

Invisible economics – valuing time-use to measure the modern economy

**Christopher Payne (Office for National
Statistics) and Gueorguie Vassilev (Office
for National Statistics)**

Contents

- Links between economic measures and well-being
- Invisible economics and the production boundary (PB) – what new information can measures of household time-use bring?
 - Outside the PB
 - Inside the PB
- Survey or big-data – what is the best solution for time-use measurement?

Economic well-being

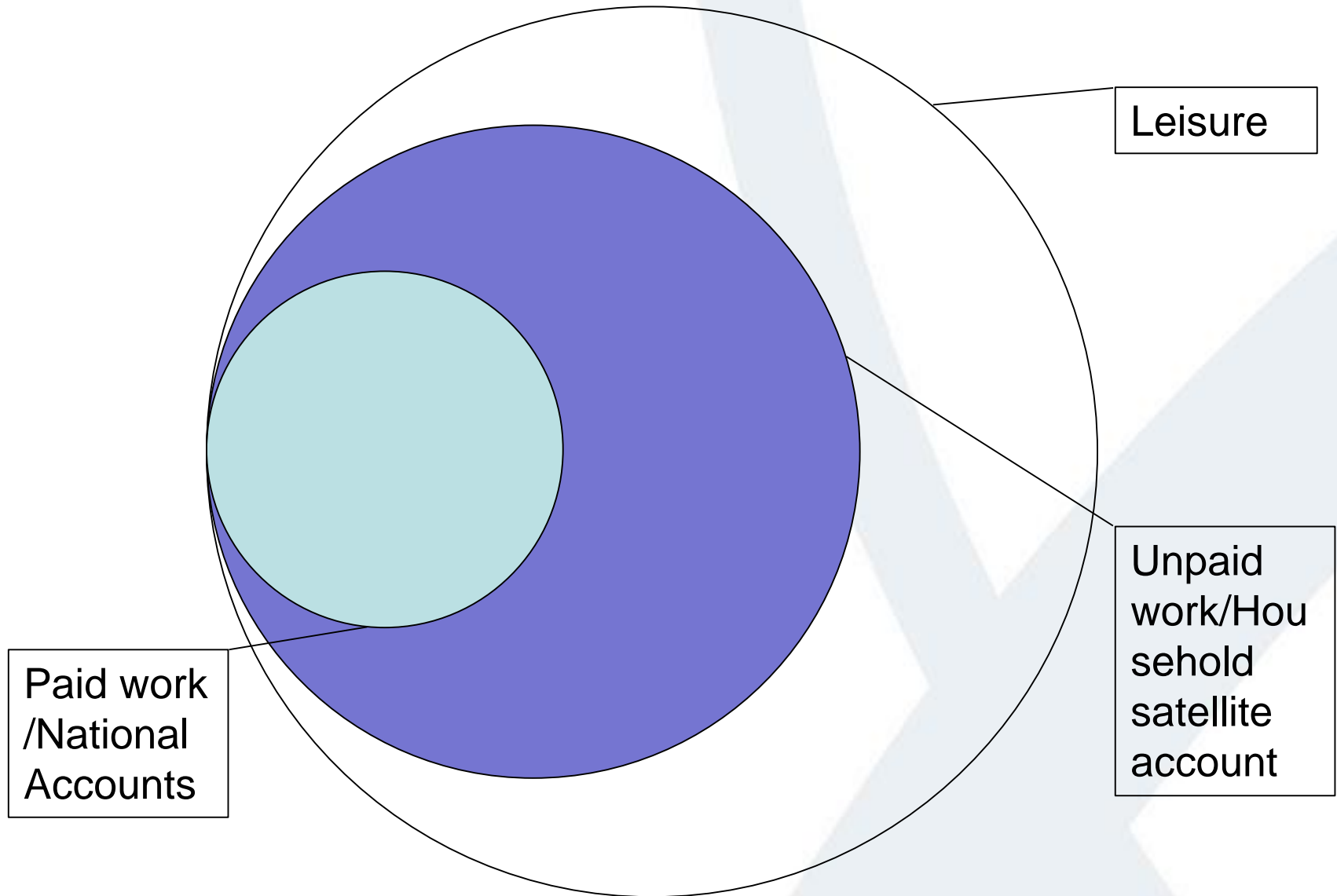
PART I



Existential questions

- Why do we have National Accounts?
 - GDP + productivity
 - Net lending/borrowing
 - Net wealth
- What is the point of economics?
- Welfare – what is it and how can we measure it?
- Contradiction of purposes?

Production boundary of the National Accounts



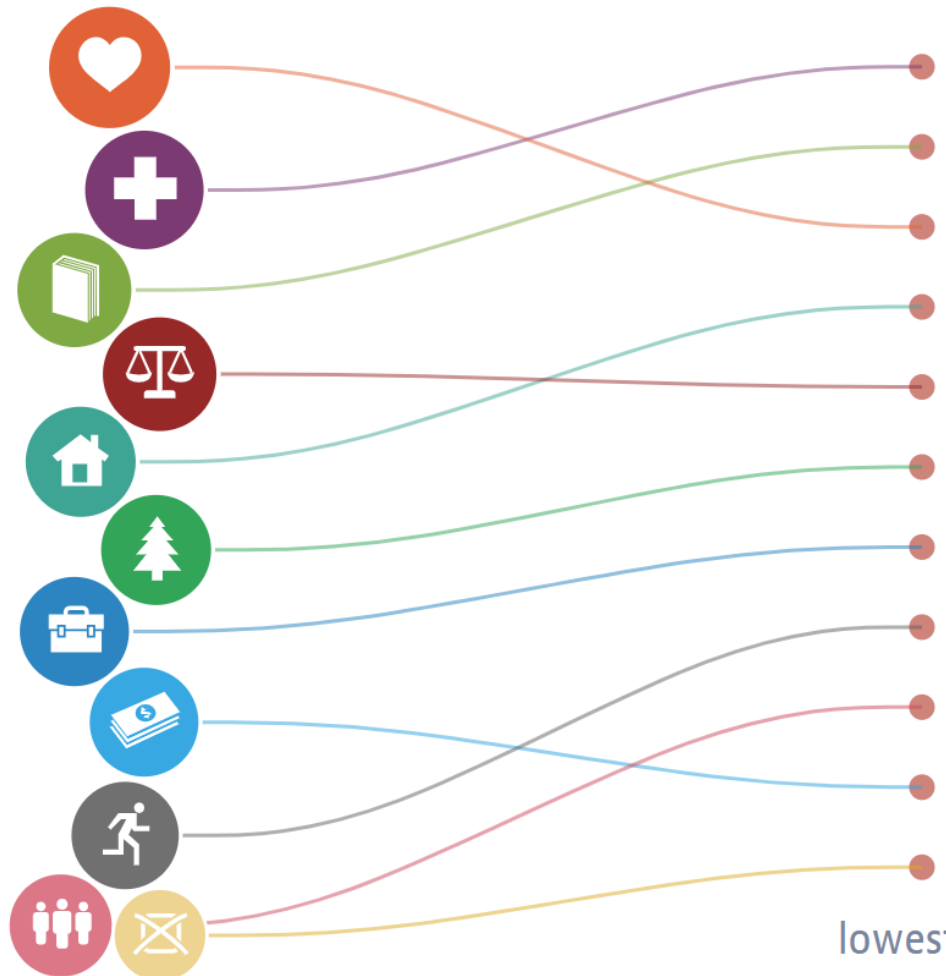
What matters to people?

United Kingdom

France

highest

Life satisfaction



lowest

What matters to people?

United Kingdom

France

highest

Life satisfaction

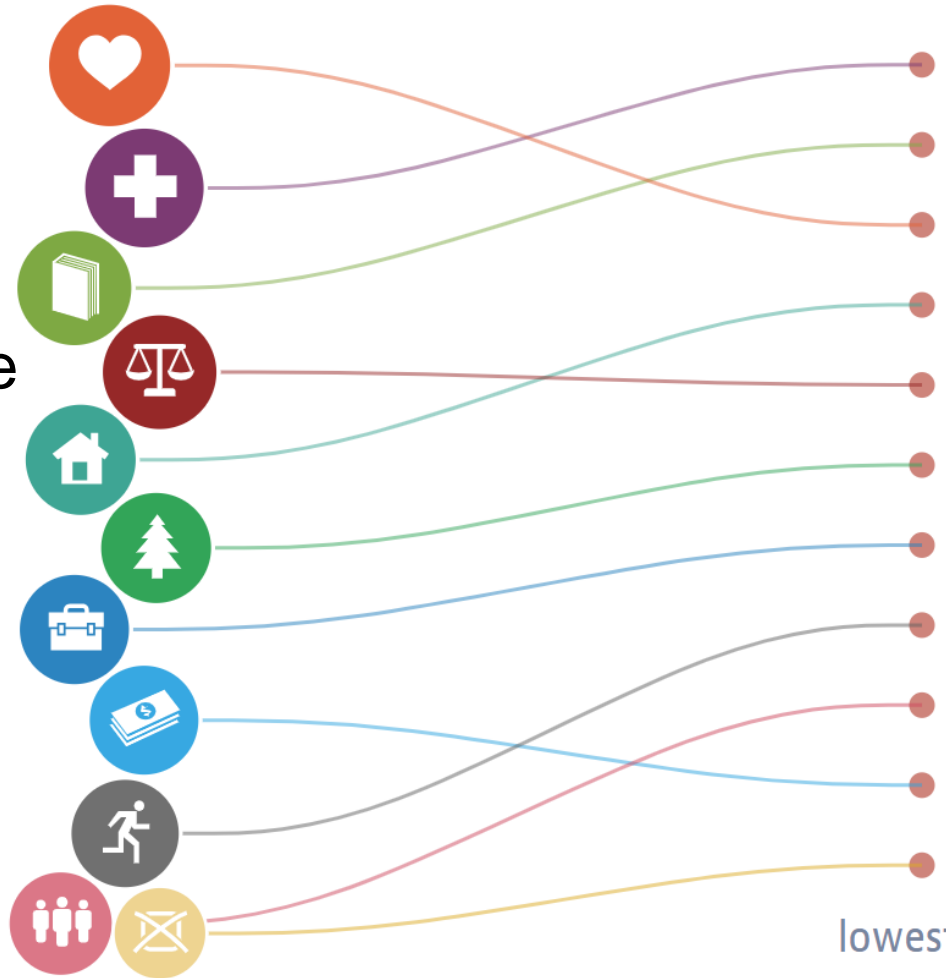


Work-life balance

Jobs

Income

lowest



What matters for higher life satisfaction in the UK?

- Health & Relationships most important

Economic factors generally less important

- Having a(ny) job
 - (What you) spend money on
 - Wealth
-
- Individual circumstances and preferences wildly vary – important for policy context

Average Life Satisfaction by age and employment status

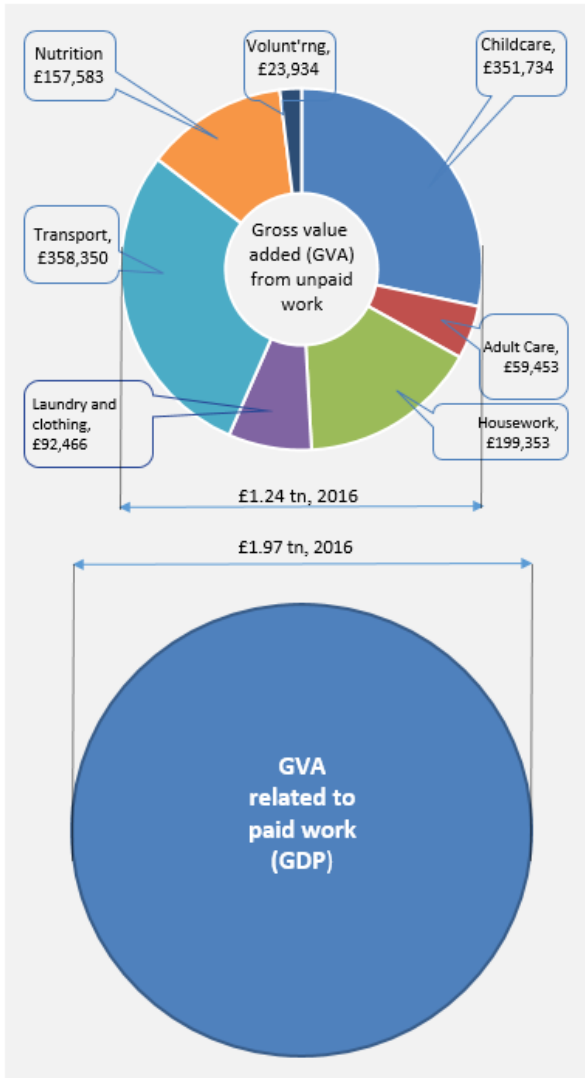


Production, consumption and welfare

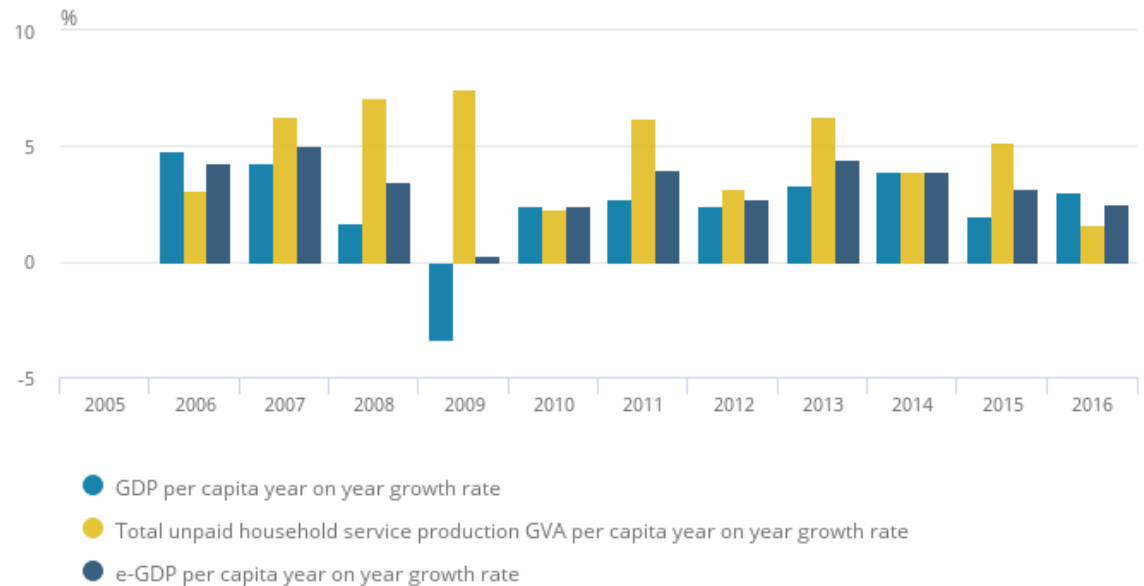
PART II



Production – completing the picture



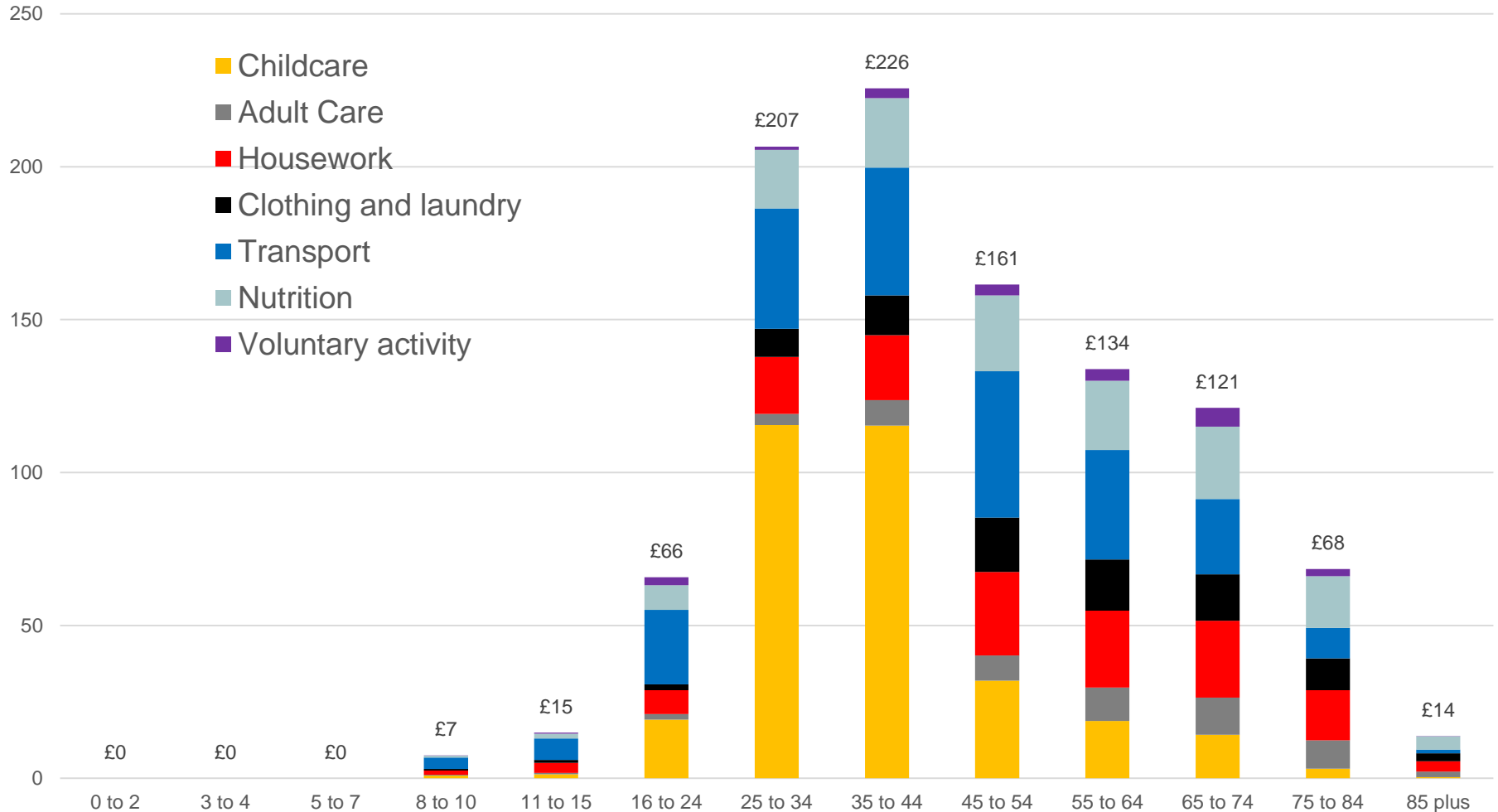
Growth rates of GVA of unpaid production, GDP and e-GDP per person



Source: Office for National Statistics

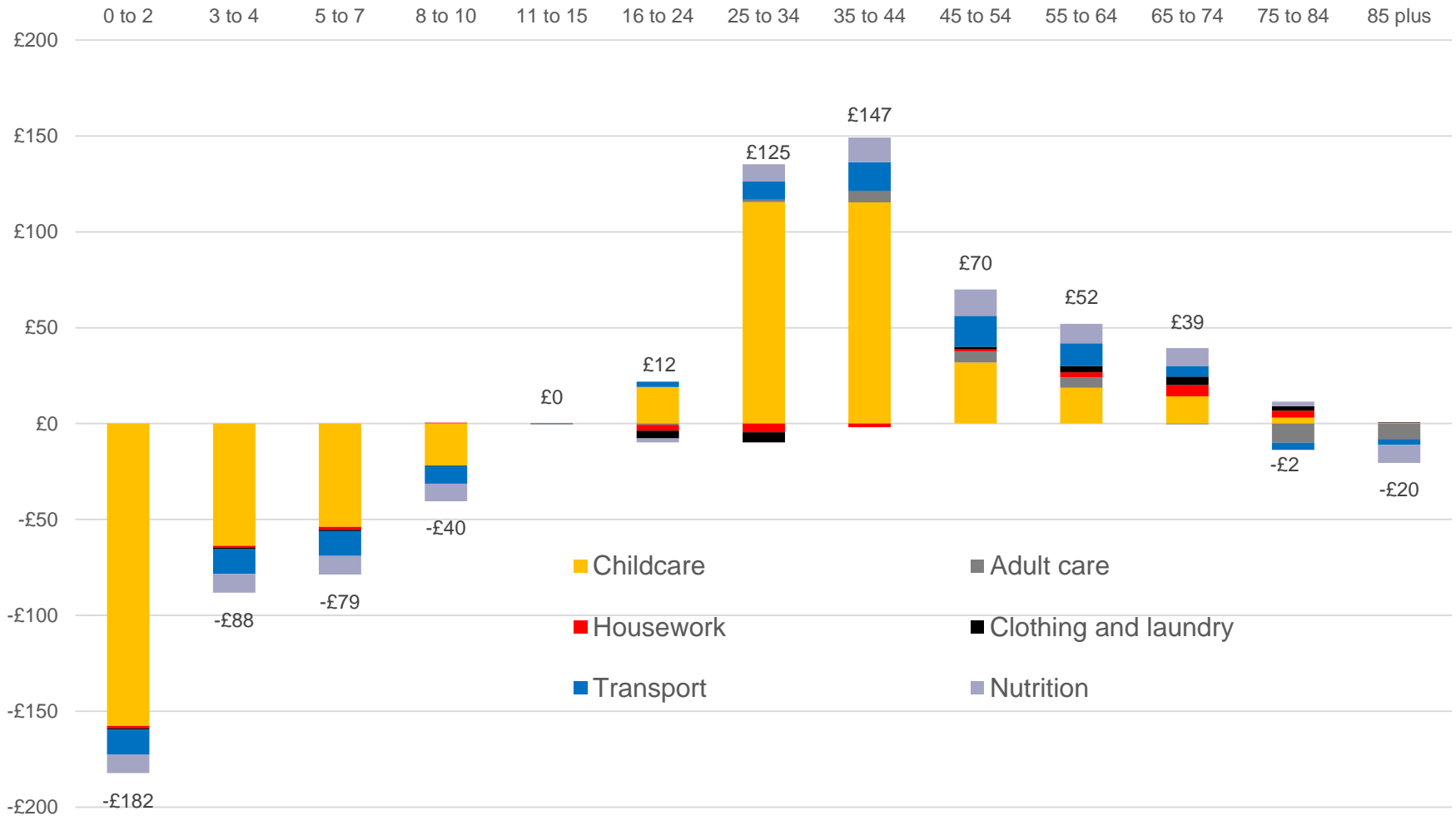
Unpaid service production by age

Gross Value Added (£bn)



Net unpaid service production by age

Gross Value Added (£bn)



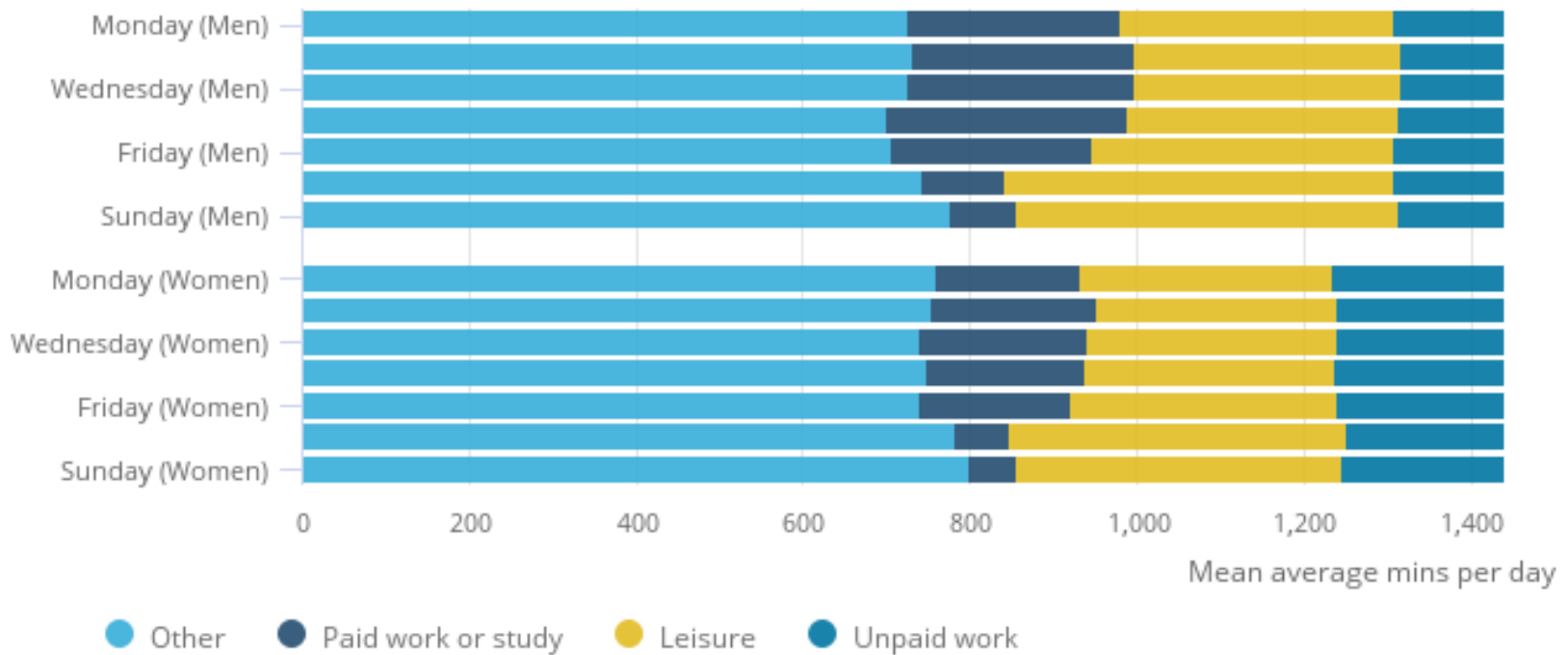
Time trade-offs and welfare

THE WIDER IMPACT OF CHANGING PRODUCTION AND CONSUMPTION PATTERNS

How best to measure leisure time?

Why time-use matters

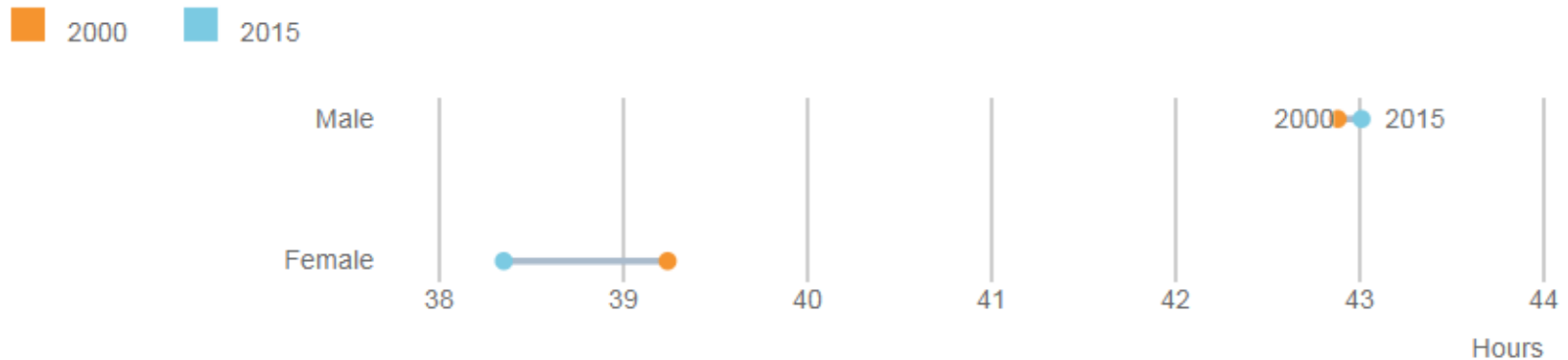
Mean total daily leisure, unpaid work and paid work by day and sex, UK, 2015



Source: Harmonised European Time Use Survey

How best to measure leisure time? Why time-use matters

Mean total daily leisure time by sex, UK, 2000 and 2015

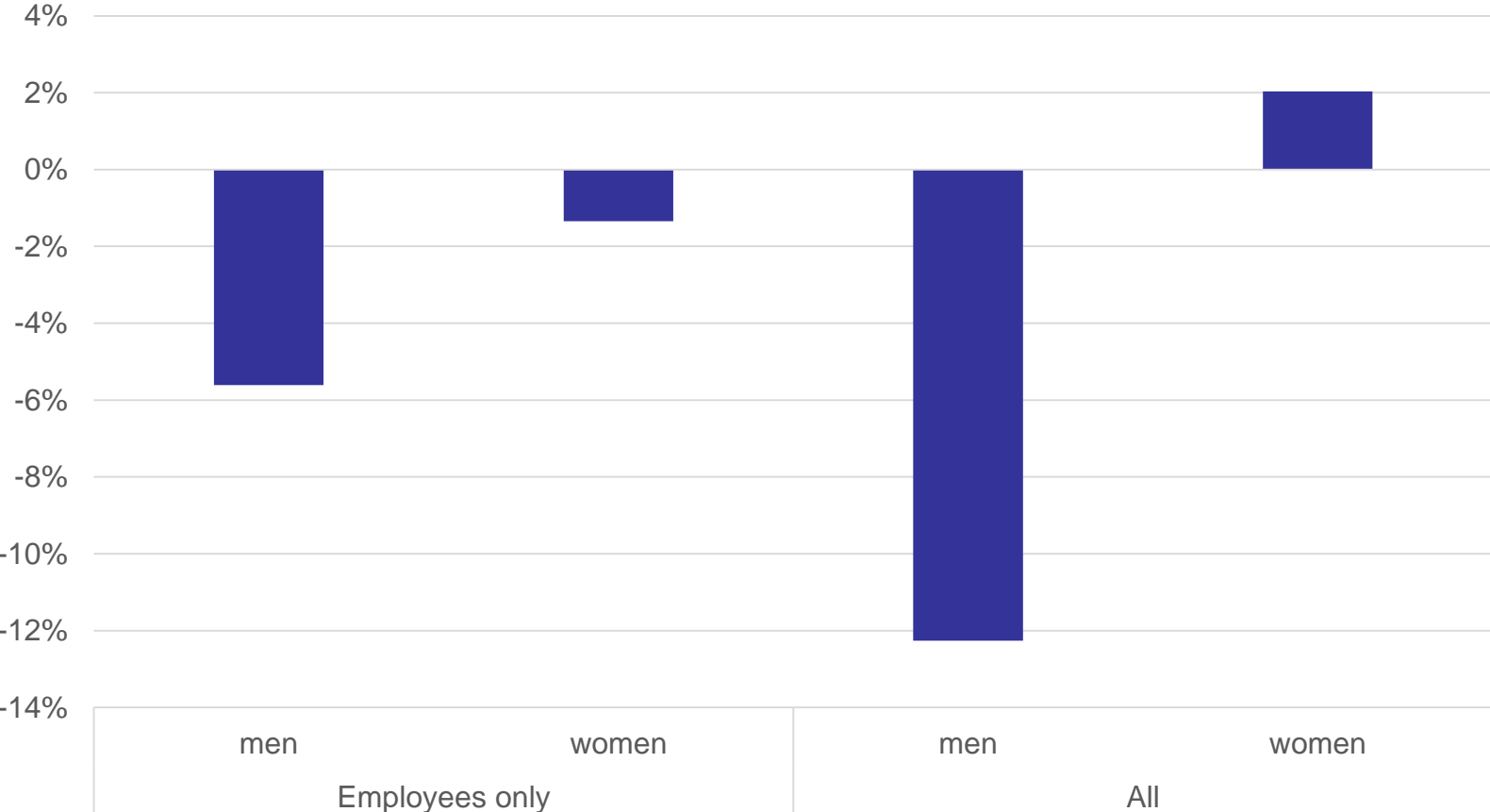


Source: 2000 and 2015 UK Harmonised Time Use Survey

How best to measure leisure time?

Why time-use matters

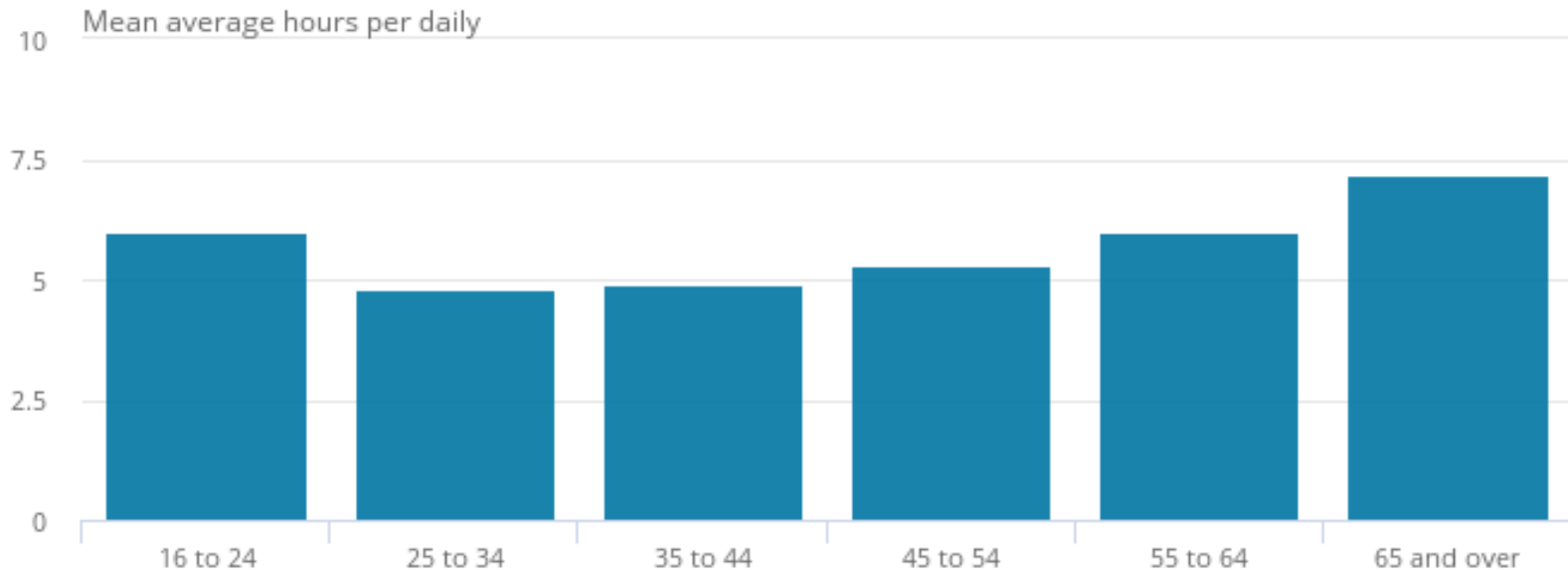
Change in working time 2000 to 2015



Sources: ASHE, UK TUS

How does the amount of leisure time differentiate across other sub-groups of the UK population?

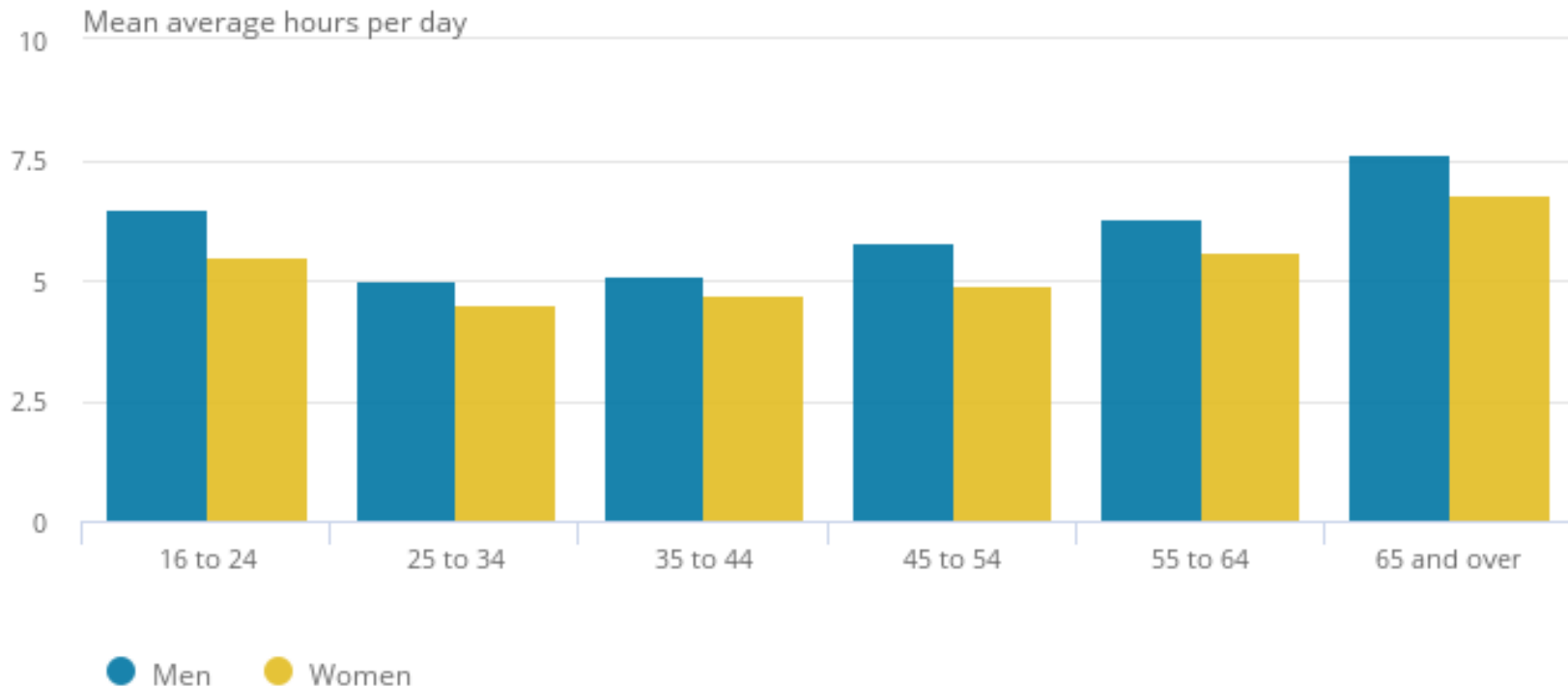
Mean total daily leisure time by age, UK , 2015



Source: Harmonised European Time Use Survey, 2015

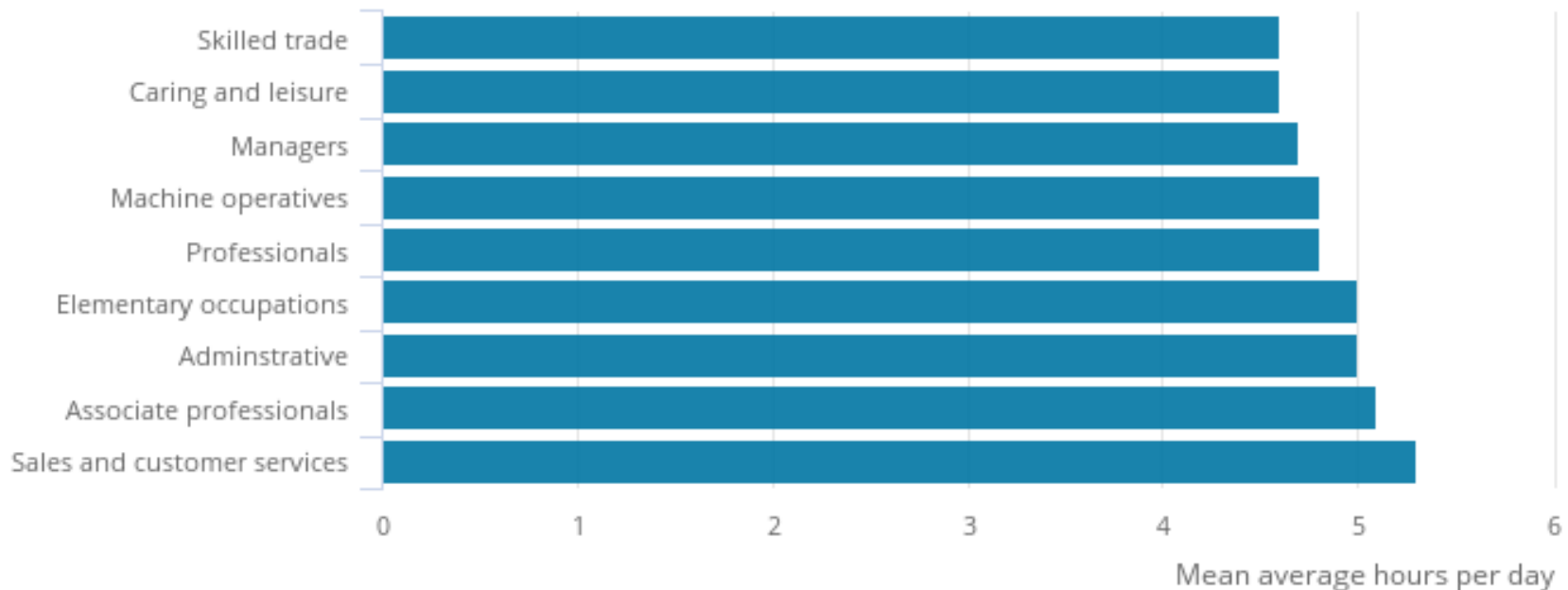
How does the amount of leisure time differentiate across other sub-groups of the UK population?

Mean total daily leisure time by age and sex, UK , 2015



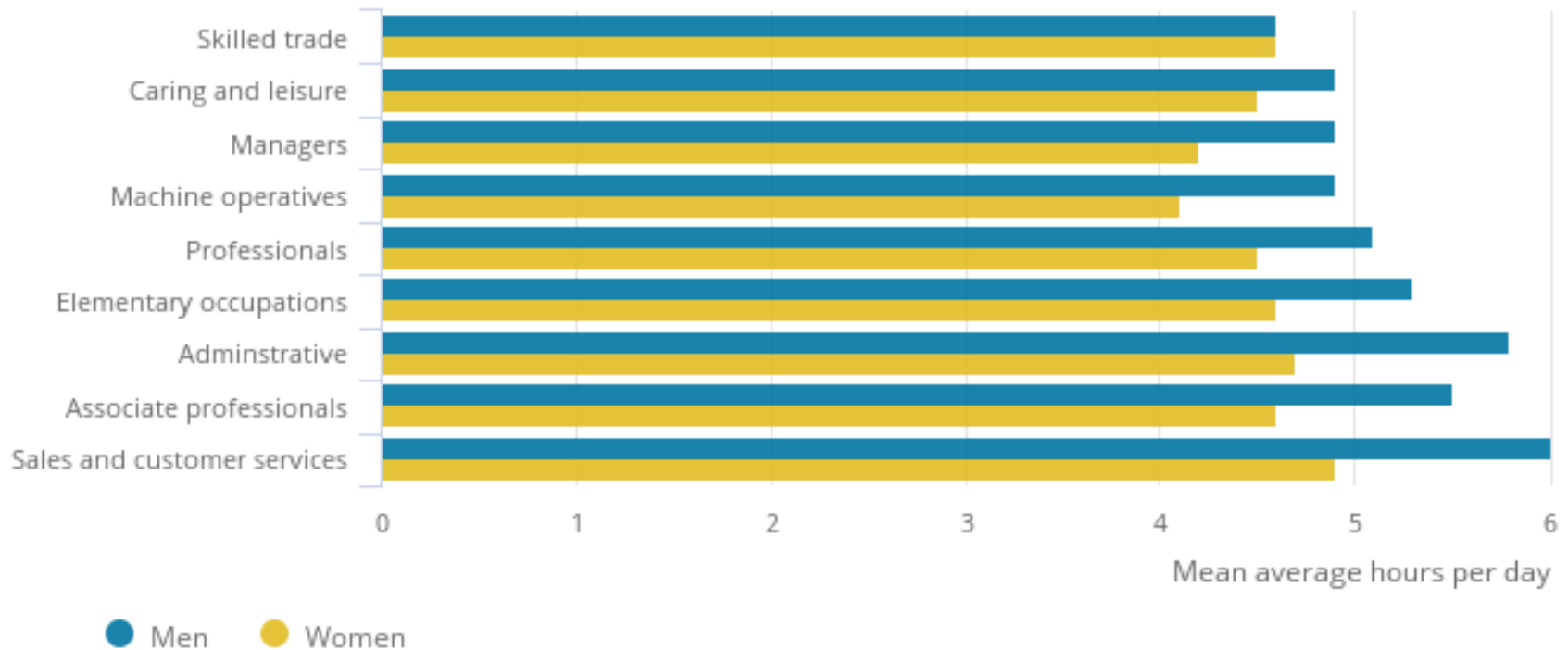
How does the amount of leisure time differentiate across other sub-groups of the UK population?

Mean total daily leisure time by occupation, UK , 2015



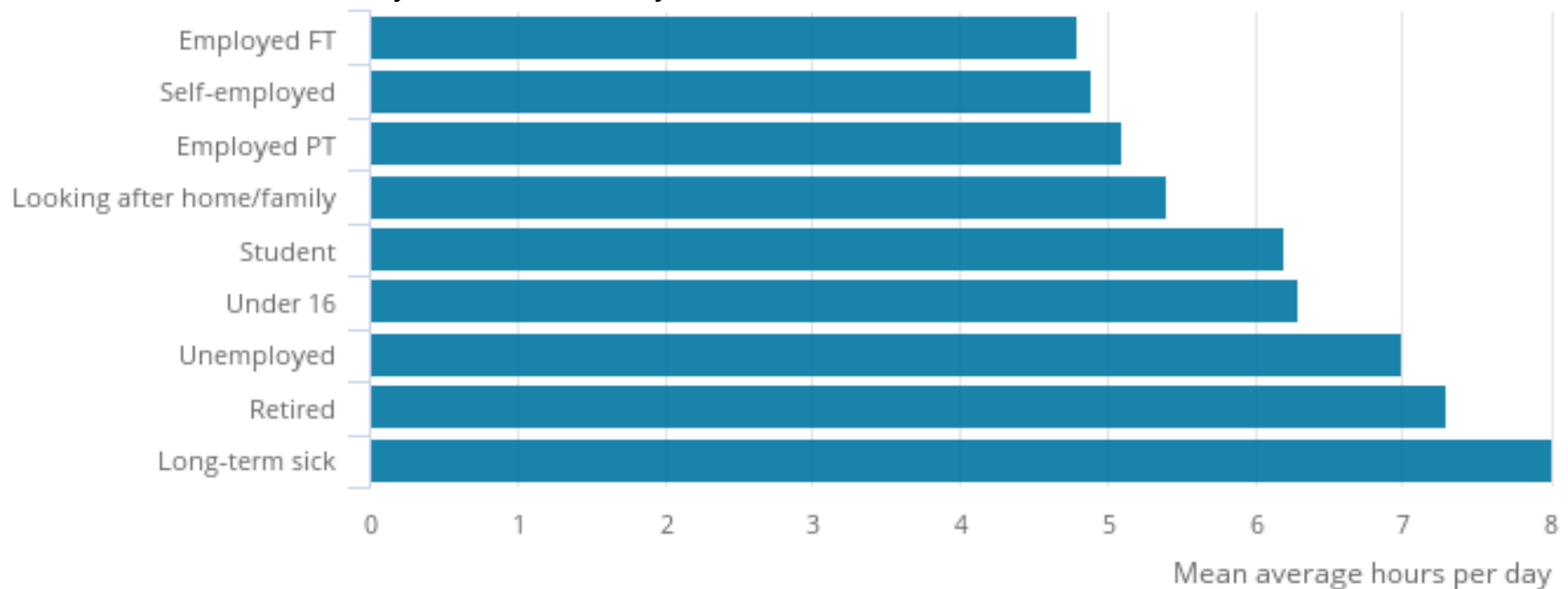
How does the amount of leisure time differentiate across other sub-groups of the UK population?

Mean total daily leisure time by occupation and sex, UK , 2015



How does the amount of leisure time differentiate across other sub-groups of the UK population?

Mean total daily leisure time by work status, UK , 2015



How does the amount of leisure time differentiate across other sub-groups of the UK population?

Mean total daily leisure time by work status and sex, UK , 2015



Modernisation of time-use (1)

UNDERSTANDING THE QUALITY OF LEISURE TIME

Socio-economic impact of smart devices

Table 1: Comparing consumption time with expenditure on print media

	Average time spent reading books per diary day	Average time reading periodicals per diary day	Volume of books purchased	Volume of periodicals purchased
	Minutes	Minutes	£m	£m
2000	6.6	12.0	3630.0	8497.0
2015	6.3	5.6	3174.0	3992.0
Change %	-5	-53	-13	-53

Note: Expenditure estimates are chained volume measures - seasonally adjusted

Socio-economic impact of smart devices

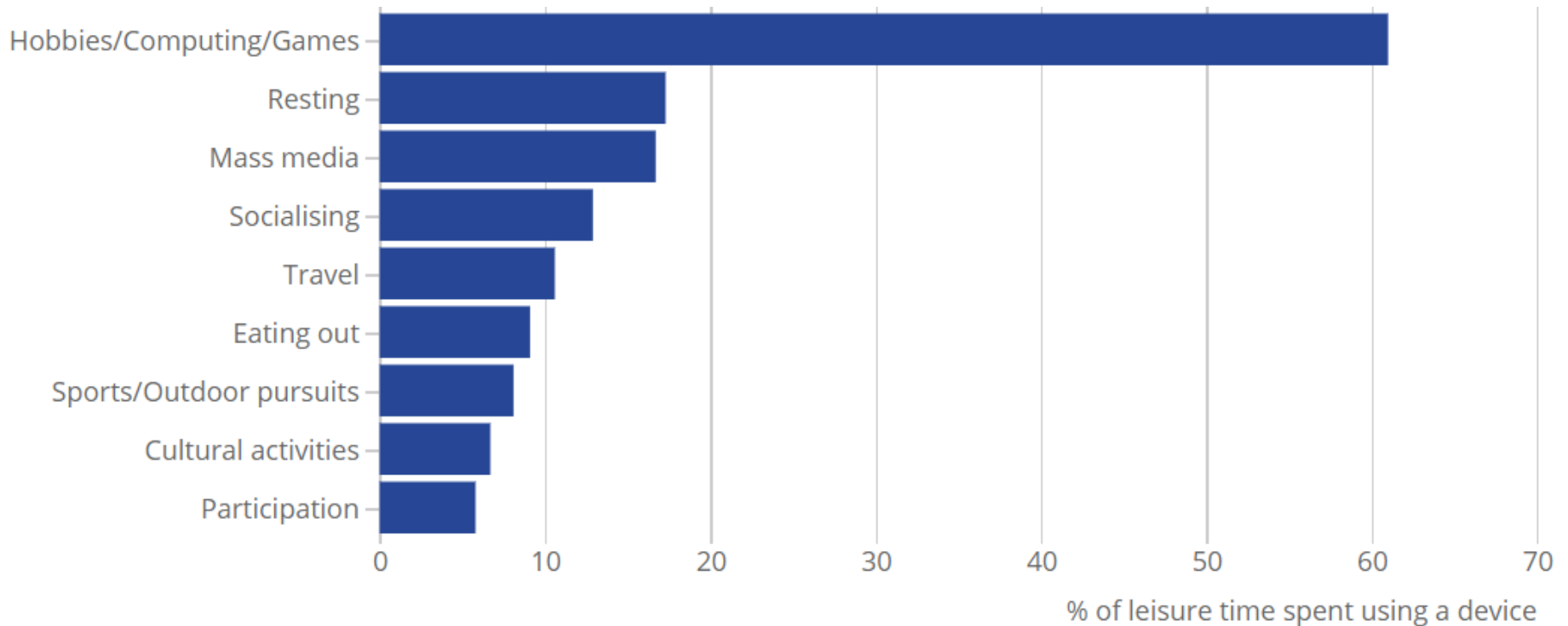
Table 2: Comparing consumption time of information by computing and devices with expenditure on information processing equipment

year	Average time spent computing or using devices per diary day	Average time computing per diary day	Average time computing on days when computing took place	Volume of information processing equipment purchased	Volume of telephone and telefax services purchased, including internet data use
	Minutes	Minutes	Minutes	£m	£m
2000	7.0	7.0	83.8	366	12,263
2015	164.9	21.0	70.0	5,971	21,265
Change					
%	2249	198	-16	1531	73

Note: Expenditure estimates are chained volume measures - seasonally adjusted

Device-use and leisure time

Proportion of device use during leisure time by type of leisure, UK , 2015



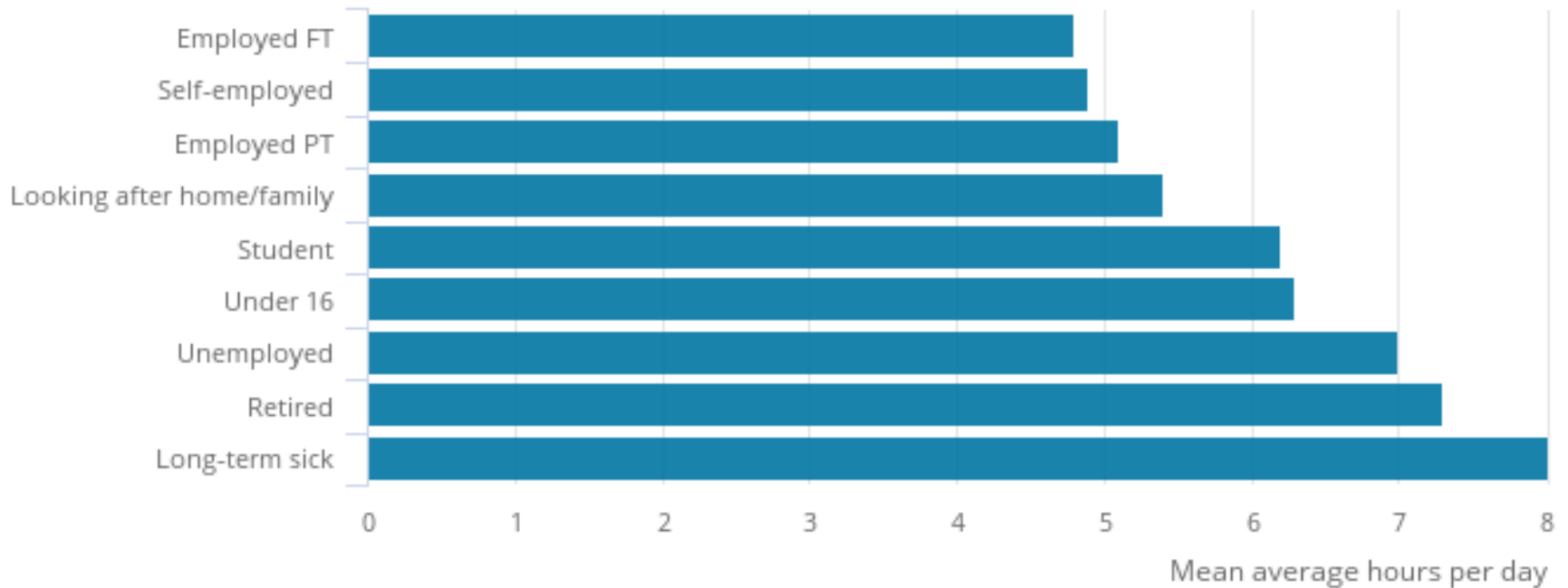
Source: 2015 UK Harmonised Time Use Survey

Modernising time-use (2)

**HOW DO PEOPLE FEEL
ABOUT THEIR LEISURE TIME?**

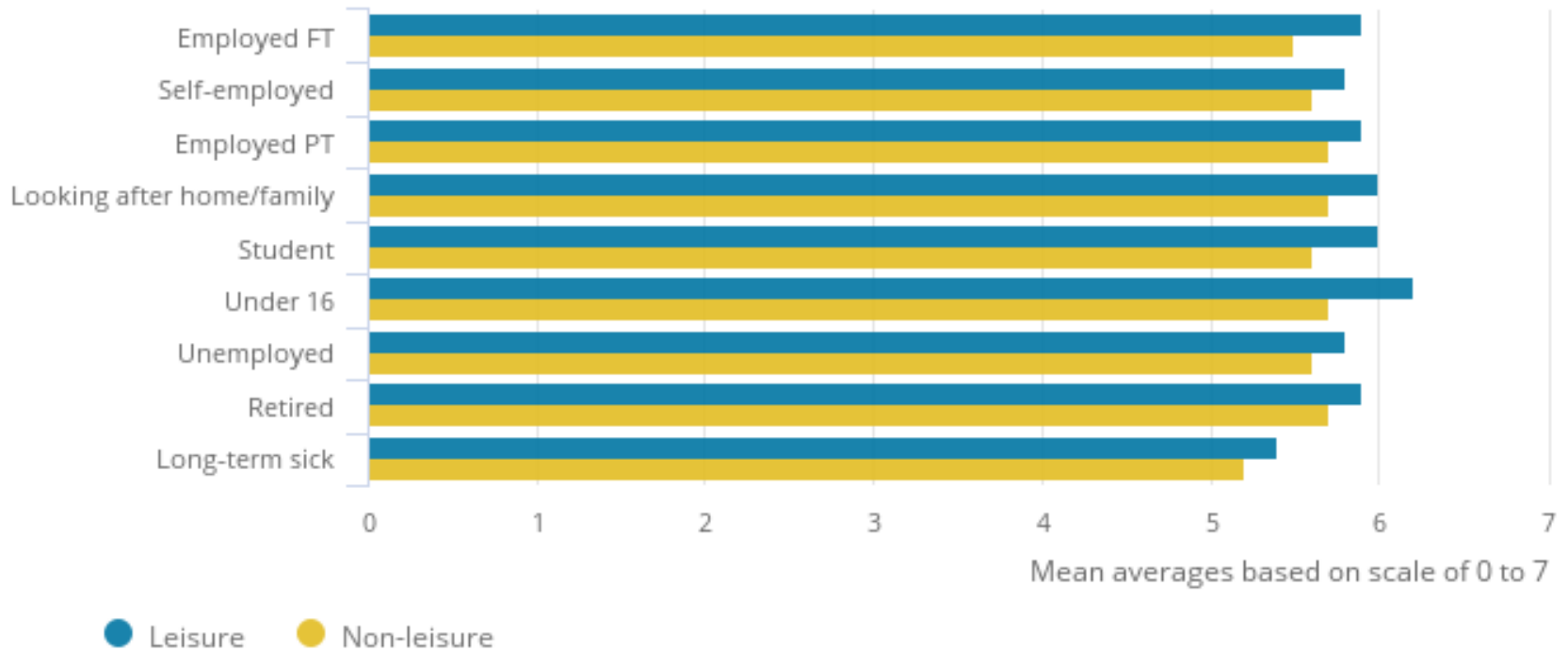
Enjoyment of leisure time

Mean total daily leisure time by work status, UK , 2015



Enjoyment of leisure time

Mean enjoyment of leisure compared with non-leisure time by work status, UK , 2015

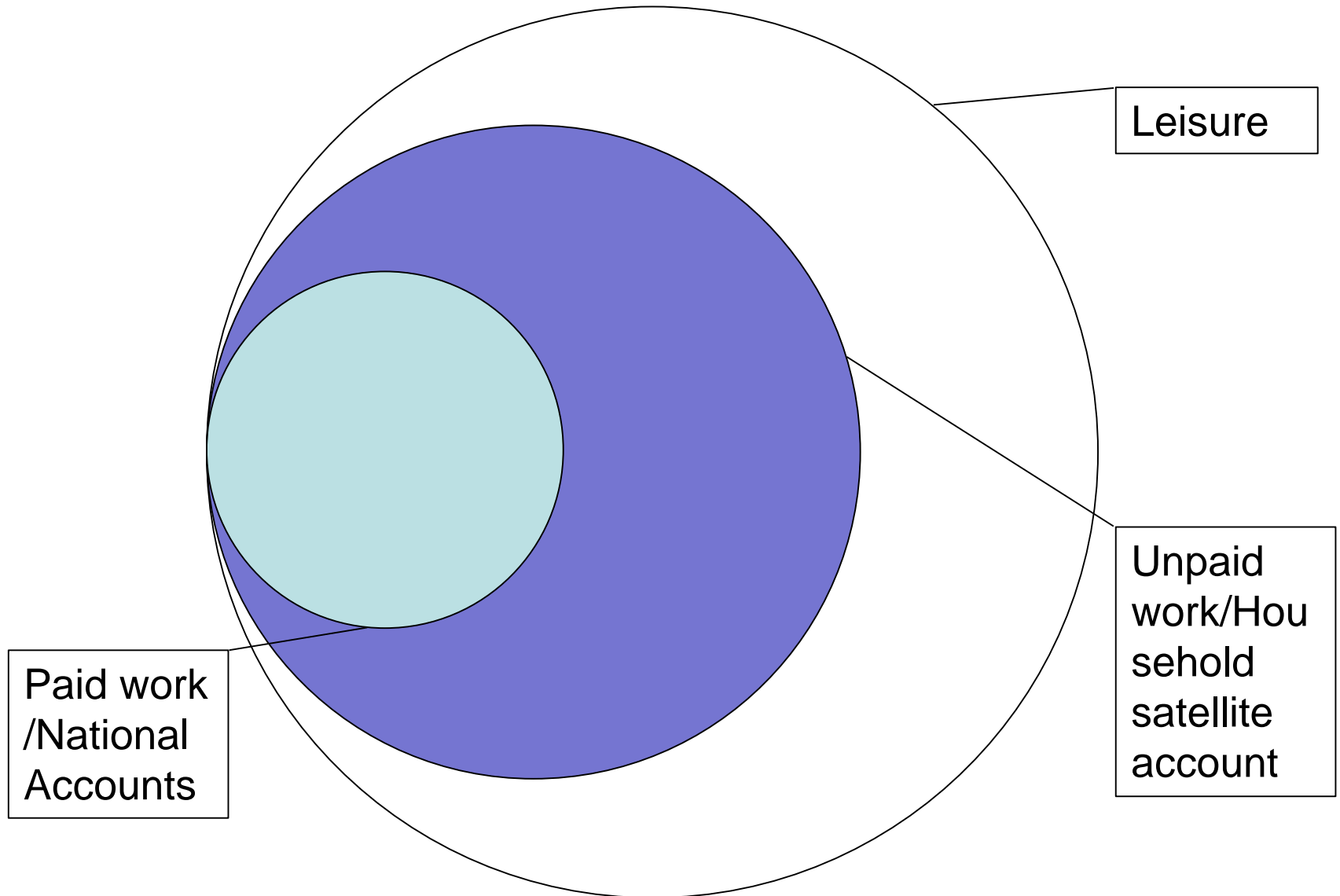


Source: Harmonised European Time Use Survey, 2015

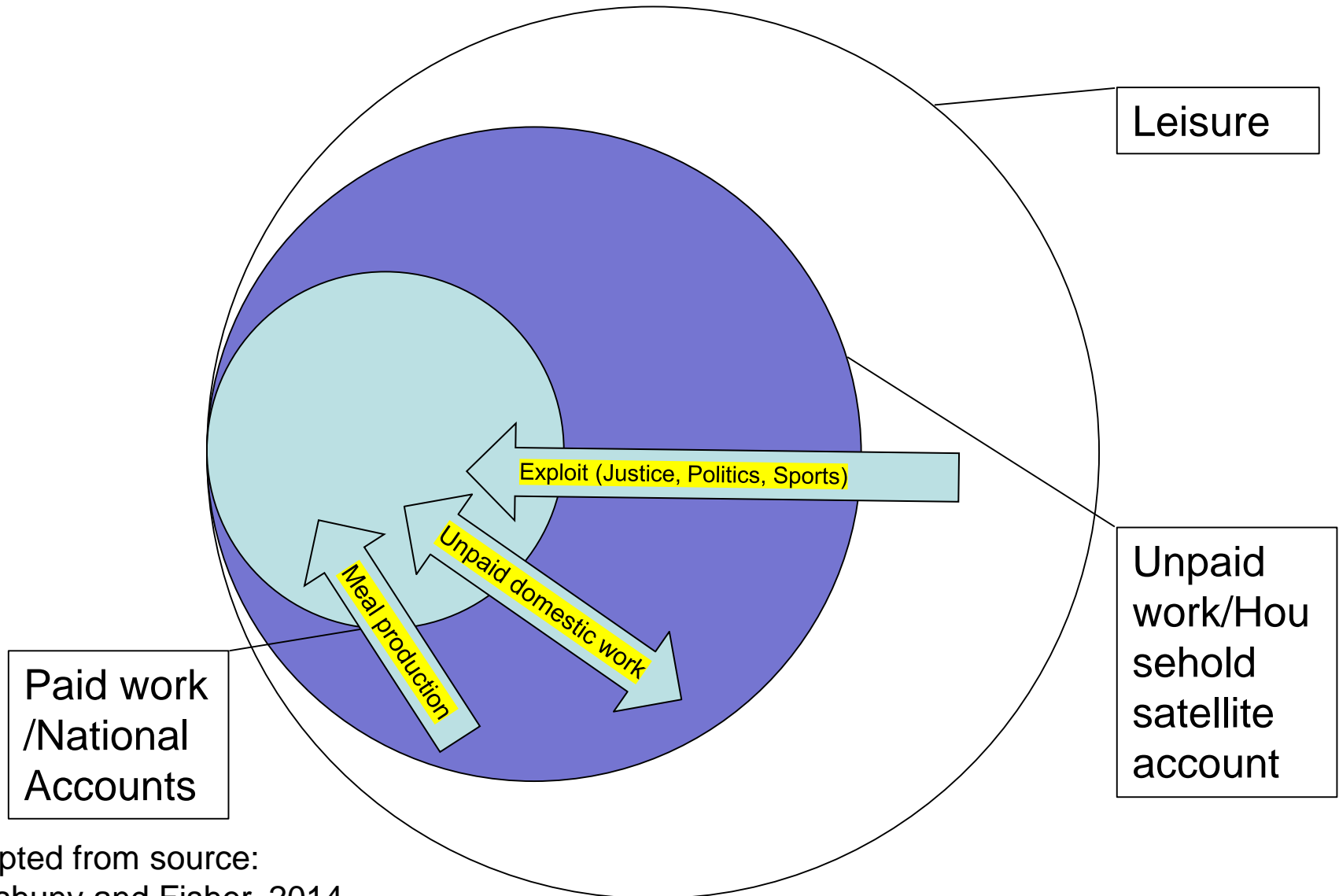
Measurement in a digital world

PART III

Historical transitions across boundaries

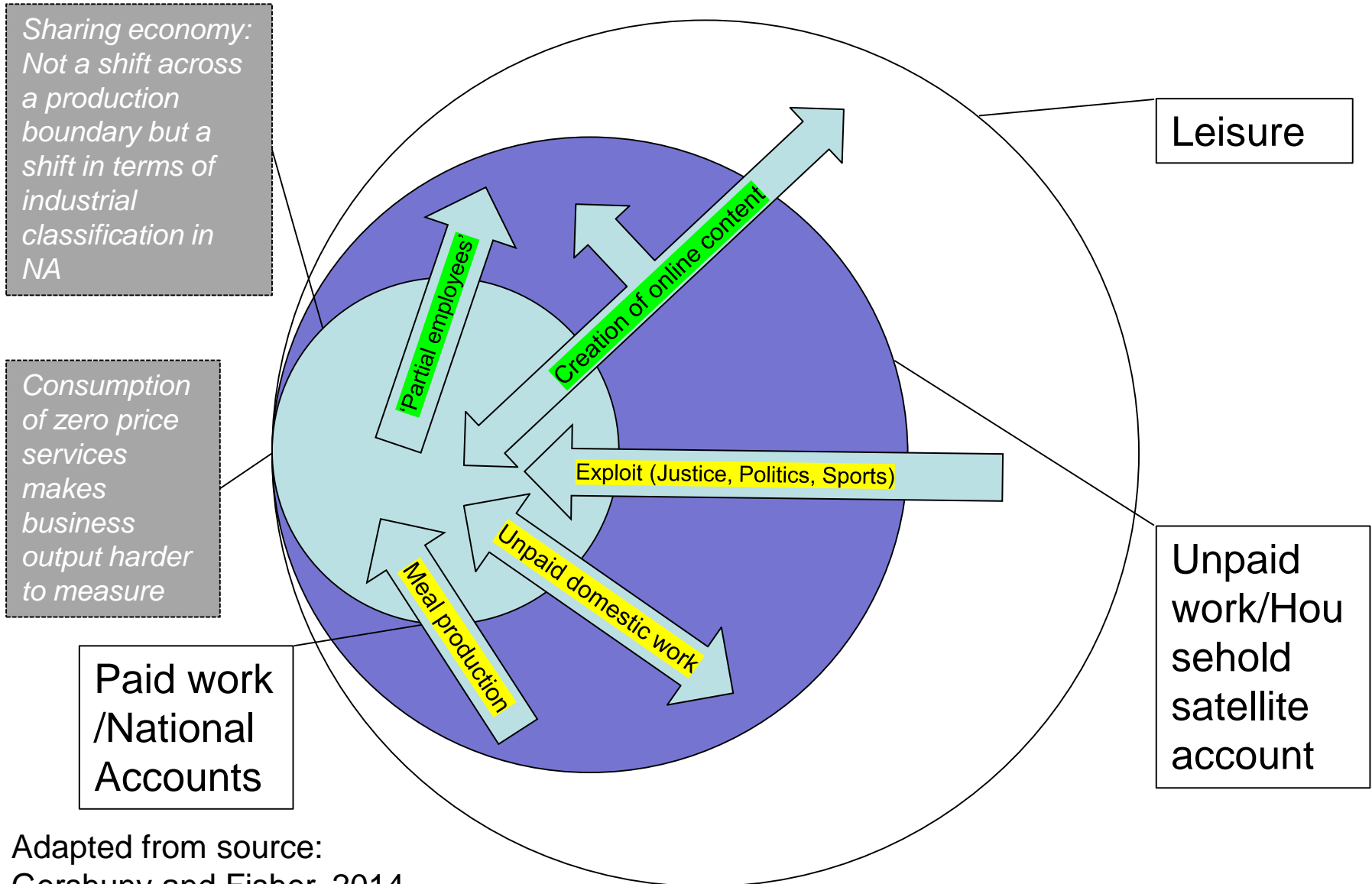


Historical transitions across boundaries



Adapted from source:
Gershuny and Fisher, 2014

Modern transitions across boundaries



Adapted from source:
Gershuny and Fisher, 2014

Moving survey online; bringing in big data

- Reduce respondent burden
- Bring in supplementary big data sources or passive device information
- Integrate with larger surveys – find respondents who have already agreed to a survey
- Develop a web-diary which gives something back to respondents

Modular nature of time-use surveys

Day 1
Time: 7am – 10am
Morning

Day 1
Time: 7am – 10am

This includes children aged 8 and over

Time: 7am–10am Morning (am)	What were you doing? Please write down one 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	Were you alone or with somebody you know? Mark all relevant boxes							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	
7am-7.10	Woke up the children		<input type="checkbox"/>	At home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
7.10-7.20	Had breakfast	checked emails	<input checked="" type="checkbox"/>	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
7.20-7.30	" "	Talked with my family	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
7.30-7.40	Cleared the table	Listened to the radio	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
7.40-7.50	↓	↓	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	↓
7.50-8am	Helped the children dressing	Talked with my children	<input type="checkbox"/>	↓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	↓
8am-8.10	" "	↓	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.10-8.20	Went to the day care centre	↓	<input type="checkbox"/>	on foot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1

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

Final thoughts

- Welfare better reflected by use of time than units of standard economic output
- National Accounts have a place but time - based measures can complement them
- New more detailed data is required but task to collect is challenging
- Multi-modal approach to data collection seems most beneficial

Contact details

Chris.s.payne@ons.gov.uk

Gueorguie.vassilev@ons.gov.uk