



# Measuring work-life balance using time diary data

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## Abstract

This paper examines how time diaries facilitate the study of work-life balance. We first compare aggregate time spent in paid work, unpaid work, attending to personal needs, and free time across seven countries using the Multinational Time Use Study. We then measure the overlap of work with other activities in two ways. First, we map the timing of episodes of work over the day, and overlay these maps onto maps of leisure time. A social group can be said to have a work-life balance if their peak periods of different activities do not overlap substantially. Second, we measure the total time spent performing multiple activities at the same time, and compare periods of multi-tasking where work is the main focus while other activities occur simultaneously with multi-tasking where work occurs alongside another activity that is the main focus of the diarist's attention. All analysis is broken down by sex and age. There are many qualifications on these results, and the results in this paper are exemplary of what can be done rather than definitive findings.

**JEL-Codes:** J17, J19

**Keywords:** work-life balance, cross-national analysis, simultaneous activities, quality of life

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## **1 The problem of work-life balance**

Popular discourse warns of dangers to quality of life when the responsibilities of people's paid employment dominate other aspects of daily life. In consequence, many governments have expressed interest in monitoring work-life balance. Measuring the degree to which populations lead balanced lives, however, can prove problematic. The dividing line between work and free time is not distinct. Some people draw more life satisfaction from their work than from free time activities. Other people devote such extensive time and financial resources to "free-time" activities that other dimensions of their lives suffer – creating an imbalance similar to the imbalance that can arise from working excessive hours. People increasingly answer work-related calls on mobile phones while in restaurants, out shopping, or even using the toilet. Checking e-mail often entails a combination of answering work-related and personal messages, even when e-mail is accessed at home or on holiday.

Official leisure statistics tend to focus on levels of consumption (such as number of DVD players or gym memberships sold), employment in leisure industries, and the proportion of populations that participate at some minimal level in varying activities (Gershuny and Fisher 2000). Merely possessing goods, having access to facilities, or periodically participating in various activities for short periods, however, does not guarantee that they draw satisfaction from their free time or that they have achieved balanced lives.

Social theorists have provided ample justification for measuring work hours as part of the measurement of work-life balance, but the other elements of the equation remain less clear. John Stuart Mill and John Maynard Keynes proposed that technology would speed the production of sufficient goods to satisfy people's wants, creating more free time. Karl Marx countered that the economic power of capitalist classes required the continued exploitation of workers through (in part) long working hours. Thorstein Veblen posited that new technology would increasingly provide workers with the means to emulate the leisure patterns of the superordinate classes, and that the desire to improve social standing would lead to a diffusion of patterns of leisure down through society. Bertrand Russell and Joffre Dumazedier proposed that the evolution toward post-industrial society would lead to an inevitable expansion of time for leisure (these positions are summarised in Gershuny and Fisher 2000).

More recently, Juliet Schor (2001; 1998) suggests that businesses maximise profits by goading employees to work long hours. Thus, while workers more financial resources than previous generations, they also have less free time. Schor (2001; 1998) contends that leisure has transformed towards rapid accumulation and unsustainable consumption of resources with little time for relaxation. The key measures suggested by each of these theories are the total hours devoted to work and total hours over which people have discretionary control. What remains is a need to measure both unpaid work and discretionary time alongside work time in a manner which allows the determination of the degree of balance. In this paper, we demonstrate that time diary data can fill this need. We first review existing research which shows that diary data can measure the balance of paid work, unpaid work, and free time. We then explore additional potential offered by diary data, the ability to measure the timing of work and leisure, and the ability to measure the overlapping of work and other activities. This paper serves as a guide to future substantive work.

## **2 Measuring hours of paid work, unpaid work, and free time**

Policy makers and academics have a long-standing interest in collecting statistics on contracted hours of paid employment and usual hours of work. Recent changes in employment legislation at both the European level and the national level of many EU member states reflect a general concern among policy makers that long hours of work can have damaging social consequences (Lourie 1996). Conventional questionnaire surveys, such as labour force surveys, have asked people such questions about how many hours they generally work (in main and second jobs), how many hours they worked in the last week, how many hours of paid and unpaid overtime they usually work, how many paid and unpaid hours are worked at home, and average times spent commuting. Hours of work have a relation to quality of life to the extent that the greater proportion of the day and week that is devoted to work, the less time remains for the enjoyment of the fruits of that labour. Nevertheless, there are shortcomings to the conventional 'hours of work' approach.

First, the accuracy of estimates of time at work is in doubt. Jonathan Gershuny and John Robinson have compared the actual hours of paid work recorded in time diaries and estimated hours worked made by the employed people who completed the diaries, and found that the estimated time is often inaccurate, for some types of work underestimated, and for others overestimated – with overestimation being far more prevalent (1994). The reasons for the inaccuracy arises as people do not have an in-built stop watch keeping track of time spent in each activity. Except in cases where working hours are rigidly controlled, people do not keep exact track of hours. Unless they carefully reconstruct their actions for a day, people have difficulty estimating actual time spent in an activity - a phenomenon that also arises for housework, other unpaid work (such as chauffeuring children to school and activities, or helping an elderly parent with medical care), time in vehicles, and time with other people as well (Gershuny 2000). Further, time at the work place is not the same as time on the job, as people may attend to non-work-related matters while at work (Robinson and Godbey 1997). We return to the question of the overlap between work and other activities in the next section.

At the same time, considering the influence of work on the balance of needs in people's lives requires a broader definition than hours worked. Time which is not paid, but which is taken up by a focus on work (such as time spent waiting for a work activity to begin, commuting, or engaged in unpaid preparation for a work event) precludes the possibility of a focus on other areas of life. Nevertheless, time spent in these activities is relevant to measuring work-life balance. Further, the concept of a balanced life must also take account of unpaid activities necessary to maintain quality of life (from arranging for repairs around the home, to paying bills, to buying supplies and goods for the household, to child care) but which in themselves are not conducive to relaxation, quality time with family and friends or intellectual challenge. Conventional measures of contracted hours or hours worked last week miss out on these dimensions of work-life balance.

Time diaries, in which people record what they do during the day (and usually also note where they are, how they travel from place to place, and who else is with them during activities), offer the advantage of collecting information on the spectrum of issues relevant to measuring balance of needs in life. Diaries collect information on actual hours worked, time spent at the workplace or in other contexts that make work the focus of those periods of the day, time in unpaid work activities, time in personal care, and time in varying types of free time engagements.

The best source of future information on time use in Europe will be the Harmonised European Time Use Studies project (HETUS), co-ordinated by EUROSTAT, but including participants which are European Union Member States, EU candidate countries, and countries which are not presently candidate countries as well. This project has produced guidelines for time use data collection and coding, though these guidelines have been implemented to varying degrees across the participating countries. EUROSTAT published harmonised basic tables on its web site (2003), and the cross-national time use data file may become available in the future. Most HETUS participating countries hope to conduct future time use studies at five to ten year intervals, though funding for this aim is not guaranteed. Table 1 displays the current status of participation in the HETUS project.

In the mean time, the best source of harmonised cross-national time use data is the Multinational Time Use Study (MTUS). The MTUS project, funded in part by the European Foundation for the Improvement of Living and Working Conditions in its early phase, has harmonised data from 44 studies conducted in 21 countries<sup>1</sup> from the 1960s through the mid-1990s into a single dataset (Gershuny 2000).

**Table 1 Participation in the harmonised European time use survey project**

Conducted a Pilot Survey – 20 countries
Albania, Bulgaria, Estonia, Finland, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Turkey, United Kingdom
Participation in the Main Stage HETUS Survey – 19 countries confirmed
Completed Field Work – 15 countries
Belgium, Bulgaria, Denmark, Estonia, Finland, France,* Germany, Hungary, the Netherlands,* Norway,* Portugal, Romania, Slovenia, Sweden, United Kingdom
In the Field – 3 countries
Italy, Slovak Republic, Spain
Fieldwork to Transpire at a Future Date – 1 countries
Poland

\*did not generally follow the guidelines but cloned national data into HETUS format.

The data are weighted so that each study is treated as having 2000 diary days (so that larger studies do not overwhelm smaller samples in the results), so that the number of diaries produced by men and women reflect the sex balance in the national populations, and so that the distribution of diaries completed on each day of the week is balanced. Once weights are applied, the data set covers around 150,000 diaries from 80,000 diarists.<sup>2</sup> Given the nature of the data presently available, an overall sense of work life balance can be derived from comparing the total time in necessary activities (paid work + unpaid work + personal care time) with remaining free time. Figures 1 to 3 compare the grand mean (average time spent across all studies) in each of these four broadly-grouped activities with the data from a selection of countries, each time period, and basic demographic characteristics.

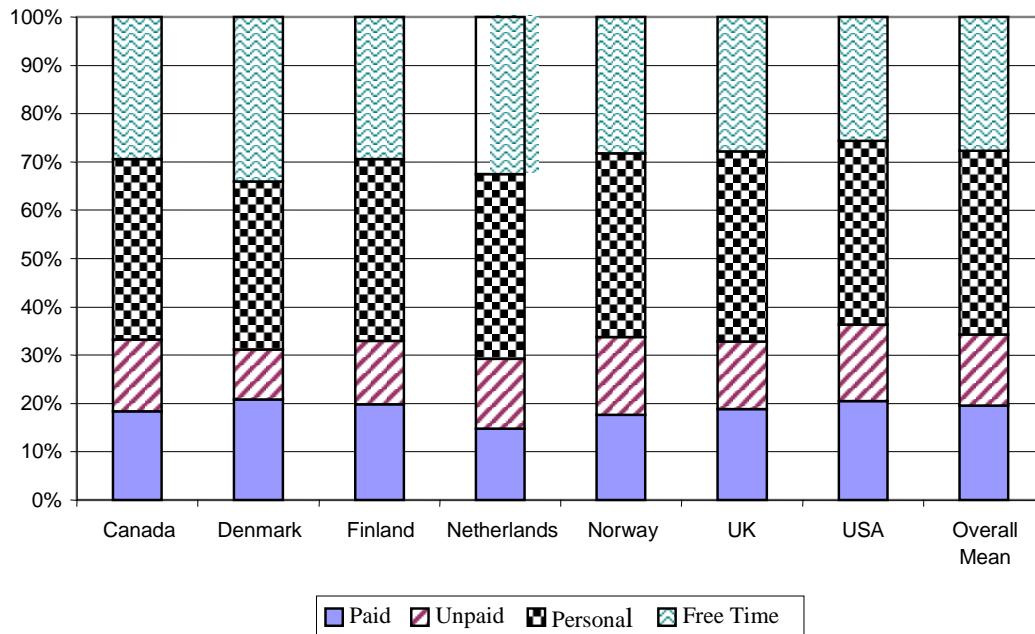
Figure 1 shows that Danes and the Dutch enjoyed relatively higher levels of free time than people in the other countries covered in the MTUS. These two countries also demonstrate that there are multiple means to the same end. Danes worked relatively long hours but performed less unpaid

<sup>1</sup> Details of all the studies are available in Fisher (2002b).

<sup>2</sup> At this time, the MTUS covers only aggregated main activity data (the sum of minutes spent in 40 activities), though in future releases, more detail will be included (Gershuny 2000).

work, while in the Netherlands people worked relatively shorter hours and performed more unpaid work.

**Figure 1 Time use across countries**



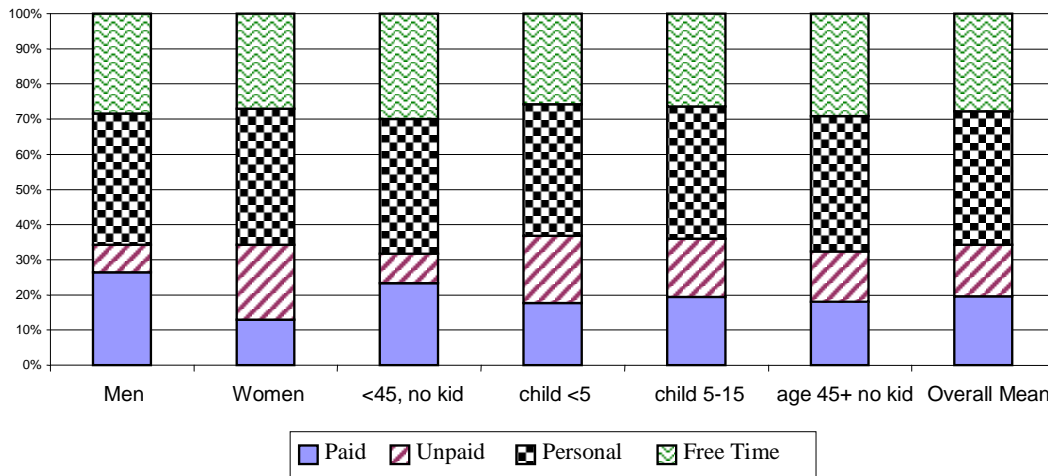
Source: The Multinational Time Use Study (MTUS) version 5.0.1.

Figure 2 considers the demographic details of diarists. Men and women enjoyed comparable levels of free time and performed similar levels of personal care. Men and women also performed similar levels of total work, though men primarily performed paid work and women primarily performed unpaid work. This distribution of activities creates unequal ability to make choices during free time, as men, by virtue of receiving pay for a higher proportion of their total working hours, control more of the finances available for use during free time activities than women. Having children decreases free time and increases total work time (paid + unpaid work), though paid work is lower when the diarist has a child aged less than five, and increases once all children are aged 5 to 15.

Figure 3 shows that total work time declined across the countries between the 1960s and early 1980s, then began to rise again by the early 1990s. The proportion of free time expanded from the 1960s to the 1980s, then shrunk slightly by the 1990s, though in the 1990s, people still enjoyed more free time than they enjoyed in the 1960s.

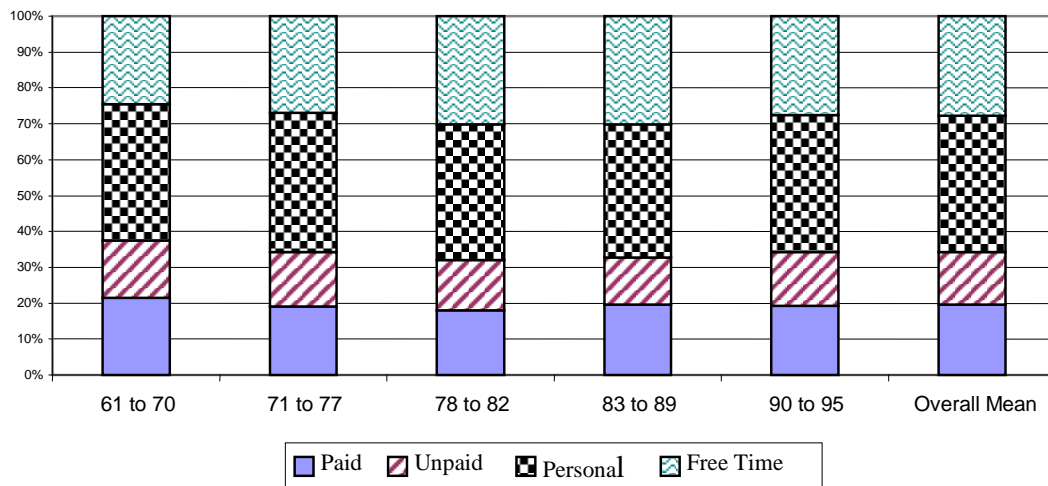
The reader should keep in mind that time use data do not, in and of themselves, reveal the full range of processes involved in the dynamics of change in time use. Geographic, economic, social policy, and social power factors impose varying constraints on people's daily schedules. Policies encouraging single mothers to spend more time improving their employment skills while their children are young will not be effective if affordable child care is not located near the homes or places of study of these mothers. Public policy must consider which groups will have the greatest and the least opportunity to change their behaviour in response to any given initiative. What time use data do provide is an indication of the effects the various key forces have on the way people allocate their time during the day.

**Figure 2 Time use by sex and family status**



Source: The Multinational Time Use Study (MTUS) version 5.0.1.

**Figure 3 Time use by time period**



Source: The Multinational Time Use Study (MTUS) version 5.0.1.

Time use data thus serve as one measure of the effectiveness of policy change; but time use data also best measure long-term, not short-term, change. People do not readily alter their habits, and consistent information and incentives must be applied over the long term to have significant effects on behaviour. For instance, in spite of pressure, first from feminist campaigners, and more recently from public agencies, to equalise the performance of both paid and unpaid work by men and women, women continue to perform the majority of unpaid domestic work (Gershuny 2000). Men have increased the time they spend doing housework and child care, but by a small amount. For example, by 2000, men in Finland performed an average of 12 more minutes per day of domestic work than they had performed in 1987 (Niemi and Pääkkönen 2002: 95). Between 1961 and 1995, British men increased their average time performing household cleaning and child care by 47 minutes a day (Gershuny and Fisher 2000).

### 3 The overlap of work and leisure

Aggregated time use information does not reveal the full story. People often perform more than one activity at the same time, and people who lead different lifestyles make different rates of transitions between activities. Relaxation and rest require time to let a person's mind and body shut down from other activities. Likewise, achieving a work-life balance can be defined by the ability to keep work in its place in the daily cycle and to prevent work from intruding into other activities. Time diaries are particularly suited to measuring both the timing of work and level of intrusion of work into other activities. As noted in the previous section, the study of work-life balance can include the analysis of both paid and unpaid work together. Nevertheless, as this area of research is relatively new, this section concentrates on the overlap of paid work and other activities, using data from the British National Time Use Study of 2000-01.<sup>3</sup>

One way of conceptualising the work life balance is to think of work, social activity and family life, and personal needs having their place in the day. Figures 4 and 5 show that men and women in Britain follow similar patterns in their scheduling of working hours during the day. As a higher percentage of men than women work full-time, men's average hours are longer than women's average hours and women's highest density of work hours peaks before men's highest density of work hours. An exception arises for people aged 65+ who work. Older men start and end work earlier than older women.

There are three ways that data such as these can be used to measure work-life balance. Similar to the examination in the previous section, one can consider the total proportion of the day in which work takes place. The higher the percentage of the population which works during a high proportion of the day, the less opportunity there is for a work life balance.<sup>4</sup> Over 32 % of men worked during 5 or more three-hour segments on an average week day work day. On Saturdays 22 % of men and on Sundays 20 % of men work during 5 or more three-hour segments of the day.

Roughly half the percentage of women as men work for pay during 5 or more three-hour segments of the day. People of both sexes work over a large proportion of week days than weekend days. Nevertheless, the percentage of women who work during most three-hour segments of the day increases on Sundays (11 %) compared to Saturdays (9 %).<sup>5</sup> Considering the proportion of the day touched by work, women in the UK have more potential opportunity to achieve a work-life balance than men, though this is primarily because women are more likely to work part-time than men (though as a consequence of continued wage differentials between women and men, women have fewer financial resources to spend in their free time than men) (Fisher 2002). A high percentage of both men and women devote a large proportion of their work days to work.

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<sup>3</sup> The study, which is the UK element of the HETUS project, collected diaries from June 2000 to August 2001 from all people aged 8 and older (11,700 people) in 6,500 households randomly selected for England, Wales, Scotland, and Northern Ireland. The data include 21,000 diaries, roughly half collected on week days and the other half collected on weekend days. The net diary response rate (completed diaries for sampled households) was 45 % (Fisher 2002b). The data used are weighted. Missing values were not imputed. Diaries containing fewer than 22 hours and 30 minutes of valid information (approximately 8 % of the collected diaries) were excluded.

<sup>4</sup> In this sample, 3 people worked during all 8 3-hour periods, and 40 people worked during 7 of the 8 3-hour periods.

<sup>5</sup> These differences are statistically significant, Pearson's Chi Squared 2-sided  $p < .000$ .

Not all people who worked over a large segment of the day necessarily failed to achieve a work-life balance. It is possible that some people live in households where work is concentrated in small numbers of days to allow for larger concentrations of other needs and pursuits to be accomplished on other days.

The greater the concentration of work on any particular work day, the more constraints (such as restoring energy after the drain of working long hours, or co-ordinating the timing of days off with friends and family members) a person must overcome to achieve a work-life balance. Consequently, in aggregate, lower numbers of people in a country working over most or all segments of the day would suggest a relatively higher possibility for people to achieve a work-life balance. An alternative way of measuring the same concept would be to determine if each dimension of life peaks for demographic groups at different times of the day. If people in a demographic group have similar general patterns of leisure, then they also have opportunities to socialise with other people in their peer group. Likewise, if periods of leisure peak at similar times for the different generations in families, then families are experiencing more opportunity to spend time together (whether family members actually meet together during leisure time when they have the opportunity or whether they engage in separate activities is the subject of the next section).

Figures 4 and 5 compare the timing of activities related to paid employment and leisure activities (social time, participation in sports and other leisure-based physical exercise, playing games or engaging in hobbies, reading, watching television, videos and DVDs, listening to the radio, tapes, records and CDs) for men and women of different age groups (after school age) in the UK. These figures show that leisure time peaks for women and men of all ages between 16:00 and 21:00, which indicates that most Britons enjoy opportunities to enjoy social time with both their families and their peer groups.<sup>6</sup>

As would be expected, men and women aged 65 plus engage in more leisure than employment activities, while men and women aged 25 to 64 engage in more work than leisure. Men's total time in employment is higher than women's time in employment (though women spend more time performing housework, child care and other unpaid domestic work than men, but the domestic work is not shown here).

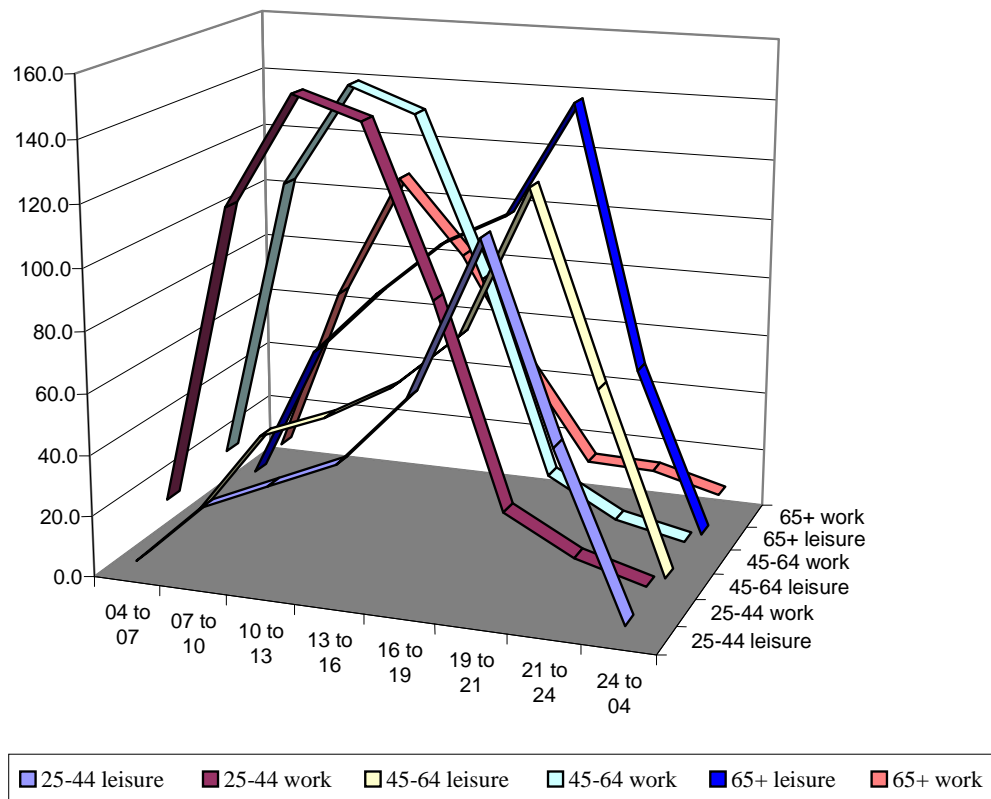
Overall, these figures suggest that most people in the United Kingdom have a reasonable opportunity to enjoy a work life balance. Nevertheless, as this is a short illustrative exercise, these images are necessarily simplistic. Sleep and personal care time and necessary unpaid activity are not included to keep the images clear, and more pronounced differences emerge when the figures are broken down by such factors as region, employment status, and industry of work. More significantly, there are qualifications on the quality of work and leisure time that do not emerge in figures displaying total time in activities.

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<sup>6</sup> Similar figures for all women and all men, and for women and men aged 8 to 15 and 16 to 24 are in the EPAG working paper.



**Figure 4** Timing of British men’s work and leisure



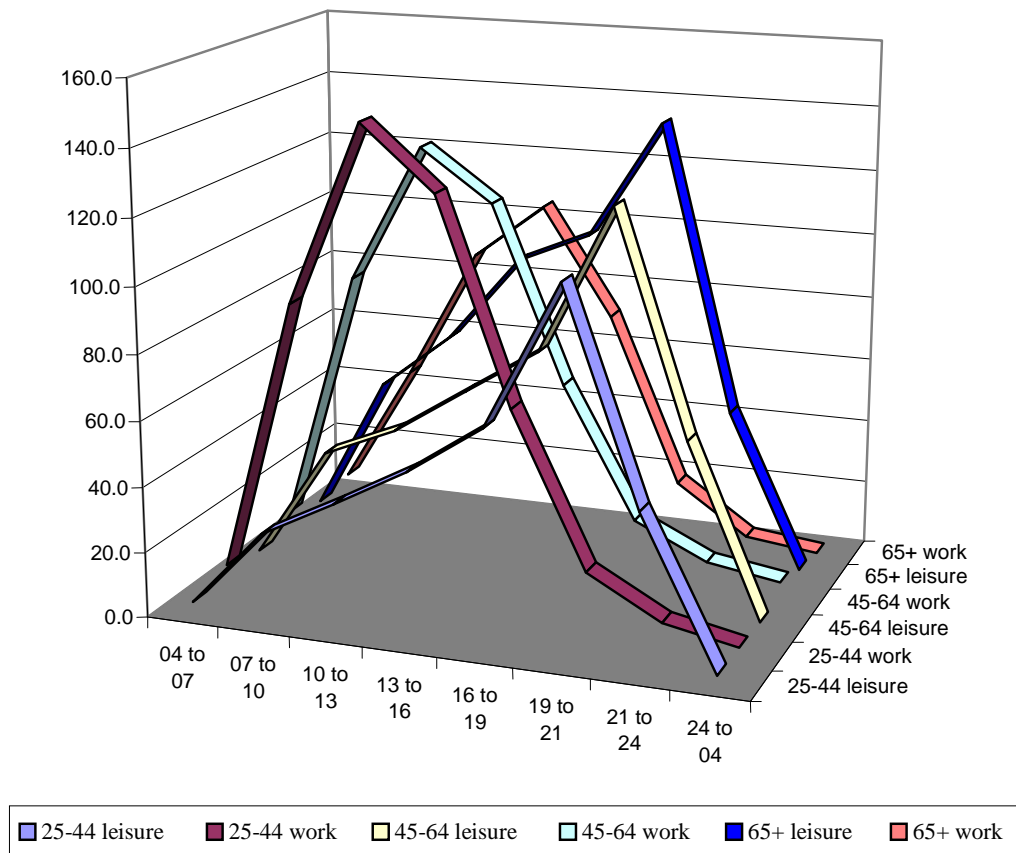
Source: Office for National Statistics (London), National Time Use Study, 2000-01.

The second way to measure work-life balance using time diary data is to consider the degree to which work overlaps with other aspects of the day.<sup>7</sup> People periodically perform more than one activity at the same time. For instance, people may listen to the radio while driving, or they may supervise the children who are doing their homework while cooking dinner. Most time diaries collect information about the main focus of people’s attention as well as activities they are doing at the same time. In this study, men who worked on their diary day spent an average of 8 hours and 54 minutes in work related activities as their main activity.<sup>8</sup> For an average of 14 minutes of this time, men did another activity at the same time as paid work, and for an additional 15 minutes, men performed a non-work activity as their primary focus while also doing something related to paid work. Women spent an average of 7 hours and 20 minutes in work related activities, and in 11 of these minutes, women did something else in addition to work. For a further 14 minutes, women worked simultaneously while doing something else as the main focus of their activity. Figures 6 and 7 show the average time that these joint activities take for those people who performed each joint activity.

<sup>7</sup> A third and more tenuous measure, examining split shift working, that is working over multiple periods in the day with long gaps for other activities in between the working spells, is also examined in the original paper.

<sup>8</sup> Work related activities are defined as working for pay, waiting for a work event (meeting to start, building to be opened, etc.), commuting, applying for a new job, interviewing for a new job.

**Figure 5** Timing of British women's work and leisure



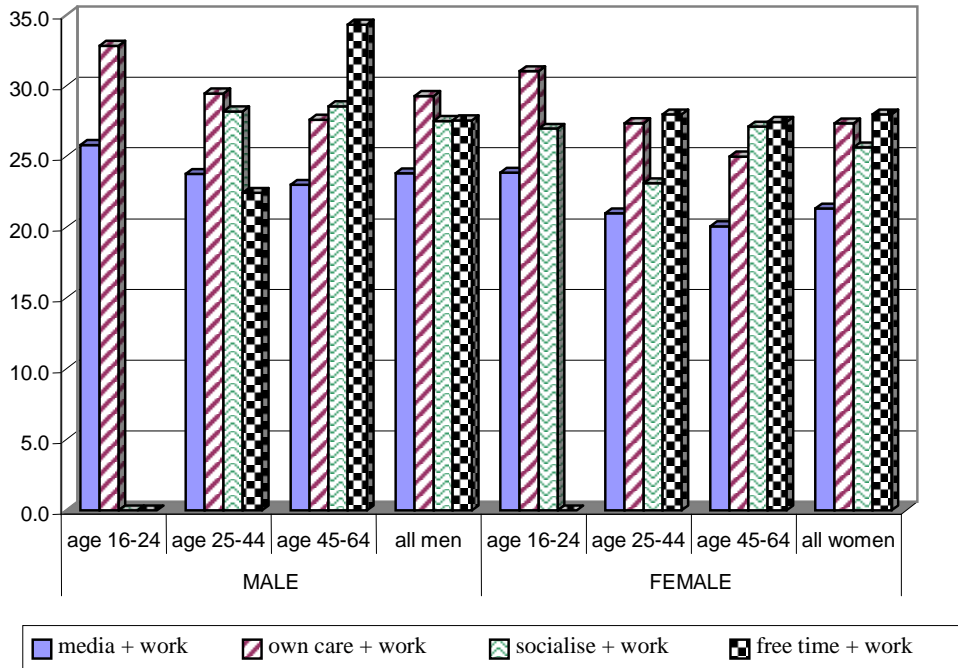
Source: Office for National Statistics (London), National Time Use Study, 2000-01.

There are four main categories of activity into which work intrudes, as shown in Figure 6. Media with work covers watching TV, reading, and listening to the radio or music while working (such as editing memos or arranging invoices while watching TV). Own care with work primarily consists of taking a business call on a mobile phone while using the toilet or eating lunch while continuing to work at one's desk. Socialising plus work covers discussing business with others at a party or public event, or taking business calls on a mobile phone while eating out or visiting friends or family. Free time plus work covers the mixing of work with other free time activity (excluding media use and social activities). For all people, engagement with work while using the media or performing personal care decreases with age. For men, the intrusion of work into other free time increases with age.

The degree to which work overlaps other activities has implications for quality of life and work-life balance. Some people find it hard to express something they consider to be of pressing importance if they know that they likely have only a few minutes before the person to whom they are talking will take a business call. Some children can feel less valued if they never attract the undivided attention of their parents. Conversations can lose their dynamic when interrupted. Further, there are qualitative differences between leisure experiences which are purely leisure (sitting back on a sofa with a glass of wine to listen to a new CD) and activities where work

overlaps leisure (listening to a few minutes of the new CD on the train until the mobile phone rings).

**Figure 6 Work time intruding on other activities for people who mixed work with other activities**

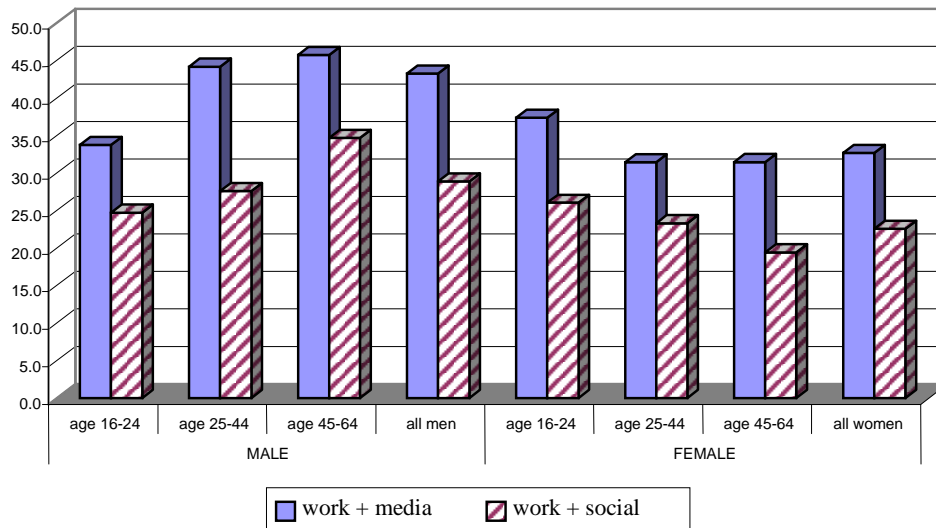


Source: Office for National Statistics (London), National Time Use Study, 2000-01.

One cannot simply define the intrusion of work into private life as always undesirable. The key issue is whether people experience work intrusions by choice or against their wishes. Nevertheless, even though some people choose to allow their work and private life to routinely overlap, a general increase in work intrusion into private life across broad population groups would represent cause for concern.

Intrusion works the other way as well, as many Britons also do some non-work activity while working as shown in Figure 7. Two groups of activity principally occur during work: media use (listening to music or the radio while working) and socialising (such as joking or making social plans with colleagues at the office). For men, media use and socialising while working increases with age, while for women, secondary activity while working decreases with age. Half of people who worked on their diary day combined work with another activity for at least part of their work day. The time of overlapped work reaches an average of 49 minutes for British workers. When work intrusion and overlapped work are taken together, working and non-working life overlap significantly for a large proportion of the British population.

**Figure 7** Other activities intruding on work for people who mixed work with other activities



Source: Office for National Statistics (London), National Time Use Study, 2000-01.

## 4 Conclusions

Time diaries produce a picture of how people apportion activities over the day. From a policy perspective, diaries can track the degree to which long-term policy initiatives influence changes in behaviour. Diaries inform the work-life balance debate, not just by demonstrating the total volume of work more reliably than other existing measures, but also by revealing the timing of work in relation to the timing of other activities, the proportion of the day influenced by work, and the degree to which work intrudes into other dimensions of life. One key issue to bare in mind is that certain patterns of time use may not be damaging to quality of life if they result from the voluntary choice of individuals, but can be devastating if they are imposed on individuals by institutions, social structures or social attitudes. Nevertheless, while diaries provide informative measures of activities on a daily or weekly basis, they do not cover longer-term cycles of activity. Consequently, though diaries do not produce a complete picture of work-life balance, the nonetheless reveal an important part of that picture.

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