2012 Time Use

Australia, UK, USA, Canada, South America & Europe

From the Editors

Welcome to the annual edition of *2012 Time Use in Australia, United Kingdom, United States, Canada, Europe and South America Bulletin.*

This edition brings together time use work from the Universities of Oxford, Toronto, Saint Mary's, Maryland, Amsterdam, Queensland and organisations such as Statistics Sweden, The Levy Economics Institute of Bard College, ETH Zurich and DARCH-gta. This vast array of institutions gives us an insight into how men and women spend their time on household chores, caring for children, how this affects children's development and much more. International gender differences make for interesting reading.

Insights into sustainability outcomes, trade-offs after the recession and impact of Parkinson's disease and deep brain stimulation on time use, participation and quality of life are just a few more of the highlights.

We hope you enjoy the various aspects of time use research and encourage readers to join our mailing list. Your comments and feedback are always welcome.

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DEAKIN UNIVERSITY AUSTRALIA

Reality – the significance of purpose/for whom in the diary

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The value of time use data can be diminished in specific applications by failure to appropriately classify and report events/activities in a manner that minimises differences in purpose interpreted through "for whom" (eg. personal, paid work, school, other, family) between subjects and users. This work based on time diary data collected in Halifax, Canada (STAR, 2008) and time diary data collected from Nova Scotia teachers (NSTU,1999) explored the effectiveness of, and approaches to, collecting "purpose for whom" data. It examined discrepancies, denoted as "differential purpose" (DP) activities, which indicates a discrepancy between the stated purpose (SP) and the assigned purpose (AP) from a coding protocol based on the activity context. DP activities accounted for 20.6 per cent and 19.1 per cent of all activities, in the 2008/1999 studies respectively. Among other findings, the data showed that while doers (SP) agreed with 99.8 per cent of paid work assignments made by coders (AP n=11,371) the (AP) assignment was only 85.9 per cent of all (SP n=13,219) paid work events. Personal AP (7.5 per cent), Family AP (5.3 per cent) and Other AP events (1.3 per cent) were also identified as (SP) Paid Work. At the other extreme, SP for Family agreed with only 58.2 per cent of Family AP with Personal accounting for 35.9 per cent suggesting a need to clarify the distinction between Personal and Family made by doers and coding.

The relationships between personal, temporal and activity context variables and DP was explored. Activity context components (what, where, and with whom) were most strongly related to differential events. Based on beta coefficients in an MCA analysis "What" ranked first for both the NSTU (.299) and STAR (.408), "Location" was second in both cases, (.119) and (.2239) respectively. This suggests the existence of a propensity for DP to occur in particular behavioural settings. The model accounted for only a small part of the variance with an R2 of .231 for STAR and .119 for NSTU. Marital status in both studies and household size in STAR were the strongest background variables. The work suggests that while traditional coding AP predominantly identifies SP events it fails to correctly identify approximately one fifth of them. It highlights the potential value of incorporating a generalised "for whom/purpose" option, the basis for SP assignment, in time diaries. Work with appropriate data seems warranted to test findings and hopefully shed greater light on the classification differences and their importance.




Recent research on 'healthy activity' from the Halifax STAR Survey

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Researchers from several Canadian universities continue to analyse healthy physical activity using time use and travel data from the Halifax STAR (Space Time Activity Research) survey. This was the world's first large scale application of a GPS assisted prompted recall survey. The survey was conducted between April 2007 and May 2008 in the Halifax Regional Municipality (HRM), a county-sized metropolitan area along the east coast of Nova Scotia, Canada (Millward and Spinney, 2011a). Primary respondents completed a computer assisted telephone interview (CATI) questionnaire, carried a cellular assisted GPS device for a 48 hour reporting period, maintained a daily "activity log" during that period, and completed a two day time diary survey.

Statistical analysis of the various datasets began in late 2009, focusing initially on aspatial relationships. It looked at how time spent daily on physical activity varied by type of activity, personal and socio-demographic characteristics (such as sex, age, income, education), season, and daily weather (Spinney and Millward, 2011a). The research took a regional geographic approach, and investigated how physical activity varies as one progresses outwards from the city centre, through urban, suburban, and rural zones (Millward and Spinney, 2011b). It then examined the localised geography of physical activity, looking at the home locations of the participants, and also at the locations of the activities themselves. Travel to physical activity locations, and travel during physical activity (both recreational travel and "active transportation") were also studied (Spinney and Millward, in press).

Most recently, the research has focused primarily on walking, both for recreation and transportation. It compared the characteristics of the two types of walking trips (Spinney, Millward and Scott, 2012), in terms of trip frequency and duration, and the destinations, durations and distances of active transport walking trips (Millward, Spinney and Scott, 2013). The outputs show that walking activity, though greatly affected by socio-demographic variables, also varies considerably by urban-rural zones. The empirical effects of neighbourhood design and density on walking activity, for both home and work neighbourhoods, are currently being assessed. Also under study are factors affecting mode choice for children's walking trips to and from school (Spinney and Millward, 2011b).

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Time use and participation: Impact of age, illness, life transitions and deep brain stimulation

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Investigators at the University of Queensland have been exploring time use as an outcome measure to capture the impact of ageing, health conditions (e.g. stroke), life transitions (e.g. driving cessation) and are now embarking on the exploration of the impact of Parkinson's disease and deep brain stimulation on time use, participation and quality of life. The use of time of 195 older community dwelling Australians (aged 65 years and older) was investigated via face to face interviews using a time diary reflecting on the past week (Activity Configuration), role participation and life satisfaction.

Findings indicated that most time was spent on sleep (8.4h/day), solitary leisure (4.5 h/day), instrumental activities of daily living (3.1 h/day), social leisure (2.7 h/day) and basic activities of daily living (2.6 h/day). Older participants (aged 75 years and above), spent significantly more time on solitary leisure ($p = 0.046$), and more time alone ($p = 0.001$) and less time on paid work ($p = 0.027$) and transport ($p = 0.011$) compared to those aged 65–74 years. Maintaining participation in valued roles was found to be significantly related to life satisfaction, although time spent in activities related to those roles was not always reflective of the value. While older people demonstrated ongoing involvement in productive roles and activities, they also seemed able to perceive ongoing role involvement, with limited regular time spent in related activities, which may be protective of wellbeing when participation becomes limited.

The impact of stroke on participation was evaluated by comparing the time use of 23 older people who experienced a stroke 1–3 years previously with data from the well older population described above. People who had experienced a stroke spent less time in sleep ($p = 0.015$), and instrumental activities of daily living ($p < 0.001$) and more time at home ($p = 0.02$), with others ($p = 0.04$) and in solitary leisure ($p < 0.001$).

These findings helped to develop understanding of the broader impact of stroke and highlight the clinical need for measuring participation as an outcome of illness. The impact of driving status on time use, participation and life satisfaction was also explored in a cross sectional survey of 234 older community people who were either current drivers, retired drivers or had never driven. Findings indicated that when compared to current drivers, retired drivers had significantly lower life satisfaction ($p = 0.01$), and spent less time on social leisure ($p = 0.002$) and away from home ($p = 0.0001$), and more time in solitary leisure ($p = 0.0001$). Comparing the participation of retired drivers with those who had never driven indicated that retired drivers spent significantly less time in volunteer work ($p = 0.009$). These findings helped to develop an intervention to promote adjustment to driving cessation for older people.

Parkinson's disease (PD) is a neurodegenerative condition which affects movement, cognition, independence and wellbeing. Deep brain stimulation is a therapy that has well documented benefits for the movement-related symptoms of PD. The broader impacts of the therapy and the condition on participation and quality of life for people with PD and their caregivers have not been thoroughly evaluated. PD has an impact on time use in terms of its symptom patterns which result in "on-times", where medication is effective and "off-times" where symptoms predominate, leaving activity restricted. Medication for PD needs to be taken at very regular intervals, requiring timers and alarms, and needing structuring of daily activities around the regime. Deep brain stimulation can result in reduced "off-times", reduced medication and improved movement patterns, but adjustment to the changed patterns resulting from this treatment seems difficult. Researchers at the Asia-Pacific Centre for Neuromodulation at the University of Queensland are currently developing a study to explore the nature of time use of people with PD and their caregivers over time and in relation to deep brain stimulation. The study aims to use established (time budgets, questionnaires) and emerging approaches (GPS based tracking, mobile phone app based experience sampling methodology of time use and mood) to monitor time use, participation and quality of life.

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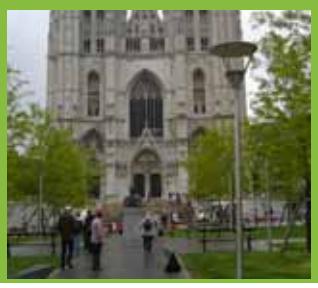


The Levy Institute measure of time and income poverty (LIMTIP)

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Official estimates of poverty still ignore the fact that unpaid household production contributes to the fulfilment of everyday needs and wants. This omission has consequences. When measuring the incidence and depth of poverty, not tracking deprivations that are linked to gaps in household production, yields an unacceptably incomplete picture of both. Therefore, these estimates provide incomplete information and inadequate guidance to policy makers. Standard measurements of poverty assume that all households and individuals have enough time to attend to basic needs of household members, including, for example, caring for children, a task absolutely necessary for attaining a bare bones standard of living. But this assumption is false. For numerous reasons, some households may not have sufficient time, and they, thus, experience "time deficits." If a household, officially classified as non-poor has such a time deficit and cannot afford to cover it by buying market substitutes, such as hiring a care provider, that household will be encountering hardships not reflected in the official poverty numbers.

The Levy Institute Measure of Time and Income Poverty (LIMTIP) is a two-dimensional measure that takes into account jointly the necessary income and household production time needed to achieve a minimum living standard, therefore showing a more accurate calculus of poverty. Recently published LIMTIP estimates for Argentina, Chile, and Mexico show that, indeed, substantial numbers of people are left out of the official ranks of the poor. The size of the "hidden" poor is indicated by the gap between official and LIMTIP poverty rate in the table below.

Most of them are households with at least one employed person, but earn incomes that prove too low to buy out their (household production) time deficits. Contrary to the view held in some quarters, it is the working poor not the professional and better paid individuals that endure the most severe time deficits. Women and men both suffer from poverty inducing time deficits; but, the specific source of their plight differs: very long hours of employment for low-wage men; for the even lower waged women, though their hours of employment are much lower relative to men, the demands of household production on their time are large enough to render them time poor. Estimates also reveal the hidden risks children face. Beyond the well, known vulnerability of children to official income poverty, an alarming majority of them (around 70 percent) live with adults that face high time deficits. Policy response to all these challenges can go a long way towards improving living conditions for those most affected.

Further information: The full LIMTIP report and other supplemental technical documents can be found at www.levyinstitute.org/publications/?docid=1566. The project was made possible by the support of UNDP (RSC-LAC) for the overall project; and by ILO's support for the case study of Chile.

Table 1: Official versus LIMTIP Poverty rates (percent)

	Argentina		Chile		Mexico	
	Official	**LIMTIP**	**Official**	**LIMTIP**	**Official**	**LIMTIP**
Households	6	11	11	18	41	50
Men	7	13	9	15	40	49
Women	7	12	11	18	43	51
Children	16	28	19	29	57	67




Parenting and inequality

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The time that parents spend with children is linked to children's cognitive and socio-emotional skills. Parenting practices associated to responsiveness, proximity, and intellectual stimulation foster kids' schooling and labour market outcomes. In contrast, receiving low levels of parental involvement during childhood was found to be correlated with future schooling drop out, unemployment, and poverty. Studying how family background is connected to parent-child relationships is therefore important to understand the socio-economic determinants of children's life chances.

The study explored two questions that are important to understand the intergenerational transmission of social inequality:

- Does parental education explain differences in parent-child relationships across children's developmental stages?
- Is education related to how parents participate in distinct leisure activities with their children?

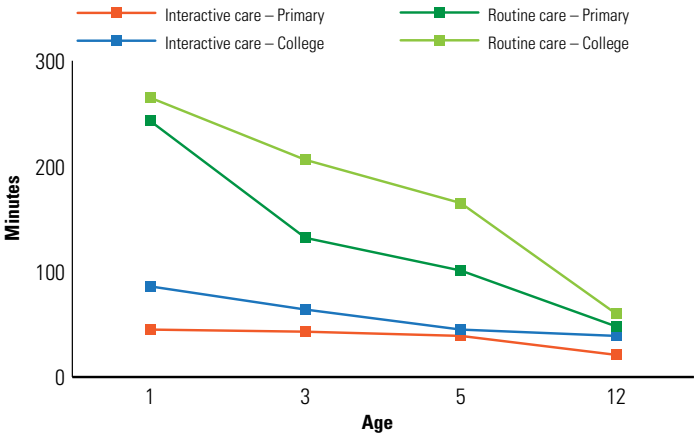
Time diary data reported by partnered mothers and fathers with young children were examined. The 2003 Spanish Time Use Survey' (n = 3,531) was used to study educational variations in two central activities: 'physical care' (feeding, medical care, and supervision) and 'interactive care' (teaching, playing, and conversations). The 2000 British Time Use Survey' (n = 908) was utilised to investigate how education is associated with parents' participation in 'watching TV' and 'cultural activities' with one or more kids from the household.

The most relevant empirical results of the project were:

- Spanish couples with two college educated parents were disproportionately engaged in routine and interactive care activities, as compared to families where both partners had primary education.
- In Spain, children raised in families with two college educated parents were particularly advantaged in parental inputs during early childhood (ages 0–5), when children's socio-emotional and cognitive performance is most dependent on intensive parenting practices.
- British parents with basic education watched TV with children more frequently than parents with the highest education. This finding reflects educational differences in one activity that when involving 'too much' time is associated with lower levels of social capital and poorer educational performance.
- In Britain, parental time in cultural activities like reading, exhibitions, and going to libraries was clearly associated with parents' years of education. This shows educational differences in children's familiarity with daily practices that foster their cultural and schooling performance.

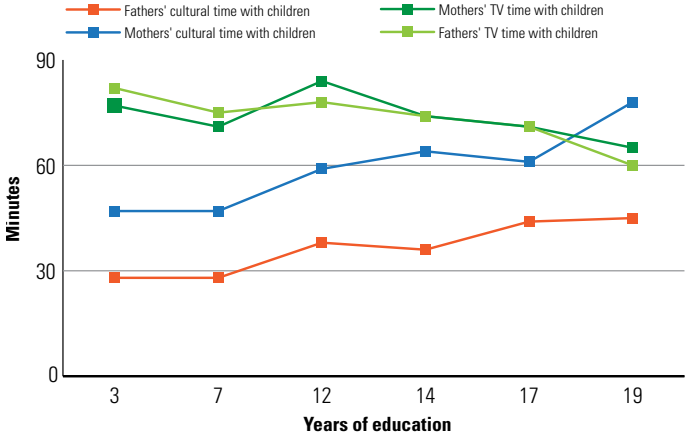
Overall, this study suggests that children raised in families with higher levels of education, not only have the most powerful material and cultural resources, but are also unevenly engaged in parent-child interactions that are essential for achieving high socio-economic and educational outcomes.

Figure 1: Educational differences in couples' total daily routine and interactive care minutes (y) by age of youngest child (x) in Spain (2003)



Source: 2003 Spanish Time Use Survey

Figure 2: Mothers' and fathers' daily minutes with children in cultural and TV activities (y) by years of education (x) in Britain (2000)



Source: 2000 British Time Use Survey




Results from the Swedish time use survey

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The Swedish time use survey sheds light on the daily life in Sweden showing how women and men are organising their lives. The results give an opportunity to study differences between women and men from a gender equality point of view.

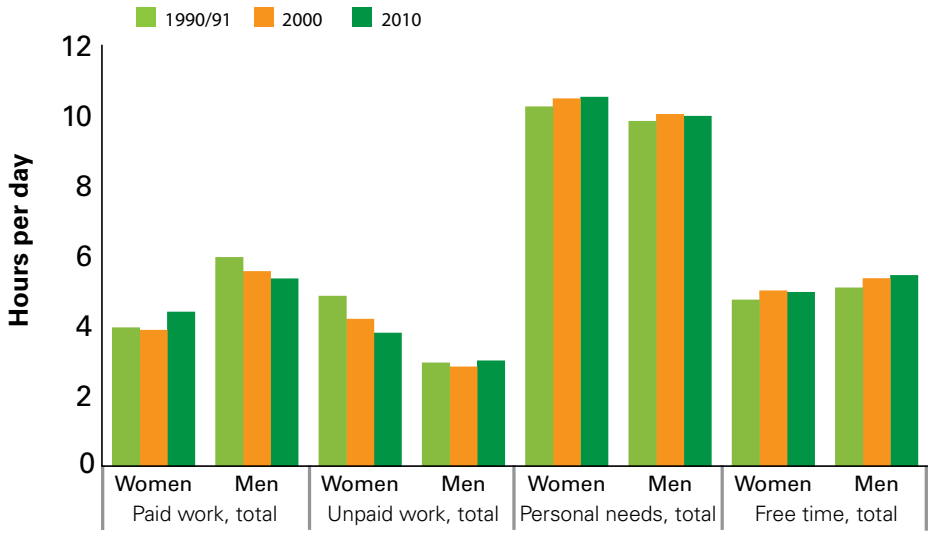
Almost 3,300 individuals in the 15 – 84 age group contributed, by describing their daily life activities in diaries. The survey was commissioned by the Swedish Government and is in general harmonised with other European time use surveys.

One of the results from the survey is that women are spending less time doing household work and men more. Women spent 14 minutes less doing some kind of unpaid work on an average day in 2010 compared to ten years ago. Men, on the other hand, spent 11 minutes more. On average, women spent almost 4 hours per day doing some kind of unpaid work in 2010. Even though men spent more time doing unpaid work than before it is still 45 minutes less each day than the average Swedish woman.

At the same time Swedish women spent more time doing paid work. Compared to the results from the previous survey in 2000, women spent more than 20 minutes doing some kind of paid work. The same comparison for men shows an opposite situation where men actually spent 14 minutes less per day doing paid work.

Compared to the results from the 1990 survey, Swedish women spent more than one hour less on unpaid household activities. This corresponds to a 20 per cent cut in time for doing unpaid work. Men spent as much time on unpaid work as they did in 1990. When putting paid and unpaid work together Swedish women spent exactly the same time doing some kind of work as the Swedish men. Both women and men spent on average 7 hours and 20 minutes per day working. That is almost half an hour less compared to the 1990 survey.

Figure 3: Mean time for activities 1990/91, 2000/01 & 2010/11 by sex. Population age 20 – 64. September to May. All days. Hours per day.



Looking at domestic activities, such as preparing food, cleaning and taking care of the children Swedish women and men are not that equal. Women spent almost twice as much time on doing such activities than men. On average a Swedish woman spent almost two hours per day on average on domestic activities. On the other hand Swedish men spent almost twice as much time on activities like taking care of the house, cleaning the car and mowing the lawn. Men spent on average 40 minutes per day on such unpaid activities.

Almost six hours per day was considered as free time. This has not changed very much since 1990 but the free time activities have. For example Swedish women and men spent less time socialising. At the same time the time for doing Internet related activities increased. One possible explanation could be the use of social media such as Facebook and Twitter? Watching television was still the dominating activity within the free time category. Swedish women and men spent around two hours per day watching TV and that is actually 20 minutes more than in 2000.




Domestic employment and multi-tasking: How much do they really contribute?

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The bulk of responsibility for domestic work and childcare in heterosexual couples falls on women. But the means they find to cope with this load, and how these relate to the factors underpinning the division of labour are not often studied.

Sayer (2006), among others, has suggested that work time may be reduced by employing domestic help (outsourcing) and by the multi-tasking of domestic and caring tasks.

Using UK 2000/1 time use data (N=4,196 couples), it was found that while the employment of domestic/caring assistance is related both to the presence of dependent children and to wife's and husband's resources, there is no overall impact of outsourcing on the total domestic/caring workloads experienced by either partner.

Indeed, the relationship, if any, appears to be the reverse for full-time employed women in dual earner couples with children aged under five: the greater the amount of domestic/caring work such women do, the more likely they are to employ domestic help. Nor can outsourcing account for the reduction in women's unpaid labour with increasing economic resources; there is a clear negative relationship between wives economic resources and time spent in domestic labour and caring, regardless of whether or not they employ any domestic/caring assistance. Wives spend more time multi-tasking than husbands, but their proportion of domestic/caring time spent multi-tasking is comparable, at about one -third, to that of husbands. Moreover, the relationship is not affected by the standard socio-demographic variables such as economic resources or the presence of dependent children. It seems that the smaller quantity of time that men spend in domestic and caring work is reflected in a relatively constant way in the smaller quantity of time they spend multi-tasking. The conclusion is that domestic multi-tasking seems to be more related to opportunity (time at home) than a response to time pressure.

Why time use surveys should ask diarists about their sexual orientation

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Time use research has a long social justice history, both explicit (promoting improvements in the status of women and poor communities), and by implication from treating the activities of all people, including those who are marginalised, as of importance in measuring social outcomes and comparing development rates across countries. Thus far, researchers have overlooked Lesbian, Gay, Bi-sexual, Transsexual and Intersex (LGBTI) people. This oversight exists in the context of a limited range of national sample social surveys collecting any information on these communities. Time use surveys can make a significant contribution to LGBTI research, with potential to illuminate how couples negotiate domestic arrangements in the absence of expected gender roles, how these communities modify use of social spaces in response to hostilities these communities face in many areas of the world, and how daily activities change as these communities regularise their social status. Sadly, to date, no time use surveys include sexuality questions.

Some diaries surveys facilitate same-sex couple research. The American Time Use Survey (collected from 2003–2013) and the Spanish Encuesta de Empleo del Tiempo in 2002–03 and 2009–10 surveys are among those time diary studies collecting household matrices which allow the identification of same-sex couples. These surveys include sufficiently large numbers for analysis. The two Spanish surveys collected diaries from 152 same-sex couples (293 diarists), and the ATUS collected diaries from 285 people in same-sex couples. This research draws on the Multinational Time Use Study version of these surveys. Same-sex couples with higher social status were more likely to identify themselves as such in these surveys. In the ATUS, same-sex couple diarists are more likely than mixed-sex couple diarists to have a post-secondary education, work in professional or management jobs, be a citizen of the USA and live in households in the upper 25 per cent of the household income range. Unsurprisingly, in the USA, same-sex couples are less like to live in rural areas.

Results of OLS regression models, controlling for a range of demographic factors, showed that same-sex couples make the same time investments in child care, unpaid housework, and religious activities as their majority couple counterparts. In this case, non-significant results are important as they challenge stereotypes held by many opponents of LGBTI equality. Outputs showed limited statistically significant differences – same-sex couples in the USA spent 35 more minutes per day in conversation and visiting family and friends, as well as modestly more time at going out to cultural events, using the internet, and walking dogs than mixed-sex couples. Time diaries offer potential for further LGBTI research and this potential would expand once surveys ask participants about their sexuality.



Urban planning and socio-spatial effects of new transport infrastructures and travel time savings

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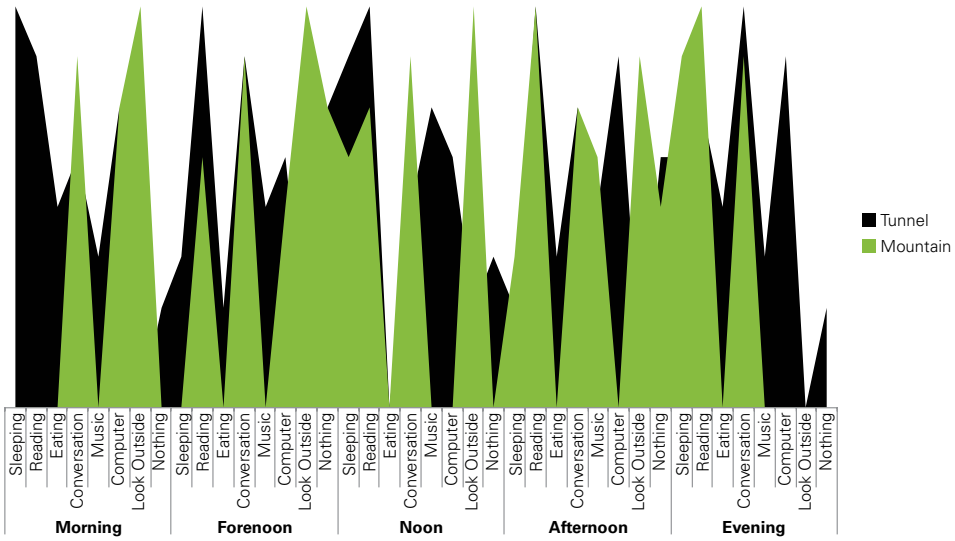
Transport infrastructures are being increasingly expanded in more and more countries throughout the world. This trend, caused not least by the globalisation process, is leading to ever shorter travel times between different countries, on the one hand, and within each country on the other. Extensive changes in the urban fabric in areas that are being equipped with a new transport infrastructure tend in the process to be regarded purely from the point of view of economic efficiency, and particularly in terms of saving time when crossing the distance from departure-point to destination. An interesting aspect here is that the significance of time appears to be replacing the significance of space. However, there has been little research on the socio-spatial effects of new transport infrastructures. This appears to be due to the fact that these changes do not become perceptible as quickly as changes in the existing urban structure, on the one hand, while on the other there seems to be no awareness of the changes – so that hardly any methods are available for investigating such phenomena. The present study is intended to add a new level to the way in which the effectiveness of new transport infrastructures is viewed namely, the level of the socio-spatial effects of this type of infrastructure.

Various methods will be used to achieve this, starting from the urban planning changes, in order to grasp the whole range of social developments that can appear as a result of new transport infrastructures. To begin with, the instruments for urban planning analysis developed in Prof. Lampugnani's department will be used to carry out a historical investigation of various spatial situations in the areas being studied. In addition, comparisons of photographic documents will identify urban developments in specific areas. With the evidence of the urban changes caused by the new transport infrastructure, methods for grasping the associated social changes will then be applied. For example, the social effects of the alterations and changes will be described through repeated observations over several years at sites that have previously been investigated in urban planning terms. The results obtained will in addition be verified or falsified by means of interviews with experts.

In addition to the social effects of new transport infrastructures on existing urban reality, the changes in social behaviour immanent to the transport infrastructure itself will also be investigated. These changes are to be recorded using "moving methods" such as on the one hand with socio-ethnographic observations during travel using the new transport infrastructure, and on the other by comparing travel reports from various time periods in order to highlight the socio-historic significance of new transport infrastructures. Actual travel time use and travel time use in history are mentioned.

A canon of empirical social-science methods for analysing urban planning situations resulting from new transport infrastructures was produced. One interesting finding is the different behaviours because of shorter journey times (See Figure below).

Figure 4: Different behaviours due to shorter journey times





How time diaries inform sustainability debates

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Time diaries can play a crucial role in climate change research. The need to persuade people to reduce the impact of their lifestyles on the climate is well established. Policy interventions aiming to inspire such adjustments focus on specific behaviours, such as encouraging people to drive less. Nevertheless, changing one dimension of daily activities will alter other dimensions, and time diaries enable us to look at the broader implications of environmental policies. Ideally, policies should encourage people to reduce other impacts of their daily behaviours once they heed advice of a specific policy, and not encourage shifts from one damaging behaviour to another that is equally or more damaging.

The USA offers a useful case study, both as this country produces high levels of per capita carbon emissions, and as the national government issues environmental guidance, but state governments hold power to implement or ignore much of this guidance. The Multinational Time Use Study version of the American Time Use Survey (ATUS) offers large diary sub-samples from each state. Data released by the Environmental Protection Agency, records whether states fully implemented, partially implemented, or have not implemented 71 policy suggestions by 2010.

The analysis coded full implementation as 2, partial as 1, and none as 0, then summed policy scores to produce a scale of environmental policy interventions across the states. In addition to controlling for state, diary, household and individual factors, the level of environmental policy implementation in each state in OLS regression models was used to compare daily activities across the states of the USA (See Figure 5).

Time diaries capture broad measures of the degree of environmental impact of daily activity patterns. The results showed that the number of environmental policies is associated with lower-impact behaviours on each of these measures.

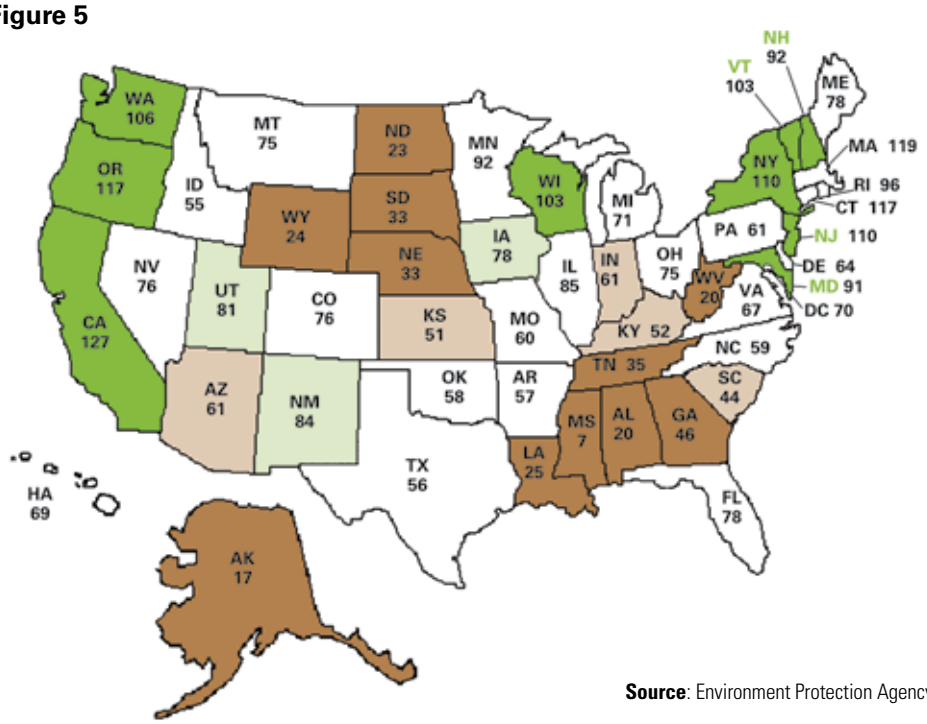
The first range of measures relates to travel. People living in states with more environmental policies walk or cycle for a greater proportion of their total travel time, spend a greater proportion of their total travel time on public transport, spend fewer total minutes in cars, and drive alone for a smaller proportion of total driving time.

A second range of measures relates to time inside during hot or cold times of day, particularly in months when temperatures are more extreme and people use energy when inside. Related measures capture time in more energy-intensive leisure, such as playing computer games. In states with more environmental policies, people spend more time outside, less time inside in energy-intensive leisure, and when they are inside engaged in energy-intensive leisure, they spend fewer such minutes alone (meaning their energy use is shared).

A third measure relates to time spent interacting with animals. The hypothesis was that people who more intensively engage with other species may be less inclined to think about the environment solely in terms of human desire satisfaction. It was found that people living in states with more environmental policies are more likely to spend 20 minutes or more on an average day interacting with animals.

This work suggests that as governments take a greater interest in regulating behaviour to reduce environmental impact, people respond by reducing the environmental consequences of their daily routines.

Figure 5



Source: Environment Protection Agency




Activity trade-offs in the perspective of economic recession

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This research into possible effects of economic recession is in part generated by ongoing debates changes over time in the aggregate duration of sleep. Research by Jahoda, Lazersfeld, and Zeisel (1933) in Marienthal, Austria, an industrial city whose factory closed and left 76 per cent of its population unemployed, documented an increase of sleep duration to 10.5 hours a day. While Gershuny (2000) posited no a priori relationship between paid work and sleep, more recent regression analysis has shown that there is a highly significant inverse correlation between duration of main paid employment and sleep in Canada. For example, well-educated people with demanding positions are shown to sleep the least (Michelson, 2007; Robinson & Michelson, 2010).

If hours of work and hours of sleep are, in aggregate, traded off, one might expect that this could be observed in an increase in amount of sleep in 2008 and 2009, as economic recession took hold. The questions raised were:

- To what extent is the distribution of sleep in society a function of employment status?
- Does sleep rise during recession?
- In the context of the zero sum game represented by the universal allotment of twenty-four hours in a day, what trade-offs are made that extend beyond just paid work and sleep, but also to a larger number of other major daily activities?

Methodology

The American Time Use Survey (ATUS), a series of annual time use surveys from 2003–2009 sheds light on the relationship of sleep and other time uses to changing economic conditions which culminated in a marked recession in 2008 and 2009. The ATUS data can also be utilised as a single sample, with a large number of respondents in different employment related contexts. The samples have been restricted to those aged 25 – 64, the most concentrated employment years. The consolidated ATUS file for this period consists of 70,290 respondents in this age range.

Results

Figure 6 was created from the consolidated ATUS file combining data from the years 2003 through 2009. In summary, those who are employed and on a working day sleep less than the other categories dealing with employment: those employed but not working on the day in question, those laid off from employment, those

Figure 6: Mean sleep duration by employment situation (minutes per day, U.S.A., 2003–2009)

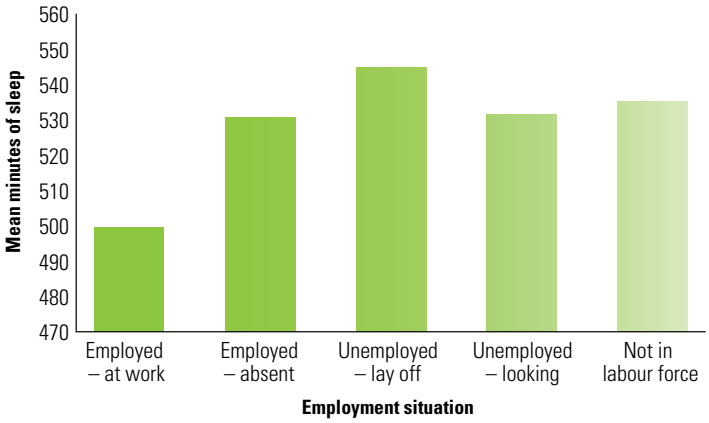


Figure 7: Mean minutes of sleep by year of American time use survey

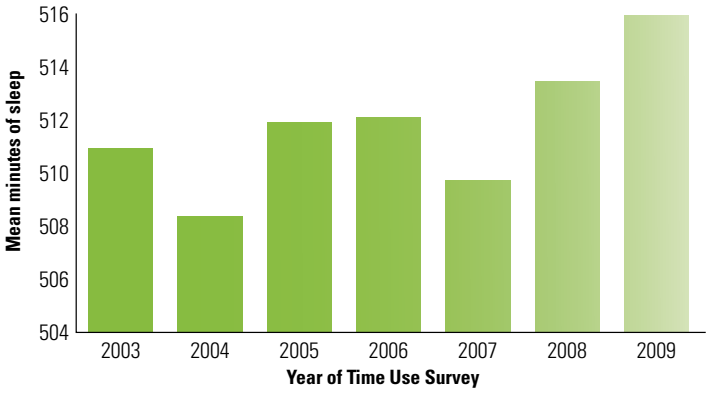
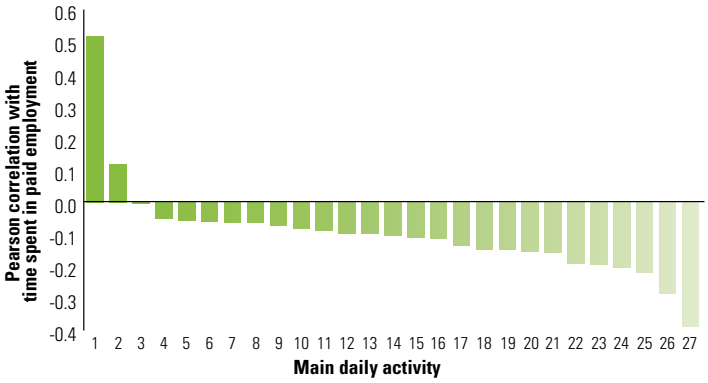


Figure 8: Correlations of daily time spent in paid employment with selected main Daily activities (U.S.A., 2003–2009, ages 25–64)



Key: **1** Commuting **2** Grooming **3** Travel for family care **4** Leisure travel **5** Relaxing/thinking **6** Travel for household activities **7** Leisure computing **8** Travel caring for non household adults **9** Games **10** Travel for eating and drinking **11** Playing with children **12** Travel grocery shopping **13** Eating and drinking **14** Physical care for children **15** Travel for socializing **16** Reading **17** Travel for other shopping **18** Grass cutting and landscaping **19** Religious services **20** Kitchen cleanup **21** Laundry **22** Shopping other than for groceries **23** Socialising **24** Food preparation **25** House cleaning **26** TV and movies **27** Sleep




unemployed but looking for work, and those not in the labour force.

Figure 7 adds a time dimension on how mean sleep duration may reflect the onset of a recession. It shows clearly that the greatest mean duration of sleep among American respondents occurs in the years following the onset of the recession, in 2008 and 2009.

Figure 8 shows the correlations of time spent in paid employment with selected other major daily activities. It is not surprising that sleep duration (no. 27) has the greatest inverse association with paid employment. Nonetheless, 24 of the 27 activities chosen for analysis in this respect are inversely correlated with time spent in paid employment. And these include a large variety of activities, from household chores to socialising and other recreational activity. Clearly, work takes a big chunk out of most people's days, which then isn't available for other activities. Two activities are positively related to time spent in paid work: commuting time and grooming. It is arguable that commuting and grooming are a common part of the employment situation.

It is interesting to note that a final activity, travel for family care (3), is largely unrelated to duration of work. When help is needed for family members, people take the time to seek it regardless of the presence or absence of employment commitments.

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Co-presence and enjoyment of activities before and after the financial crisis in the USA

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More time use surveys will collect affective dimensions of daily life following the endorsement of combining time and emotion data collection by the Stiglitz Commission and the OECD. Most research has concentrated on emotional experiences during activities, but emotional responses also arise from contact with other people.

The 2006 Princeton Affect and Time Survey (PATS), which followed the American Time Use Survey (ATUS) format, collected six affect ratings for three randomly selected time periods. The 2010 ATUS asked the six PATS emotions questions over three randomly selected episodes. These two surveys enable comparison of aggregate emotional experiences in the USA before and after the financial crisis.

Results showed that the total unpleasant time has decreased for women and men. While differences in the surveys partially may account for this finding, the economic crisis has not left people in the USA feeling less happy overall. An age dimension is observed where, unpleasant time was flat for people above retirement age, declined slightly for older working-age people, and declined most sharply for people aged less than 35.

Modest changes were found in who else was present during personal care, child care and housework, presence of others during other activities changed little over this time period. Nevertheless, the time spent in many activities has changed.

Overall, unpleasant time with family and work colleagues declined, and unpleasant time while alone or with strangers remained constant. Unpleasant time with friends and neighbours, however, increased, largely due to a shift from going out to staying in and watching TV – a less enriching form of social time – with neighbours and friends. Future time use research should take more account of context as well as the activity patterns associated with emotional responses.

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Mapping multinational time use differences

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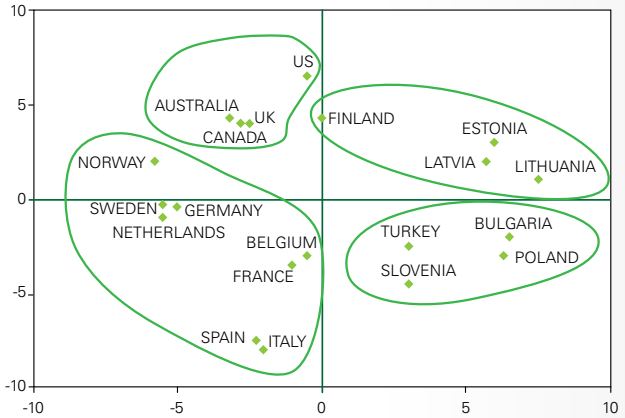
How can we conveniently summarise the complex patterns of daily life around the world, given the increasing collection of national time-diary data by government and academic organisations? The technique of Multi-Dimensional Scaling (MDS) has made it possible for social scientists to discover (or uncover) an underlying spatial structure of relations between various groups of people, social communities (like countries), social objects (like music or artifacts; Robinson, Fink and Dowden (1985), public attitudes (Inglehart 1997) or "perceptual maps of the world" (Robinson and Hefner 1968).

When the first multinational time diary data from Szalai (1972) became available Converse (1972) published two-dimensional MDS visualisations that provided immediate and plausible insights into what mainly differentiated daily life in these widely disparate 15 national settings. Converse concluded that "It is remarkable that statistical compression of these raw (time use) data yields anything resembling a physical map".

Figure 9 shows much the same conclusion is replicated when MDS is applied to Fisher and Robinson's (2011) latest standardised tables from the 20+ country diary data from 1998–2004 as archived at Oxford University. Like Converse's figure, Figure 9 clearly reflects a strong imprint of geographic factors on a nation's time use, with the Eastern countries of Lithuania and Bulgaria clustered on its right (east) vs the primarily Western/Nordic countries on its left. The second vertical dimension serves to geographically separate the Mediterranean countries of Italy and Spain at the bottom contrasted with the more Northern counties of US, Finland and UK at the top.

Figure 9: MDS Placement of country differences in daily time use



Based on data in Fisher and Robinson (2010)

Beyond this purely dimensional structuring, Figure 9 more generally bands certain "neighbouring" countries together, like the three Baltic states, the widely separated Anglophone countries of UK, Canada and Australia from the three Eastern European countries of Poland, Bulgaria and Slovenia. Again such maps are generated based solely on time differences on hours people spend working, caring for families, sleeping, watching TV and other free time activities – without any geographic information whatsoever.

Thus, MDS has again generated plausible and insightful visualisations in daily life, ones that strongly reinforce the conclusion that daily life is primarily influenced by geographical and cultural proximity.

Two further successful applications of MDS are also visible for two groups identifiable within data from the new (2003–12) American ATUS project: that involve 1) US immigrants from different countries (with even more prominent geo-cultural clusterings than in Figure 9), and 2) workers in different occupations.

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Australian Time Users Research Group website 2013

The Australian Time Users Research Group website (**http://australian-time-users-group.org/**) has moved to a new server and will continue to be updated with time use information. Some updates coming up in 2013 include the Employment Time Use Portal relating to USA, Canada and UK that was developed by Christina Inbakaran and Marie van der Klooster from Deakin University for the 33rd IATUR (UK) and the 34th IATUR conference (Rio de Janeiro). A further extension of this work will include updates to the Employment Time Use section for Australia along with a special focus on employment patterns within indigenous communities. Official figures show the unemployment rate for Aboriginal and Torres Strait Islander Australians is 17.1% compared to 5.4% for other Australians. The website will enable users to access data, reports and links to policy and research relating to employment time use of indigenous communities in Australia. Overtime there would be references to similar work on time use of rural indigenous populations such as Saraguro.