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Guidelines for harmonising time use surveys**Time use surveys: policy relevance, international harmonisation initiatives and new guidelines****Note by the secretariat***Summary*

The paper presents an extract from the “Guidelines for harmonising time use surveys”. It covers the structure of the draft Guidelines on time use surveys, overview of the existing initiatives for their harmonisation, and the policy relevance of time use surveys.

The aim of the Guidelines is to help countries in carrying out time use surveys and to improve international comparability of their results. The Guidelines were prepared by a Task Force consisting of Australia (Chair), Canada, Finland, France, Hungary, Japan, New Zealand, Norway, Romania, Sweden, Eurostat, the Organisation for Economic Co-operation and Development, the United Nations Economic Commission for Europe and the Centre for Time Use Research, United Kingdom. The Bureau of the Conference of European Statisticians reviewed the Guidelines in February 2013 and decided to send it for electronic consultation. The Guidelines are available at:

www.unece.org/stats/documents/2013.06.ces.html

The full text of the Guidelines has been sent to all members of the Conference of European Statisticians for electronic consultation. Subject to positive outcome of the consultation, the Guidelines will be submitted to the 2013 plenary session of the Conference for endorsement.

I. Introduction

1. In most developed countries, time use surveys are an integral part of social statistics and the number of countries that have collected time use data is on the increase¹. Since 1990, sixty-nine countries worldwide conducted a time use survey. The value of time use data has been increasingly recognised by policymakers, firstly for understanding the relationship between growth in market output measured through the national accounts and the total output produced within a country, including household production. Time use surveys have proven very useful for measuring essential dimensions of gender equality. In recent years, the contribution to the measurement of well-being has also risen to the forefront. Overall, time use data allow addressing a great number of issues that are of relevance to policymaking and research.

2. The international scope of time use surveys has obviously raised the need for the exchange of good practice and for coordination in defining the concepts, methodology and ways of aggregation of the results. This is necessary for obtaining reliable time use statistics that can answer the pertinent policy questions and be comparable across countries. The present Guidelines aim at responding to these needs. They are designed to help the relevant national authorities in carrying out time use surveys and to improve their international comparability. The Guidelines build on several international harmonisation initiatives described below.

II. International harmonisation initiatives

A. Multinational Time Use Study

3. Sandor (Alexander) Szalai led the United Nations Educational, Scientific and Cultural Organization (UNESCO)-sponsored Multinational Comparative Time-Budget Research Project, the first cross-national time use project to harmonise data collection methods (Szalai et al. 1972). This project set out the scheme for data collection, which even today is still used in almost every time use survey. In the 1980s, the datasets collected in the early 1960s were harmonised into the dataset with common series of background variables and total time spent per day in 69 activities, to form the Multinational Time Use Study² now hosted at the Centre for Time Use Research at Oxford University. The Study has since then grown to encompass over 60 datasets from 25 countries, and is now incorporating recent data from the Harmonised European Time Use Surveys (see below) and the American Time Use Survey.

B. Harmonised European Time Use Surveys

4. In 1996 and 1997, Eurostat launched a number of pilot studies that resulted in the guidelines on Harmonised European Time Use Surveys (HETUS). These included recommendations on the sample design, diary days, survey forms, activity coding lists, interviewers, data coding and estimators. The Eurostat HETUS guidelines, most recently revised in 2008, propose a set of recommendations covering all steps and aspects from the

¹ The Centre for Time Use Research maintains a database of metadata about time use surveys at <http://www.timeuse.org/information/studies>.

² <http://www.timeuse.org/mtus>

design of the surveys to the processing of results and recommend an activity classification (Eurostat 2009). Their focus is on the production of output-harmonised data.

5. Most, but not all national statistical institutes around Europe that have carried out time use surveys since the late 1990s have taken these guidelines into account. It has been possible to put together a database with comparable or almost comparable data representing 15 European countries. With financial support of the European Commission, Statistics Sweden and Statistics Finland developed an online tool³ for producing user-defined tables from the data of those countries.

C. United Nations guide and classification

6. In 2005, the United Nations Statistics Division published a “Guide to producing statistics on time use: measuring paid and unpaid work” (United Nations 2005a) to present an overview of the different approaches that have been adopted in the design of time use surveys and in the dissemination of time use data. While building on HETUS, it primarily targets developing countries that are considering to conduct a time use survey. The main approach of the Guide is to advise countries on how to undertake a time use survey and to harmonise the method for wide international use. It does not contain prescriptive guidelines, discussing instead the lessons learned from the surveys already conducted and presenting the advantages and disadvantages of the different options.

7. The Guide includes the trial International Classification of Activities for Time-Use Statistics (ICATUS) first introduced in 1997. A United Nations expert group met in 2012 to discuss potential revisions to this classification.

D. In-depth review by the Bureau of the Conference of European Statisticians

8. In November 2010, the Bureau of the Conference of European Statisticians (CES) conducted an in-depth review on time use surveys based on a paper by the German Federal Statistical Office as well as written comments and suggestions from 22 countries and organizations. The review highlighted the need to improve comparability of time use surveys across countries and the usefulness of developing further practical guidelines for their implementation. It was noted that due to the budget restrictions for many national statistical offices (NSOs), a legal framework and financial means to carry out time use surveys had become an increasing concern for many countries. Examples of good practices, particularly in the use of a light time use diary and in the use of time use data for policymaking, could help national agencies to advocate for this complex and resource demanding survey. Practical guidelines could provide NSOs the opportunity to learn from these practices.

9. The in-depth review concluded with the establishment of the United Nations Economic Commission for Europe (UNECE) Task Force on Time Use Surveys, which worked through 2011 and 2012 on developing the present Guidelines.

³ <https://www.h2.scb.se/tus/tus>

III. United Nations Economic Commission for Europe Guidelines for harmonising time use surveys

10. The overall objective of the Guidelines is to help countries in carrying out time use surveys and to improve the international comparability of their results. They focus on areas where the statistical community has expressed a particular need for further guidance, which include policy relevance of time use surveys, availability and comparability of key statistical measures of time use, periodicity of time use surveys, the use of light and full-scale time use diaries, and activity classification. Chapters 1 to 5 of the full version of the Guidelines deal with these topics of primary interest.

11. Chapter 2 addresses the fundamental question of why it is necessary to conduct time use surveys. It identifies three key areas where information from time use surveys is necessary for informed policymaking, and for which other data sources are not adequate. The three key uses for time use surveys are unpaid work and non-market production, monitoring well-being, and gender equality. The need to inform policy in these areas provides the core rationale for conducting time use surveys and defines priorities for survey content. The chapter describes the use of time use surveys for addressing these policy areas, including concrete examples from several countries. In addition to these, the chapter also refers to a range of other uses of time use data that are of relevance to policymakers but which are of a lower priority, either because there are alternative information sources available or because the policy impact of the information is smaller at this time.

12. The present Guidelines aim at harmonising time use surveys on the level of aggregate outputs. For this purpose, chapter 3 defines the statistical measures that should be produced from each time use survey. These measures are selected to inform and monitor the key policy areas outlined in chapter 2 – unpaid work and non-market production, monitoring well-being, and gender equality. A list of input requirements and populations are included under each of the recommended outputs as well as the definition of the population to whom the measure is relevant, such as being a parent of a dependent child or persons who provided informal care to others.

13. The perceived need for more frequently updated information on time use and budget constraints have motivated a search for alternatives to the implementation cycle of ten years with a full time use diary. Chapter 4 summarises the yet scarce experience with the use of light time use diaries and argues that while they are suitable for studying general trends in time use, they cannot replace the full-scale diary survey with its rich content. The chapter also provides arguments for the use of diaries as opposed to surveys based on stylised questions only. Further, this chapter considers the different intervals for conducting the surveys and addresses activities that last longer than the observation period of time diary surveys. It also summarises the experience with longitudinal time use surveys and the purposes for which they can be useful.

14. Currently there is no single approved international standard classification of activities for time use surveys, which limits international comparability and impacts on the ability to achieve standardization in the collection and output of activity data. However, there are many common elements used across different frameworks, which can be utilised to form a minimum set of classification categories for international comparability and reporting purposes. Chapter 5 of the full version of the Guidelines proposes a minimum set of classification categories to allow comparison of activities across countries and facilitate key policy and output requirements. The proposed classification is sufficient for producing the recommended outputs described in chapter 3 of the full version of the Guidelines.

15. Further chapters of the present Guidelines cover the different stages of survey-taking: sampling, questionnaire design and testing, data collection, processing and

dissemination. Regarding these topics, the Guidelines focus on issues not covered in the United Nations Guide to Producing Statistics on Time Use (see section II.C) or where updating is necessary in the light of recent experience. The Guidelines focus on issues that are specific to time use surveys at the cost of guidance on household surveys in general, because a great deal of methodological guidance is available for the latter (e.g. United Nations 2005b and 2008). The guidance provided here is based on experiences from countries with developed statistical systems.

16. Wherever relevant, the Guidelines include explicit recommendations, which are presented in the end of each chapter. In some areas, the Guidelines only summarise some country experiences that are considered yet insufficient for making a clear-cut recommendation. Such areas include the use of light time use diaries, measurement of well-being and affect, and the use of new technologies like mobile devices. Survey design and methodology is continuously evolving, looking to reduce respondent burden and gain accuracy. At the same time, policy needs also evolve. An overview of the areas envisaged for further harmonisation efforts is provided in chapter 11.

IV. Policy relevance

A. Introduction

17. Time can be viewed as the ultimate constraint on human activity and, unlike other resources, is shared equally by everyone. Each of us has 24 hours per day. Time use surveys measure the numerous and diverse ways in which people use these hours.

18. Time may be spent in the labour market where its value is measured in monetary terms, but it is also the resource that enables consumption and the undertaking of domestic and voluntary work. Because production can move between the labour market and the domestic sector, an understanding of time use is necessary to understand trends in either area. Time is also the basic resource for leisure activities and an important aspect of well-being. Only a time use survey provides an integrated picture of how the various paid, voluntary, domestic and leisure activities are combined in people's lives (Fleming & Spellerberg 1999).

19. Five methods commonly are used to measure people's use of time. These Guidelines concentrate on the time diary method, which produces data that are more accurate and a greater depth of detail for policy applications than the alternatives. Direct observation produces the most detailed data over the widest range of dimensions. Though useful in qualitative contexts where a researcher can build a trust relationship with participants, this method requires considerable labour resources. Costs, post-coding and concerns such methods may raise with some participants make this approach unsuitable for national sample surveys. Databases of time-stamped information, such as official records of periods of stay in institutions such as hospitals or prisons, use of facilities, such as public sports facilities or libraries, and time-stamped social media entries, from Twitter feeds or Facebook timelines, offer a range of time use information. Nevertheless, these resources reflect activities of highly selective samples, and do not cover comprehensive activity ranges needed to cover the range of policy applications outlined in this chapter.

20. A number of surveys ask stylised questions asking people to estimate the total time people spend undertaking various activities (how long did you watch television / clean the house / need to drive to work yesterday?). This method entails significant inaccuracy (that varies by activity type), and cannot capture other dimensions of time use necessary to measure some of the policy dimensions outlined in this chapter.

21. The fifth approach, experience sampling method, collects detailed information of the type collected in a diary "in the moment" in response to a prompt from a beeper, instant message, text or phone app prompt. While this method works well in contained populations, such as school students, implementation difficulties make this method not readily useful across a national sample. Also, the absence of total time spent over a day and the context of the sequences of activities in context in which any particular activity also make this approach unsuited for some of the policy areas outlined in this chapter.

22. Time diary surveys have a long history. Studies based on time-use data first developed in the early 1900s in social surveys reporting on the living conditions of working class families (Szalai 1972). Until the late 1960s, time use information was used mainly by academic researchers. Since the 1970s, however, the value of time use information has been increasingly recognised by policymakers. It is essential to understand the relationship between growth in market output measured through the national accounts, and the total output produced within a country, including household production. Time use data is also essential to provide an evidence base on policy concerning unpaid domestic work and gender equality. In recent years, the measurement of quality of life has become another area of high policy importance where time use data are providing an essential contribution (Stiglitz, Sen & Fitoussi 2009). Beyond this, time diary surveys can provide information relevant to understanding social and leisure time, health, and transport policy. It has been used as a tool to study audiences of print media, radio and television.

23. The exceptionally broad range of applications make time diary surveys particularly good value for money. In an environment where issues of both fiscal impact and respondent burden place a limit on what activities national statistical agencies can undertake, it is important to be clear about the key purposes for which time diary surveys are necessary. This is essential in order to make decisions regarding trade-offs about what information is most important for time use surveys to collect, what information national statistical agencies should output from time use surveys, and how frequently time use surveys should be undertaken, as well as for decisions about the relative priority of time use surveys compared to other statistical activities.

24. The present Guidelines identify three key areas where information from time diary surveys is necessary for informed policymaking, and for which other data sources are not adequate. These provide the core rationale for conducting time diary surveys and define the priorities for survey content. The three key uses for time diary surveys are unpaid work and non-market production, monitoring well-being, and gender equality. In addition to these, there are a range of other uses of time use data that are of relevance to policymakers but which are of a lower priority either because there are alternative information sources available or because the policy impact of the information is smaller. These are described in section IV.E.

25. The policy issues identified below can adequately be addressed using a 24-hour time diary approach, but not by relying on "stylised" questions or other approaches alone. These policy issues require collection of data on the total time spent in activities over whole days as opposed to participation at any moment in time. They also require data on the context of behaviours in time, for example, how activities fit into chains of events over the day, who people are with and where people are as they undertake various activities, all of which cannot be collected with stylised questions and records databases.

B. Unpaid work and non-market production

26. By measuring the value of the output created by an economy (the Gross Domestic Product (GDP)) the System of National Accounts excludes from the economic output services produced by households for their own use and often fails to include the voluntary

activities and care, in which people engage for the benefit of others. For a meaningful interpretation of the information contained in GDP, it is necessary also to know about changes in the non-market sector. For example, the increased participation of women in the labour market has resulted in increased market production of some products and services that were previously produced or offered by households. This might lead to a policy conclusion that the increase of services such as childcare or long-term care for the chronically ill increase the quantity of goods and services produced in a country, when in fact they simply move production from the household to the market sector. Without data on work in the unpaid sector, an accurate assessment of the impact and long-term costs and benefits of that policy change cannot be made. Time use surveys are the only source of information that we currently have, which is capable of producing reliable estimates of the value of household production.

27. Placing monetary values on the non-market sector is not straightforward since the work is unpaid and most of the time, unpaid care produces intangible services. There are broadly two distinct approaches to estimation: (1) by placing a value on the unpaid work registered in the time diaries (“input valuation”), and (2) by estimating the market-equivalent value of the episodes of intangible service consumption recorded in the diaries (“output valuation”). In turn, the first of these has two alternatives: (1a) the “opportunity cost” approach and (1b) the “replacement wage” approach. The first is based on the observation that, while doing this unpaid work, the household members are prevented from engaging in their paid work, so their unpaid work is to be valued (at the lowest) by their own marginal (or in the case of the un- or non-employed, expected) wage. The replacement wage approach values the unpaid work time either by the wage rates earned by specialist workers (cooks, cleaners, drivers and so on) or by generalists (termed “housekeepers”) who might otherwise have been paid for this work.

28. There is no general agreement as to the choice between methods 1a and 1b. On one hand, 1a does reflect the fact that households of higher -paid workers are likely to have better domestic equipment than those of lower paid workers, with the consequence that domestic productivity in the former sort of household is on average higher than in the latter. However, preferring 1a over 1b does have paradoxical consequences: for example, the value of a meal home-cooked by a brain surgeon would be (it is to be assumed, incorrectly) valued on the basis of 1a at many times the value of a meal home-cooked by a professional chef.

29. Method 2 does however provide some basis for resolving this problem. Each recorded episode of consumption of unpaid services may be valued by the cost of an equivalent purchased service. In this case, the consumption may be differentially valued by the economic level of the household. For example, a meal lasting more than 30 minutes eaten by a member of a low-income household might be valued at the average price of a meal eaten at a fast-food outlet, whereas a meal eaten by a member of a rich household might be valued at the price of a meal at a cordon bleu restaurant. A fundamental principle of national accounting (somewhat simplified here) is that the value of national production is identical to that of national consumption. By extension, the value placed on the home-cooked meal (minus the costs of ingredients and some allowance for domestic capital equipment) must be identical to the value-added by the labour input to the home cooking. In this case at least, the 1b cook (or housekeeper) valuation of the labour would come closer to the required national accounting identity than would the 1a opportunity cost approach. The experimental national accounts extensions constructed by the United Kingdom Office for National Statistics (UK ONS) (Holloway et al 2002) provide, inter alia, an example of this comparison of input and output calculations.

30. The output approach has the additional advantage of drawing attention to the value of that part of domestic output/production that relies mostly on domestic capital, and only

minimally on unpaid labour. A household's provision of sleep-related services appears only as the value of bed-making time in the input-based approach. By contrast, the (output) sleep episodes revealed by the diaries, might be valued, in a poor household, at the cost of beds in a one-star hotel, and in a rich household, at prices at a five-star hotel. Conventional GDP measures already include an allowance for general services provided by housing and other domestic capital. To avoid double counting, these allowances should be subtracted from the calculated total value of extra-economic consumption in extended national accounts.

31. Better knowledge of other unpaid production activities (and the corresponding unpurchased consumption activities) can help answer many important policy questions. For example, how do public policies such as tax policies, family leave policies and welfare policies change the mix of market, housework and leisure time? How would the national income accounts change if we included the value of citizens' unpaid productive activities? To what extent are gross domestic product growth rates biased because they exclude the home productivity losses that typically occur when someone enters the labour market? Time use surveys provide the data required to answer such questions. For example, analysis of the French time use survey suggests that, valued at the minimum wage and measured with the narrowest definition, unpaid domestic work is worth 17.5 per cent of GDP, a figure equivalent to the value-added of the entire French manufacturing industry. Measured with an intermediate definition, its value reaches 27 per cent of GDP, half the added value of market services.

32. Some countries have started to value these activities through input-based 'Household Satellite Account', which provides important information on the economy and society. Unpaid work satellite accounts have been undertaken in *Australia* and resulted in the publication of experimental estimates (Soupourmas & Ironmonger 2002). Households' unpaid production and use of market services for the national accounts has also been undertaken in *Finland* (Varjonen & Aalto 2006). *New Zealand* is currently building a household satellite account to provide statistics on the contribution of households and informal volunteering to the economy following their 2009/2010 time use survey. Measuring unpaid work's contribution to the economy was also carried out after the 1999 time use survey (Callister & Dixon 2001; Statistics New Zealand 2001). *France* has also published a methodological document about unpaid domestic work using the 1998 French time use survey (Roy 2011). Similarly, *Canada* has undertaken work with its 1986, 1992 and 1998 time use surveys highlighting that these data are a critical ingredient to estimates for the measurement and economic value of households' unpaid work, which are excluded from the measurement of GDP (Jackson & Chandler 1995; Hamdad 2003). In *the United States*, such satellite account estimates have been recommended by the National Research Council Panel (Abraham & Mackie 2005) and compiled from several time use surveys, including the recent annual American Time Use Surveys (Landefeld, Fraumeni & Vojtech 2009). Output-based extended accounts (Holloway et al 2002, for the *UK* Ironmonger and Soupourmas 2009 in *Australia*), are rather rarer.

33. Hirway (2010) demonstrates that measuring household production is particularly significant in the context of developing countries, where an even greater share of total national output takes place in the household sector. The quantity and efficiency of household production, and the time constraints on people (mostly women) who devote long hours to domestic production, matters both for the tracking the level of economic development, the potential for up-skilling the workforce, and the economic power of women relative to men. For this reason, the United Nations Economic Commission for Africa is currently developing guidelines for time use studies in developing countries.

C. Well-being

34. In their report on the measurement of economic performance and social progress, the Stiglitz commission argued for a shift of emphasis from measuring economic production to measuring people's well-being (Stiglitz et al. 2009). The commission referred to the consensus that quality of life depends on people's health and education, their everyday activities, their participation in the political process, the social and natural environment in which they live, and the factors shaping their personal and economic security. It identified time use surveys as a key way to inform on well-being and progress, recognising that indicators in this area remain deficient.

35. Quantifiable measures like real income or earnings frequently have been used to assess quality of life, assuming that a higher salary means a better quality of life. However, high salary jobs often imply long working hours and less leisure time and measures that ignore home production and leisure may be misleading. Time use data would allow consideration of an essentially broader set of resources in these measurements (Joyce & Steward 1999, German Federal Statistical Office 2010). Time diary accounts are exhaustive. A well-designed and implemented time diary study covers the whole spectrum of human activity in a representative fashion. Ultimately, this exhaustiveness is the basis for the contribution that diary studies make to the measurement of well-being. Time use data is crucial to understanding how time spent in different activities contributes to well-being, and how changes in time use impact on overall well-being. In particular, time use data provides the most accurate and quantifiable way of assessing the value of leisure time and social connections, as well as the impact of work life balance on overall well-being. Time use data also provides a potential framework for developing more comprehensive "well-being accounts" based on measures of subjective well-being.

1. Social and leisure time

36. We know a great deal about the effects of policy changes on labour market behaviour while relatively little is known about how government policies affect the way people spend their non-working time. Do they engage in more non-market production or do they consume more leisure? (Joyce & Steward 1999). Time use surveys provide information on the allocation of time to household production of substitutes for market output as well as on the allocation of time to leisure activities. This information is typically missing in other household survey datasets, but inevitable for showing how well-being depends on consumption and leisure (Apps 2002).

37. The concept of a balanced life must also take account of unpaid activities necessary to maintain quality of life, such as childcare, repairs around the home, paying bills and buying supplies and goods for the household. In themselves, these activities may not be conducive to relaxation, quality time with family and friends or intellectual challenge. For this, the leisure time of a family member has to be distinguished from the time spent on household maintenance, management and care activities for other family members. Time use data provide the key starting point for the measurement of the value of leisure. For example, leisure is 64 per cent more enjoyed than domestic task in the *French* Time use survey (Ricroch 2011).

38. Time use surveys also reveal that levels of subjective well-being correlate negatively with some activities, such as commuting, and positively with time spent with others (Krueger and Kahneman, 2006), that infrequent communication between spouses is an important predictor of possible family dissolution (Hill 1988), and that social capital of volunteering and social networking contributes to happy and successful life careers (Zuzanek 2009, Ravanera, Raiulton & Turcotte 2003).

2. Work-life balance

39. Policymakers and academics have a long-standing interest in collecting statistics on contracted hours of paid employment and hours of work, reflecting the concern that long hours of work can have damaging social consequences (Lourie 1996). Social surveys, such as labour force surveys, measure usual work hours. Some surveys additionally collect usual commuting times to measure the full constraints of paid work. While they matter for quality of life, these measures are insufficient for understanding several key policy-relevant issues. They do not tell us when during the day and the week paid work is undertaken and therefore lack evidence of atypical or antisocial hours. They do not tell us the duration of work spells and so lack evidence of work stress. They do not tell us whether spouses or other household members are simultaneously working or taking leisure (Gershuny 2011). Yet the time spent together with partner and children that is measured by a time use survey is of key concern in understanding work-life balance. They do not tell us about the context of the whole day, whether the respondent sacrificed sleep, leisure, self-care or social time to make space for long commitments to paid work (Fisher & Layte 2004). Likewise, the daily and weekly work rhythms measured by a time use survey have an important impact on well-being.

40. The time use diaries are known to provide a more accurate estimate of the total number of hours than direct questions on this metric encountered in general social surveys (Robinson & Bostrom 1994). Furthermore, time at the work place is not the same as time on the job⁴, as people may attend to matters not related to work while at work (Robinson & Godbey 1997). Time use surveys provide also an insight into less well understood productive activities such as subsistence work, casual work and work in the informal sector (Merz 2009). Time diaries, in which people record what they do during the day, map the entire spectrum of issues relevant to measuring balance of needs in life and for the development of work-life balance policies (Fisher & Layte 2004).

41. A major advantage of a time use survey is that it establishes where work was undertaken and when several activities were carried out simultaneously. For example, it can be shown that a significant share of white-collar workers working late into the evening are at home when undertaking such work. Over 40 per cent of the time they spent working in the late evenings was recorded as being simultaneous paid work and childcare (Singley & Callister 2004). In contrast, a worker in the hospitality industry may be required to work Friday nights and weekends, outside of their home, at times when formal childcare is generally not available. In this example, the hospitality worker may work relatively few hours of paid work and have a less satisfactory work-life balance than an office-based professional working longer hours (Callister 2004).

42. In *Japan*, time use data have been used to monitor the implementation of the 'Charter for Work-life Balance' and the 'Action Policy for Promoting Work-life Balance' adopted in 2007. The *Finnish* national programme for increasing the attraction of work life has used time use surveys to ensure that the working week of older people is shortened and systems are put in place to make paid working time more flexible. The ability to measure time crunch has also been identified in *Canada*. The *Indian* time use survey has measured absence of leisure when low status people, particularly women, undertake such physically

⁴ Time diary surveys typically ask people simply to record "paid work" without asking them to specify details of the work, such as whether they were in a meeting, repairing equipment, giving a presentation, and the like. The research referenced in this paragraph makes use of the context information (secondary activities that are not paid work, location, who else is present, for whom, flag for whether the activity involved use of the internet). Supplements to diaries, including GPS trackers or accelerometers.

demanding activities that their downtime is limited to exhaustion recovery rather than personal enhancement or social regeneration (Hirway 2010).

D. Gender equality

43. Gender analysis of public policies is increasingly recognised as an essential component of policy advice. Strategic objective H2 of the Beijing Platform for Action demands that gender perspectives are integrated in legislation, public policies, programmes and projects. The objective requires that governments “seek to ensure that, before policy decisions are taken, an analysis of their impact on women and men, respectively, is carried out.”

44. Convention 156 of the International Labour Organisation (ILO) encourages member countries to develop policies to ensure that workers with family responsibilities are not discriminated against, and to reduce conflict between family life and employment. In *New Zealand*, the response was a project to promote “family friendly” workplaces. For projects of this kind, time use data provides empirical evidence of unequal sharing within households and the barriers to participation in paid work presented by caring responsibilities (Fleming & Spellerberg 1999).

45. Because of the unequal distribution of paid and unpaid work between men and women, data on time spent in household and caring work are an essential component of gender analysis. As women make key contributions to unpaid work that both maintains the household and generates household income, understanding women’s full range of activities is an essential element of modelling movement towards or away from gender equality. Time use data can therefore be used increasingly as a tool for policy analysis on gender and this has been the driving motivation for recent time use surveys, among others, in countries of emerging economics such as Brazil and South Africa (Antonopoulos & Hirway 2010).

46. Despite substantial change over the last half century, women still do much more unpaid work and less paid work than men. Men have increased the time they spend doing housework and childcare, but by a small amount. For example, in 2000, men in *Finland* performed an average of 12 more minutes per day of domestic work than they had performed in 1987 (Niemi & Pääkkönen 2002). Between 1961 and 1995, *British* men increased their average time performing household cleaning and childcare by 17 minutes a day (Gershuny 2000). In *Canada*, the average length of time men spent doing household work and childcare increased by 13 minutes from 1998 to 2010 (Statistics Canada 2011). In *France*, between 1986 and 2011, men only increased their average time in unpaid work by 13 minutes, whereas women decreased their average time by 48 minutes. The difference is still 87 minutes per day in 2011 (Ricroch 2012).

47. When women’s and men’s participation in paid employment differs, the partners’ respective rates of accumulation of human capital will differ. If, furthermore, a couple splits, the outcome is often that the man departs with enhanced human capital while the woman’s human capital diminishes. In the absence of appropriate compensation, this outcome is potentially inequitable. To design policies that address these issues, evidence of the joint distributions of paid and unpaid work within households is required (Gershuny 2011). Time use surveys provide such evidence.

48. For example, a time use survey can show how occupational segregation and, ultimately, pay disparities between women and men could be influenced by something as simple as the daily starting-time of jobs. In *Australia*, large differences were measured between the proportion of men and women who were working in the early morning. Men were more than twice as likely to be working between 4 am and 6 am and about twice as likely in the 6 am to 8 am period. The later start for mothers reflects higher rates of part-

time work amongst this group as well as childcare constraints in the early morning. While policymakers consider day care, after-school care and even weekend care in terms of supporting working parents, little attention has been given to early-morning care (Callister 2004).

49. While time use surveys have been used to research gender equality, they have also been used to inform on policy in some countries. *Japan* has 'The Basic Plan for Gender Equality' that was established by their government under 'The Basic Law for a Gender-equal Society'. This basic plan stipulates that the time spent on 'child care' and 'caring or nursing' should be measured by sex through the '*Japanese Survey on Time Use and Leisure Activities*'. The results have to be used to monitor the goal of increasing the time that husbands with children under six years spend on housework and childcare from 60 minutes in 2006 to 150 minutes in 2020. Research in *Romania* has looked into the gender differences in time use in life cycle stages. In *Hungary*, the Women and Men Gender Equality Council need information on all aspects of gender equality including reconciliation of work and family life and sharing of work and housework between men and women. In *France*, time use surveys, in conjunction with other data sources, are used by the National Institute of Statistics and Economic Studies to publish every four years a report entitled "Women and men, an overview of gender parity".

50. In *Norway*, time use surveys have been used in research for several government offices since the 1970s. Particular interest has included men's and women's time spent on paid work in various age groups and life cycle stages. The Ministries of Finance, Labour, Children, Equality and Social Inclusion, Culture, and Health and Care have funded research and investigations based on time use surveys.

E. Other uses of time use data

1. Health

51. Time use surveys provide a picture of time inputs into health related activities alongside their demographic and economic characteristics. Through this, a much better understanding of investments in health is assured (Hamermesh, Frazis & Steward 2005). The valuation of unpaid health care services is another important issue related to health policy and health insurance. Unpaid services in the household influence the length of stay at hospitals. The World Health Organization defines the expenditure for non-market production as the value established at the cost of resources used to produce the good or service in question (WHO 2003, Lorenz & Amjad 2010).

52. Time use surveys allow us to understand the engagement in behaviours that have direct influence on health over a long-term, such as exercise, eating and sleeping. Time use surveys also cast light on relationships between time use, well-being and health. It was traditionally assumed that long hours of work have direct negative effects on health (Harrington 2001). Time use data show that this negative impact may be indirect and operate with a considerable delay, since the self-assessed health of people who work more than average was higher than of employees working shorter hours (Zuzanek 2009).

53. Time use data contribute to shaping of obesity policy (Davis and You 2010, Hamrick 2006), and the *United States* Department of Agriculture added an Eating and Health Module to the 2006-2008 American Time Use Survey. This was done both to examine the effectiveness of some poverty reduction policies on the health of poor communities as well as to facilitate wider inclusion of health implications in policy analysis (Reifschneider et. al. 2011). Time use data feature in the analysis of physically active transport (Tudor-Locke et. al. 2007, Peters 2010), and health researchers have developed a compendium to the American Time Use Survey which maps the typical energy expenditure

people make when participating in various activities (Tudor-Locke et. al. 2009). The United States National Institute of Health is developing a similar compendium to the Multinational Time Use Study. Time use data helped confirm in *France* the link between the rhythm of eating and obesity: people who have less than three meals per day are more often obese than others of same characteristics and behaviours, as they eat between meals more often (De Saint Pol 2012).

54. In a recent *British* study that medical and educational professions undertake relatively little exercise (Gershuny 2011). In *Canada*, the need for data to inform sport policy continues to be a priority and the *Canadian* time use survey is the only national survey that provides information on sport participation for all *Canadians* aged 15 and older.

55. In *Australia*, a study on new mothers' time use was conducted to inform policymakers of a way to improve the use of the country's human capital. It draws attention to the potential policy contradiction between increasing women's labour force participation and protecting and forming the human capital of their young children as the first year of life is the most critical for the future health and learning trajectories. In conclusion, the authors argue for increased paid maternity leave and more family-friendly employment policies (Smith, Craig & Ellwood 2009).

2. Transport

56. Time use data have long been used to model the need for provision of transportation facilities, mechanisms driving consumer choices of transportation mode, and more recently the environmental impact of transportation behaviours (Arentze and Timmermans 2007, Banerjee, Ye and Pendyala 2007, Chikaraishi et. al. 2012). Additionally, time use surveys reveal gender disparities in access to transportation. Research in *Canada* (Michelson 2009) and *South Africa* (Potgieter et. al. 2006) shows that men tend to control the use of the most advanced transportation options owned by households, while women make do with the less expensive and convenient options, and that the limitations in women's transportation access in turn restricts their options in other elements of daily activity scheduling.

57. Time use surveys provide a lot of information on the household production of transport services. Specifically, this concerns the number, duration and timing of trips in motor vehicles. The distance travelled in kilometres can then be estimated based on the duration of a trip multiplied by the average speed obtained via travel surveys.

58. In *Australia*, there are also annual official surveys of samples of both domestic and commercial vehicles to determine, for public transport policy purposes, the annual average number of vehicle kilometres travelled by vehicle type. These surveys provide estimates of household transport vehicle kilometres.

59. In *Australia*, time use surveys have been used in combination with journey-to-work data from the Census of Population and Housing to understand transport demand and the needs of people using transport networks and surveys (Ironmonger & Soupourmas 2009). They revealed that travel does not involve a large use of total time. It was also revealed that travel time is a growing component of total time use by women while it is a diminishing proportion of time use by men.

60. In *Canada*, time use data have been used to explore commuting patterns, time spent travelling to work, and their relationship to selected subjective measures of quality of life, including stress levels and satisfaction with work-life balance (Turcotte, 2010).

3. Culture and sport

61. Examples of using time use data in *Finland* include planning of timing of television programmes and the evaluation of cultural policy. The *Canadian* General Social Survey

time use cycles have been used for sport-related policies and programs to evaluate sports participation to meet the goal of enhanced participation in sport used by Sport *Canada* and Department of *Canadian* Heritage. The non-government organisation 'Active Healthy Kids *Canada*' that is committed to engaging all children and youth in physical activity has used data from the time use survey in its 2009 Report Card on Physical Activity for Children and Youth. Time use data have been used in *Canada* to describe *Canadians'* demand for cultural goods and services and their involvement in cultural activities. In addition, time use data have been used to explore social contacts, shopping and consumption behaviours, as well as sleep patterns.

62. Research using the American Time Use Survey finds that women and men undertake similar levels of exercise, but men are more likely to participate in team sports and competitive sports, and the competitive sport gives men social capital advantages that women do not enjoy (Deaner et. al. 2012).

4. Environment and climate

63. Time use surveys play an increasingly important role in environmental and climate research. The *United States* Environmental Protection Agency has funded both national and regional level time use studies, collected in the Consolidated Human Activity Database (CHAD), to examine the impact of exposure to traffic fumes, passive smoke, chemicals used in the home and industrial pollution. Similarly, time use surveys feature in the analysis of exposure to poisoning from the use of biofuels in cooking (Shimada et al 2012). As the impacts of anthropogenic climate change are better understood, time use studies now feature in research to measure peak flows for energy demand (Aerts et. al 2012, Torriti 2012, Widén et. al. 2012) and the impact of energy consumption reduction policies on individual behaviours. Research using time use data in the *United States* also has revealed that expansion of the total volume of state level environmental policies and regulations contributes to general reductions in energy consumption across the population (Fisher, Shahbazian and Sepahvand 2012).

5. Policies targeting specific population groups

64. Time use surveys also are used in policies that target specific population groups. For example, in *Finland*, time use surveys have been used for policymaking or policy evaluation about rural areas, including employment projects for rural work, and on early retirement (Huovinen & Piekkola 2002a and b). In *Hungary*, time use surveys, in conjunction with other data sources, have been used by the Ministry of National Resources to create a complete picture of the elderly. Interest has included understanding active or passive time and free time activities. This was further utilised in a comprehensive management plan of elderly issues National Strategy on Ageing, 2009. Other investigations include whether actual activities of the elderly strengthen or weaken their social relationships and how they were connected to persons in and outside their households.

65. Children also are the focus of time use policy in the *United States* (Hofferth and Sandberg 2001), *United Kingdom* (Hagell 2012), *Canada*, and *Australia*. Interest in children's time use is the key motivation for adding the Child Development Supplements and Transition to Adulthood supplements to the Panel Study of Income Dynamics (*U.S.*), and for including time use diaries in the Growing Up in *Australia* Longitudinal Survey of Australian Children. In *Canada*, time use surveys have helped to understand children and youth physical activity. The data was used in the non-government organisation Active Healthy Kids *Canada's* 2009 Report Card on Physical Activity for Children and Youth.

66. Researchers additionally have used time use studies to examine how single fathers manage child care responsibilities in the *United States* (Hook and Chalasani 2008), how drivers adjust travel behaviour when petrol prices change (Sen 2012), how couples where

one or both partner has a disability and people looking after adults with long-term disabilities manage daily schedules to accommodate care (Bittman et. al. 2005, Freedman et. al. 2012). Time use surveys also play a central role in analysis of improving the basic living conditions of women in the communities with the least resources in developing countries (Antonopoulos and Hirway 2010).

F. Conclusions

67. Time use surveys collect information on all human activities and can therefore inform a broad range of policies. The three key areas of unpaid work and non-market production, monitoring well-being, and gender equality are identified as those where information from time use surveys is necessary for informed policymaking, and for which other data sources are not adequate. This provides the core rationale for conducting time use surveys regularly. In particular, time use surveys are well placed to respond to the recent shift of emphasis towards measuring well-being in the context of measuring social progress.
