

**BigSurv18**

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# TESTING THE LOGISTICS OF THE ACCELEROMETRY PROJECT IN SHARE

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MAX PLANCK INSTITUTE FOR  
SOCIAL LAW AND SOCIAL POLICY  
Munich Center for the Economics of Aging



# What is SHARE?



- ▶ Survey of Health, Ageing and Retirement in Europe
- ▶ Population ageing is one of ***the* challenges of the 21<sup>st</sup> century**
- ▶ Representative samples of individuals age 50+ (and partner) in 28 countries
- ▶ Panel survey (every 2 years since 2004): >297k interviews from >120k respondents
- ▶ Face-to-face interviews (CAPI) by trained interviewers



SHARE IS  
THE LARGEST  
PAN-EUROPEAN SOCIAL  
SCIENCE PANEL STUDY.



SINCE 2004  
MORE THAN 123.000  
PEOPLE PARTICIPATED  
IN 293.000 INTERVIEWS.



*How we age in Europe.*



SHARE OFFERS  
MICRO DATA ON HEALTH,  
SOCIO-ECONOMIC STATUS  
AND SOCIAL & FAMILY  
NETWORKS.



# What is SHARE?



**Socio-economic status:**  
labor force participation,  
education, retirement, income,  
wealth



**Social participation:**  
Living arrangements, partnership,  
family, social networks, social  
support



**Health:** Physical and mental  
health, subjective health,

**Physical activity**

morbidity, health behaviors



# New: accelerometry

- So far self report of activity level
  - BUT: social desirability issues; differential item functioning (DIF)
  - Harmonization between respondents, countries, studies:

→ objective measurement of physical activity needed

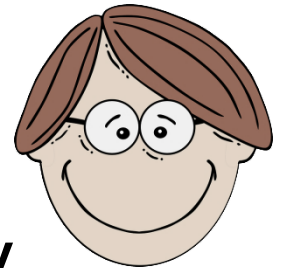
→ Axivity ax3 at upper thigh

- Triaxial accelerometer, 25 Hz, 8 days

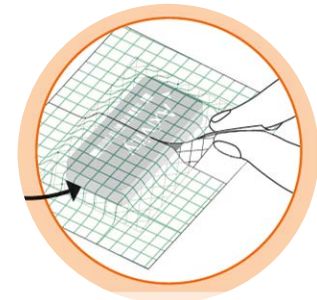
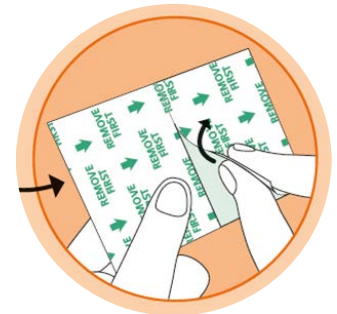


# Who and how?

- 10 countries
- Subsample: 200 respondents/country
- 50 devices per country
- Less in pretest: ~ 5 devices/country  
→ Test of logistics



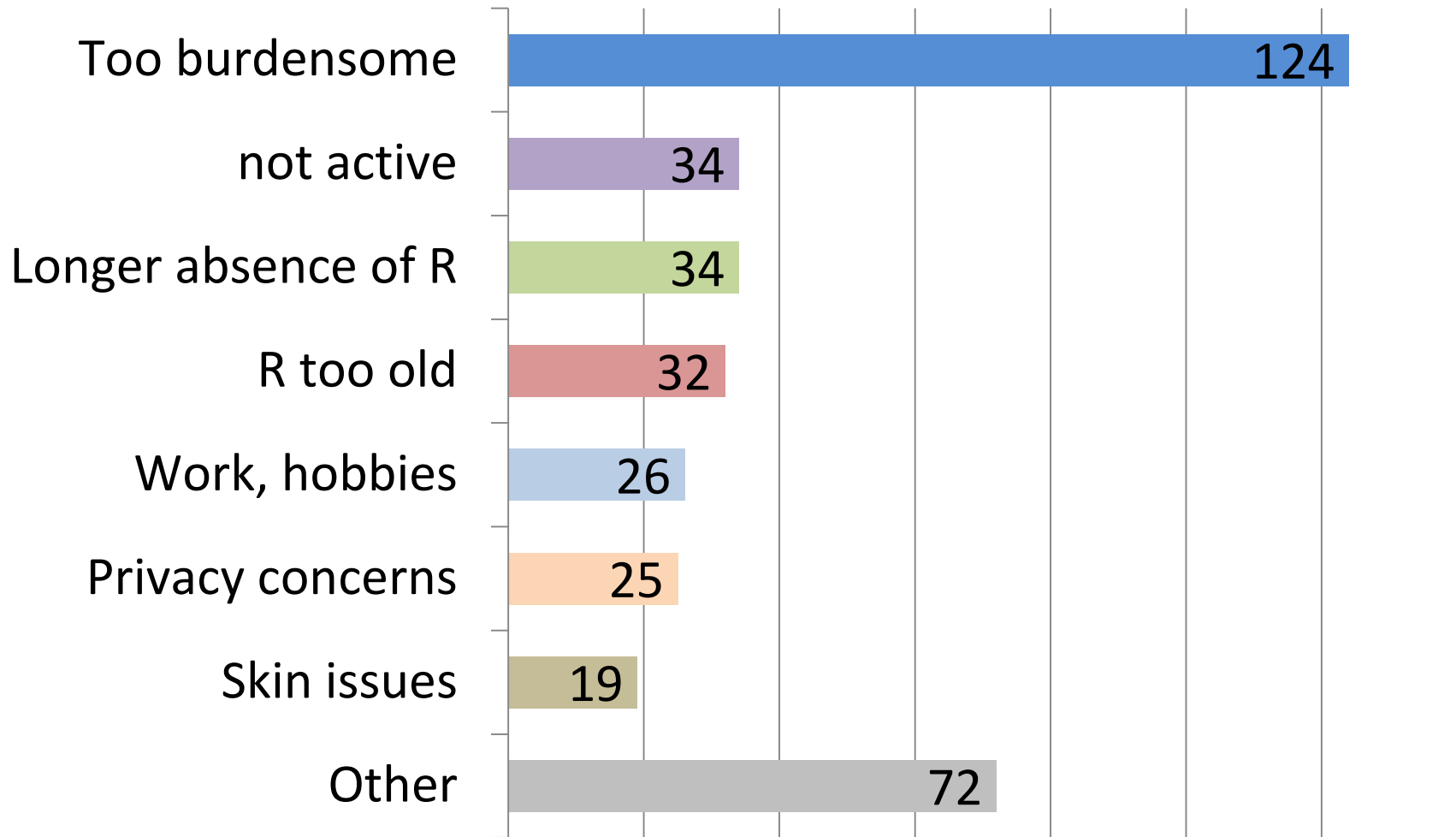
- Limited number of devices
  - Sent around when available, several cycles
    - Attached by respondents themselves
    - Illustrated Instruction brochure
      - Translation in several languages
      - Material has to be similar in all countries
    - „Respondent Information Card“
      - Information on wearing period
      - Possibility for feedback
- Multinational survey → multiple survey agencies



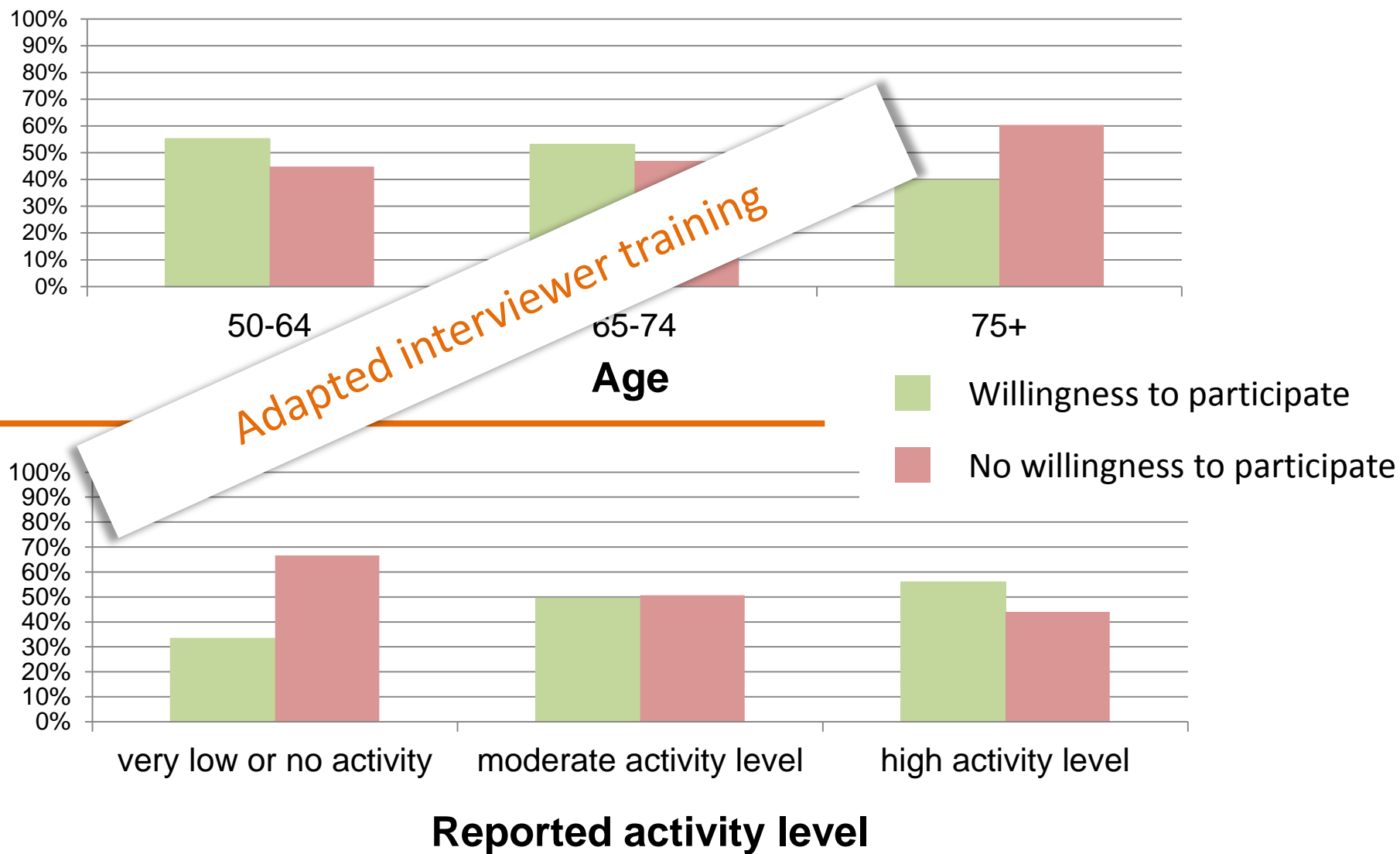
- Expected: ~ 50 % willingness to participate
  - Experience from LISS panel and others
- 47 % actually willing to participate (artificially low rate because of data export issues)
- 293 respondents agreed; 85 randomly chosen to test turnaround procedure



# Reasons for refusal



# Willingness to participate



# Raw data

2017-10-24 14:46:11.559	.625	-.296875	.71875
2017-10-24 14:46:11.579	.515625	-.390625	.75
2017-10-24 14:46:11.600	.390625	-.53125	.6875
2017-10-24 14:46:11.619	.484375	-.390625	.671875
2017-10-24 14:46:11.640	.515625	-.328125	.71875
2017-10-24 14:46:11.659	.5625	-.5	.625
2017-10-24 14:46:11.680	.734375	-.546875	.78125
2017-10-24 14:46:11.699	.5625	-.734375	.640625
2017-10-24 14:46:11.720	.671875	-.546875	.640625
2017-10-24 14:46:11.739	.609375	-.5625	.6875
2017-10-24 14:46:11.760	.609375	-.53125	.640625
2017-10-24 14:46:11.779	.484375	-.609375	.671875
2017-10-24 14:46:11.800	.34375	-.609375	.640625
2017-10-24 14:46:11.819	.34375	-.625	.671875
2017-10-24 14:46:11.840	.578125	.390625	.640625

> 17 000 000 rows per respondent

2017-10-24 14:46:11.899	.78125	-.859375	-.1875
2017-10-24 14:46:11.920	.390625	-.921875	-.328125
2017-10-24 14:46:11.940	.625	-.625	-.328125
2017-10-24 14:46:11.960	.625	-.640625	-.1875
2017-10-24 14:46:11.979	.890625	-.46875	-.0625
2017-10-24 14:46:12.000	.421875	-1.0625	.109375
2017-10-24 14:46:12.020	.3125	-.8125	-.09375
2017-10-24 14:46:12.039	.609375	-.953125	-.3125
2017-10-24 14:46:12.059	.8125	-.96875	-.15625
2017-10-24 14:46:12.079	.6875	-.890625	.109375
2017-10-24 14:46:12.100	.546875	-.828125	-.171875
2017-10-24 14:46:12.119	.71875	-1.015625	-.703125
2017-10-24 14:46:12.140	.0625	.0625	

- Release of data
  - Account for gravity: ENMO, HFEN, BFEN (VAN HEES ET AL 2013) ...
  - Average/person, .../day, .../time of day, ...
  - Cut points for intensity levels
  - MVPA, L5M5 (e.g. R PACKAGE GGIR)...
- Adaptation of available aggregation tools:
  - Ax3
  - worn at thigh, not wrist
- Our own research questions
  - Self-reported vs. accelerometry derived physical activity levels
  - Determinants of physical activity (retired vs. working)
  - Relation of sitting time to health outcomes during ageing

# THANK YOU FOR YOUR ATTENTION!

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- Van Hees, Vincent T., et al. "Separating movement and gravity components in an acceleration signal and implications for the assessment of human daily physical activity." *PloS one* 8.4 (2013): e61691.
- <https://cran.r-project.org/web/packages/GGIR/vignettes/GGIR.html>