Time Use Research, History and Current Archives

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History and Archives Outline

- What are time use surveys
- Policy significance of time use surveys
- History of time use surveys
- Why time use surveys are under-used in research
- Why time use archives matter
- American Time Use Survey Extract project
- American Heritage Time Use Study
- Multinational Time Use Study
- Why you should cite archives in references
What Are Time Use Surveys

- Structured narrative accounts of recent events, usually over 24 hour intervals, of what people do in conjunction with what, where, with whom (and more recently how people feel about what they do and happens around them and when smart devices feature in activities)
- Suited to large sample surveys but retains properties of qualitative narratives
- **Flexibly** capture largely **accurate** activity reports
### Example Time Diary 2014-15 UK ELS

#### Day 1
**Time: 7am – 10am**

**Morning**

<table>
<thead>
<tr>
<th>Time: 7am-10am Morning (am)</th>
<th>What were you doing? Please write down one main activity.</th>
<th>If you did something else at the same time, what else did you do?</th>
<th>Did you use a smartphone tablet, or computer?</th>
<th>Where were you? Location, or mode of transport</th>
<th>Were you alone or with somebody you know? Mark all relevant boxes</th>
<th>People who live with you</th>
<th>How much did you enjoy this time? 1 not at all 7=very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>7am-7.10</td>
<td>Woke up the children</td>
<td></td>
<td></td>
<td>At home</td>
<td>Alone □ Spouse/partner □ Mother □ Father □ Child aged 0-7 □ Other person □ Others you know □</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>7.10-7.20</td>
<td>Had breakfast</td>
<td>checked emails</td>
<td>□</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.20-7.30</td>
<td></td>
<td>Talked with my family</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.30-7.40</td>
<td>Cleared the table</td>
<td>Listened to the radio</td>
<td>□</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.40-7.50</td>
<td>Helped the children dressing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.50-8am</td>
<td>Helped the children dressing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8am-8.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.10-8.20</td>
<td>Went to the day care centre</td>
<td></td>
<td></td>
<td>on foot</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Policy Significance of Time Use

- Address a central behaviour policy dilemma
  - Any behaviour change has unforeseen knock-on consequences – as time diaries collect complete systems of behaviour, collect detail of these unintended consequences
- Successful policies can yield undesired change
- Unsuccessful policies can yield desired change
Policy Significance of Time Use

- Comprehensive overviews of behaviour matter increasingly in:
  - Health risks (Ebola, Zika, Foot and Mouth, biological terrorist attack)
  - Energy use / energy supplies
  - Climate change and sustainability of lifestyles
- Daily routines are relevant to most policy areas
Policy Applications

- Environment
- Minority populations
- Smart devices
- Well-being & quality of life

Extended national accounts
Gender equality
Travel

Common policy uses
Health
Paid work
High Value for Money

- Time use surveys have comparatively high administration cost
- Considering the range of policy applications per respondent contact, however, these are among the best value for money social surveys

BUT

- Achieving this value for money requires that many people use the data in research
- Key value of IPUMS Time Use and CTUR archives matter
Early Time Use Surveys

- Survey style dates to dawn of 1900s
- Early designs may reflect parallel development of similar techniques
  - Radio (BBC, NHK – Japan) audience surveys
  - Social justice (Fabian Society UK concern with women in working poor families, unemployed men USA & Austria)
  - Peasant studies (Poland & USSR)
Early Time Use Surveys

- Survey style dates to dawn of 1900s
- Early designs may reflect parallel development of similar techniques
- Explain dynamics of social change (Pitirim Sorokin – USSR then USA)
- Document full economy, including measuring unpaid productive activity (Hildegard Kneeland at USDA, US economist Margaret Reid, related work in Germany and France)
USDA Surveys

- 1500 whole-week diary records kept by women (‘homemakers’)
- 1924–28 808 records from farm (559, 69%) and town (<2500 people) (249, 31%) households
- 1930–31 692 married alumnae of Bryn Mawr, Goucher, Mount Holyoke, Smith, Vassar and Wellesley Colleges from the classes of 1886 to 1929
- Only 77 of 1930-31 records located so far
**SUMMARY OF WEEK'S TIME RECORD**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Total for Week</th>
<th>Daily Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours</td>
<td>Minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WORK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homemaking (For details see page 9)</td>
<td>51.45</td>
<td>7</td>
</tr>
<tr>
<td>Farm work</td>
<td>51.40</td>
<td>7</td>
</tr>
<tr>
<td>Gardening (fruits and vegetables)</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Dairy work</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Farm management</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Other farm work</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Going and returning</td>
<td>2.26</td>
<td></td>
</tr>
<tr>
<td>Other work</td>
<td>2.26</td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>2.26</td>
<td></td>
</tr>
<tr>
<td>Going and returning</td>
<td>2.26</td>
<td></td>
</tr>
<tr>
<td><strong>CARE OF SELF</strong></td>
<td>7.15</td>
<td>10</td>
</tr>
<tr>
<td>Sleep and rest—Night</td>
<td>88.55</td>
<td>9</td>
</tr>
<tr>
<td>Day</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Eating</td>
<td>5.40</td>
<td>1</td>
</tr>
<tr>
<td>Care of person</td>
<td>5.48</td>
<td></td>
</tr>
<tr>
<td>Other care of self</td>
<td>5.48</td>
<td></td>
</tr>
<tr>
<td>Going and returning</td>
<td>2.26</td>
<td></td>
</tr>
<tr>
<td><strong>LEISURE</strong></td>
<td>39.45</td>
<td>5</td>
</tr>
<tr>
<td>Reading</td>
<td>11.00</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Meetings and dances</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Work for organizations</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Care of persons not members of household</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Social life away from home</td>
<td>8.00</td>
<td></td>
</tr>
<tr>
<td>Entertainments</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Outings and sport</td>
<td>2.10</td>
<td></td>
</tr>
<tr>
<td>Correspondence</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>Other hobbies</td>
<td>5.10</td>
<td></td>
</tr>
<tr>
<td>Going and returning</td>
<td>2.26</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL TIME</strong></td>
<td>166.50</td>
<td>24</td>
</tr>
</tbody>
</table>

**FOOD**

- Preparing meals: 16 hours 45 minutes (25%)
- Breakfast: 2 hours 15 minutes (12%)
- Lunch: 2 hours 15 minutes (12%)
- Supper or lunch: 2 hours 15 minutes (12%)
- Other: 2 hours 15 minutes (12%)
- Cleaning away meals: 2 hours 45 minutes (35%)
- Breakfast: 1 hour 45 minutes (25%)
- Lunch: 1 hour 45 minutes (25%)
- Supper or lunch: 1 hour 45 minutes (25%)
- Other: 1 hour 45 minutes (25%)

**HOUSE**

- Cleaning and straightening: 4 hours 15 minutes (7)
- Care of fires: 1 hour 45 minutes (7)
- Making, installation, repairing: 1 hour 45 minutes (7)
- Care of house surroundings: 1 hour 45 minutes (7)
- Other house: 1 hour 45 minutes (7)

**CLOTHING AND TEXTILES**

- Laundry: 1 hour 45 minutes (7)
- Regular washing: 1 hour 45 minutes (7)
- Regular washing: 1 hour 45 minutes (7)
- Extra sewing: 1 hour 45 minutes (7)
- Laundry and out: 1 hour 45 minutes (7)
- Mending: 1 hour 45 minutes (7)
- Sewing and fancy work: 1 hour 45 minutes (7)
- Other clothing and textiles: 1 hour 45 minutes (7)

**CARE OF MEMBERS OF HOUSEHOLD**

- 1 hour 45 minutes (7)

**HOUSING**

- 1 hour 45 minutes (7)

**HOMEMAKING MANAGEMENT**

- Feed purchasing: 1 hour 45 minutes (7)
- Other purchasing: 1 hour 45 minutes (7)
- Planning and recording: 1 hour 45 minutes (7)
- Supervision: 1 hour 45 minutes (7)
- Other management: 1 hour 45 minutes (7)

**OTHER HOMEMAKING**

- 1 hour 45 minutes (7)

**GOING AND RETURNING**

- 1 hour 45 minutes (7)

**TOTAL HOMEMAKING**

- 1 hour 45 minutes (7)
USDA Diary Surveys

- Diaries stored in boxes at USDA stations, scanned & digitised by CTUR
- Only names, addresses & diaries
- Matched to census data & public records to recover household & personal details
- Also have cause of death for many cases
Assumptions of Time Use Surveys

• Human behaviour occurs in cycles aligned to both natural and cultural rhythms
• To understand behaviour, you must consider activity patterns in total – the focus on isolated elements distorts and obscures the picture

• Technology efficiently managing complex data recent
• Sequence statistics / analytic techniques new
Radical Assumptions of Time Use

- All activities by all groups of people are important research subjects.
- Financial value is only one dimension of importance when measuring policy success and comparing societies.
- The boundary between the paid and unpaid sectors are fluid, porous, and changing.
SO THE HARDER A WIFE WORKS, THE CUTER SHE LOOKS!

GOSH, HONEY, YOU SEEM TO THRIVE ON COOKING, CLEANING AND DUSTING AND I'M ALL TUCKERED OUT BY CLOSING TIME. WHAT'S THE ANSWER?

VITAMINS, DARLING! I ALWAYS GET MY VITAMINS.

Vitamins for pep! PEP for vitamins!
Transformation of Time Use

- Main past modes phone interviews; paper self-completion, & paper or CAPI personal interview
- Tension between diary formats
  - “Full” (more detail, more respondent burden & processing costs)
  - “Lite” (less detail, less respondent burden & processing costs)
- Full and Lite formats produce different estimates of some activities
Transformation of Time Use

- Shift to mixed-mode surveys
  - Happiness Research Organisation (app & on-line diaries)
  - Denmark HETUS 2008-09 (paper and web)
  - Canadian 2015 General Social Survey time use module (CATI and on-line instruments)
  - 2014-15 Age 14 wave of the UK Millennium Cohort Survey (paper, on-line and app)
New Comparability Issues

- New domains (particularly smart device / internet use) produce more episodes
- Detail collected by supplementary devices (activity monitors, GPS tracking, environmental condition monitors)
  - Produce more episodes overall
  - Collect previously unreported brief activities
  - Collect detail people do not think to record
Why Time Use Archives Matter

- Behaviour trends gradual, need very long term sequences to model drivers of activity change
- Lack of widespread historic interest in this data means many older surveys which can answer big theoretical sociological, economic, and other social theory questions in danger of being lost
- Provides base for learning to use diary data – to stand on the shoulders of giants need to know where to find them
IPUMS Time Use Archives

- **ATUS-X** American Time Use Survey Extract System
- **AHTUS-X** American Heritage Time Use Study Extract System
- **MTUS-X** Multinational Time Use Study Extract System
American Time Use Survey Extract

- Idea of Katharine Abraham, University of Maryland, formerly Bureau of Labor Statistics
- 2003 - American Time Use Survey established as a 9th wave of a sub-sample of the Current Population Survey (1st continuous/annual Time Use Survey)
- Collaborators: Sandra Hofferth (University of Maryland), Sarah Flood and Matt Sobek (Minnesota Population Center)
- ATUS more complex than other CPS datasets
- Aim to reduce barriers to accessing this data
IPUMS Time Use Archives

- **ATUS-X** Original Survey Data
- **AHTUS-X** Harmonised Survey Data
- **MTUS-X** Harmonised Survey Data

Combines data analysis expertise of University of Maryland, data archiving and delivery expertise of Minnesota Population Center, and data collection and harmonisation expertise of Centre for Time Use Research at the University of Oxford
Harmonisation Process

- Make most of narrative properties of diaries - unreported main activity not always missing
- Reading activity in sequences
  - 4:00-8:30 sleep home
  - 8:30-8:40 home
  - 8:40-8:50 commute walk
  - 8:50-9:20 commute train
  - 9:20-12:30 paid work, main job office
Harmonisation Process

- Data cleaning and correction
  - Techniques to fix errors not available in past
  - Sequencing techniques relatively new, can enhance data as well as analyse data
- Create variables possible for a large number of national sample time use surveys
- Enhance files by moving information recorded by respondents to all relevant elements of diaries (can involve grouping as well as breaking down of original codes)
Harmonisation Documentation

- Main file creation process
- Survey-specific variable comments
- Survey specific code maps
- Survey metadata summary
- Annotated code files that start with original data files and end saving final MTUS files
American Heritage Time Use Study

- Initiated by Yale University as a part of a Program on Non-Market Accounts funded by the Glaser Progress Foundation in 2006
- CTUR commissioned to harmonise major USA time use surveys from the 1960s, the 1970s, the 1980s and the 1990s with the 2003 initial American Time Use Survey, now covers through 2015 ATUS, adding 1920s & 1930s data
- Served as a trial run to make the episode files in the Multinational Time Use Study
CTUR AHTUS Files

- **Questionnaire file** – 1 row per person per wave
  - Person-level variables
  - Household and region level variables

- **Summary file** – 1 row per diary
  - Summary time in 10 main activity categories (sum 1440 minutes)
  - Summary time in 92 main activities (sum 1440 minutes)
  - Summary time in 92 main activities where diarist also reported secondary child care

- **Episode file** – 1 row per episode
  - Row = change in dimension of diary
Multinational Time Use Study

- Jonathan Gershuny discovered minimally used time use surveys – stored in collections of uncatalogued floppy disks, box files, and paper diaries stored in bags in 1970s
  - BBC Audience Research Unit
  - Szalai materials
  - Young & Wilmott symmetrical family
  - Mass Observation (1930s UK data)
- www.timeuse.org/MTUS
Multinational Time Use Study

• Most comprehensive harmonised time use data
• Cross-time, some 1920/30s; 1960s to 2010s
• Cross-national – 30 countries
• Created by Jonathan Gershuny with help of Sally Jones in early 1980s
• Started as summary time over 24 hours in main activities (20 and 41 categories) for time budget analysis, covering ages 18-60 only, now all collected diaries included
Multinational Time Use Study

- Activity sequence files with context variables (developed by Kimberly Fisher)
  - Specified locations & mode of transport
  - Indoors, in a vehicle, or outside
  - With spouse, a child, another person, animal
  - Using smart device or internet
- 25 and 69 activity categories
- Core file – summary time but more countries (Jooyeoun Suh & Ewa Jarosz current managers)
CTUR MTUS Files

• Separate country supplement files
• Harmonised core file (HCF)
  o Summary time in 25 main activities (row=diary)
  o Most surveys, fewest variables
  o 1 file with all surveys (some not upgraded)
• Harmonised aggregate file (HAF)
  o Summary time in 69 main activities (row=diary)
  o More detailed survey & demographic variables
  o Separate adult & child files
• Harmonised episode file (HEF)
  o Row = change in dimension of diary
  o Separate adult & child files
• Austria 1992 (1981, 2008-09 coming)
• Finland (1979, 1987, 1999, 2010 coming)
• Germany 1991-92, 2000-01
• South Africa 2000 (2010 we hope to negotiate access)
• Spain 02-03, 09-10 (Basque region 92-3 98-9 02-3 08-9)
MTUS & AHTUS

- Both include same USA surveys

- **AHTUS** 92 category USA-specific harmonised activity codes, and 4 distinct demographic variables not in MTUS

- **MTUS** more demographic & diary context variables than AHTUS

- Both archives have separate supplements & files, and include many common diary & demographic details but with different variable names & presentation formats
• All CTUR AHTUS files are in the AHTUS-X


• Surveys from a limited range of countries included in the MTUS now are in the MTUS-X

• This group gets to give the pre-launch of the MTUS-X a good workout to help us improve the system before the full launch
By June 2017, MTUS-X will include 8 countries:

- In addition to the same USA surveys
  - Austria 1992
  - Canada 2010
  - Finland 1979, 2009-10
  - Spain 2002-03, 2009-10
At present, MTUS-X & AHTUS-X combine all CTUR files in one system – easier to access

Future AHTUS-X

- Will just have USA unique variables, other variables in common with MTUS-X
- Original survey variables added, including
  - Additional diary and demographic information
- Current AHTUS-X variable names will change – easier use in conjunction with MTUS-X
• **MTUS-X** variable and value labels available in English and in Spanish
• **AHTUS-X** unique variables and values will be translated into Spanish in future releases
• Current documentation in static files
• Development of extended metadata for both the **MTUS-X** and **AHTUS-X** will make documentation more easily searched, customised, and accessible
• New metadata also will allow extract of survey characteristics variables with other data
Over 260 publications using these archives

- AHTUS
- MTUS

Timeline:
- Earlier
- 1999-2003
- 2004-2008
- 2009-2014
Publication topics

• Adult care (valuation, time cost, who performs care but does not identify as a carer)
• Child care (valuation, trends, participation of fathers, balance of physical/interactive care)
• Education (homework, parental involvement)
• Environment (transport modes, time at home/inside)
• Leisure (trends, physical activity, quality)
• Paid work (hours of work, scheduling)
• Sleep (hours per week, deprivation, trends)
• Unpaid work (women’s total economic contribution, hours, trends, sharing in households)
• Volunteering (valuation, trends)
• Work-life Balance
• Over 1200 registered users of these archives
• 60 countries, most from
  • USA, UK, Canada
  • Australia, France, Italy
  • Germany, Finland
  • Republic of Korea
  • Spain, Sweden
• Gender balance
• Half on IATUR e-mail list
• 44% academics, 40% postgraduates
• 6% government & NGO; rest others
Cite MTUS, AHTUS & IPUMS Time Use Archives

- These files are released free to researchers (through there is a registration process to access the MTUS and MTUS-X)
- Archives require considerable effort & aftercare
- Acknowledge this work by citing these archives and the articles describing these archives in your reference lists
- If you participate in collecting a national sample time use data, please lobby for the inclusion of this data in the MTUS & IPUMS Time Use
Thank you

Comments & feedback welcome

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