

## Harmonisation of non-accelerometer data in large consortia

Andy Atkin, University of East Anglia  
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## Outline

- ProPASS: Challenges and opportunities
- International Children's Accelerometry Database (ICAD)
- Data collation and cataloguing
- Harmonisation examples: Car ownership, Education
- Record keeping

## ProPASS: Challenges and opportunities

ProPASS is an international research collaboration platform of cohorts using thigh-worn accelerometry to explore the effects of physical activity, posture, and sleep patterns on a wide range of health outcomes.

The objectives of the consortium are:

- To establish a pooled data resource on physical activity, posture allocation, sleep, and health outcomes.
- To develop methods for processing, harmonising, and pooling data of existing such studies.
- To develop methods for collecting data for future studies (prospective harmonization).

analysing?

## ICAD

PEACH; CHAMPS UK;  
SPEEDY; ALSPAC; MAGIC

KISS; Ballabeina; Belgium Preschool study; CoSCIS  
EYHS Denmark, Estonia, Norway, Portugal

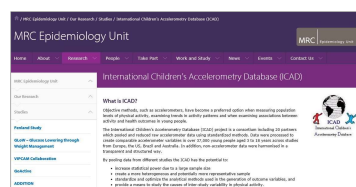


## ICAD

- Accelerometry
- Sedentary behaviours
- Demographics
- Sleep
- Anthropometry
- Diet
- Metabolic markers
- Reported PA
- Home and family



## ICAD



- Access and publication guidelines
- Current proposals and publications
- Data dictionary
- Harmonisation documentation

<http://www.mrc-epid.cam.ac.uk/research/studies/icad/>

### Data collation and cataloguing

1. Identification of key constructs / variables
2. Identify sources and collate data
3. Data cataloguing (create data dictionaries)
4. Data extraction and review
5. Generate harmonised variables
6. Document harmonisation process

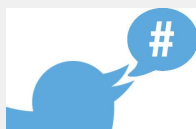
### Data collation and cataloguing

- Data cataloguing
  - Variable name
  - Study / wave
  - Variable label
  - Variable description
  - Variable grouping
  - Format (eg categorical / continuous)
  - Value labels
  - Units



### Data collation and cataloguing

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### Data collation and cataloguing (ICAD)

- Excel**

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**Access**

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**Web**

  - Widely available, easy to use
  - More flexible, better for information retrieval
  - Accessible, non-editable

### Data collation and cataloguing (ICAD)

- MAGIC (n=460)
- Two-arm cluster RCT
  - Glasgow, Scotland
- CLAN (n≈1100)
- Prospective cohort
  - Melbourne, Australia



### Example 1: Car Ownership

- 6 studies with relevant data (16 waves); 19 variables
- Constructs: Car ownership, access to a car
- Respondent: Parent, Child
- Timing: Proximity to assessment of outcome

### Example 1: Car Ownership

A14. a) Do you or your partner have the use of a car (including vans, minibuses, etc.)?

Yes 1 No 2

**If yes.**

b) how often do you yourself have the use of a car?

never 1

not every day 2

everyday or almost every day 3

not applicable/do not drive 4

ALSPAC, mother questionnaire, completed when child age 8 months

### Example 1: Car Ownership

10. Which of the following things do you have at home? (Please place a tick in the box for each thing you have at home. Leave the box empty for things you don't have.)

A car (or van)

More than one car (or van)

A garden

Play equipment in the garden (such as a trampoline, slide or swing)

A television

A home computer (PC)

A games console (such as Xbox, Playstation)

SPEEDY, wave 1, child questionnaire

### Example 1: Car Ownership

Study Name	Variable Name	Variable Description	Notes
ALSPAC	f366	FREQ of car use by MUM. Reported when child was aged 8 months. Mother reported. Item - how often do you yourself have the use of a car? Response coding - missing (coded -1) / no car available (0) / never (1) / not daily (2) / daily (3) / does not drive (4) / NA or do not drive (7) / dk (9).	
CLAN	W1_p1q12	Car ownership. Parent reported. Item - How many cars are there in your household. Free text response.	
HEAPS	W1_p1q8	Car ownership. Parent reported. Item - How many cars are there in your household? Free text response. Coding - missing (coded 9).	
SPEEDY	W1_carown	Car ownership - child reported. Item - Which of the following things do you have at home (tick the box for each item you have at home). Response options - A car (or van) / More than 1 car (or van). Response coding - no / yes 1 car / yes more than 1 car (text variable).	

### Example 1: Car Ownership

Variable name	Description Coding	Summary statistics		
		Studies (n)	1	2
Car1	Coding: No car (coded 0) / At least one car (1) / Missing (999)	5	4	1
Car2	Coding: No car (coded 0) / One car (1) / Two cars (2) / Three or more cars (3) / Missing (999)	4	3	1
Car3	Coding: No car or one car (coded 0) / Two or more cars (1) / Missing (999)	5	3	2

### Example 1: Car Ownership



Car ownership cross-sectionally associated with lower MVPA and higher sedentary time

Reduction in household car ownership associated with a reduction in MVPA

The Lancet, Volume 392, Supplement 2, November 2018, Page s89

### Example 2: (Mother) education

- 18 studies with relevant data (29 waves); 53 variables
- Constructs: Qualifications attained, Educational institutions attended/completed, Age at completion of education, years of education completed
- Respondent: Mother (self-report), Partner-proxy, Child

### Example 2: (Mother) education

8. Do you have any of the following qualifications? Please tick all that apply.

<input type="checkbox"/> None	<input type="checkbox"/> Matriculation
<input type="checkbox"/> School Leaving certificate	<input type="checkbox"/> GCE A Level, AS level, Highers
<input type="checkbox"/> CSE	<input type="checkbox"/> Technical College exams, City & Guilds
<input type="checkbox"/> GCE O level or GCSE	<input type="checkbox"/> HND GNVQ
<input type="checkbox"/> Completed Apprenticeship	<input type="checkbox"/> Secretarial College Exams
<input type="checkbox"/> Teaching Diploma, HNC/NVQ	<input type="checkbox"/> University Degree
<input type="checkbox"/> Trade Certificates	<input type="checkbox"/> Other. Please describe _____

9. At what age did you finish full time education? \_\_\_\_\_ years

SPEEDY, wave 1, parent questionnaire

### Example 2: (Mother) education

Q 7 What is your highest level of schooling? (please tick one)

1 Never attended school

2 Primary school

3 Some high school

4 Completed high school

5 Technical or trade school certificate/apprenticeship

6 University or tertiary qualification

CLAN, wave 1, parent questionnaire

### Example 2: (Mother) education

■ Gelieve in onderstaande lijst uw hoogst behaalde diploma aan te kruisen (niet meer dan 1 diploma aanduiden a.u.b.)  
 Bij co-ouderschap, gelieve de gegevens van de eigenlijke vader en moeder in te vullen.

MOEDER (of inwonende partner van vader)	VADER (of inwonende partner moeder)
<input type="checkbox"/> geen diploma	<input type="checkbox"/> geen diploma
<input type="checkbox"/> lager onderwijs	<input type="checkbox"/> lager onderwijs
<input type="checkbox"/> buitengewoon lager onderwijs (BLO)	<input type="checkbox"/> buitengewoon lager onderwijs (BLO)
<input type="checkbox"/> buitengewoon secundair onderwijs (B.u.S.O)	<input type="checkbox"/> buitengewoon secundair onderwijs (B.u.S.O)
<input type="checkbox"/> lager middelbaar (secundair) (tot 3 <sup>de</sup> jaar):	<input type="checkbox"/> lager middelbaar (secundair) (tot 3 <sup>de</sup> jaar):
<input type="checkbox"/> beroepsonderwijs (BSO)	<input type="checkbox"/> beroepsonderwijs (BSO)
<input type="checkbox"/> technisch of kunstonderwijs (TSO of KSO)	<input type="checkbox"/> technisch of kunstonderwijs (TSO of KSO)
<input type="checkbox"/> algemeen onderwijs (ASO)	<input type="checkbox"/> algemeen onderwijs (ASO)

Belgian Preschool study, parent questionnaire

### Example 2: (Mother) education

Study Name	Variable Name	Variable Description	Notes
Ballabeina	W2_b_education_mother	Mother education - highest qualification. Parent proxy- or self-reported. Item (transition) - What training do you have? Coding - university or highschool (coded 1) / maturity or career position without university (2) / 2-4y apprenticeship (3) / obligatory school-9 years (4) / no complete school education (5).	
Belgian Preschool_1	Diploma_Ma_Leertijd	Mother - age completed education. Parent (proxy-/self-) reported. Item (transition) - until what age were you in education? Free text response - until the age of XX years.	
CHAMPS US	moth_ed	Mother education - self or proxy reported (by other carer). Q50 in questionnaire. Item - For yourself and other adults in the household indicate the highest level of education completed. Response options - Attends or has attended high school (coded 1) / Completed high school (coded 2) / Attends or has attended college or technical school (coded 3) / Completed college or technical school (coded 4) / Attends or has attended graduate college (coded 5) / Completed graduate school (coded 6).	
CLAN	W1_Mother_highestEd	Mother - highest educational qualification. Parent (self- or proxy) reported. Item - What is your highest level of schooling / what is your partner / cocarers highest level of schooling? Response options - never attended school (coded 1) / primary school (2) / some high school (3) / completed high school (4) / technical or trade school certificate (5) / university or tertiary qualification (6) / missing or na (9).	

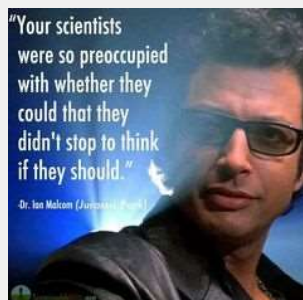
### Example 2: (Mother) education

Variable name	Description Coding	Summary statistics			
		Studies (n)	1	2	3+
Mother education 1	Coding: Up to and including completion of compulsory education (coded 0) Any post-compulsory education including vocational training (1) Missing (999)	17	11	2	4
Mother education 2	Coding: Up to and including completion of compulsory education (coded 0) Some post-compulsory education or vocational training (1) Completed undergraduate or postgraduate education (2) Missing (999)	15	9	2	4

### Example 2: (Parental) education

Mother education 1		Mother education 2	
Education	Count	Education	Count
≤ Compulsory	14 859	≤ Compulsory	13 526
≥ Compulsory	22 189	Vocational	11 200
Missing	46 387	University	10 626
		Missing	45 738

N≈37k
N≈35k



### Inferential equivalence

### Record keeping

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- Studies / waves with relevant data
- Assessment characteristics (what, when, how, who)
- Variables created
- Studies / waves included in each harmonised variable
- Item selection / prioritisation
- Study-specific notes
- Harmonisation tables (variable recoding)

### Key messages

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- Inc. data management expertise in project team
- Be realistic about timelines (esp. data cataloguing)
- Partner engagement is essential
- Document process fully

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