

Introduction to quantitative time diary analysis

1. Origins and milestones of time diary research

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Plan of this lecture

1. Introduction and measurement

- A brief history of time use studies
- Time use surveys and time diaries
- Typical time use analysis

What is time?

- Time as implicit knowledge (Adam 2013)
- *Delimited time*
 - can be *measured* and *divided* (by clock and calendars);
 - universal and invariable rhythms (ie days, months are the same everywhere);
 - that is a limited and commodified resource: valuing speed
- Contextual time:
 - Natural time (ie seasons, planetary cycles)
 - Has a direction, which is irreversible (ie birth, ageing and death)
 - Plural experiences (between people, other beings, etc...)

How is time studied in sociology?

1. Time as an intrinsic object of study
 - Social theory: ie acceleration
 - Social times and rhythm
 - Rationalisation and modernity: criticisms of the 'clock time'
2. ... As a tool to investigate social issues
 - Productivity (Organisation studies)
 - Inequality ie Time poverty/exploitation
 - Division of labour in the household
3. Limitations due to the availability of reliable, systematic empirical data

Growing interest from the 20th C. onwards

- Early 20th Century: peasant households in Russia & the Fabians (Women in London)
- Soviet economists: Time Budgets of Russian Workers in 1923–1924;
- US Department for Agriculture time use in farms, towns, and later elite educated “college”, women
- In the UK: Mass Observation and the BBC listener surveys

What drove this interest for time use?

- Monitoring economic productivity, in particular household productivity
- Labour force behaviour
- Social (central) planning
- Understand consumers behaviour
- Investigate social issues ie poverty, gender inequality
- More broadly part of continued rationalisation of societies (Weber)

Contemporary large scale studies

- Alexander Szalai's *The Use of Time*
 - Pioneering survey of mostly urban households in 12 countries
 - First systematic time diary data collection: '*who does what, where, with whom, over 24h*'
- Multinational Time Use Study (MTUS)
 - Gershuny (Centre for Time Use Research)
 - Main source of harmonised time use data
 - 55 years, 10⁹ diaries, 30 countries, 70 surveys
- ICATUS; Harmonised European Time Use Study (HETUS);
- American Time Use Study; Indian Time Use Survey

Past

- Jonathan Gershuny first developed the MTUS in the mid 1980s
- Intention to create a cross-national *ex post* harmonised set of time use surveys. Designed to complement and add to *ex ante* harmonised HETUS study
- Built on 1965 Szalai Multinational Time Budget Study

Current

- 24 countries, 95 Harmonised Aggregate Files (HAF), 69 Harmonised Episode Files (HEF), Light diaries for the UK
- Surveys included from 1960 to 2018

Future

- Add more countries from all regions of the world e.g. South Asia, Asia & Pacific, Middle East including, Eastern Europe, Central Asia, Africa, and North and South America

File Structures

Aggregate Files

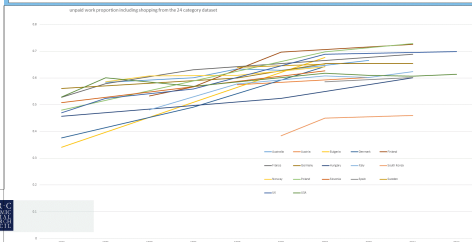
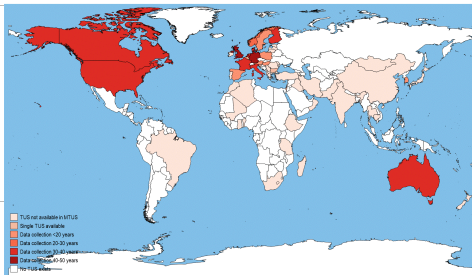
- 25 simple and where possible 69 activity categorisation suggesting total time spent in an activity in a day
- Context variables: day, age, sex, employment status, family status, work hours, education
- ...plus weights, country, survey, household, individual and day identifiers.

Sequence Files

- Episode of an activity suggesting beginning & ending of an activity
- Primary and secondary activities, location, co-presence variables for each episode
- Both 25 simple and where possible 69 activity categorisation
- ...plus weights, sex and age
- The Episode match with the aggregate file

Light Diaries

- For the UK only
- Includes a list of pre-coded activities (30-40) from which a respondent choose, mark it on the time s/he spent doing that activity
- Primary and secondary activity, location, co-presence variables



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What does a time use surveys look like?

- Data: 2015 UK Time Use Survey
 - 16,550 diary days of 10,208 respondents in 4,238 households in the UK
 - Diaries for respondents aged 8 and above
 - Collected all year round
 - Individual survey questions ie
 - How old are you? What is your job?
 - Time diary
 - 10 minutes time slots
 - 2 days per person (1 weekday/1 day at the weekend)
 - Unit of observation is *the day* rather than a person

What is recorded in time diaries

- *Main* and *secondary* activity ie 'eating dinner and watching TV'
- Location of the activity (ie at home, at work, etc)
- Who was also present
- Any unique combination of these is an *episode*
- New features:
 - Whether a device (ie phone...) was used
 - Immediate wellbeing: enjoyment
- Activities recoded using a harmonised nomenclature

A paper time diary example

DAY 1

Use an arrow or quote marks to record that an activity lasted longer than 10 minutes

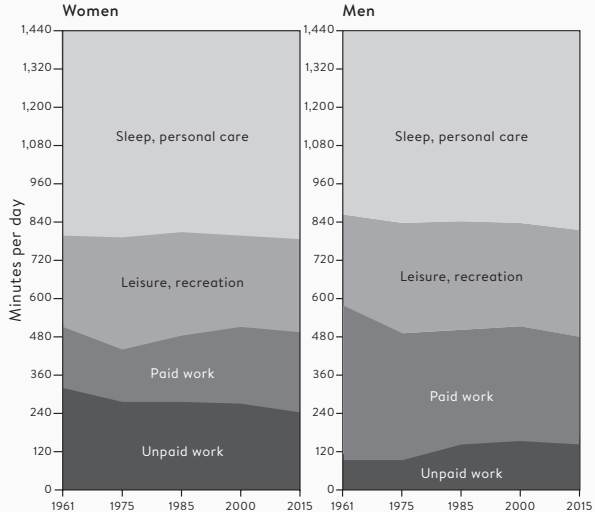
Were you alone or with somebody you know?
Mark all relevant boxes

Time 7am–10am Morning (am)	What are you doing? Please write down your main activity	If you did something else at the same time, what else did you do?	Did you use a smartphone, tablet, or computer?	Where were you? Location, or mode of transport	People who live with you							How much did you enjoy this time? 1=not at all 7=very much
					Alone	Spouse/partner	Mother	Father	Child aged 0–7	Other person	Others you know	
7.00–7.10	Woke up the children			At home								5
7.10–7.20	Had breakfast	Checked emails	✓									6
7.20–7.30	" "	Talked with my family										5
7.30–7.40	Cleaned the table	listened to the radio										4
7.40–7.50	↓	↓			✓							
7.50–8.00	Helped the children dressing	Talked with my children										
8.00–8.10	" "			↓								
8.10–8.20	Went to the day care centre			On foot								1

Common estimates from time diaries

- The time spent on activities ie their duration
- Their sequencing through the day
- Whether activities are carried out or not ie their probability.
- The importance (in terms of time spent, probability of occurrence) of activities relative to other activities or other people
- Their change over time

Durations of activities



(Source: Gershuny et al 2020)

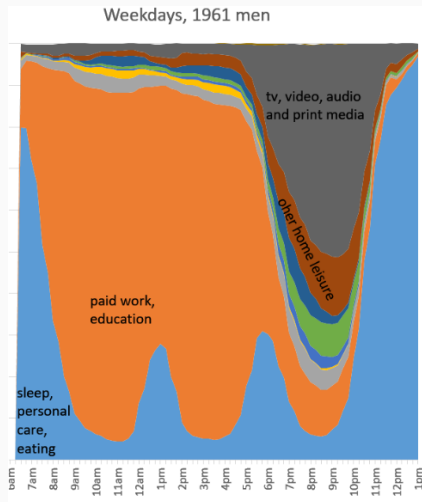
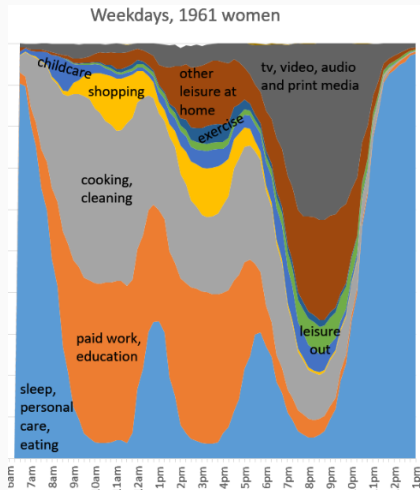
Duration of activities?

- For simplicity, activities were grouped in 4 categories
- For each time point, we have the average amount of time spent on each activity
- Activities all add up to 24h ie 1,440 minutes.
- We can compare time use between groups
- Three main lessons
 - Overall impression of stability over time
 - Little change in sleep and leisure duration
 - Opposite trends in paid and unpaid work
 - Marked gender differences

Sequencing of activities

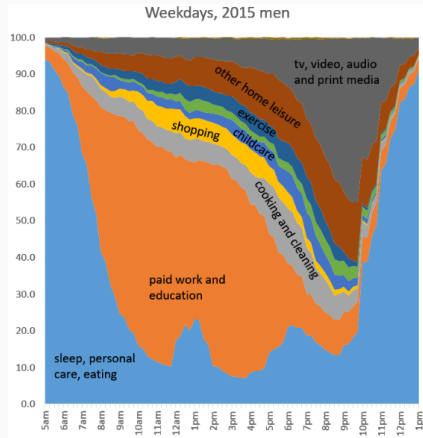
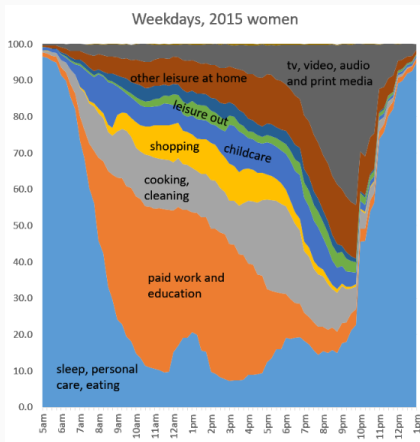
- The following plots show by time of the day, the percentages of people engaged across 8 types of activities
- We can follow the daily rhythms of people
 - Paid work leisure, meal times
- Partial blurring of originally heavily gendered use of time
- Changes in leisure behaviour
- Spread of eating time: erosion of the traditional meal

Activities throughout the day – then...



(Source: Gershuny et al 2020)

Activities throughout the day... And now



(Source: Gershuny et al 2020)

Summary

- Over the course of the 20th century, rise of interest for the way men, women and households spend their time
- Systematic time diary data collection from the 1960s
- There is now large amount of comparative data enabling time use research
- Time diaries record primary, secondary activities and their context
- Stability *and* change in daily behaviour over the last 50 years; gender contrasts