only about 10 percent greater when using the specialist wage versus using the generalist wage. However, it did matter whether secondary childcare was included or excluded—including secondary childcare increased the value of own-use production work of services by about one-third.

7.3.4 Estimating time spent in own-use production work of services using a regression model

302. Because the ATUS interviews only one person per household and collects only one diary per person, the collected information of own-use production work of services was incomplete. Therefore, the authors estimated the average time spent in own-use production

[19] The ATUS has data on usual weekly earnings. However, the data are available only for the respondent, and there are no data on unearned income. Therefore, it is necessary to match ATUS respondents to Current Population Survey data, which has more extensive income data for all household members. In practice, however, only about one-third of ATUS respondents can be matched (Frazis and Stewart, 2004).

[20] This is not an activity *per se*. Respondents are asked to report times or activities during which a child under 13 was "in your care."

work of services conditional on observable characteristics. They used a variation of the regression methods used in studies by Bonke (1992), and Jenkins and O'Leary (1996) to predict own-use production work of services. They regressed the equivalence-scale normalized value of own-use production work of services on a set of demographic and income variables. For married respondents, they also included demographic and income variables for the spouse. Because it was important to measure accurately the relationship between own-use production work of services and income, a flexible specification for the log of family income was used.[21]

303. Separate regressions by marital status, sex, and day of week (weekends and weekdays) were ran. For each marital-status-by-sex cell, the predicted values from the weekday (×5) and weekend (×2) equations to generate the imputed weekly value of own-use production work of services were summed. For married households, total own-use production work of services was simply the sum of the husband's and wife's predicted values.

304. Note that using only predicted values of own-use production work of services ignores the variation that is not related to demographic characteristics. The error term in the regressions is equal to the sum of a long-run person-specific variation (which is real variation in long-run own-use production work of services) and day-to-day variation (which is noise). It is possible to place an upper bound on the long-run person-specific variation by assuming that there is no day-to-day variation. Thus, the regression residual to the predicted value of own-use production work of services was added.[22]

7.3.5 Results

305. The computed inequality measures (Gini coefficient, coefficient of variation, 90-50 ratio, 50-10 ratio, and 90-10 ratio) were under a wide range of assumptions about the wage (generalist and specialist), secondary childcare (included and excluded), equivalence scale (OECD and square root), and the imputation procedure. It was found that:

- All of the inequality measures provided similar results — extended income was more equally distributed than money income.
- Adding the regression residual to the predicted value of own-use production work of services had only a small effect on the inequality measures.
- There was very little variation in own-use production work of services by income. Adding the mean value of own-use production work of services for each of the cells defined above yielded about the same decline in inequality measures as does using the predicted values. Using the coefficient of variation as the inequality measure, it was found that the main result—that extended income is more equally distributed than money income—holds even if money income and the value of own-use production work of services were perfectly positively correlated.

[21] Gallant's (1981) Fourier series expansion were specifically used.
[22] The authors also experimented with alternative assumptions about the fraction of the residual that is day-to-day variation, and the results were the same.

7.3.6 Conclusion

306. Previous studies have also found that extended income is more equally distributed than money income and speculated that the result is due to a negative correlation between money income and own-use production work of services. One would expect this result from economic theory, as households (or individuals within households) with low market wages would be expected to devote more time to own-use production work of services relative to the labour market. The authors confirm the greater equality of extended income but identify a different reason. They show that the weak correlation cannot be the explanation and that virtually all of the difference in measured inequality between the two measures is due to the addition of a large constant—the average value of own-use production work of services—to money income.

7.4 Implementation of the household satellite account of Mexico

307. Since 2011, the National Institute of Statistics and Geography (INEGI) develops the Household Satellite Account of Mexico. The objective is to provide information on the economic value and importance of own-use production work of services of women and men.

308. The valuation of unpaid household service work is conducted periodically and in timely manner, based on the 2008 SNA and the Eurostat's "Proposal for a Methodology of Household Satellite Accounts".[23]

309. The household satellite account provides additional information for public policy and decision-making, in particular on issues related to gender equality, consumption and household expenditure, total workload, care of children and the elderly, care of chronic and temporary sick, and home schooling.

310. Furthermore, the results have been used for shaping key indicators for the development of the country, such as "estimate of women's contribution to GDP by the economic value of unpaid household work" inscribed in the National Program for Equal Opportunity and Non-Discrimination against Women 2013-2018.

311. In valuing the unpaid household service work, the total workload in the economy is disaggregated by the time spent to paid, own-use production work and volunteer work of services. In 2016, women had the highest workload, with 3.1 million of hours per week versus 2.6 million hours done by men; that is, for each 10 hours done by women, men completed only 8.4 hours (see Figure 7.1).

7.4.1 Distribution of time spent on own-use production work of services by individual characteristics, and by each activity

312. The responsibility of own-use production work of care and domestic services lies mainly on women, whose contribution to these activities is 65% of their total working time,

[23] Eurostat, "Household Production and Consumption: Proposal for a Methodology of Household Satellite Accounts", Eurostat, 2003.

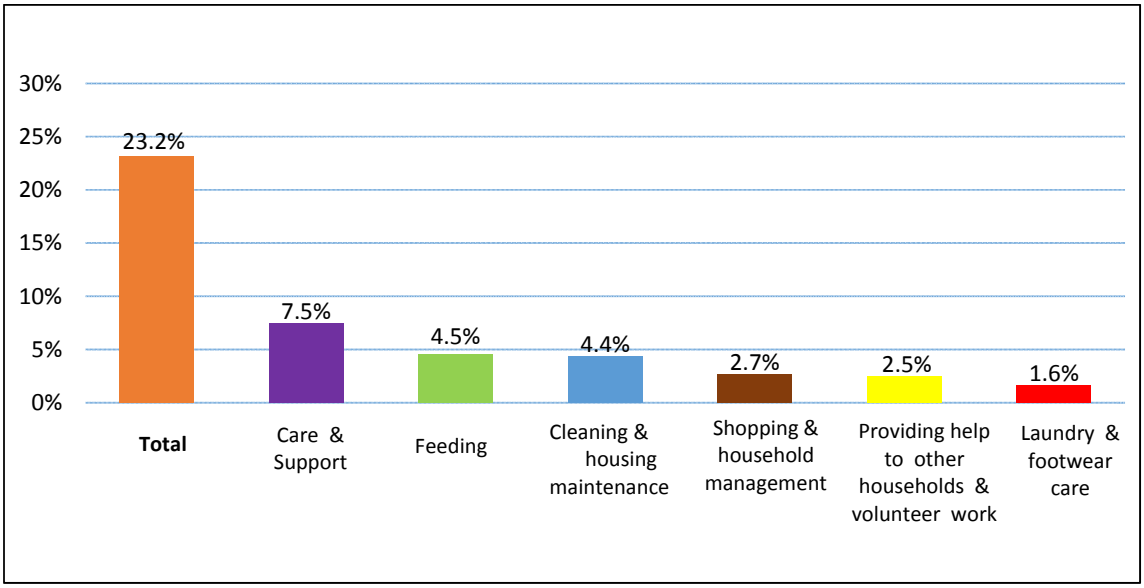
compared to 33% spent on market work. In contrast, men's activities include mainly market work (73% of their total work hours), whereas only about 24% of their total working time is spent on own-use production work of care and domestic services.

Figure 7.1
Composition of the total workload of the economy in hours by sex, 2016
(Millions of hours)

Source: INEGI.
Note: Preliminary results.

313. Breaking down the information related to unpaid household service work by type of activity showed that "care and support" for household members amounts to 7.5% of national GDP, followed by "feeding" (4.5%), "cleaning and housing maintenance" (4.4%), "shopping and household management" (2.7%), "providing help to other households and volunteer work" (2.5%) and "laundry and footwear care" (1.7%) (see Figure 7.2).

Figure 7.2
Care and domestic work of households by type of services in terms of GDP, 2016
(Percentage)



Source: INEGI.
Note: Preliminary results.

314. The statistics provided above would allow the decision makers to identify activities where participation of women is substantial, while their associated wages are lower compared to men's wages. An example of public policies related to gender equality involve caring for children (e.g., through the establishment of parental care for both parents), which would allow to reduce the inequality gap between men and women[24].

7.4.2 Comparing valuations of own-use production work of services using the replacement generalist and hybrid approaches.

315. The economic valuation of unpaid household service work in Mexico follows the replacement cost, which is generally accepted in many studies. It defines the amount to be paid to a person who performs a productive activity required to satisfy the household needs.

316. For the purposes of this case study, the mechanism of an economic valuation of unpaid household service work has been illustrated briefly, leaving out some technical details (see Table 7.2). For example, average wages are used for the economic valuation of unpaid household service work hours, whereas in practice equivalent wages are used in the market for different tasks (see Table 7.2, A, B, C, D, E, F, G, H, I and J).

[24] See article 92 of Administrative Code of the State of Chihuahua, Mexico.

Table 7.2
Main results of unpaid household service work from Household Satellite Account of Mexico, 2003-2016

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
(A)	Weekly hours per person of unpaid household services (UHS)													
National	28.2	27.9	27.4	26.2	26.4	25.9	25.3	25.7	26.5	26.3	26.5	27.0	27.3	27.6
Women	42.6	41.9	41.1	39.1	39.4	38.6	37.5	37.9	38.7	38.3	38.3	38.7	39.0	39.2
Men	10.4	10.6	10.9	10.7	11.1	11.1	11.2	11.7	12.2	12.4	12.7	13.2	13.6	13.9
(B)	Population that realizes unpaid household services (thousands)													
Total	68,499	70,176	72,145	73,774	75,690	77,567	79,960	81,950	84,198	86,765	88,984	91,129	93,274	95,528
Women	37,978	38,656	39,495	40,148	40,958	41,747	42,813	43,961	45,248	46,707	47,979	49,211	50,443	51,733
Men	30,520	31,520	32,650	33,626	34,731	35,820	37,148	37,989	38,950	40,058	41,005	41,918	42,832	43,795
(C) = A x B	Millions of hours a week of unpaid household services													
Total	1934	1955	1980	1929	1998	2010	2021	2110	2228	2284	2358	2460	2550	2633
Women	1616	1620	1625	1570	1614	1611	1605	1666	1751	1787	1837	1906	1969	2027
Men	318	335	355	359	384	399	416	443	477	497	521	554	581	607
(D) = Cx52 Wee	Millions of hours per year of unpaid household services													
Total	100594	101684	102960	100326	103904	104538	105084	109698	115833	118783	122616	127907	132608	136940
Women	84056	84244	84487	81638	83944	83776	83458	86645	91041	92947	95546	99104	102382	105386
Men	16538	17439	18472	18687	19959	20763	21626	23052	24791	25836	27070	28803	30226	31553
(E)	Wages per hour by generalist approach (euros) [1, 4]													
Average	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.2
(F) = D x E	Monetary value of unpaid household services by generalist approach (Millions of euros)													
Total	58,975	63,495	71,343	73,885	83,900	88,672	90,488	98,168	109,222	117,244	127,102	136,312	146,868	160,052
Women	49,045	52,395	58,324	59,883	67,556	70,839	71,621	77,212	85,476	91,258	98,549	104,992	112,642	122,377
Men	9,931	11,100	13,019	14,003	16,344	17,833	18,868	20,956	23,746	25,986	28,553	31,320	34,227	37,676
(G)	Wages per hour by equivalent individual function approach (euros) [2, 4]													
Average	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1
(H) = D x G	Monetary value of unpaid household services by equivalent individual function approach (Millions of euros)													
Total	100,562	106,421	115,423	123,458	135,522	144,130	151,012	169,779	188,245	202,205	219,754	241,548	262,980	288,354
Women	81,154	85,222	92,131	97,617	106,802	113,019	117,694	131,845	145,736	155,870	169,030	184,437	200,232	219,249
Men	19,408	21,199	23,292	25,840	28,720	31,111	33,319	37,934	42,510	46,335	50,724	57,111	62,748	69,105
(I)	Wages per hour by hybrid approach (euros) [3, 4]													
Average	0.8	0.8	0.9	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.7
(J) = D x I	Monetary value of unpaid household services by hybrid approach (Millions of euros)													
Total	79,008	85,241	92,511	100,320	112,556	118,909	122,119	135,866	152,076	165,334	178,832	196,637	213,159	232,042
Women	62,927	67,504	72,993	78,533	87,905	92,449	94,241	104,120	116,359	126,109	136,189	148,699	160,724	174,641
Men	16,081	17,737	19,519	21,787	24,650	26,460	27,877	31,746	35,717	39,226	42,643	47,938	52,436	57,401

Source: INEGI. Available from http://www.inegi.org.mx/est/contenidos/proyectos/cn/tnrh/default.aspx.
Notes : [1] An average between the salary of domestic workers and the salary of specialists to calculate the value of volunteer work was used; [2] An average salary of occupations of specialists to evaluate each of the activities of unpaid domestic and care work was used; [3] An average between the salary of domestic workers for activities that household members usually do and the salaries of the specialists occupations for other activities was used; [4] For comparison purposes, April 11th, 2016 exchange rate of Mexican peso against euro (1 peso = 20.0996 euros) was used.

317. Parameters "Weekly hours per person" (A) and "Population that realizes unpaid household services" (B) are obtained from the National Employment Survey (ENOE by Spanish acronym). The mass of "hours per week of unpaid household services" (C) is the result of multiplying A by B, and that, expanded by 52 weeks, sums up to "hours per year of unpaid household services" (D).

318. The variable (E) "Wages per hour by generalist approach" is estimated by using the hourly market value of a specific activity that can cover most of the daily work of the household, allowing calculating an average wage of domestic workers. Average hourly wages are considered for all activities in the unpaid household service work for which equivalence in the market is available. The variable (G), "Wages per hour by equivalent individual function approach" is derived using the hourly wage of an activity in the market that is similar to the one performed in the household without payment. The variable (I), "Wages per hour by hybrid approach" is derived by using (E) to value the productive household activities that are usually performed by domestic employees in combination with variable (G).

319. As shown in the table, obtaining the economic value of unpaid household service work is a result from multiplying the mass of "Hours per year of unpaid household services" (D) by the price determined for each kind of valuation: (E), (G) or (I).

320. The technical treatment of the services generated by the household for its own final consumption and whose benefit can be transferred to a third party, allows to show how personal choices, which transform in economic decisions could change the production boundary and the household consumption levels. The individual who receives the benefit of an unpaid household service work activity as feeding or laundry, can replace these services for a similar service in the market as a result of a change in his/her family situation and this is an important information for policy makers.

7.5 Republic of Moldova's experience in estimating the value of unpaid household service work

7.5.1 Measuring own-use production work of services using a time use survey.

321. Unpaid household services were valued using TUS, Earnings Survey (ES) and LFS data. Hours spent in unpaid household service work were estimated based on the TUS data, collected in 2011-2012, during twelve consecutive months. Activities were coded using the HETUS coding list:

OWN-USE PRODUCTION WORK OF SERVICES

31 FOOD MANAGEMENT
311 Food preparation, baking and preserving
312 Dish washing

32 HOUSEHOLD UPKEEP
321 Cleaning dwelling
322 Cleaning garden
323 Heating and water
324 Arranging household goods and materials
329 Other or unspecified household upkeep

33 MAKING AND CARE FOR TEXTILES
331 Laundry
332 Ironing
333 Handicraft and producing textiles
339 Other or unspecified making of and care for textiles

34 GARDENING AND PET CARE
343 Caring for pets
344 Walking the dog
349 Other or unspecified gardening and pet care

35 CONSTRUCTION AND REPAIRS
351 House construction and renovation
352 Repairs to dwelling
353 Making, repairing and maintaining equipment

354 Vehicle maintenance
359 Other or unspecified construction and repairs

36 SHOPPING AND SERVICES
361 Shopping
362 Commercial and administrative services
363 Personal services
369 Other or unspecified shopping and services

37 HOUSEHOLD MANAGEMENT
371 Household management

38 CHILDCARE
381 Physical care and supervision
382 Teaching the child
383 Reading, playing and talking with child
384 Accompanying child
389 Other or unspecified childcare

39 HELP TO AN ADULT FAMILY MEMBER
391 Physical care of a dependent adult household member
392 Other care of a dependent adult household member
399 Help to a non-dependent adult household member

SERVICES FOR OTHER HOUSEHOLDS (VOLUNTEER WORK OF SERVICES[25])

42 INFORMAL HELP TO OTHER HOUSEHOLDS
421 Construction and repairs as help
423 Care of own children living in another household
424 Other childcare as help to another household
425 Help to an adult of another household
429 Other or unspecified informal help to another household

7.5.2 Valuing own-use production work of services using a replacement specialist and generalist approach

322. Two valuation approaches were considered:

a) Using gross salary estimates by economic activities from the ES;
b) Using the gross hourly wages of domestic workers estimated from the LFS for most activities and salary estimates from the ES only for some activities, requiring higher qualification.

323. Additionally, a possible measurement of unpaid household service work offered for other families (volunteer work, according to 19th ICLS) using data from a specially designed survey is presented.

[25] Not necessarily volunteer work, according to the 19th ICLS resolution.

7.5.2.1 First approach: Replacement specialist approach

324. In the ES, economic activities are coded using classification of economic activities in the European Community, NACE rev.2 at four digits. Estimates are reliable at two digits only. Consequently, even if for each activity from TUS a corresponding four-digit NACE rev.2 code was identified, the salary used to value hours was the one calculated at the level of two digits.

325. For activities included in the "**Shopping and services"** group, the hourly wages estimated for domestic workers (from the LFS) was used. As LFS collects data on net wages, a coefficient was used to estimate the gross wage for domestic workers. Given the value of the estimated net wage, the income taxes, social and health insurance contributions should make about 17.5% of the gross wage. Therefore, in order to obtain an estimation of the gross wage, the net wage was divided by 0.825.

326. In order to use salary estimates from the ES, TUS hours had to be transformed into full-time working programs. To do this, the estimated volume of hours spent monthly in unpaid household service work, by persons aged 15 years and over, was divided by 169 hours/month (obtained by multiplying 8 hours/day by 21.125, the average number of working days in a month).

327. Hours for activities included in the "**Shopping and services"** group, for which LFS gross hourly wage was applied were not transformed into full-time working programs.

328. Table 7.3 shows the TUS and NACE activity and corresponding salary, and the estimated monthly volumes of hours and their value by type of unpaid household service work.

Table 7.3
Estimated monthly value of unpaid household service work

TUS activities	NACE rev.2 two-digits code	Hours per month	Monthly full-time programs	Average monthly gross salary for a full-time employee, MDL (2014)	Monthly value MDL
A	B	C	D	E	F=D*E
311	56	68,062,170	402,735	2,598	1,046,103,471
312	56	29,026,485	171,754	2,598	446,131,922
321	81	26,687,325	157,913	2,652	418,848,881
322	81	8,355,655	49,442	2,652	131,139.286
323	43	19,051,645	112,732	3,852	434,253,501
324	96	6,136,470	36,310	2,619	95,093,499
331	96	14,901,160	88,173	2,619	230,915,076
332	96	1,943,230	11,498	2,619	30,113,166
339	96	479,135	2,835	2,619	7,424,891
343	96	1,339,705	7,927	2,619	20,760,671
344	96	1,017,725	6,022	2,619	15,771,124
349	96	6,011,475	35,571	2,619	93,156,520

TUS activities	NACE rev.2 two-digits code	Hours per month	Monthly full-time programs	Average monthly gross salary for a full-time employee, MDL (2014)	Monthly value MDL
A	B	C	D	E	F=D*E
351	41	616,360	3,647	3,865	14,097,503
352	43	4,023,765	23,809	3,852	91,715,652
353	95	1,061,890	6,283	2,779	17,463,378
354	45	2,966,525	17,553	3,317	58,231,657
359	95	977,580	5,784	2,779	16,076,853
361	97	19,262,650	19,262,650[26]	12.5[27]	240,595,652
362	97	1,535,765	1,535,765[14]	12.5[15]	19,182,116
369	97	4,605	4,605[14]	12.5[15]	57,518
371	82	167,190	989	6,014	5,949,194
381	88	16541685	97880	2,437	238,552,631
382	88	2,786,245	16,487	2,437	40,181,280
383	88	7,859,150	46,504	2,437	113,339,174
384	88	1,012,570	5,992	2,437	14,602,578
389	88	254,135	1,504	2,437	3,664,958
391	88	1074,750	6359	2,437	15,499,294
392	88	89,325	529	2,437	1,288,183
421	41&43	1,562,130	9,243	3,858	35,660,008
423	88	57,475	340	2,437	828,864
424	88	4430,100	26,214	2,437	63,887,809
425	88	645,615	3,820	2,437	9,310,609
429	88	7,329,540	43,370	2,437	105,701,508
Total	-	**257,271,230**	-		**4,075,598,425**

329. On average, the monthly value of unpaid household service work in 2014 was 4.1 billion MDL.[28] For the whole year, the estimated value of unpaid household service work was 48.9 billion MDL or about 3.5 billion USD, which represented 43.6% of the GDP in 2014.

7.5.2.2 Second approach: Replacement generalist approach

330. In the second approach (with few exceptions), the gross hourly wage of domestic workers was used to value directly hours obtained from the TUS.

[26] For TUS activities 361, 362, 369 actual hours are given
[27] For TUS activities 361, 362, 369 hourly gross wage of a domestic worker is estimated from LFS
[28] US$ = 14.039 MDL

331. Hours spent in two activities, **35 Construction and repairs and 421 Construction and repairs as help** were valued using salaries estimated from the ES as these activities require higher qualification and most probably cannot be undertaken by domestic workers. Consequently, hours spent in these activities were transformed into full-time programs.

332. Table 7.4 shows the estimated monthly volumes of hours and their value by type of services.

Table 7.4
Estimated monthly value of unpaid household service work using LFS wage estimate

TUS activities	Monthly hours	Gross hourly wage of domestic workers	Monthly value MDL
A	B	C	D=B*C
311	68,062,170	12.5	850,114,714
312	29,026,485	12.5	362,548,564
321	26,687,325	12.5	333,331,830
322	8,355,655	12.5	104,364,367
323	19,051,645	12.5	237,960,143
324	6,136,470	12.5	76,646,152
331	149,01,160	12.5	186,119,475
332	1,943,230	12.5	24,271,463
339	479,135	12.5	5,984,524
343	1,339,705	12.5	16,733,274
344	1017,725	12.5	12,711,658
349	6,011,475	12.5	75,084,931
351	3,647[29]	3,865[30]	14,097,503
352	23,809[23]	3,852	91,715,652
353	6,283[23]	2,779	17,463,378
354	17,553[23]	3,317	58,231,657
359	5,784[23]	2,779	16,076,853
361	19,262,650	12.5	240,595,652
362	1,535,765	12.5	19,182,116
369	4,605	12.5	57,518
371	167,190	12.5	2,088,248
381	16,541,685	12.5	206,610,071
382	2,786,245	12.5	34,800,946
383	7,859,150	12.5	98,162,886
384	1,012,570	12.5	12,647,270

[29] For TUS activities **35 Construction and repairs** and **421 Construction and repairs as help** full-time programs are given.

TUS activities	Monthly hours	Gross hourly wage of domestic workers	Monthly value MDL
A	B	C	D=B*C
389	254,135	12.5	3,174,214
391	1,074,750	12.5	13,423,915
392	89,325	12.5	1,115,693
421	9,243[23]	3,865[24]	35,729,333
423	57,475	12.5	717,878
424	4,430,100	12.5	55,333,134
425	645615	12.5	8,063,904
429	7,329,540	12.5	91,547,916
Total	**257,272,230**	-	**3,306,706,831**

333. On average, under the second approach, the monthly value of unpaid household service work was 3.3 billion MDL in 2014. For the whole year, the estimated value of unpaid household service work was 39.7 billion MDL or about 2.8 billion USD, which represented 35.4% of the GDP in 2014.

7.5.3 Conclusions

- Both approaches give very big values (at least one third of GDP) which indicate a strong need to apply (one of these two or another one) methods of estimating the value of unpaid household service work and publish estimates.
- Although technically, both approaches are easy to implement, using salary estimates from the ES probably induces a bias by using salaries estimated at two-digit level of the NACE.
- The value of unpaid household service work under the second approach is probably a better estimate as it is calculated using a wage actually paid by households for household services.
- It is possible to use other sources than TUS for estimating the number of hours spent in unpaid household service work, at essentially lower costs.
- When estimating hours of unpaid household service work and valuing them, great attention should be paid to seasonality.

7.6 The relationship between household disposable income and unpaid household service work- Finland

334. Economic theory suggests that poorer people should consume more own-use production work of services, due to their reduced ability to contract these services in the market. However, empirical evidence in this area is fragmented and scarce. In terms of measuring economic resources, household disposable income per head is widely used as a measure of economic resources. Alternatively, economic resources and wellbeing can also be reflected by consumption, measured as the level of consumption and availability of goods and

services. However, both of these measures exclude goods and services that households produce for their own consumption, such as meals, childcare etc. It is well recognised that the consumption of these services has a significant impact on individual well-being; however, they are still largely excluded from official figures.

335. Unpaid household service work and, especially, own-use production work of domestic services is strongly related to gender. In many developing countries, women and girls bear the responsibility for housework and childcare in a family. Domestic work is seen to impede women's' efforts to obtain education and participate in paid work. Combining paid and domestic work is difficult because of undeveloped infrastructures. In this way, own-use production work of services can be seen to keep people in poverty and not the other way round. But what would be the alternative? If meals and accommodation must be purchased instead of providing them oneself, money is needed. Therefore, it is a vicious circle.

336. The economic approach to own-use production work of services focuses on individuals' rational choices between paid and unpaid work in time allocation. The studies have very much applied Becker's theory on the allocation of time. People specialize in work in which they are most productive. This is based on the hypothesis of rational behaviour and utility maximization in the allocation of time. The availability of appropriate data may have restricted the number of studies in this field. There is a need for a combination of data on time and expenditure and data on household income.

337. This Finnish case study[31] uses data drawn from the calculations made for the household satellite account, using time-use data. Inputs into unpaid household service work were then calculated by income quintile. Domestic work time was valued by the replacement cost of the generalist housekeeper. The gross wage was EUR 10/hour. Income quintiles were calculated in two ways. Households were ranked according to gross income of the total household (QA) and gross income per household member (QB). These two types of quintiles were estimated because the time-use data set did not include information on household income by consumer unit. At the same time, we have no knowledge of the effect of economies of scale on housework time in larger families. Therefore, it is more explicit to use "real" incomes and incomes divided by the number of household members as a basis for ranking households by gross income.

338. Consumption expenditure by income quintile was divided into three groups: raw materials (intermediate consumption), purchases of durables needed for home production, and purchases of final consumption products and services (ready–to–use products). Final consumption products do not belong to own-use production work of services – they are a means of outsourcing it.

339. In the Finnish case, it is concluded that income does not explain the amount of own-use production work of services in a family, in general. All in all, it shows that there need to be good alternatives available for outsourcing own-use production work of services. If they are not available, own-use production work of services does not change much according to household income. In order to analyse disposable income of own-use production work of services in relation to poverty it is necessary that the sources of data (time-use and household budget survey) included information about the gross income of households. The data sets were combined according to the income quintiles that belonged to households.

[31] Household production as an economic resource for low–income families, Johanna Varjonen, National Consumer Research Centre Kaikukatu 3, FI–00530 Helsinki Finland.

7.7 The valuing method of Switzerland: Empirical example with different assumptions on wages

340. This paragraph provides a summary of the valuing method used in Switzerland and will present some examples with different wages. The aim is to show the effects on the total amount as well as on the different activities.

341. The starting point for the household satellite account is formed by private households' production activities that are not carried out on a commercial basis, i.e. the time spent by private individuals on unpaid household service work (input valuation).[32] A monetary valuation, which applies market costs by means of average labour costs, allows the comparison of unpaid household service work as "fictitious" monetary flows with aggregates of National Accounts.[33]

342. The labour cost approach corresponds to the market costs method utilised for the unpaid household service work satellite account. It is assumed that for the valuation of unpaid work, the private household or private individual has the unpaid household service work done by a worker obtained through the market and is therefore theoretically put in the position of an employer.

343. Labour costs are all expenditures borne by employers in connection with the employment of personnel. Labour costs are composed of wages and salaries (depending on the economic sector, between 78% and 81% of the amount), employers' social insurance contributions (between 16% and 18%) and other expenditures (vocational training, personnel recruitment, etc.: between 2% and 4%). Principal source is the Swiss Earnings Structure Survey (SESS). Comparability exists at European level for these statistics.[34]

344. The benchmark year is SESS 2006. The corresponding value for each year of the unpaid-work-module (backward and forward) is been estimated by applying the Swiss Wage Index (SWI) to the benchmark year.

345. Until the planned revision in 2016/17, equivalent wages by General Classification of Economic Activities (NOGA-02) and by activities are being used. As from 2016, we will work with NOGA-08 and ISCO-08 Classification instead of the activities, because the latter are not available any more in this survey since 2012.

[32] Unpaid household service work is valued using the Swiss Labour Force Survey. The unpaid work module provides data on domestic, childcare and voluntary work in Switzerland. See also chapter 5.a.iv LFS Module – Case Study Switzerland

[33] See: https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/unpaid-work/household-production-satellite-account.html and https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/shhp.html

[34] See also: https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/lse.html and https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/ecm.html.

Table 7.5
Equivalent wages (General Classification of Economic Activities, NOGA -02)

	Average labour costs by worked hour [15)]					
	1997	2000	2004	2007	2010	2013
Wages by NOGA and/or tasks						
1 Meal preparation [1,2)]	30.4	31.1	33.2	34.4	36.2	37.1
2 Washing-up and putting away crockery [2)]	30.1	30.8	32.9	34.1	35.9	36.8
3 Shopping [3)]	33.5	34.3	36.6	38.0	39.9	40.9
4 Cleaning, tidying [4)]	33.5	34.2	36.5	37.9	39.8	40.8
5 Laundry, ironing [5)]	28.8	29.4	31.4	32.6	34.3	35.1
6 Home maintenance, handicraft [6)]	40.7	41.6	44.4	46.1	48.5	49.7
7 Animals, plants, gardening [7)]	31.7	32.4	34.6	35.9	37.7	38.6
8 Administrative tasks [8)]	49.7	50.8	54.2	56.3	59.1	60.7
9 Feeding and bathing young children [9)]	46.2	47.2	50.4	52.3	55.0	56.4
10 Playing with children, helping with homework [10,11)]	53.0	54.1	57.8	60.0	63.0	64.6
11 Provision of care and assistance to adults [10)]	46.7	47.8	51.0	52.9	55.6	57.0
12 Formal voluntary work: leading function [12)]	71.6	73.2	78.1	81.1	85.2	87.4
13 Formal voluntary work: executive function [13)]	41.1	42.0	44.8	46.5	48.9	50.1
14 Informal voluntary work [14)]	44.6	45.6	48.7	50.5	53.1	54.4
Generalist wages						
Average wage of all employees	48.2	49.3	52.7	54.7	57.4	58.9
Food and beverage services, activities of households as employers [2)]	30.1	30.8	32.9	34.1	35.9	36.8

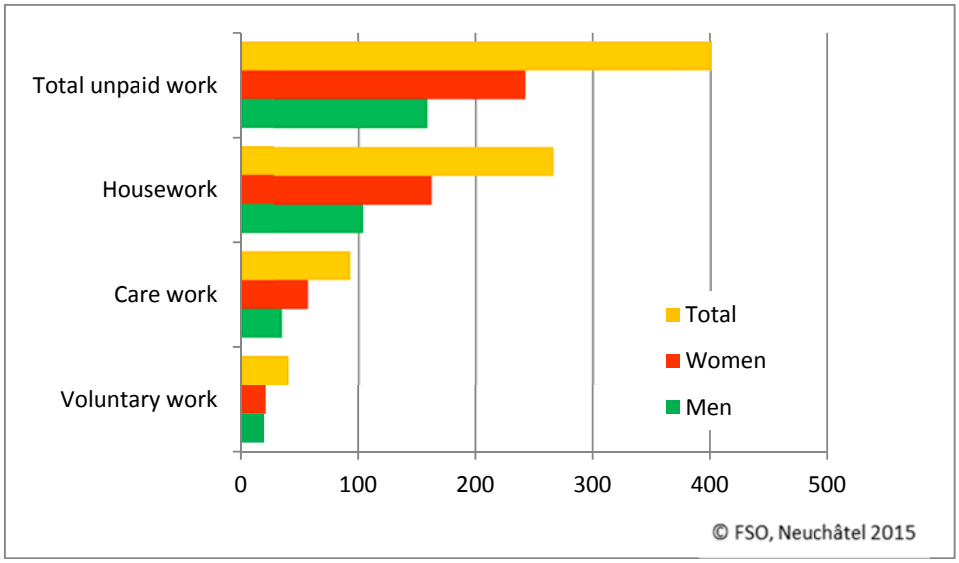
1) Noga 5224A, activity 10; 2) Activity 37; 3) Noga 6024, activity 31; 4) Activityt 35; 5) Noga 9301A; 6) Noga 453, 454, 502, 180;
7) Noga 01; 8) Activities 21, 22, 23; 9) Noga 8511, 8514, 853; 10) Activity 33; 11) Activity 36; 12) Upper and middle management;
13) No management function; 14) Activities 33, 36 and 37; 15) Average labour costs by worked hour, in CHF.

Note: For the activities, see table 'Gross monthly wage by activity - Private and public sectors combined – Switzerland' Available from: https://www.bfs.admin.ch/bfs/en/home/statistics/catalogues-databases/tables.assetdetail.179477.html
Sources: Federal Statistical Office: Swiss Labour Force Survey (SLFS): unpaid work, Swiss Earnings Structure Survey (SESS), Swiss wage index (SWI)

346. The monetary value of all unpaid household service work carried out in Switzerland in 2013 is estimated at CHF 401 billion (approximately US$ 414 billion[35], see Figure 7.3). Domestic workload alone amounted to approximately CHF 267 billion (67% of the total value). Care-related tasks carried out at home were estimated at CHF 93 billion (23% of the total value), formal and informal voluntary work at CHF 41 billion (10% of the total value). Work done by women accounted for 60% of the total value overall. This percentage varies depending on the field of activity: it amounts to 61% for domestic workload, approximately 62% for care-related tasks and 52% for voluntary work. Compared with this, the GDP in 2013 has been estimated at about CHF 635 billion (production approach, approximately USD 655 billion).

[35] Based on an exchange rate of 1.032 (August 15, 2016).

Figure 7.3
Monetary valuation of unpaid household service work, 2013
(In billions of francs, market costs method on basis of labour costs)



Source: FSO – Swiss Labour Force Survey (SLFS): unpaid work module, Swiss Earnings Structure Survey (ESS). Available from https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/unpaid-work/household-production-satellite-account.html

7.7.1 Empirical example with different wages

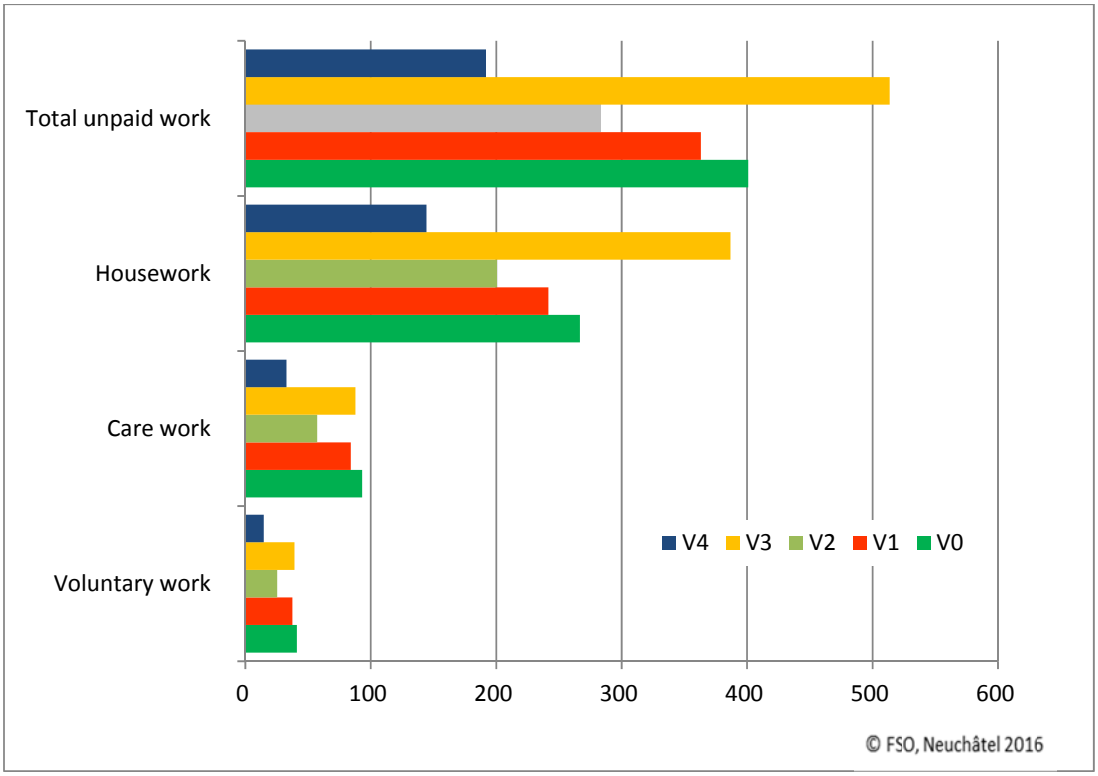
347. The selection of suitable wages depends on the concept and the methodology as well as on the available data sources. However, the monetary value of unpaid household service work can vary considerably depending on the wage selected. The following paragraphs will provide a few examples of different choices of wage rates for valuing Switzerland's unpaid household service work and assess the impact on the total amount and the varying effects on the unpaid household service work activities.

348. For the comparative analysis, the following wages have been tested:

Version 0: Fourteen different wages rates (corresponding to the Swiss model as shown in table 3);
Version 1: Two different wage rates (refer to Table 7.5):
activities 1 to 8 Housekeeping (CHF 36.80): mean of hotel/catering trade work, domestic work (corresponds to average labour costs for activity 37),
activities 9 to 14 Health and Social services (CHF 56.40): mean of health and social services, hospital-employees (NOGA 8511, 8514, 853);
Version 2: Two different wages rates recommended by the federal high court (to measure domestic compensation):
activities 1 to 8 housekeeping (CHF 30.60),
activities 9 to 14 care and volunteering (CHF 38.40);
Version 3: One wage rate : mean of all employees (CHF 58.90);
Version 4: One wage rate recommended by the State Secretariat for Economic Affairs (SECO): minimal wage for employment of housekeepers in private households (CHF 22.00).

349. Figure 7.4 shows estimates of the value of households' unpaid service work of sensitivity to imputed labour costs for 2013.

Figure 7.4
Monetary valuation of unpaid household service work by different wages, 2013
(In billions of francs)



Source: Swiss Labour Force Survey (SLFS): unpaid work module, Swiss Earnings Structure Survey (ESS) and others

350. The sensitivity test to different wages for valuing unpaid household service work with Swiss data gives the following information; all comparisons are made with the version 0 representing the actual Swiss valuing method. As expected, the differences are important according to the selected wage rates (between around 10% and 50%). There are also different effects by activities and by sex. In monetary terms, we notice the most important differences for housework.

351. Version 3 and version 4 are demonstrating two extremely different and not much convincing valuations. However, the impact of the selected data source seems to be important because we notice bigger differences between version 1 and version 2 (with two different wage rates for the same activities, but different sources) as between version 0 and version 1 (with a different number of wage rates, but the same source).

7.7.2 Conclusions

352. According to the selected wage rate (s), the value of unpaid household service work can vary strongly. As this empirical example shows, the differences can be much bigger with a generalist substitute than with several substitutes by group of activities. Furthermore, the impact of the data source can be important.

353. Even when countries are working with different data sources, harmonized ISCO-08 and/or NOGA-08 equivalent groups could allow international comparisons. Although in the Swiss Earnings Structure Survey (SESS) there is no information about wages in economic sector "Agriculture and Forestry" or in private households, it would be possible to define comparable professions or economic activities.

354. Moreover, it will be difficult to find one fitting substitute in the market for all unpaid household service work activities. We suspect that activities like home maintenance, administrative tasks and especially the responsibility (e.g., organization, education) for care tasks would hardly be taken on by a generalist. That is why we propose a (few) number of substitutes for at least three groups of activities. Also, we would suggest to use means of wages over all education levels and professional positions.

7.8 Using an output approach to measuring own-use production work of services – United Kingdom's experience

7.8.1 Introduction

355. The United Kingdom is unique in that it is the only country that regularly measures the majority of own-use production work of services using an output methodology – measuring the outputs produced rather than the inputs. The United Kingdom started measuring unpaid household service work in 2002, when the Office for National Statistics (ONS) was the first national statistics institute to publish a household satellite account for the United Kingdom (ONS, 2002; Holloway, Short and Tamplin, 2002). More recently, the ONS launched the Measuring National Well-being (MNW) programme following the publication of the report by the Commission for the Measurement of Economic Performance and Social Progress (2009). With the MNW programme's focus on wider measures than just GDP, interest in the household satellite reignited. As a result, ONS began publishing estimates of the value of various different unpaid household service work activities between 2009 and 2015. This culminated in April 2016 with the publication of a full set of household accounts for the first time since 2002, largely following the output approach devised in 2002.

356. ONS' decision to measure own-use production work of services using an output approach is largely driven by the same arguments laid out in Chapter 3. For instance, it is it is often far easier to value outputs rather than inputs, especially when there is a comparable market-equivalent service. Furthermore, the output approach is more methodologically consistent with National Account techniques – measuring and valuing the good or service produced. Finally, United Kingdom's estimates do not rely on time-use data, which is relatively limited in the United Kingdom. The latest time-use survey data relates to 2000, although data for 2014 will be available by the time the Guide is published. The fact that the United Kingdom does not need to rely on infrequent time-use data allows the production of a more frequent time series of estimates.

357. This case study will describe the United Kingdom's methodology for measuring the volume and value of output for two activities of unpaid household service work: own-use production of childcare services and own-use production of nutrition services.

7.8.2 Measuring the gross value added of informal childcare

7.8.2.1 Methodology for measuring gross value added of informal childcare

358. ONS' methodology for valuing informal childcare (all care not involving a monetary transaction and therefore includes the childcare of parents and other family members) requires first measuring the units of output – in this case, the total number of hours that children are looked after informally. In the absence of a single data source recording informal hours of care for children, the ONS adopt a four-stage approach (each section will be explained in more detail further on):

a) Estimate total annual hours of required care (population of children*24 hours*365 days).
b) Using available administrative data, calculate the number of formal childcare hours.
c) Estimate the number of hours children spend alone.
d) Total informal childcare hours = 1 - 2 - 3.

359. Following the estimation of total informal childcare hours, there are four more stages to obtain the GVA:

e) Output of informal childcare = total hours*per hour cost of a child-minder.
f) Estimate intermediate consumption of informal childcare.
g) Estimate the inputs from other own-use production work of services activities (such as housing and nutrition services). GVA of informal childcare = 5 - 6 - 7.

7.8.2.2 Measuring formal childcare hours

360. Information on both pupil numbers and available places in different types of formal care is collected for each United Kingdom region. Largely, this information is based on administrative data[36] collected by various government departments. For instance, statistics on children attending schools and early-years childcare places for England is provided by the Department for Education. As the requirement for and use of formal childcare varies for children of different ages, places are allocated in the following categories:

- Age Group 1: under 5 years old
- Age Group 2: 5 to 7 years old
- Age Group 2: 8 to 10 years old
- Age Group 4: 11 to 15 years old

361. Furthermore, as demand for formal childcare varies by time of the year, the methodology defines four types of day:

- Weekend = 104 days (52*2)
- Weekday school day = 180 days (36 weeks x 5 days)
- Weekday working holiday (school holiday but working week)= 28 days (4 weeks x 5 days plus 8 bank holidays)

[36],[26] The full list of assumptions can be found here: http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-295940).

- Weekday school holiday (school holiday and working holiday) = 53 days (12 weeks holiday minus bank holidays)

362. A set of assumptions provides the basis for estimating formal childcare hours for each age group, by time and type of day. For example, the methodology assumes that pupils attend school for 6.5 hours on school days. Similarly, children attending child-minders spend 5 hours on weekday school days, and weekday working holidays. Estimates by age group and type of day are aggregated to obtain a figure for the total number of hours spent by all children in the United Kingdom in formal care in any one year.

7.8.2.3 Accounting for time spent alone

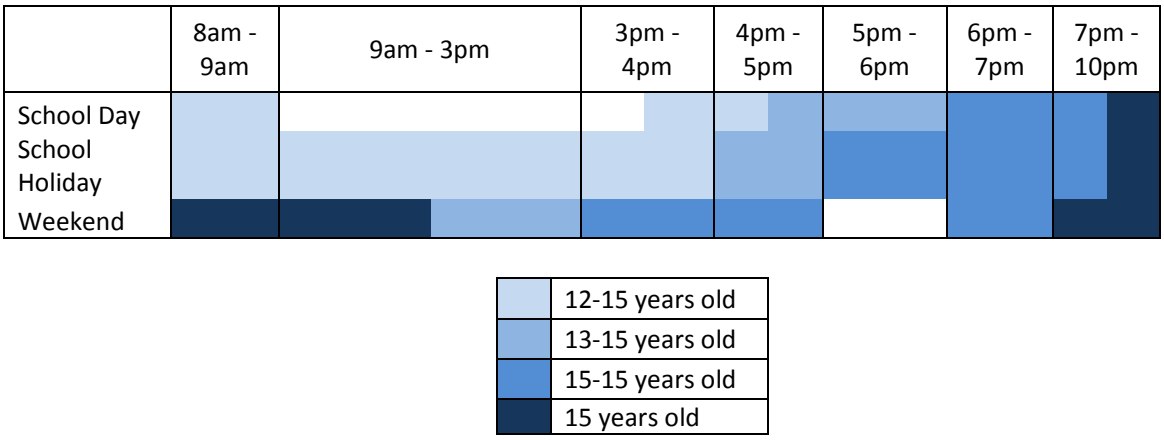
363. Evidence on the amount of time that children are left unsupervised (and therefore are not cared for formally or informally) is limited and very sensitive to reporting errors due to social norms and beliefs about the amount of time children should spend alone. A survey carried out by Kids Club Network in 1997, sponsored by Nestlé, estimated that 6% of children return home to an empty house. A similar survey (Make Space Youth Review) conducted in 2007 suggests that an estimated 34% of all teenagers return home to an empty house. The sensitivity of the issues suggests that there is under-reporting by parents. Due to the lack of consistent evidence regarding time left unsupervised, ONS use the following set of assumptions.

a) No child aged 11 or under is left unsupervised
b) 10% of 12 year olds, 20% of 13 year olds, 30% of 14 year olds and 50% of 15 year olds spend time without adult supervision.
c) No allowance for time spent unsupervised during four weeks of holiday or bank holidays.

364. These assumptions can be interpreted as a mix of two extremes. ONS could say that 10% of children aged 12 are left unsupervised all the time. ONS could also say that out of 337 days (365 days minus four weeks paid holiday of parent/carer minus eight days bank holiday) an individual 12-year-old would spend a total of 10% of their time unsupervised.

365. As Figure 7.5 shows, for a 12 year old, this unsupervised time could typically include an hour in the morning before school, plus an hour and a half after school (e.g., walking themselves to and from school), plus being left unsupervised by an adult between 8.00 a.m. and 4.00 p.m. in the school holidays while a parent is at work. This scenario assumes no time unsupervised in the evenings or at the weekends. For a 15-year old, the assumption includes the same times of day as a 12 year old, plus additional hours after school on school days, in the evenings in the school holidays and at the weekend.

Figure 7.5
United Kingdom Office for National Statistics assumption regarding unsupervised time



7.8.2.4 Estimating the output of informal childcare hours

366. As described earlier, calculating informal childcare hours requires subtracting formal and unsupervised hours from the total hours that children require care. To value this output, ONS use the cost of the nearest market-equivalent –child-minder, which costs approximately £4 per hour per child in 2014. The way in which we value own-use production work of services using the output approach differs from the input approach. In the former, we measure the actual output of the service produced, and therefore it makes conceptual sense to value using the cost of the market-alternative output. The input approach, on the other hand, tends to measure the units of labour to produce a service, and is therefore valued at the equivalent wage rate, whether that be on a replacement or opportunity-cost basis. As the input approach estimates just the value of the labour, it is more difficult, as compared to the output approach, to derive a measure of output that is comparable to output measured in National Accounts. For instance, one needs to account for intermediate consumption, and GOS.

367. ONS' approach to measuring the quality of informal childcare assumes that the quality of care given is equivalent to a child-minder. This is unlikely to be the case in all circumstances, and will inevitably lead to an overestimate in some cases, and in others an underestimate of the true value of informal childcare. For instance, ONS justifiably include sleeping hours as informal childcare. However, it could be argued that valuing this time at the cost of a child-minder is too high, and might be better valued at the cost of a babysitter. On the other hand, some of the time spent in informal childcare will be with parents, and arguably, better for a child's development than time with a child-minder, who may be looking after 5 or 6 children at a time.

7.8.2.5 Adjusting for intermediate consumption and the input of other own-use production work of services activities to derive GVA

368. The final stage of the methodology is to derive GVA by making two adjustments. The first accounts for intermediate consumption of households. Intermediation consumption is measured using information from Household Final Consumption Expenditure, collated with United Kingdom National Accounts, which includes personal effects and clothing items normally associated with the care of children.

369. The second adjustment recognises that the output of other own-use production work of services activities feeds into other areas. In the case of childcare, ONS assumes that caring

for a child in the home requires the use of a room. Therefore, a proportion of the output of household housing services is reassigned as an input to informal childcare.

7.8.2.6 Results

Table 7.6 highlights that there has been a 1.0% decline in formal childcare hours per child between 2005 and 2014. However, over the same period, there has been an 8.9% increase in the hours per child aged under five, coupled with a 1.6% decline in hours per child aged between 11 and 15. The steady growth in formal childcare hours for children aged under five is consistent with government policies aimed at improving accessibility and affordability of childcare. Furthermore, the participation rate for women aged 16 to state pension age with dependent children increased from 70.6% to 74.1% between 2005 and 2014.

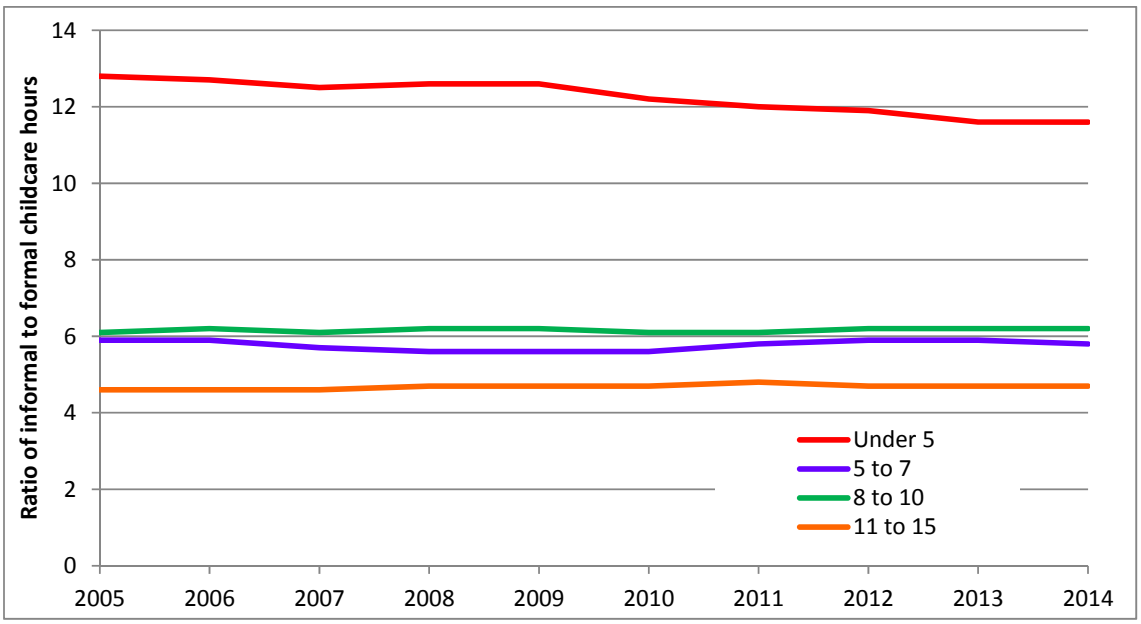
Table 7.6
Estimated United Kingdom formal childcare hours per child, 2005-2014

	Under 5	5 to 7	8 to 10	11 to 15	Total
2005	636	1266	1228	1310	1088
2010	664	1333	1225	1297	1083
2014	693	1283	1213	1289	1076
% change 2005 to 2014	8.9%	1.3%	-1.2%	-1.6%	-1.0%

Source: Office for National Statistics. (2016). Available from https://www.ons.gov.uk/releases/householdsatelliteaccounts2011to2014

370. One of the main benefits of this methodology is the ability to compare market services with own-use production of services work together, and analyse substitutions between the two. Figure 7.6 presents the ratio of informal to formal childcare hours. Overall, the ratio of informal to formal childcare hours grew slightly (1.9%) between 2005 and 2014; however, this masks significant variation between different age groups. The rate of growth in the ratio of informal to formal childcare hours between 2005 and 2014 for those aged 5 to 7, 8 to 10 and 11 to 15 was relatively low (-1.5%, 1.4% and 1.7% respectively). This is unsurprising given that these age groups are most likely to attend school, and have little option other than attending formal childcare settings. However, informal to formal childcare hours declined by 8.8% over the same period highlighting the increasing extent to which informal childcare is substituted for formal childcare settings.

Figure 7.6
Ratio of informal to formal childcare
(Hours)

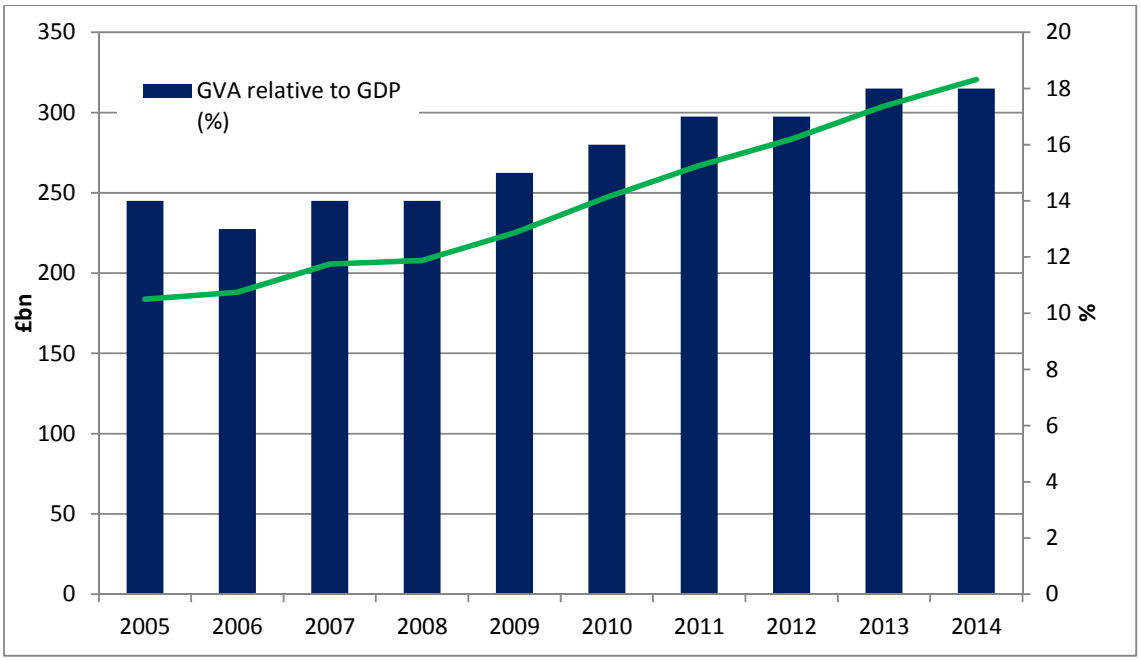


Source: Office for National Statistics (2016).

371. Finally, Figure 7.7 presents both the GVA of informal childcare, and GVA relative to total United Kingdom GDP. GVA of informal childcare grew by 74.5% between 2005 and 2014, at an average growth of 6.4% per year. Most of the increase in the value of informal childcare occurred between 2008 and 2014 - annual growth was 7.5% per year. Growth between 2005 and 2008 was slightly less at 4.2% per year. Given that total informal hours only grew by 4.9% over the 10-year period, a large majority of the growth in the value of informal childcare is accounted for by the 61.1% increase in the cost of a child minder.

372. Comparing the GVA of informal childcare with GDP, Figure 7.7 shows that the proportion of informal childcare GVA to GDP increased by 3.8 percentage points from 13.8% to 17.6% between 2005 and 2014. Further, informal childcare is the largest of all home production activities throughout the 10-year period covered.

Figure 7.7
Ratio of informal childcare to GDP



Source: Office for National Statistics (2016).

7.8.3 Measuring the gross value added of household nutrition services

373. The United Kingdom defines the output of household nutrition services as the meals, snacks and drinks prepared by the members of households for consumption, for which no monetary transaction takes place. For example, if a household were to prepare free food for a birthday party this would be included, whereas if they sell the prepared food it would not. Further, if an item of food requires no preparation at all, such as a chocolate bar, it should not theoretically be counted.

7.8.3.1 Estimating the output of nutrition services

374. In the United Kingdom, there is currently a lack of detailed information on meals produced within the household. In the absence of this data, ONS estimate the value of nutrition services within a household using data from the Family Food Survey, published by the Department for Environment Food and Rural Affairs (DEFRA). This survey provides information on calories consumed at home, which ONS uses as a proxy for volume prepared. This assumes that consumption is equal to production, and does not make any adjustment for food produced but not eaten. Further, no adjustment is made for the type or quality of the calories consumed, and it is quite likely that the estimates will include snacks that require no preparation. However, the data does allow the separation of alcoholic beverages, which are removed from the analysis.

375. To value the output ONS uses information on consumption and expenditure of calories eaten 'out' (not sourced from household supplies) from the Family Food Survey. The output

of nutrition services equals expenditure per calorie eaten out multiplied by the total number of calories eaten in.

7.8.3.2 Adjusting for intermediate consumption and the input of transport services to derive gross value added

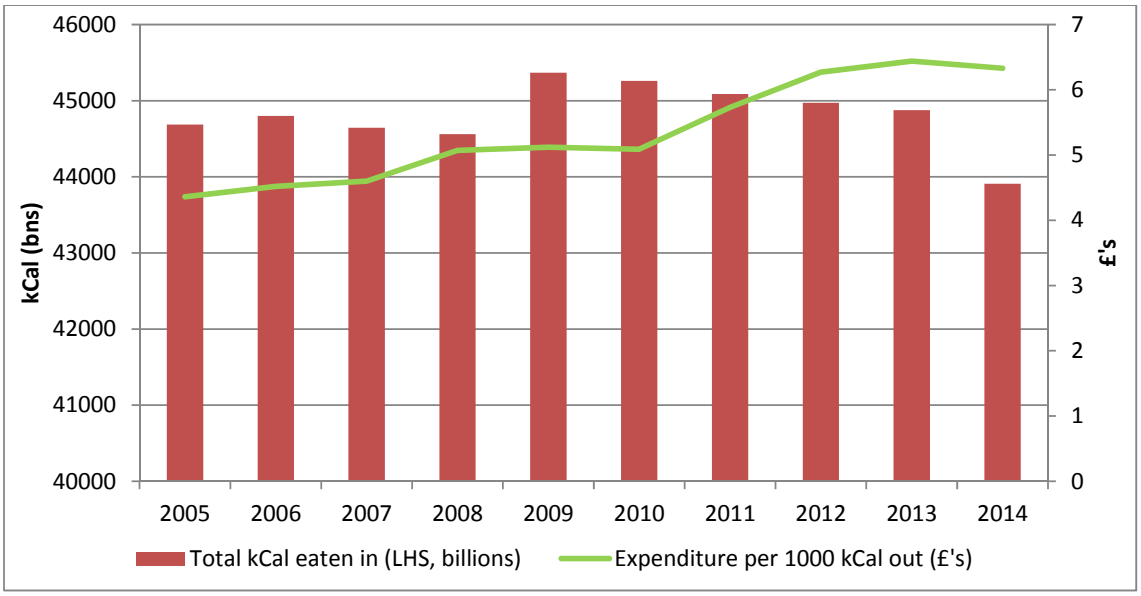
376. Finally, to estimate GVA, ONS adjust for intermediate consumption and for the input of other own-use production of services activities. As with childcare, intermediate consumption relates to items within Household Final Consumption Expenditure to which are related to private transport (e.g., fuel, tyres etc.). Further, ONS assume that private household transport is considered an input to the output of nutrition services. This accounts for the fact that an element of the market price of meals eaten out will include transportation costs of purchasing food. This is accounted for by applying a proportion of the output of private household transport as input to nutrition services. This is based on the proportion of total private miles travelled on shopping trips. GVA is estimated as output minus intermediate consumption and the input of transport services.

7.8.3.3 Results

377. Figure 7.8 shows that growth in the total number of calories eaten in was largely flat between 2005 and 2014, with average annual growth of negative 0.2%. The 1.8% increase between 2008 and 2009 was largely offset by a 2.2% decline between 2013 and 2014. This result is surprising given that the United Kingdom population has grown by 6.9% between 2005 and 2014. This results in a reduction in the number of calories eaten in per person of 8.1% between 2005 and 2014.

378. Furthermore, expenditure per 1,000 kilocalories (kCals) (excluding alcohol) increased by 45.1% from £4.36 to £6.33 between 2005 and 2014. Most of the increase occurs between 2005 and 2012, where the expenditure per calorie grew by an average of 5.3% per year. Most notably, expenditure per 1,000 kCals increased by 12.7% between 2010 and 2011. This was driven by an 8.6% decline in reported calories consumed out coupled with an increase in expenditure of 3.0%. More recently, between 2012 and 2014, average growth in the cost of calories consumed out of the house only grew by an average of 0.4%. The recent slowdown in the cost of calories corresponds with ONS' Consumer Price Inflation index for restaurants and cafes. While the rate of inflation for restaurant and café services was 4.8% in 2011, it declined in 2012 (3.3%), 2013 (2.8%) and 2014 (2.5%).

Figure 7.8
Volume of calories eaten in and expenditure eaten out, 2005-2014

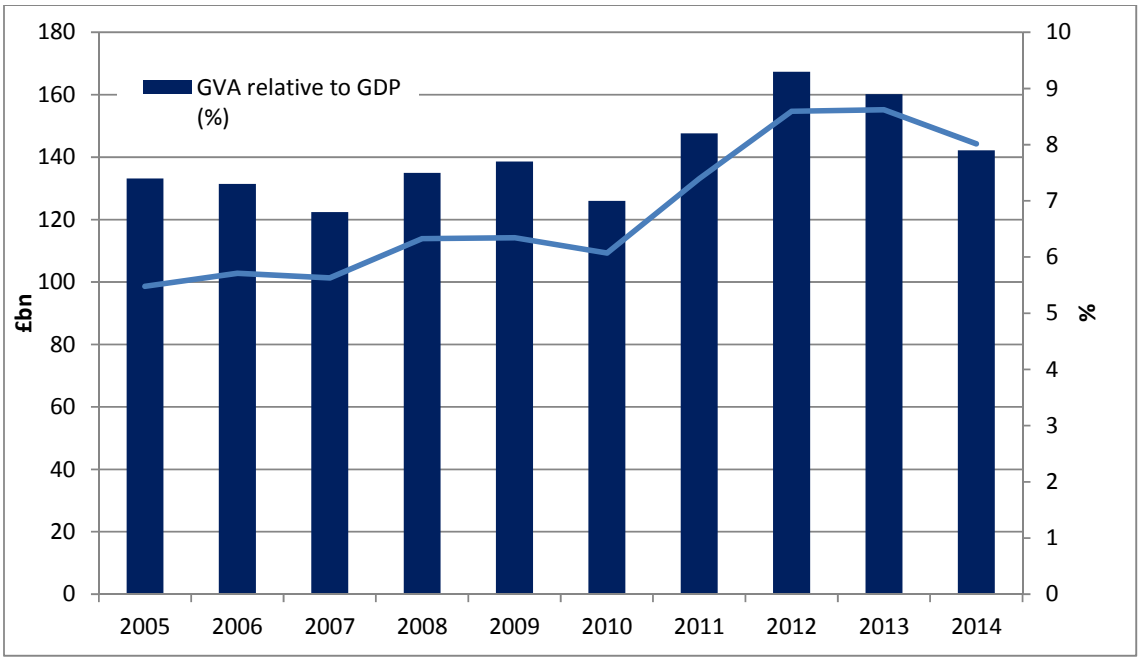


Source: Office for National Statistics (2016).

379. Figure 7.9 shows the GVA of nutrition services of households increased by 46.4% between 2005 and 2014. This was largely driven by average annual growth of 6.7% between 2005 and 2012. However, growth in the value of nutrition services declined by 6.8% between 2012 and 2014, driven by a decline in the number of calories consumed at home, and a flattening of the cost per calorie eaten out over this period.

380. In 2014, the value of nutrition services was £144.3 billion, equivalent to 7.9% of GDP. This is a largely similar position to 2005. However, within the period considered nutrition services as a proportion of GDP has fluctuated between 6.8% in 2007 and 9.3% in 2012.

Figure 7.9
Gross value added of nutrition services of households



Source: Office for National Statistics (2016).

7.8.4 Conclusions

7.8.4.1 Strengths

- Once the volume of output is estimated, it is relatively straightforward to value this output, in a way that is consistent with National Accounts, by using just the market-equivalent cost of the particular service. This is in contrast to the input approach which, using information on hours of input and wages yields an estimate that is much more in line with compensation of employees. Further adjustments, such as intermediate consumption, and GOS are required to estimate output in the input approach.
- The fact that the methods adopted here are consistent with National Accounts, allows direct comparisons between United Kingdom GDP and the GVA of unpaid household service work.
- The data required for measuring the GVA of informal childcare and nutrition services is available on an annual basis. This allows a much more frequent time series for analysis than, for example, input approaches based on time-use information.
- A large proportion of data required for United Kingdom's output approach is already freely available, as administrative data. This means that the cost of compiling many aspects of the household satellite account is relatively low, and does not require bespoke data collection exercises.

7.8.4.2 Weaknesses

- United Kingdom estimates of informal childcare do not include some paid care which takes place, but for which ONS is unable to find any data. This includes care by babysitters and au-pairs, as well as out-of-school clubs and holiday play schemes for children over 8 years old.
- Measures of informal childcare depend largely on estimates of the amount of time that children spend unsupervised. In the absence of hard evidence, these estimates are reliant on working assumptions. In the future, ONS hope to improve this situation by analysing 2014 time-use data which will be available in 2016.
- It is not possible to provide breakdowns by gender, age and other socio-demographic variables in ONS' output approach. This is important information for assessing inequalities in own-use production of services activities, and to enhance the usefulness of measures for policymakers.

7.9 Measuring consumption of fixed capital for own-use production work of services production in Italy, 2002 and 2008

381. Figure 7.10 highlights the value of products that are reallocated away from household final consumption expenditure to intermediate consumption and capital formation in 2002 and 2008. It shows that around 60% of household final consumption expenditure is allocated to intermediate consumption, and around 4% to capital formation. Italy has traditionally used the PIM model for estimating the consumption of fixed capital in their household satellite account. Figure 7.10 highlights that the capital consumption of durable goods for own-use production of services activities is estimated at €33.9m in 2002, decreasing to €30.8m in 2008. Looking at the 2008 figure more closely, 96% of the capital consumption of durable goods is due to depreciation, with the remaining 4% accounted for by capital formation. Figure 7.10 also highlights the breakdown of household final consumption in the Italian national accounts between intermediate consumption (37% year 2008) and investments (durable goods 3% year 2008). Depreciation amounted to €27.9m in 2002 at current prices compared to €32.0m in 2008. Since depreciation is less than the amount of the investments made by household (€33.9m in 2002 and €30.8m in 2008), there is a variation of the assets and equity position of €6.0m in 2002 and €1.2m in 2008. In other words, the value of purchased goods was greater than the value of goods written off in Italian households in 2008.

Figure 7.10
Breakdown of final consumption in the national accounts in intermediate consumption and durable goods, Italy, 2002 and 2008

2002

Final individual consumption 2002	Final consumption household production	Intermediate consumption household production	Durable goods household production	*Consumption of fixed capital*	*Net fixed capital formation*
Millions of euros					
771.277	461.716	275.692	33.870	*27.878*	*5.992*
percentage					
100	60	36	4	*82*	*18*

2008

Final individual consumption 2008	Final consumption household production	Intermediate consumption household production	Durable goods household production	*Consumption of fixed capital*	*Net fixed capital formation*
Millions of euros					
979.699	617.504	330.230	31.964	*30.760*	*1.204*
percentage					
100	63	34	3	*96*	*4*

7.10 Examples of continuous time-use surveys – United States

382. This section describes the two sources of US time-use data - the Multinational Time Use Survey (MTUS) and the American Time Use Survey (ATUS) – and some of the issues with integrating them into a time series.

383. Prior to 2003, there were a number of small-scale time-use surveys, carried out by the University of Michigan in 1965–66, 1975–76, and 1985 and the University of Maryland in 1992–93 and 1998–99. The response sizes of these surveys range from 1,200 to 10,000 diary days. These surveys were later incorporated into the MTUS, a cross-country harmonized set of time-use surveys.

384. The annual ATUS surveys which began in 2003, and are conducted by the U.S. Bureau of Labour Statistics. They are large scale with response sizes of 15,000 to 20,000 diary days. To estimate a time series of own-use production work of services, the ATUS and MTUS data sets are combined into a single data set. This involves overcoming a number of issues. The first is that the two surveys use different classifications. The MTUS survey split household time use into 41 different categories, seven categories of which are included in own-use production work of services: housework, cooking, odd jobs, gardening, shopping, childcare and domestic travel. The ATUS survey contains a much more detailed accounting of household activities. To retain comparability between the two data sets, ATUS categories are reclassified into one of the seven MTUS categories.

385. The second issue is that MTUS data is drawn from periodic surveys. To place them on an annual basis, we interpolate hours between survey years for each category. The Maryland

surveys were not used because the 1998–99 survey has a small sample and the 1992–93 survey is biased heavily towards the weekend. To obtain annual estimates, hours between survey years for each category are interpolated using adult population by gender and work status.

386. The main advantage of the ATUS data is that it is the annual - the only annual time-use survey - and that allows for more frequent estimates of own-use production of services. Therefore, these data can be used to examine time allocation at a higher frequency. Using 11 years of ATUS data, the U.S. Bureau of Economic Analysis has released periodic estimates of own-use production work of services, which track activities over a recession (Bridgman et al., 2012; Bridgman, 2016b). These estimates provide a unique resource for policymakers and researchers to better understand the business cycle.

7.11 Example of using time-use surveys - a light diary / full diary – Finland

7.11.1 Introduction

387. Statistics Finland has conducted four nationally representative time-use surveys, conducted at intervals of approximately ten years. The most recent survey dates back to 2009–2010 (Pääkkönen and Hanifi 2012). However, faster provision of data on changes in the use of time is needed, for example, for use in the household satellite account. For this purpose, Statistics Finland has developed a light diary that was tested at its Survey Laboratory by means of the focus group interview procedure. The aim is to study whether results comparable with those of the full-scale diary can be produced with the light diary.

7.11.2 Data

388. The light diary was tested with a sample of 1,000 persons, by mail, in connection with the Finnish time-use survey in 2010. Respondents completed the diary with 35 pre-coded activities, covering a one-day period. The target age of respondents was limited to between 25 and 64. There were two diary-keeping periods in March, each lasting one week. A reminder card was sent afterwards to all sampled persons.

389. Control data was established using information received in diaries from the full-scale time-use survey. The date of survey completion, the age of the respondent, and the 35-category classification system were consistent between the light-diary and the control data.

390. Characteristics of the Full-scale TUS and the Light Diary Survey are presented in Table 7.7.

Table 7.7
Characteristics of the Full-scale Time Use Survey and the Light Diary Survey

	Full-scale Time Use Survey	Precoded "light" diary
Type of survey	Separate survey	Separate survey
Data collection mode	CAPI or CATI	Postal inquiry
Fieldwork period	April 2009 – May 2010	March 2010, two survey weeks
Sample	Households / persons	Persons
Coverage	Household population 10 years or more	25–64 years old Finnish speaking population
Who completes diary	Household members 10 years or more	One person per household
Number of diary days	2 days, one weekday + one weekend day	1 day
Descriptions/pre-coded	Respondent writes in descriptions of activity	Respondent selects pre-coded activity categories
Activity detail	Coded to 146 activity codes	35 activity codes
Self-completion/interviewer	Self-completion with interviewers' instructions	Self-completion, no interviewer
Diary/recall	Respondent fills in the diary during the day	Respondent fills in the diary during the day
Time periods	10 minute time periods	10 minute time periods
Main and secondary activity	Main and secondary activity	Main activity, no secondary activity requested
Location	Location coded based on other diary information	No location coded
Who with	Who with recorded	Who with recorded
Coding	Activities are centrally coded	Activities pre-coded
Achieved sample	7,480 diary days	174 diary days
Response rate	Household interview: 59%, Person interview: 48%, Diary overall: 39%	Diary 17%
Editing	Fully edited	Slightly edited
Imputing	Missing evening sleep was imputed for 114 diaries	No imputing
Weighting	Yes, with calibration	Yes, with calibration
Other data collected	Household and individual interviews, week diaries for the employed	Demographic background questions

7.11.3 Non-response

391. The non-response rate was 82.6 % with only 174 individuals from the sample returning the diary. Large non-response is harmful in two ways: it reduces the sample size, increasing the standard error of estimates. Further, it can cause bias due respondents differing from non-respondents.

392. The high non-response rate in this survey is understandable. Non-response rates are often high in mail enquiries, coupled with the fact that respondents were required to fill in the diary over 24 hours, entailing a large response burden.

393. The characteristics of non-respondents were studied using variables from the sampling frame. Distributions by gender, age and education of non-respondents differed from the population (Pääkkönen and Väisänen, 2012). The non-response rate of males was seven % higher than females. Males aged 25-34 had the highest non-response rate (91.4%), while females aged 55-64 had the lowest (77.9%). Finally, the study highlighted that response rates were positively correlated to education.

394. In spite of the high non-response rates, valuable information was retrieved using the available auxiliary information. Post-stratification and generalised regression estimators helped to reduce the non-response bias. Post-stratification according age group and gender combined with calibration estimators were used for the light diary data. For a more detailed description of the weighting, see Pääkkönen and Väisänen (2012).

7.11.4 Classification of activities

395. The light-diary classified main activities into 35-categories. The classification was ordered hierarchically so that categories related to personal care were listed first, followed by gainful work and studying, travel, domestic work and eventually by free-time categories (Ås, 1978). Furthermore, the design of the classification allows direct comparability to the 146-categories used in the full-scale survey. The control data was classified by a corresponding 35-category classification for the comparison. Due to the low number of observations in the light diary data, the final analysis condensed the classification to 15-categories (see Table 7.8).

396. Respondents were asked to record only one activity for each time slot. Respondents who were doing carrying out two tasks simultaneously were instructed to select only the activity they regarded as the main activity. Unfortunately, not everybody followed these instructions - at least two activities per episode were recorded in 79% of the diaries, while 30% of respondents recorded three activities per episode. A total of 37% recorded empty episodes of time.

397. Overall though, the vast majority (82%) of episodes had only one activity. 11% and 4% of episodes had two and three activities respectively. Finally, 3% of episodes were left empty. It was impossible to ascertain which of the simultaneous activities the respondents had viewed as the main one. To resolve this issue, the classification category with the shortest code, or the highest-level activity, was deemed the main activity.

398. Finally, the following corrections were made at the editing stage to harmonise the definition of main activity with the full-scale time-use survey:

a) If gainful work was recorded as the secondary or third activity, it was changed into the main activity.
b) If socialising was recorded as the main activity and the second recorded activity was something else, the second activity was made the main activity.
c) If resting was recorded as the main activity and the second recorded activity was something else, the second activity was made the main activity.

399. Once these changes were processed, durations were calculated for the main activity categories. The time spent in gainful work increased by 26 minutes as a result of reallocating it from secondary or tertiary activity to a main activity. By contrast, the time used for meals and snacks decreased by 18 minutes.

7.11.5 Results

400. These results present time spent in the following main categories: personal care, gainful work and studying, domestic work, free time and travel. The two surveys produce similar amounts of time for these main categories with the exception of domestic work on which the time spent is 33 minutes shorter in the light diary than in the control data. The size of the difference is almost the same for men and women.

Table 7.8
Time used for main activities by type of diary and gender
(Minutes per day)

	Total			Men			Women		
Activity	Full-scale TUS	Light diary	Difference (TUS-Light diary)	Full-scale TUS	Light diary	Difference (TUS-Light diary)	Full-scale TUS	Light diary	Difference (TUS-Light diary)
Personal care, total	**630**	**624**	**6**	**627**	**621**	**6**	**633**	**628**	**5**
Sleep and resting	502	483	19	503	493	10	500	474	26
Meals and snacks	80	90	-10	80	88	-8	79	92	-13
Washing, dressing	48	51	-3	43	40	3	53	62	-9
Gainful employment, study	**240**	**243**	**-3**	**260**	**250**	**10**	**220**	**236**	**-16**
Domestic work, total	**173**	**140**	**33**	**132**	**98**	**34**	**213**	**182**	**31**
Childcare	25	17	8	13	7	6	38	28	10
Other domestic work	147	122	25	120	91	29	175	154	21
Free time, total	**317**	**309**	**8**	**337**	**339**	**-2**	**296**	**279**	**17**
Socialising	43	67	-24	48	64	-16	37	69	-32
Participation and culture	18	16	2	18	14	4	17	18	-1
Physical exercise	42	30	12	47	26	21	37	35	2
Computing	31	30	1	29	36	-7	33	24	9
Reading	35	44	-9	32	44	-12	38	44	-6
TV, video, radio	130	106	24	141	135	6	119	76	43
Other free time	18	16	2	22	20	2	15	12	3
Travel	69	72	-3	71	84	-13	67	60	7
Unspecified	12	52	-40	12	49	-37	12	56	-44
Total	**1,440**	**1,440**	**0**	**1,440**	**1,440**	**0**	**1,440**	**1,440**	**0**
Diary days	366	174		173	70		193	104	
Source: Statistics Finland									

401. Among the main categories, the results of the two surveys deviate most in the time used for domestic work. The light diary produces 33 minutes less time for domestic work per day than the full-scale diary. There are differences particularly in the home maintenance and childcare classes. Possible reasons for the observed differences in the home maintenance class are high non-response rates of the light diary or possibly due to differences in tenure type across the two surveys. Unfortunately, the latter cannot be explored as the light diary does not record information on housing. Despite the overall differences in home maintenance, the amount of time spent on renovations and repairs is exactly the same in both datasets (eight minutes).

402. Time spent caring for children is approximately one-third less in the light diary compared to the full-scale diary. However, when the analysis is restricted to only those who have children aged less than 18 years old and living at home, the difference between the two datasets is greatly reduced (light diary data 45 minutes vs. control data 46 minutes). The time used for travel (travel to work, school, shop, gym, or the like, also on foot) is almost the same in both diaries (4% difference).

403. Sleep and resting are examined together as it seems that the respondents had difficulty in making a distinction between the two (see also Lader et al., 2006). In time-use classifications, sleeping usually comes under personal care and resting under free time (e.g., Eurostat, 2009). The light diary results record less sleep and more resting than the full-scale diary. Further, total time spent sleeping and resting recorded in the light-diary is less than the

full diary. On the other hand, the light diary observes slightly more time for meals than the full-scale diary.

404. The two surveys report almost equal total amounts of time spent on gainful employment and study. For gainful employment, the difference is only four %, in contrast to studying time where the light diary reports estimates which are almost four times as much time as the full-scale diary. This perhaps is not a surprise given that the age range of the survey respondents is 25 to 64, and therefore the sample size of full-time students among them is low.

405. The total amount of free time only deviates by 2.5% in the datasets. The most notable difference between the data can be seen in socialising: the light diary produces 56% more time for it than the full-scale diary. This is likely due to respondents understanding socialising in a way that differs from the coding practice in the full time-use survey.

406. Finally, the diaries contained 13 minutes of unspecified time-use and 39 minutes of empty episodes, totalling 3.6% of the 1,440 minutes of the day. Missing data on sleep in the evening was imputed in the full-scale survey, which reduced time in the unknown category (Väisänen, 2012). In the control data, the time that remained in the unknown category was 12 minutes, or 0.8 % of the day.

7.11.6 Conclusions

407. Experiences gained from the testing of the light diary as a postal inquiry indicate that assistance from interviewers is needed to reach a satisfactory response rate and to enhance quality. In this comparison, the effect of non-response was corrected with weighting.

408. Despite low response rates (17%), the diaries produced estimates that were close to each other in most of the main time-use categories. However, there were notable differences in classes relating to own-use production of services such as home maintenance and childcare. The light diary produces one-third less time for childcare than the full-scale diary, but when the examination is restricted to only those who have children aged under 18 living at home, time spend on childcare is almost the same in both datasets. More positively, the light-diary allowed separate distinctions in the category renovations and repairs category – an important aspect of the household satellite account.

409. Most respondents found it impossible to record time use by choosing just one main activity. Apart from main activities, the diary should also allow the recording of one parallel activity. The respondents themselves should be allowed to decide which is the main and which the secondary activity (see also McGinnity et al., 2005). The editing of the data to correspond with the full-scale survey data would then be easier in the categories of socialising, physical exercise and television watching. The use of a web questionnaire could be tested as an alternative to a light paper diary. This could also improve the quality of the diaries.

7.12 An example of using a Labour Force Survey module to measure labour input to unpaid household service work – Switzerland

7.12.1 Introduction

410. In the late 1980s and the 1990s, the National Council in Switzerland, noticing the absence of statistical information on domestic and family workload as well as on voluntary work, requested more information about unpaid household service work. As a result, in 1995 the Executive Federal Council of Switzerland instructed the Swiss Federal Statistical Office (FSO) to collect statistical data on unpaid household service work.

411. The results were intended to provide a basis for statistics on hours spent on paid and unpaid household service work throughout society and their distribution between men and women. Further, the ratio of value between paid work and unpaid household service work would potentially provide an addition to the National Accounts. As a result, the FSO developed the project of unpaid household service work statistics, which became an official current statistic since 2007.

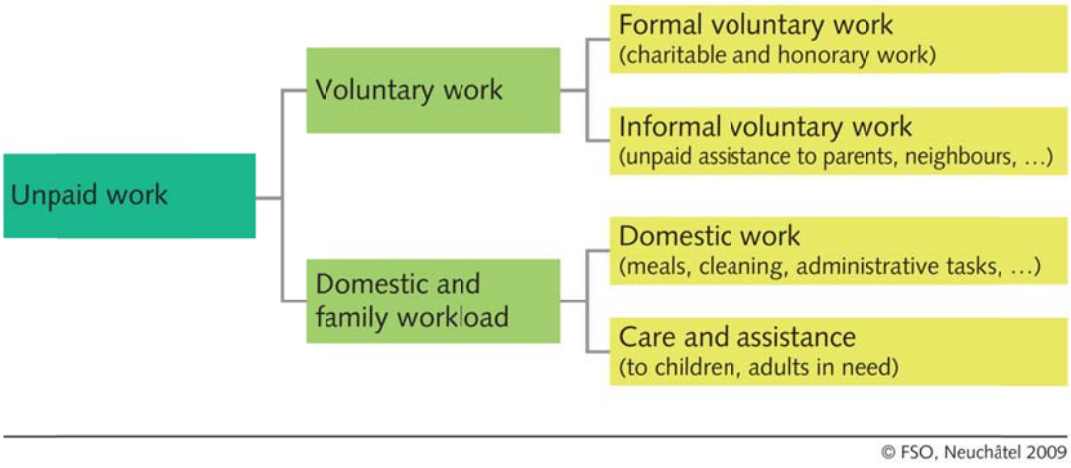
7.12.2 Implementation of unpaid household service work module into Labour Force Survey

412. To measure unpaid household service work, a specific module was appended to the Swiss Labour Force Survey (SLFS) in 1997 and every three or four years thereafter. The latest results date from 2013.

413. The "unpaid work module" provides data on activities such as domestic duties, childcare and volunteering in Switzerland. The questions identify the different unpaid household service work activities, recording the time spent on them. The relatively wide spectrum of the SLFS enables the data to be disaggregated in many different ways. Further, it allows the interesting possibility of combining information about time spent on paid work and time spent on unpaid household service work for the same individuals.

414. As individuals were questioned over the phone for the SLFS, it was important to explain concepts in the simplest way possible. The main aims of the questions concerning unpaid household service work were to define the different kinds of unpaid household service work and to measure the time spent on these tasks. Two large areas of unpaid household service work were identified: domestic and family workload, and voluntary work (Figure 7.11). Domestic work, childcare and assistance to adults includes tasks such as cleaning, cooking, shopping and administrative tasks as well as childcare and looking after people in need of care in one's own home (for the list of covered activities (Table 7.9). Voluntary work forms the second category, consisting of formal voluntary work for organisations, institutions, clubs and unions and informal voluntary work. Informal voluntary work includes, for example, neighbourly help, looking after someone else's children, domestic work for friends or relatives, transportation services (see Table 7.11)

Figure 7.11
Unpaid household service work in Switzerland



415. The chosen groups of activities are as much as possible comparable with the output-tables on unpaid household service work published by Eurostat[37] or OECD[38] on time-use surveys. In order to avoid general estimated values for an average week, the questions take account of one particular day (reference day), the preceding day of the interview or the day before that (no interviews are held on Sundays). This enables the possibility to estimate the time spent on one particular task as well as the total of unpaid household service work performed on one particular day. In addition, the survey asks the quantity of time spent on formal as well as informal volunteering during the four weeks preceding the interview.

416. The list of variables and the questionnaire from 2013 are available at:

https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/slfs.html

7.12.3 Surveys

7.12.3.1 Swiss Labour Force Survey

417. The SLFS is sent out to individuals every year. The main purpose of the SLFS is to provide information on the structure of the labour force and employment behaviour patterns. Strict adherence to international definitions allows Swiss data to be compared with OECD and EU data. Since 2010, the SLFS is conducted on a continuous basis. The surveys are completed by telephone based in the sampling of individuals.

418. Addresses are selected at random from the FSO's sample register. This is mainly based on official records of the inhabitants of the municipalities and cantons. Since 2003, an additional sampling of foreigners (15,000 until 2009 and 21,000 from 2010) was selected from the central information system on migration (ZEMIS). From the 2nd quarter of 2014, this subsample is also selected from the FSO's sample register. The statistical basis and survey units are the permanent resident population aged 15 and older. The SLFS is conducted as person survey, i.e. only one person per household is selected for the interview.

[37] Available from http://ec.europa.eu/eurostat/en/web/products-statistics-in-focus/-/KS-NK-06-004
[38] Available from http://www.oecd.org/gender/data/balancingpaidworkunpaidworkandleisure.htm

419. In total, 126,000 interviews are conducted, with participating individuals surveyed 4 times over a period of one and a half year. In 2013, the non-response rate was 20.4%.[39]

7.12.3.2 Unpaid household service work module

420. Approximately two thirds of the sample was questioned in the unpaid household service work module - amounting to around 25,000 individuals. As in the SLFS, the survey unit is the permanent resident population aged 15 and older and only one person per household is interviewed. The module is only surveyed at the first contact-interview - there is no longitudinal-information on unpaid household service work. The module is consisting of a short block of questions, during on average 4.8 minutes.[40]

421. The questions asked include:

- Main responsibility for domestic tasks and for childcare
- Hours spent on housework on the reference day (by each of the 8 predefined tasks)
- Hours spent on looking after children and care of adults on the reference day (4 tasks)
- Total hours spent on domestic tasks and childcare on the reference day (control question)
- Participation in formal voluntary work in the 4 weeks prior to interview (8 categories of associations)
- Hours spent on formal voluntary work in the 4 weeks prior to interview (by category of association)
- Participation in informal voluntary work in the 4 weeks prior to interview (7 categories of activities)
- Hours spent on informal voluntary work in the 4 weeks prior to interview (by category of activity)

422. Regarding metadata:

- The standard error of the mean for all domestic and family workload is about 0.2, for the involvement in formal voluntary work it is 0.3% and for the involvement in informal voluntary work it is also 0.3%.
- Since 2010, the reference day has been integrated in the weighting model of the module because the interviews are not spread equally over the week.
- The non-response is the same as in the SLFS survey: 20.35% in 2013.
- The survey-costs at about CHF 200,000 (approximately $205,000[41]).

[39] Available from https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/slfs.assetdetail.6897.html
[40] Available from https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/sake-ua.html
[41] Based on exchange rate on 20/04/2016.

7.12.4 Key results from the Labour Force Survey - module 2013

Table 7.9
Domestic and family workload by group of activities, 2013
(Hours on average per week)

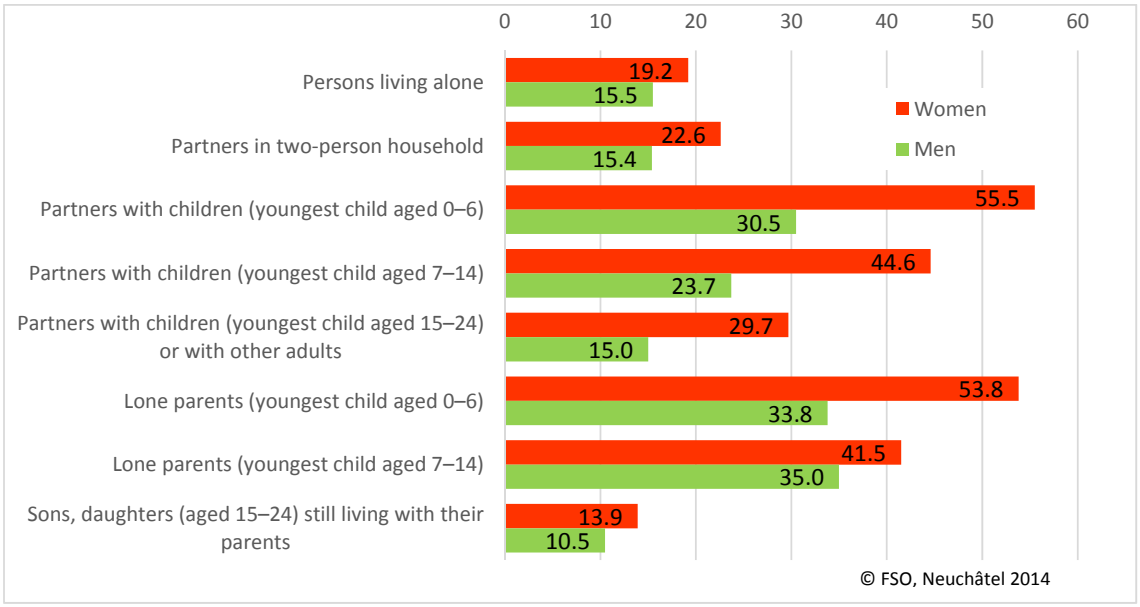
	Women		Men		Total	
	hrs	+/- h	hrs	+/- h	hrs	+/- h
Total of households:						
Total of hours spent on domestic and family workload	*27.5*	*0.4*	*17.3*	*0.3*	*22.5*	*0.3*
Meal preparation	6.8	0.1	3.4	0.1	5.2	0.1
Washing-up and putting away crockery, laying the table	2.5	0.0	1.7	0.0	2.1	0.0
Shopping	2.5	0.1	1.8	0.1	2.1	0.0
Cleaning, tidying	4.4	0.1	1.8	0.1	3.1	0.1
Laundry, ironing	2.3	0.1	0.6	0.0	1.5	0.1
Home maintenance, handicraft	0.8	0.1	1.7	0.1	1.2	0.1
Animals, plants, gardening	2.2	0.1	1.8	0.1	2.0	0.1
Administrative tasks	1.1	0.1	1.5	0.1	1.3	0.0
Total care and assistance	*5.1*	*0.2*	*3.3*	*0.2*	*4.2*	*0.1*
Feeding and bathing young children	1.3	0.1	0.6	0.1	1.0	0.0
Playing with children, helping with homework	3.2	0.2	2.3	0.1	2.8	0.1
Accompanying children, taking them out	0.4	0.0	0.3	0.1	0.4	0.0
Provision of care and assistance to adults	0.2	0.1	0.1	0.0	0.1	0.0
Only households with child(ren) or adults in need of care:						
Feeding and bathing young children	9.5	0.5	4.6	0.4	7.1	0.3
Playing with children, helping with homework	10.7	0.5	7.2	0.4	9.0	0.3
Accompanying children, taking them out	1.3	0.1	1.0	0.2	1.2	0.1
Provision of care and assistance to adults	11.4	4.3	4.5	1.5	8.3	2.5
Total of hours spent on unpaid work, permanent resident population aged 15 and older (voluntary work included)	28.9	0.4	18.4	0.3	23.8	0.3

+/- h: confidence interval 95% in hours per week

423. Table 7.9 highlights that women spend just over 10 hours more of time than men on domestic and family workload (27.5 hours per week compared with 17.3 hours). Furthermore, as Figure 7.12 below shows, women with partners and children where the youngest child is aged 0-6, spend on average 55.5 hours per week, on domestic and family workload. This exceeds the normal weekly number of working hours of a person in full-time employment, although it should be noted that this work is carried out 7 days a week. In this household category, men also participate in these tasks with an average of 30.5 hours per week.

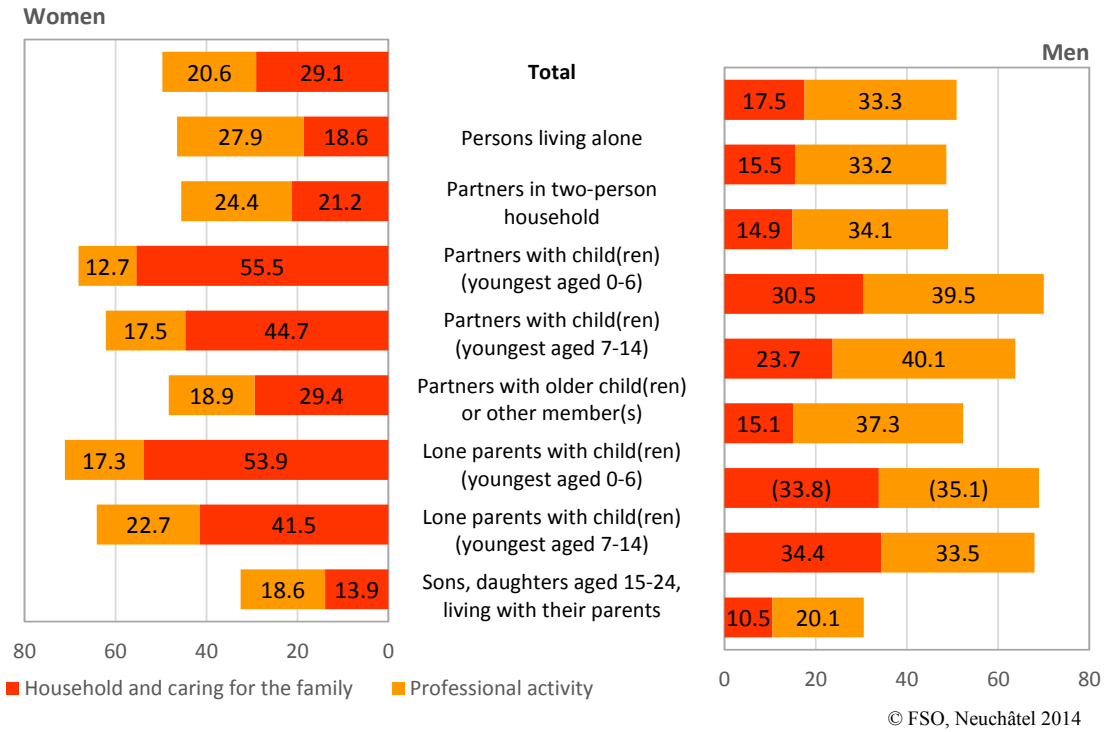
424. Figure 7.13 highlights that although working and family roles are unequally divided in Switzerland, the total amount of hours worked (total of employment, domestic and family workload) by men and women is generally the same in comparable family situations. Partners in couple households with the youngest child under 7, on average, work a total of 70 hours (men) and 68 hours (women) per week. Lone parents work similarly long hours.

Figure 7.12
Time spent on domestic and family workload, by household type, 2013
(Hours on average per week)



Source: FSO – Swiss Labour Force Survey (SLFS): unpaid work module.

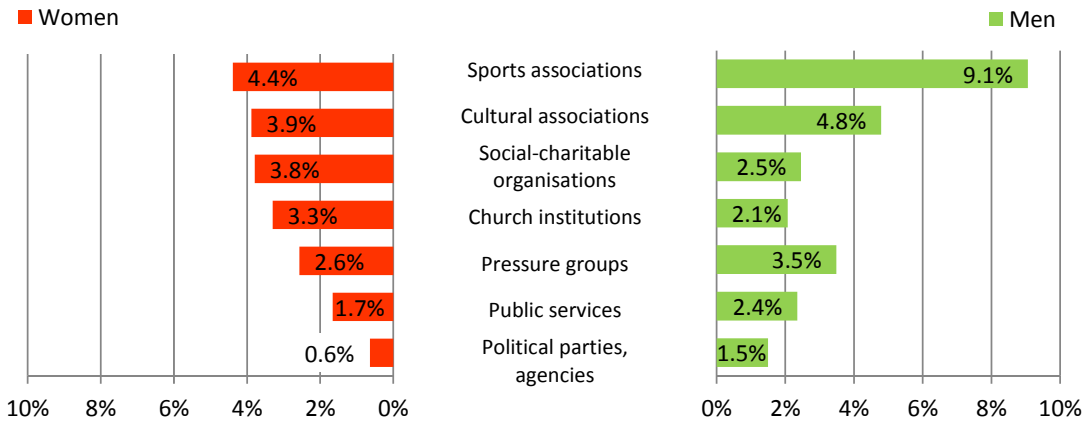
Figure 7.13
Time spent on professional activity on housework and caring for the family, 2013
(Hours on average per week, by family situation)



Source: FSO – Swiss Labour Force Survey (SLFS): unpaid work module
Note: Only economically active persons aged 15 to retirement age – women aged 15 to 63, men aged 15 to 64 years

425. Twenty per cent of the resident population, around 1.4 million people, in Switzerland carry out at least one honorary or voluntary activity for an institution or organisation. Figure 7.14 represents the involvement in formal voluntary work in 2013. Men tend to participate more than women (22.2% compared with 17.9%). Finally, individuals spend on average almost one and-a-half working days per month on these activities (women 12.0 hours, men 14.5 hours per month).

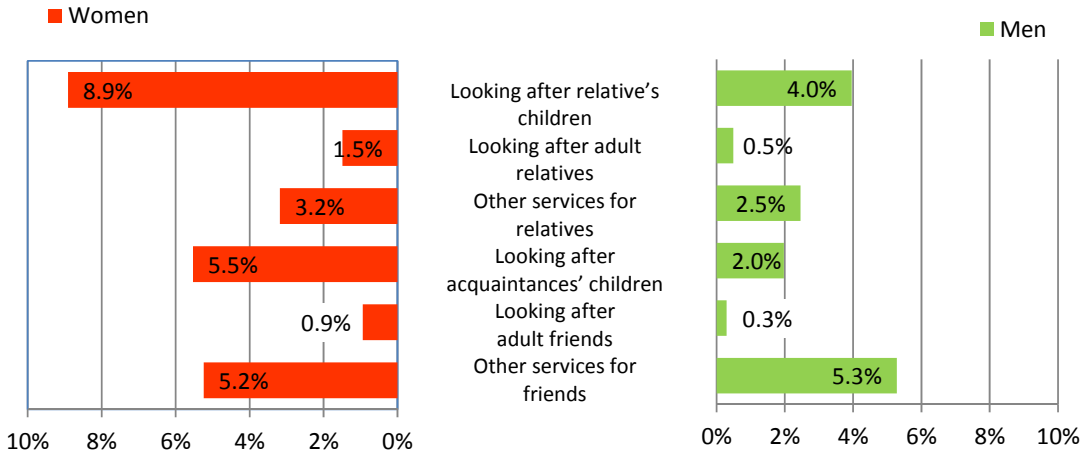
Figure 7.14
Involvement in formal voluntary work, 2013
(As a percentage of resident population, age 15 and older)



Source: FSO – Swiss Labour Force Survey (SLFS): unpaid work module

426. In Switzerland, 18.6% of the resident population– or around 1.3 million people – are involved in informal unpaid household service work. Women are more active than men in this informal context: 23.2% of women compared with 13.8% of men (Figure 7.15). Individuals spend on average almost two working days per month on these activities (women 17.2 hours, men 11.9 hours per month, see Table 7.10).

Figure 7.15
Involvement in informal voluntary work, 2013
(As a percentage of resident population, age 15 and older)



Source: FSO – Swiss Labour Force Survey (SLFS): unpaid work module

Table 7.10
Time spent on voluntary work, 2013
(Hours on average per week)

Total	Total voluntary work		Formal voluntary work		Informal voluntary work	
	hrs	+/- h	hrs	+/- h	hrs	+/- h
Volunteers 1)						
Total	4.1	0.2	3.3	0.2	3.8	0.2
Men	3.8	0.2	3.6	0.3	3.0	0.3
Women	4.4	0.2	3.0	0.2	4.3	0.3
Total population 2)						
Total	1.3	0.1	0.6	0.0	0.7	0.0
Men	1.2	0.1	0.8	0.1	0.4	0.0
Women	1.5	0.1	0.5	0.0	1.0	0.1

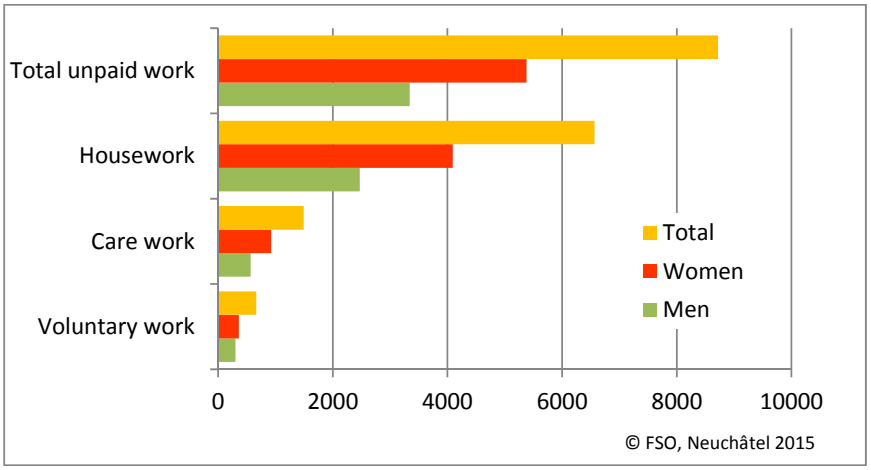
1) People aged 15 years and older, who were actively involved in formal and/or informal voluntary work over the past
2) Permanent resident population aged 15 and older, whether they are involved in voluntary work or not.

+/- h: 95% confidence limit, in hours per week

427. In 2013, the resident population of Switzerland aged 15 and above spent 8.7 billion hours on domestic workload, care-related tasks and voluntary work (Figure 7.16). In comparison, there were 7.6 billion hours of actual paid work during the same period.

428. As shown in Table 7.11, domestic workload represents a total of 6.6 billion hours - three-quarters of the total time spent on unpaid household service work. Looking after children or adults in need of care added up to a total of 1.5 billion hours per year (17% of the total volume). 665 million hours were spent on voluntary work (7.6% of total volume). Work done by women accounted for 62% of the total volume overall. This percentage varies depending on the field of activity: it amounts to 62% for domestic workload, approximately 62% for care-related tasks and 55% for voluntary work.

Figure 7.16
Volume of unpaid household service work of permanent resident population aged 15 and over, 2013
(In millions of hours)



Source: FSO – Swiss Labour Force Survey (SLFS): unpaid work module. Available from https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/employment-working-hours/working-time/hours-work/actual-hours-worked.html

Table 7.11
Distribution of unpaid household service work of permanent population aged 15 and over, 2013
(Millions of hours)

	Total			Women			Men		
	Mio. hrs	+/- in %	+/- Mio. hrs	Mio. hrs	+/- in %	+/- Mio. hrs	Mio. hrs	+/- in %	+/- Mio. hrs
Total	8720	1.2	101.6	5379	1.5	79.6	3341	1.9	63.4
Total domestic and family workload	6565	1.2	78.5	4094	1.5	61.8	2472	2.0	48.4
Meal preparation	1829	2.5	45.3	1233	1.9	22.9	597	2.4	14.0
Washing-up, laying the table	750	1.5	11.5	456	1.9	8.8	294	2.5	7.4
Shopping	756	2.3	17.2	445	2.9	13.0	311	3.7	11.4
Cleaning, tidying	1115	2.2	24.6	799	2.7	21.2	316	4.0	12.6
Laundry, ironing	517	3.6	18.5	415	4.1	17.0	102	7.1	7.2
Home maintenance, handicraft	437	5.7	24.8	148	8.3	12.4	289	7.5	21.5
Animals, plants, gardening	701	3.7	26.0	391	4.5	17.4	309	6.2	19.3
Administrative tasks	460	3.7	17.2	206	5.2	10.7	253	5.0	12.7
Total childcare and asistance to adults	1490	3.3	48.8	923	4.2	38.7	567	5.3	29.9
Feeding and bathing young children	340	5.1	17.2	233	6.2	14.5	108	8.6	9.3
Playing with children, helping with homewor	980	3.6	35.8	588	4.8	28.1	392	5.7	22.3
Accompanying children, taking them out	127	9.4	11.9	70	10.2	7.1	57	16.7	9.5
Provision of care and assistance to adults	42	31.7	13.4	32	40.2	12.8	10	38.6	4.0
Total voluntary work	665	4.4	29.2	363	5.9	21.5	302	6.6	19.9
Formal voluntary work	317	6.2	19.6	119	9.4	11.2	198	8.2	16.3
Informal voluntary work	348	6.1	21.3	243	7.5	18.3	105	10.5	11.0

+/- : confidence interval 95% in % or in million hours per year.

7.12.5 Conclusions

429. There are many advantages to using a module on the Labour Force Survey to measure unpaid household service work. They include:

- Since 1997, the unpaid household service work module supplies Switzerland with good quality information on domestic and family workload as well as on formal and informal voluntary work.
- It provides a comparison of time spent in paid work and unpaid household service work for the same individuals.
- Relatively low budget: estimated survey-costs at around CHF 200,000 (approximately $205,000)
- The module can be easily repeated each 3 or 5 years.

430. However, the limitations are:

- Only one person is surveyed per household. This means that while the results provide some insight into the way households are managed (main responsibility for housework and childcare), it does not tell us how much unpaid household service work is done by all the members of a household together.

- Because in the CATI-interview we are working with predefined tasks, we are limited in differentiations. For instance, there is no possibility to separate the task "Care of animals or plants, gardening".
- There is a lack of subjective or contextual information (e.g., who was the activity carried out with, or for whom).
- There is an issue of recall – individuals may not remember their unpaid household service work activities on the reference day. Furthermore, the results rely on people correctly distinguishing the category of unpaid household service work. For instance, some might describe playing with children as either childcare or leisure.
- Lack of information regarding simultaneous activities.

7.13 Connecting a household satellite account to a health satellite account - Mexico

431. According to the 2008 SNA,[42] there are two types of satellite accounts, and at least four areas (tourism, environment, health and unpaid household service work activities) that can be extended depending on the needs of each country or sector through others specific issues such as agricultural commodity output (e.g., coffee), NPI, pension manager, water, forest, etc. The common feature of the satellite accounts is that they consider the SNA as a starting point. This study examines the key sector, which presents an extension of the system (extend of the production boundary), allowing elements that are invisible in the central system.

432. This satellite scheme is useful for economic analysis, allowing determination of specific activities that play a key role in the economic transactions besides their use for economic analysis and particularly as support for the design of economic and social policy. The fact that they are satellite accounts does not mean that their treatment should be equal or uniform. In principle, the only common feature they have is its dependence on SNA. The consistency[43] among the different satellite accounts is not ensured by the central system, even they are consistent with SNA.

433. The experience has taught us that it is not possible to use widely the same procedures for each satellite account, nor use the same structure or classifiers. The extent of production boundary for several key sectors is also applied differently. Some limits are similar to the central system's ones, but others go beyond the boundary, and are more related to issues such as social wellbeing rather than the measurement of economic activity[44].

434. The experience in building satellite accounts allows to define key classification patterns that help to incorporate the elements, which are the measurement object inside the boundary, while at the same time classify the remaining elements outside the boundary. The measurement object of tourism satellite account is for example the consumption, which occurs outside the usual environment. The measurement object of a culture satellite account is the economic activities derived from cultural practices. For example, singing with relatives or friends is not considered; whereas singing in a theatre, where economic flows occur is measured in this satellite account.

435. The ranking of the information distinguish between connected activities, main and support activities, specialized or not specialized producers, etc. These key classification patterns match some criteria such as the third party. This allows showing if an activity is productive, depending on its capability to transfer its service to a different person than the one who have produced it. For example, ironing clothes, which is unpaid household service work, constitutes a productive activity, that increases the wellbeing of another person. On the other hand, brushing or making sport exercises increases the wellbeing only of the person who performed such activities.

436. The development of key classification patterns or criteria should follow the principles of consistency, completeness, comparability and coherence, which are useful in processes or

[42] See SNA 2008, paragraph 29.86 to 29.87.
[43] "Many satellite accounts are possible but, though each is consistent with the central system, they may not always be consistent with each other. (SNA 2008, 29.4)"
[44] See SNA 2008, paragraph 1.84.

activities that appear in several satellite accounts. Because of incompleteness, for example, an activity can appear in two or more satellite accounts.

437. Developing schemas and roadmaps describing each process ensures homogeneity of the quantitative processes associated with the construction of satellite accounts. It helps to identify similar ways from various accounts in using resources, methodological and statistical tools, quality control models (e.g., Generic Statistical Business Process Model), risk matrix, etc.

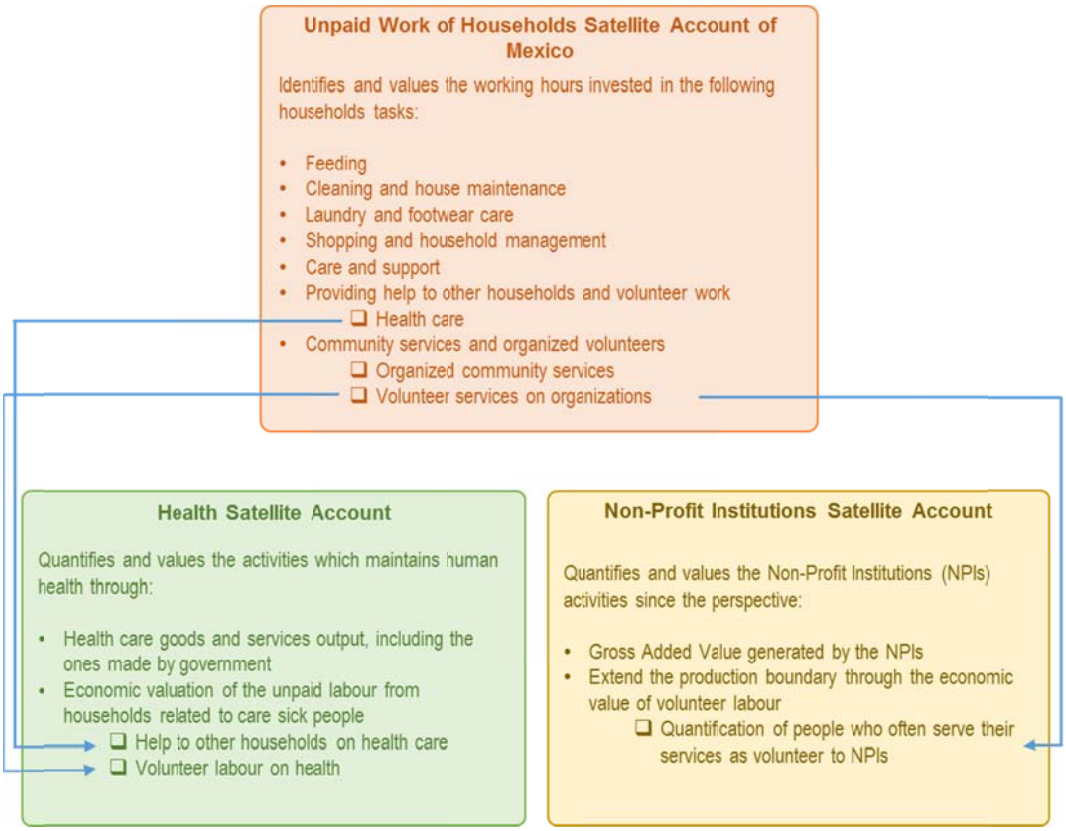
438. Based on the analysis of these similar ways among unpaid household service work of households satellite account, health satellite account and NPI' satellite account, the following points were derived:

- Repeating work was avoided, particularly when it refers to the same issue addressed by two satellite accounts with apparently different profiles.
- Cross-cutting issues from satellite accounts, such as GDP, employment, volunteer labour, or replacement cost valuation or equivalent function can be addressed at the same time.
- Boundaries between each satellite account were set and recognized.
- Confidence in the generated results and consistency of information between the accounts was ensured. It showed same result from the same variable, although it came from a different sector.
- The not-additive rule of satellite accounts was used.
- Synergies between different work teams helped to gain further knowledge and exchanging of ideas.
- Good practices were transferred from one project to another.

439. Figure 7.17 shows the linkage between the unpaid household service work of household satellite account and health and NPI's satellite accounts. Links to other satellite accounts will gradually be identified in developing other accounts. One might expect, for example, a linkage to the culture satellite account, in particular about volunteer labour on cultural activities such as civic, patriotic and religious festivals, or film, dance and theatre festivals management. Environmental accounting, meanwhile, also have to measure unpaid household service work on reforestation, recycling, cleaning the streets and trash collection, care of beaches, etc. Its linkage with housing satellite account lies on activities such as housing extension and improvement, own construction, supervising and own production. Almost all of these activities have household participation, either through work provided by the household or by other households (close relatives or volunteer labour). Regarding the tourism satellite account, linkages are identified from participation in volunteer labour in activities such as tour guide, care of beaches, care of protected natural areas, protection of archaeological sites and so on.

440. This allows analysing the measurement processes in the central SNA, e.g., contributing to the valuation of unpaid household work in housing. This kind of activities is valued for their imputed costs by the central system where labour cost is added to the cost of used materials.

Figure 7.17
Example of the linkage between unpaid household service work and other satellite accounts



441. Figure 7.17 shows intersecting elements such as help to other households in health care, volunteer labour in health care through an organization, and volunteer work in different areas (environment, development, welfare, etcetera), which appears in recurring and organized manner.

442. The practice of linking processes between different satellite accounts allows extrapolating not only experience but also the measurement schemas for particular variables, as identified in the previous paragraph. For example, for the various satellite accounts work is needed to identify the unpaid household service work hours on health care from TUS, or to align the organized volunteer work, and the work performed directly by household, using the employment and NPI's surveys.

443. The figure highlights in particular the issue of economic valuation of volunteer labour. In the three satellite accounts, labour is calculated by the method of replacement cost (hybrid method), using the average compensation of employees from the central system (although alternatively they could be calculated by using collected wages from employment surveys). For other satellite accounts, which are not mentioned in the figure, such as tourism and culture, volunteer labour appears as a cross-cutting issue.

444. The experience in building satellite accounts contributes to the identification of common practices and could serve to establish the first steps towards the development of a specific satellite accounts' handbook. Such practices should be always presented as an extension of the central SNA.

Chapter 8 Current and Future Research Areas

8.1 Simultaneous activities

8.1.1 What are simultaneous activities?

445. An activity may be the only one that is carried out over a particular interval of time, that is to say a *single activity*. Or, as is sometimes the case, an activity may be carried out in parallel with one or more other activities over an interval of time, the whole set being referred to as *simultaneous activities*. Simultaneous activities complicate the valuation of own-use production work of services, because, depending on the specific activities and the valuation approach used, it may be necessary to determine how much time was devoted to each activity (UN, 2005).

446. How we define and record multitasking influences conclusions about its prevalence and importance. Different perceptions of what is multitasking may lead to differences in its recording, particularly if guidance on how and what to record is not provided. This may call into question the extent to which we can compare inter-participant time-use diaries.

447. Simultaneous activities are different from consecutive activities, which may occur in the same block of time, but which clearly occur at distinct times. Ideally, all sequential activities should be recorded as primary, taking the time to report the starting and stopping times and only true simultaneous activities would be reported as secondary (or ignored if secondary activities are not collected).

448. However, respondents may find it convenient to report certain short-duration activities as secondary, even though they were really the primary activity. For example, if a respondent interrupts their ironing to answer the phone, these activities should be recorded as ironing, talking on the phone, and ironing. Yet, the respondent might report the single activity of ironing and report talking on the phone as a secondary activity.

449. Thus, secondary-activity reports not only include true simultaneous activities but almost certainly also short-duration sequential activities that respondents did not report separately. If the activities are sequential, we will have overestimated the total time spent on any principal function, as we have allocated a full 10 or 15 minutes to both the primary and secondary activities.

8.1.2 Why is multitasking important?

450. Multitasking is considered important due to the fact that:

- Multitasking is highly prevalent. People participate in more than one activity concurrently for approximately one third of the day (Floro and Miles, 2003), meaning that multitasking can "add" up to seven hours to the average waking day (Kenyon, 2010).
- Multitasking is particularly prevalent in specific types of activities. For instance, childcare activities are often performed in parallel with other activities like housework but respondents will often report the care-giving activity as a secondary

activity. Thus, much of the time spent in childcare may not appear in survey estimates if only primary activities are covered.

- Accounting for multitasking has implications for the understanding of well-being and inequality in society. Evidence suggests that multitasking is differentially distributed across and is linked to demographic factors including age, culture, educational attainment, employment status, gender, presence of children and income (Floro and Miles, 2003). Women, for instance, tend to do multitask more than men.
- Multitasking has serious consequences on people's well-being and quality of life. Tendency to multitask can imply potential benefits in terms of increased productivity, but it can also represent the intensification of work and the lack of discretionary or 'pure' leisure time (as in the case of overlap between work and leisure activities).

8.1.3 How are simultaneous activities treated in time-use surveys?

451. While most time diaries (as the ones used to create the HETUS database) ask respondents to report both their primary activity as well as anything else they were doing simultaneously with the primary activity, some time-use diary surveys record only the main activities that people perform and disregard the secondary (or tertiary) activities that happen in the meanwhile. Other surveys only collect information on certain secondary activities, such as childcare, and even then, sometimes through special supplements to regular time-use surveys.

452. When simultaneous activities are recorded, it is necessary to prioritise these as main, secondary, etc. Despite efforts to harmonise different surveys, important differences in the specification of primary and secondary activities remain. Table 8.1 presents six different ways of recording multitasking within five time-use diaries, suggesting that these surveys mean different things by "multitasking".

Table 8.1
Different ways of recording multitasking

Survey name and instructions	Instruction summary
American Time Use Survey, USA, 2007 „If respondents report doing more than one activity at a time, they are asked to identify which one was the „main" (primary) activity. If none can be identified, then the interviewer records the first activity mentioned." (BLS, 2009)[6].	(1) Main activity (2) First activity mentioned
Norwegian time use survey, Norway, 1980-81 The first activity column was headed: „Most important activity in the period". The second activity column was headed: „The period was simultaneously used for." (Kitterod, 2007, 173).	Most important activity
OPCS Omnibus Survey, UK, 1995 „Sometimes you maybe doing two things at the same time. Please try and choose what your main activity was. For example, keeping an eye on children while doing housework should be recorded as „Cleaning house/tidying" rather than „Care of own children and play". If you can't choose between two or more activities record the one you did for the longest time as the main activity." (Gershuny	Longest activity
Survey of Adolescent Time Use and Well-Being, Ireland, 2007-2008 „If you were doing more than two things, decide which two activities demanded most attention." (Hunt, nd).	Most attention
UK National Survey of Time Use, UK, 2000-2001 „If you were doing more than one thing at the same time, record the second activity in this column. For example, you might be watching television (main activity) and drinking tea or watching children (second activity). You must decide which is the main and which is the second activity." (ONS, 2000).	Guidance by example

Source: Kenyon (2010)

8.1.4 Measuring time spent in simultaneous activities

453. A first approach for measuring time spent in simultaneous activities is to count only the time spent in the primary activity, while the sum of secondary activities may be counted and tabulated separately. This is the most commonly used approach in time-use surveys, usually because it simplifies estimation and tabulation. As discussed above, however, counting only primary activities in producing statistics of daily totals of time-use means omitting many meaningful activities that are often reported as secondary activities.

454. A second method is to allocate the same amount of time to the activities performed simultaneously. For example, simultaneously cooking and watching the television for an hour would be measured as an hour of cooking and an hour of watching the television. This method, although easily implementable, does not satisfy the constraint that a day has 24 hours. The method also presumes that the "output" of an activity performed jointly is the same as when the activity is performed solely. This feature is particularly troublesome when the data are used in valuation of housework.

455. A third approach allocates time spent on simultaneous activities on the basis of the proportion of the time that a group spends on primary activities. This method computes the total amount of time a population group spend on a given activity, on average, and assigns an hour of time spent by an individual simultaneously performing the activity on the basis for the proportion of the group totals. For example, if teenage girls spend 10 hours a week talking on the phone (as a primary activity) and 20 hours a week watching television (also as a primary activity), giving a ratio of 1:2, then 9 hours jointly spent talking on the telephone

while watching television would be allocated as 3 hours on the phone and 6 hours watching television. The advantage of this approach is that the constraint that a day has 24 hours is satisfied; however also this approach assumes the "output" of an activity performed jointly is the same as when the activity is performed solely (UN, 2005); moreover it gives the impression that less time is being spent on an activity than in actuality.

456. The example below, based on the 2008-09 Italian time-use data, exemplifies the relevance of simultaneous activities and the related measurement challenges. Table 8.2 reports the average time spent on primary (by rows) and secondary (by columns) activities relevant for own-use production work of services. On the main diagonal (highlighted in yellow) are the minutes of the main activities exclusively.

Table 8.2

Example matrix time-use activity for primary and secondary own-use production of service work activities, Italy, 2008 and 2009

(Minutes per day)

TUS categories	0	01	02	03	1	11	12	13	2	21	22	3	31	32	33	34	35	36	37	38	39	4	41	42	43	5	51	52	6	61	62	63	7	71	72	73	8	81	82	83	84	90	900	901	902	903	904	905	906	907	908	909	99	Totale	
0 CARE OF HIS PERSON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
01 STAY, TO BED SICK	0	522	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	523	
02 EAT, DRINK	0	0	57	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	33	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	121	
03 OTHER CARE OF HIS PERSON	0	0	0	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	2	9	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102	
1 WORK EXPERIENCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11 HOME WORK	0	0	0	0	0	106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106	
12 SECOND JOB	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
13 OTHER TIME TIED TO WORK	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
2 EDUCATION, STUDY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21 SCHOOL, UNIVERSITY	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
COURSES SPECIFIED	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
3 CARE OF YOUR HOUSE AND	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
31 COOKING, WASHING AND STORING THE DISHES	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**38**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**64**	
32 CLEANING AND REORGANIZATION OF THE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**50**	
33 WASH, IRON AND WORKING OF ITEMS OF CLOTHING	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**203,6**
34 GARDENING AND CARE OF	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	
35 CONSTRUCTION AND	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	
36 PURCHASE OF GOODS AND	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	
37 MANAGEMENT OF THE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	
38 CARE OF CHILDREN / BOYS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	
FAMILY	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	
4 ACTIVITIES OF VOLUNTEER, AID FREE TO OTHER FAMILIES, SOCIAL PARTICIPATION AND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
41 ACTIVITIES OF VOLUNTEER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
42 AID DATA FOR FREE TO FAMILIES OF OTHER PEOPLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
43 PARTICIPATION IN SOCIAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
5 SOCIAL LIFE, LEISURE AND CULTURAL ACTIVITIES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
51 SOCIAL LIFE	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52	0	0	0	0	0	0	0	0	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	
52 LEISURE AND CULTURAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
6 SPORT AND OUTDOOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
61 EXERCISE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	
62 HUNTING, FISHING, COLLECTION OF MUSHROOMS,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
63 OTHER ACTIVITIES RELATED TO SPORTS AND OUTDOOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7 ARTS, RECREATION AND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
71 ARTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
72 RECREATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
73 GAMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	11	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
8 MEDIA AND COMMUNICATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
81 READINGS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	17	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	
82 TELEVISION AND VIDEO	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	1	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112	
83 RADIO, MUSIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
84 COMMUNICATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
90 JOURNEYS ACCORDING TO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
900 Movements for self-care	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
901 Navigating on business	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	14	
902 Movements for education, study	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	
903 Movements for the care of their family and their home, the goods and services, household	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	20	
904 Movements related to voluntary activities, aid to other families, social	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	7	
905 Movements related to social life, entertainment and cultural activities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	19	
906 Movements related to sports and other outdoor activities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	5	
907 Movements related to their	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
908 shifts associated with changing the location, for leisure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	6	
909 children shifts with someone, without specifying the reasons for	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
99 TIME Unspecified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
Totale	**0**	**523**	**59**	**84**	**0**	**106**	**1**	**5**	**0**	**13**	**1**	**1**	**39**	**35**	**12**	**17**	**3**	**24**	**1**	**19**	**2**	**0**	**1**	**8**	**10**	**0**	**130**	**5**	**0**	**28**	**2**	**0**	**0**	**1**	**2**	**13**	**0**	**21**	**171**	**36**	**1**	**0**	**6**	**11**	**1**	**16**	**6**	**14**	**4**	**1**	**4**	**0**	**2**	**1440**	
												147																																													**153,7**			**1229,3**

457. Table 8.2 highlights that the time spent on secondary activities adds up to 4 hours a day. This is important to understand what may be the impact of multitasking. In particular:

- For codes 31 - 39 the total of the diagonal of the yellow cube equals 143.4 minutes (see the numbers in red).
- The number of minutes in the whole yellow cube equals 147 minutes. For example, for those who are doing "cooking, washing and storing the dishes" as a primary activity, they are spending 0.9 minutes taking "care of children / boys of his family code 38)".
- If we look at the row totals of the activities 3.1-3.8 we have that out of a total of 203.6 minutes about 56 minutes are spent in secondary activities defined as "social life" (14.1 minutes see the numbers in green) and "television and video" (25.4 minutes see the numbers in green). In practice, out of a total of 203.6 minutes spent in household productive activities there are 56 minutes of secondary activities spent in free time and social life. The question is then whether to consider these minutes as productive for estimating the value of own-use production work of services.
- The same is true if we look at the column totals of activities 3.1-3.8. Out of 153.7 minutes 6 are spent in free time and personal care as secondary activities (see the numbers in green). i.e., 2 minutes spent watching TV, almost 1 minute in social life activities, 1.6 minutes eating and drinking, almost 1 minute for personal care, etc. Again, the question is, should this be included as own-use production work of services time?

8.1.5 Valuing time spent in simultaneous activities

458. Assuming that an agreement was found on the way overlapping activities are reported and measured, a number of issues related to their valuation remain, which makes it difficult to incorporate simultaneous activities in valuing own-use production work of services.

459. To illustrate, assume a respondent spent one hour cooking (primary activity) and looking after children (secondary activity) at the same time. If the generalist-wage approach is used then valuation is straightforward, with the entire hour being valued at the generalist wage. If the specialist-wage approach is used, then one must determine how to value that hour of time: value the entire hour at the professional cook wage, value the entire hour at the childcare worker wage, or value part of the hour at the housekeeper wage and part at the childcare worker wage. If the latter valuation is used, one must determine how to apportion time to the two activities (see previous section). The treatment of simultaneous activities is much simpler if a generalist wage is used, although both valuation approaches require disentangling the activities when one of the simultaneous activities is not household work.

460. Table 8.3 presents estimates of the time spent in nonmarket production, broken down by activity, plus four estimates of the total value of this production in the U.S. in 2003 based on ATUS data. Frazis and Stewart (2004) apply the generalist wage and the specialist wage to two alternative definitions of household work. The first definition includes household activities and care of household members done as a primary activity. The second definition is

broader, as it also includes childcare as a secondary activity.[45] The authors exclude secondary childcare that was done at times when the respondent was engaged in nonmarket work as a primary activity. The specialist wages were generated using the Outgoing Rotation Group files for 2003 from the CPS. The hours-weighted average wage for each 3-digit occupation was computed and the time spent in each nonmarket activity was valued at the wage for the occupation that most closely resembles the activity. For the generalist wage, the hours-weighted average wage for house cleaners and housekeepers was used. Using the specialist wage rather than the generalist wage adds between 6 and 9 percent to the value of nonmarket work, although there is some variation across activities. Differences in the valuations of individual components are as expected.

Table 8.3
Alternative valuations of own-use production work of services, American Time Use Survey, 2003

Activity	Aggregate Hours (in Billions)	Aggregate Value (in Billion $) of Nonmarket Production Using … Specialist Wage	Generalist Wage
Housework	51	461	461
Meal Preparation/Clean-up	44	376	397
Interior/Exterior Repair	13	178	121
Yard Work	16	183	149
Purchasing Goods and Services	67	609	609
Other Housework	27	374	243
Child Care (as primary activity)	39	373	359
Adult Care	6	52	52
Total (excluding seconday childcare)	**253**	**2,605**	**2,391**
Child Care (as secondary activity)	85	746	777
Total (including seconday childcare)	**348**	**3,351**	**3,167**
Paid Work*	277		4,888
Gross Domestic Product†			11,004

Source: Frazis and Stewart (2004).

8.1.6 Conclusion

461. Inclusion of simultaneous activities in the valuation of own-use production work of services requires important decisions on how to measure time spent in these activities. Current knowledge on this issue is not sufficient for the formulation of clear-cut recommendations and further work is required.

[45] The American Time Use Survey (ATUS) does not collect information on secondary activities. It does, however, include a set of questions asking respondents to identify times when a child under 13 was "in your care." The goal of these questions is to measure the amount of time that respondents spend looking after children while doing something else.

8.2 Volunteer work

462. The forms of work framework from the 19th ICLS was discussed in Chapters 2 and 3 of this report. It was noted that two of the forms of work within the framework could be considered as 'unpaid household service work', namely own use provision of services and volunteer work. In common with own-use production work of services (the main reference point for the material in this guide), statistics on participation and valuation of volunteer work are relatively scarce.

463. Those seeking explicit guidance on the measurement and valuation of volunteer work can refer to existing guidance material. In 2011 the ILO published a Manual on the Measurement of Volunteer Work,[46] which includes definitions, and recommended measurement approaches for volunteer work. Also within the manual there is a brief discussion on valuation approaches. The considerations in choosing a measurement and valuation approach are very similar to those discussed in this guide. However, if a replacement cost approach is adopted to value volunteer work it is worthwhile to consider which occupational groups will be used to calculate the 'shadow' wage and this may differ from the group used in the case of own use provision of services.

464. A point of note in using the 2011 ILO Manual is that, as it was written before the standards from the 19th ICLS were adopted, it applied a different definition of volunteer work. The key difference relates to the scope of activities considered to be volunteer work. Specifically the 2011 ILO Manual defined volunteer work as "Unpaid non-compulsory work; that is, time individuals give without pay to activities performed either through an organization or directly for others outside their own household". Within the forms of work framework adopted at the 19th ICLS the scope was narrowed so that volunteer work is now defined as unpaid, non-compulsory work done for the people outside the household or family. The impact of this relates to work done for the benefit of family members living in other households, previously this was considered volunteer work but under the latest standards it is considered part of own-use production work of services along with unpaid activities done for household members.

465. In addition to the ILO Manual the forthcoming update of the UN Handbook on Non-Profit Institutions in the System of National Accounts[47] will also discuss approaches to valuation of volunteer work.

466. Any country wishing to include volunteer work within their measurement and valuation approach should refer to the available guidance. In addition it is critical that the forms of work included in any estimates of value should be explicit and that if volunteer work is included it should be distinguished in the measurement and valuation process from own use provision of services. This will ensure that the measurement is in line with the standards from the 19th ICLS and aid in the transparency, comparability and coherence of the estimates produced.

467. While, as already stated, the guidance in this manual will have some relevance to measurement and valuation of volunteer work it would be worthwhile to develop explicit

[46] Manual on the measurement of volunteer work, ILO, 2011: http://www.ilo.ch/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_167639.pdf

[47] At the time of writing the updated handbook was proceeding through a consultation process. The draft which was made available for consultation can be found at: http://unstats.un.org/unsd/publication/seriesf/seriesf_91e.pdf

guidance adapted specifically to those activities to identify and promote good practices and relevant concepts. The Task Force recommends this as an area of work worthy of consideration for follow up activities.

Glossary

Compensation of employees: The total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period. (SNA 2008, 7.5)

Consumption of fixed capital: The decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage. (SNA 2008, 10.25)

Household final consumption expenditure: The expenditure, including expenditure whose value must be estimated indirectly, incurred by resident households on individual consumption goods and services, including those sold at prices that are not economically significant and including consumption goods and services acquired abroad. (SNA 2008, 9.113)

Household: A group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food. (SNA 2008, 4.4)

Imputed compensation for labour input to own-use production work of services: The value of labour input to own-use production work of services. There are many approaches to valuing the labour input to own-use production work of services, including the opportunity cost, and replacement cost methods.

Intermediate consumption: The value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital. (SNA 2008, 6.213)

Labour input to own-use production work of services: Time spent by household members on the production of own-use production work of services.

Market output: Consists of output intended for sale at economically significant prices. (SNA 2008, 6.99)

Market prices: Amounts of money that willing buyers pay to acquire something from willing sellers; the exchanges are made between independent parties and on the basis of commercial considerations only, sometimes called "at arm's length." Thus, according to this strict definition, a market Price refers only to the price for one specific exchange under the stated conditions. (SNA 2008, 3.119)

Non-market output: Consists of goods and individual or collective services produced by non-profit institutions serving households (NPISHs) or government that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole. (SNA 2008, 6.128)

Opportunity cost: For purposes of the satellite account, it refers to the cost of the activity that is being forgone when households engage in own-use production work of services. In this case, it is the monetary value that people refuse to earn for a paid work in order to spend the same amount of time on the own-use production work of domestic and care services.

Output for own final use: Products retained by the producer for his own use as final consumption or capital formation. (SNA 2008, 6.114)

Own-use production work of services: The production of services by households for their own-use without a monetary transaction. Examples of own-use production work of services include the caring of adults and children within the same household, preparation of meals, and cleaning clothes. Households produce these services via a combination of labour inputs,

with durable and non-durable consumption goods. It covers activities where the services produced are consumed by household members, or by family members living in other households.

Production boundary: The production boundary of the SNA includes the following activities (a) The production of all goods or services that are supplied to units other than their producers, or intended to be so supplied, including the production of goods or services used up in the process of producing such goods or services. (b) The own-account production of all goods that are retained by their producers for their own final consumption or gross capital formation. (c) The own-account production of knowledge-capturing products that are retained by their producers for their own final consumption or gross capital formation but excluding (by convention) such products produced by households for their own use. (d) The own-account production of housing services by owner occupiers. (e) The production of domestic and personal services by employing paid domestic staff. (SNA 2008, 6.27)

Production measure of GDP: The production measure of gross domestic product (GDP) is derived as the value of output less intermediate consumption plus any taxes less subsidies on products not already included in the value of output. (SNA 2008, 16.47)

Productive activity: Based on the criterion of the third person (presented by Margaret Reid), it is considered that an activity is productive if it can be delegated to someone else, and if it can provide a good or service that can be exchanged.

Replacement cost: Monetary amount needed to acquire a similar service in the market that people have at home. In this context, it is the monetary value that is required to hire the workforce needed for doing the domestic and caregiving services at home.

Services: Are the result of a production activity that changes the conditions of the consuming units, or facilitates the exchange of products or financial assets. Change-effecting services are not separate entities over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is completed, they must have been provided to the consumers. (SNA 2008, 6.17)

Unpaid household service work: The production of services produced by household members, and consumed either by households themselves or by other households without a market transaction. There are two main elements of unpaid household service work - own-use production work of services, and volunteer work.

Value added: Gross value added is the difference between output and intermediate consumption. GDP is the sum of gross value added of all resident producer units plus that part (possibly the total) of taxes on products, less subsidies on products, that is not included in the valuation of output. (SNA 2008, 2.138)

Volunteer work: Unpaid non-compulsory work; that is, time individuals give without pay to activities performed either through an organization or directly for others outside their own household.[48] (ILO, 3.5).

Wages and salaries: Include the values of any social contributions, income taxes, etc., payable by the employee even if they are actually withheld by the employer for administrative convenience or other reasons and paid directly to social insurance schemes, tax authorities, etc., on behalf of the employee. Wages and salaries may be paid in various ways, including goods or services provided to employees as remuneration in kind instead of, or in addition to, remuneration in cash. (SNA 2008, 7.43)

[48] International Labour Office. Manual on the Measurement of Volunteer Work. 3.5.

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