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**Design and Implementation of a Mixed Mode Time Use Diary in  
the Age 14 Survey of the Millennium Cohort Study**

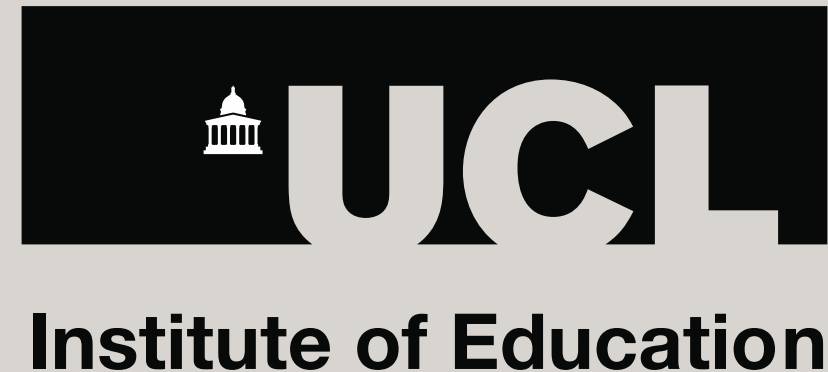
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# Outline

- Introduction to the Millennium Cohort Study
- Age 14 time use diary mixed-mode research design
- Instruments
- Data quality

# Millennium Cohort Study

- Following the lives of approximately 19,000 children born between 2000-2002 in the UK.
- Six waves completed: 9 months, 3, 5, 7, 11 and 14 years (age 17 in-field now).
- Multidisciplinary focus: child development, behaviour, health, poverty, etc.
- Linked with admin data: education records, birth records, medical records
- Time use diary: new survey element at Age 14

# Age 14 time use diary: research design

- Pre-coded light diaries: 44 age-specific activity codes
- Two diaries per respondent: weekday and weekend
- Main activity, location, who with, enjoyment
- Mixed-mode design: time use app & web-administered diary
- Paper diaries offered only to those with no internet access or those refusing to fill in app/web

# The instruments

# Time use diary instruments

	Paper	Web	App
Approach	Time-grid	Time-grid	Question-based
Time-unit	10 minute slots	10 minute slots	User-assigned start and end times
Diary dimensions	Overlap	Overlap	Coterminous
Soft and hard checks	No	Yes	Yes
Aide-Memoire	No	Yes	Yes

# Paper diary

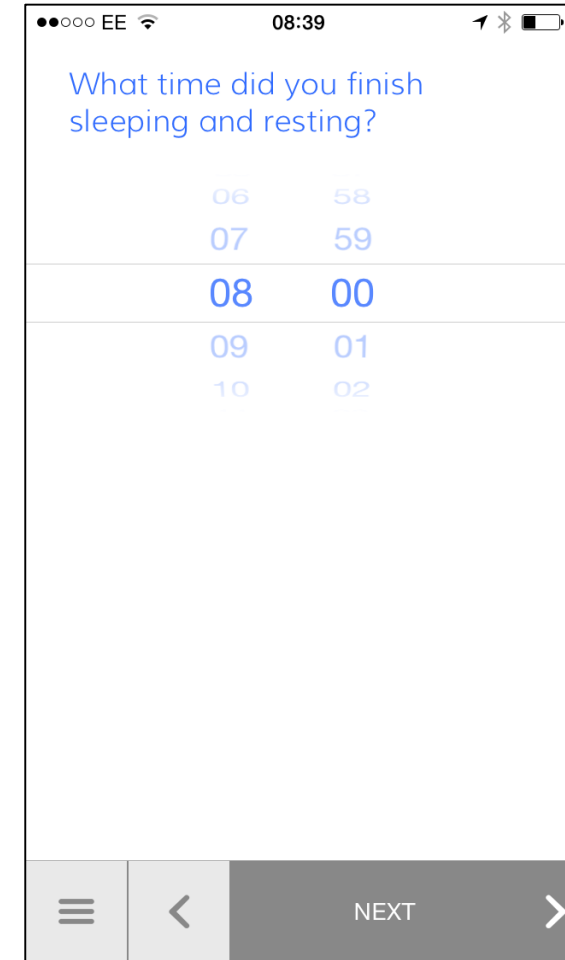
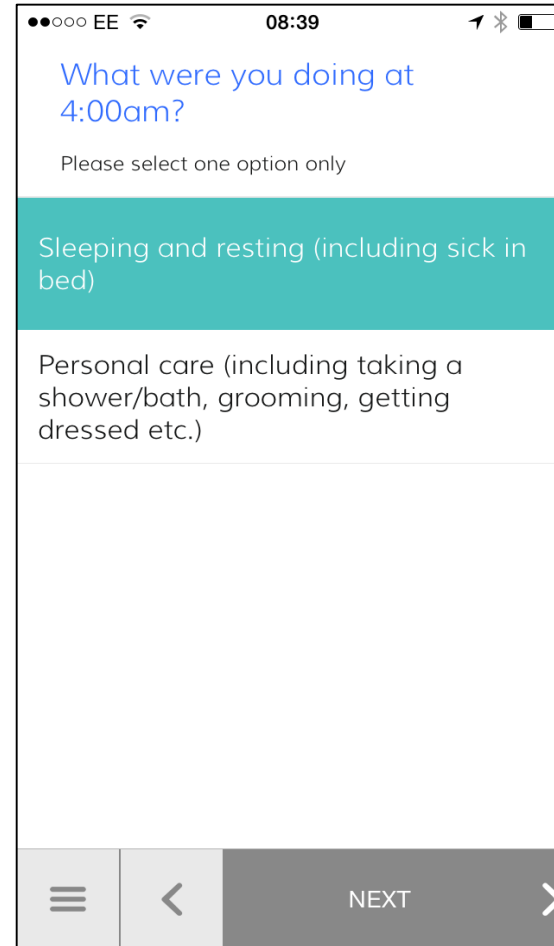
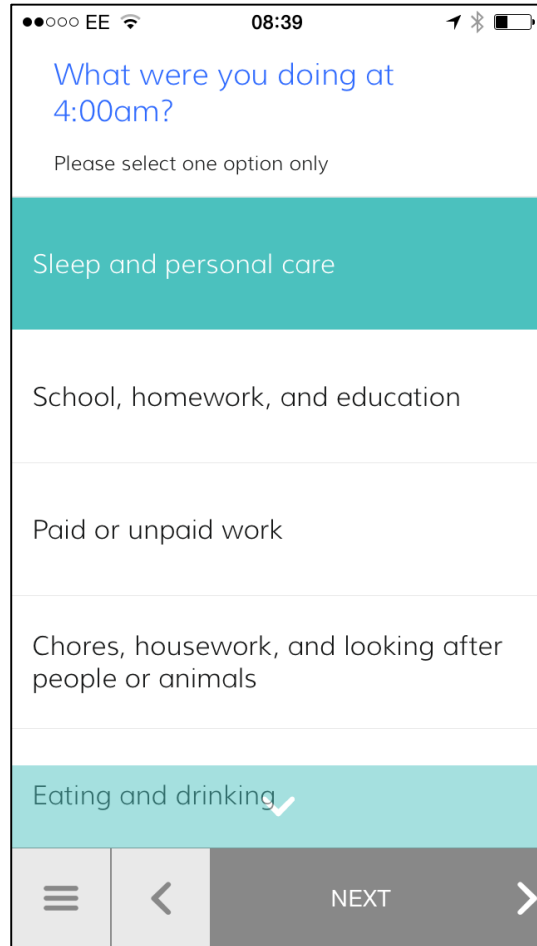
What were you doing?		4am					5am			
		10	20	30	40	50	10	20	30	40
Sleep and personal care	Sleeping and resting (including sick in bed)									
	Personal care (including taking a shower/bath, grooming, getting dressed etc.)									
School, homework, and education	Homework									
	In class									
	School breaks									
	School clubs									
	Detention									
Paid or unpaid work	Paid work (including paid babysitting and paid work for the family)									
	Unpaid work for family or other non-household members (e.g. help in family business)									
Chores, housework, and looking after people or	Cooking, cleaning, and shopping for the household									
	Fixing things around the house, fixing bike, gardening									
	Looking after brothers, sisters, other children in the household									



# Web diary

Activities	Early morning					
	4am	5am	6am	7am	8am	9am
<input type="checkbox"/> What were you doing? 10 20 30 40 50	10 20 30 40 50	10 20 30 40 50	10 20 30 40 50	10 20 30 40 50	10 20 30 40 50	10 20 30 40 50
<input type="checkbox"/> Sleep and personal care						
Sleeping and resting (including sick in bed)						
Personal care (including taking a shower/bath, grooming, getting dressed etc.)						

# App diary



# The web diary

- Bespoke web instrument built by Ipsos MORI.
- Worked on all common web browsers (Internet Explorer, Firefox, Google Chrome, Safari).
- Required users to enter their unique username to log in.

# The app

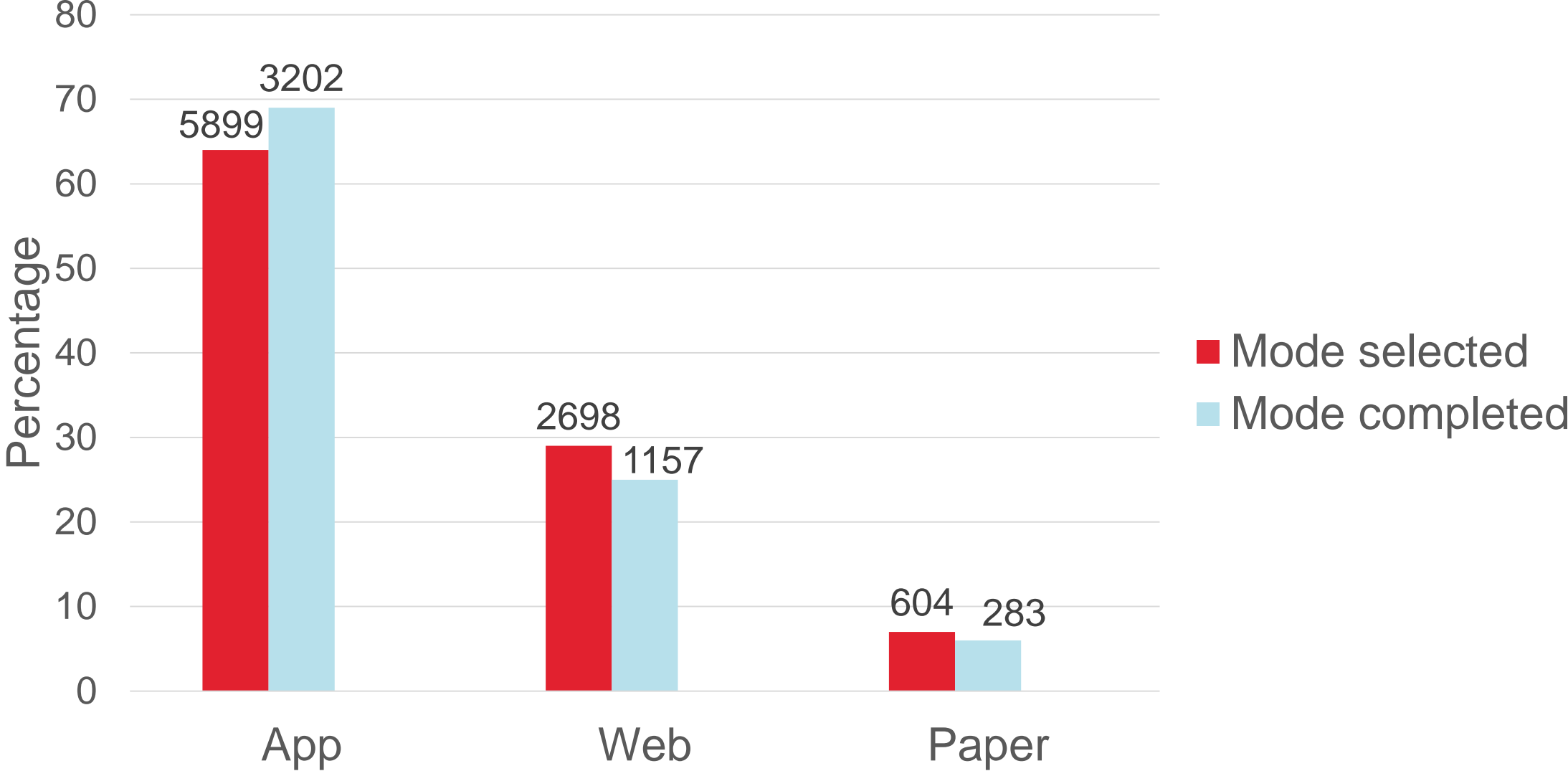
- Bespoke app built by Ipsos MORI using the Ipsos Mobile survey app, in conjunction with Lumi Mobile.
- Worked on iOS and Android operating systems (downloadable for free from the Apple App Store and Google Play Store).
- Required users to enter their unique username to log in.

# Completion protocol

- Regular completion encouraged (app in real-time, online could be accessed and saved as needed).
- Aide memoire provided for app and online, so CMs could write down what they were doing throughout the day if unable to carry device.
- CMs encouraged not to complete the time use record in classes, but were provided with a letter for their school to explain what they were participating in.

# Response rates

# Instrument take-up



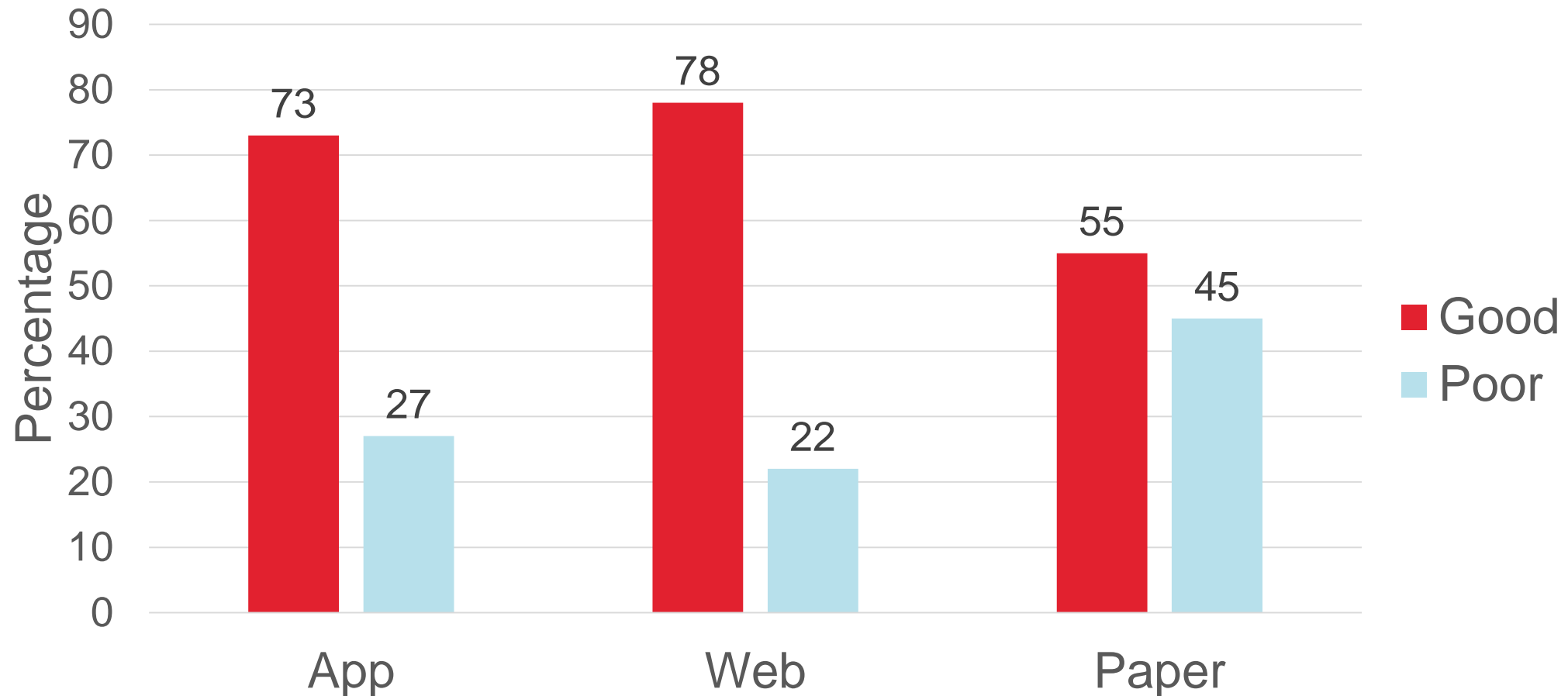
# Selection into mode

- 64% of boys and 74% of girls chose the app.
- Those who used social networks for more hours per week were more likely to use the app (no use = 43% chose app, over 7 hours per week = 80% chose app).
- Those whose parents owned their homes were more likely to use the app than those who lived in rented houses or other arrangements (70% own home, 67% renting, 65% other).
- Those who are above the OECD 60% median income are more likely to use the app than those below the median (70% vs. 65%).



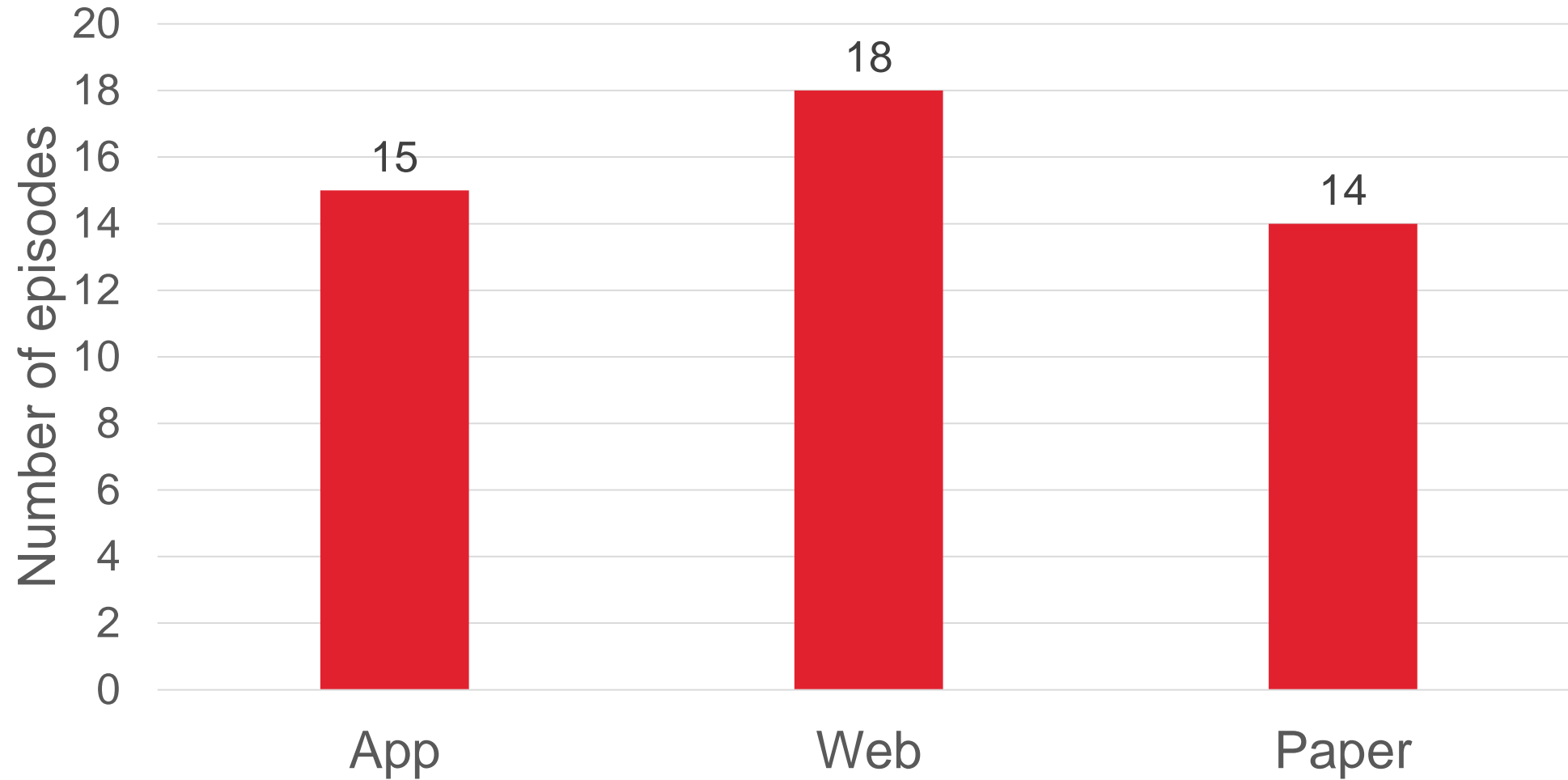
# Diary quality

# Diary quality



- Good quality diary threshold: less than 90 minutes missing activity time, 7 episodes, 3 out of 4 main daily activities reported (sleep/rest, personal care, eating/drinking, movement/exercise/travel)
- No information: blank diary returned/submitted

# Mean number of episodes reported



Note: Good quality diaries only

# Measurement

## Measurement differences - weekdays

	App	Online	Paper
Sleep & personal care	624	600	619
Education related	280	278	188
Work	7	3	2
HH chores	18	20	25
Eating & drinking	72	71	83
Exercise and sports	<b>52</b>	<b>45</b>	<b>77</b>
Travel	68	69	63
Social events, outings	<b>64</b>	<b>57</b>	<b>37</b>
Digital media	<b>177</b>	<b>208</b>	<b>271</b>
Volunteering, spiritual	2	5	4
Hobbies inc. relaxing	<b>77</b>	<b>84</b>	<b>71</b>

## Measurement differences - weekends

	App	Online	Paper
<b>Sleep &amp; personal care</b>	674	657	685
<b>Education related</b>	<b>31</b>	<b>41</b>	<b>62</b>
<b>Work</b>	9	7	0
<b>HH chores</b>	34	30	32
<b>Eating &amp; drinking</b>	85	86	75
<b>Exercise and sports</b>	67	53	66
<b>Travel</b>	56	56	54
<b>Social events, outings</b>	<b>115</b>	<b>80</b>	<b>54</b>
<b>Digital media</b>	<b>259</b>	<b>320</b>	<b>328</b>
<b>Volunteering, spiritual</b>	<b>7</b>	<b>14</b>	<b>15</b>
<b>Hobbies inc. relaxing</b>	<b>103</b>	<b>97</b>	<b>70</b>

# Conclusions

# Summary and conclusions

- Electronic diaries successfully used to capture the daily activities of 14 year olds
- App most popular instrument – over two thirds chose to use this mode
- The app does not allow the respondent to visualise context and coterminous dimensions effects, but still yields good quality data.
- Web and app instruments yielded higher quality data than the paper diary (web slightly out-performed app)
- Web and app generally most similar in terms of measurement - unexpected



For more detail, please see the Social Indicators Research article:

<https://link.springer.com/article/10.1007/s11205-017-1569-5>

CLS working paper (2015/5):

<https://cls.ucl.ac.uk/wp-content/uploads/2017/04/CLS-WP-2015-5.pdf>.

Data are available from UKDS.

Thank you

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