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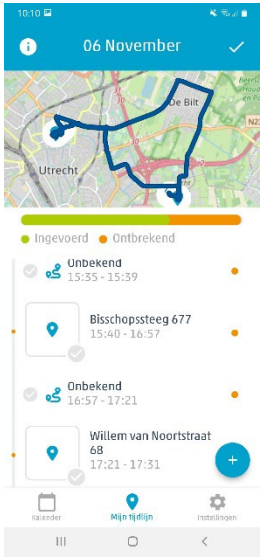
Effects of study duration on response rates and representativity in smartphone travel app of Statistics Netherlands

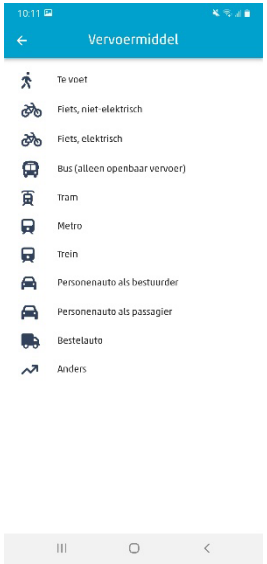
Utrecht University

22 June 2023 – MASS Workshop

Introduction: the app

App CBS Onderweg in Nederland



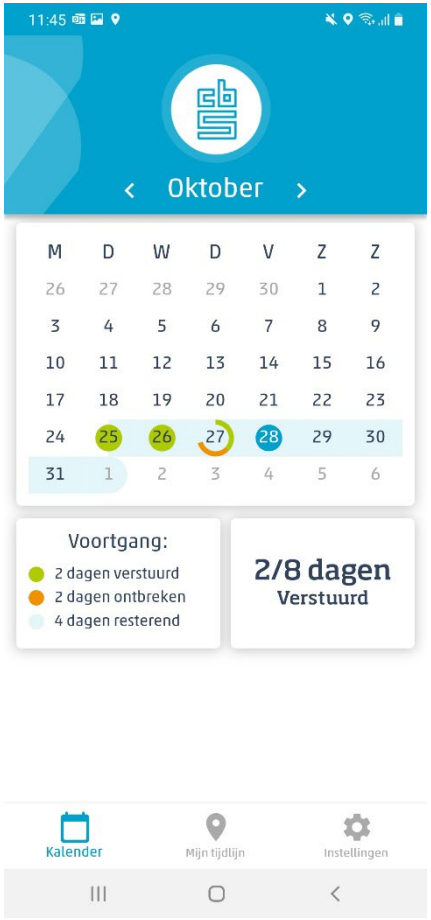


Research question: How many days should we ask respondents to participate in an app-based travel diary study?

Experiment: short (1 day) vs long (7 days) study duration of app study

Outcome variables:

- Participation rates
  - Registration
  - Activity
  - Completion
- Representativity of sample
- Data quality
- Evaluation survey


11:45
Oktober
M D W D V Z Z
26 27 28 29 30 1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31 1 2 3 4 5 6
Voortgang:
2 dagen verstuurd
2 dagen ontbreken
4 dagen resterend
2/8 dagen
Verstuurd
Kalender
Mijn tijdlijn
Instellingen

20:13
Oktober
M D W D V Z Z
26 27 28 29 30 1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
Voortgang:
8 dagen verstuurd
0 dagen ontbreken
0 dagen resterend
Onderzoek afgerond!
Kalender
Mijn tijdlijn
Instellingen

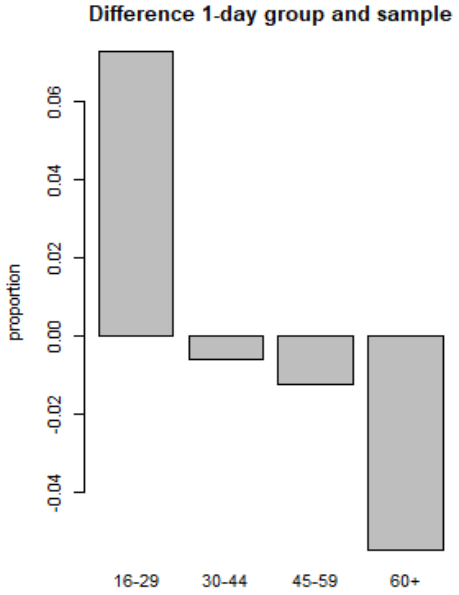
Results

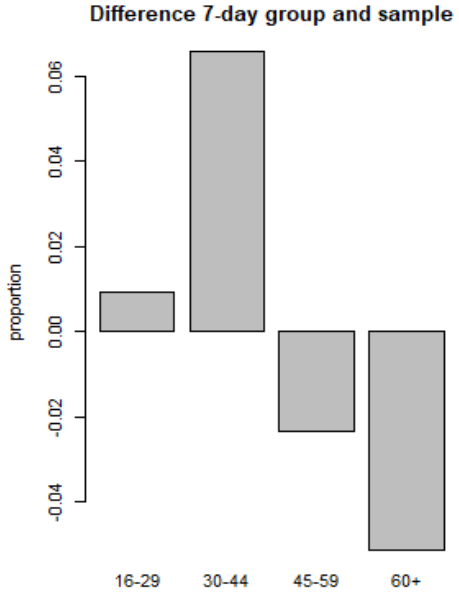
Response rates 1 vs 7 days

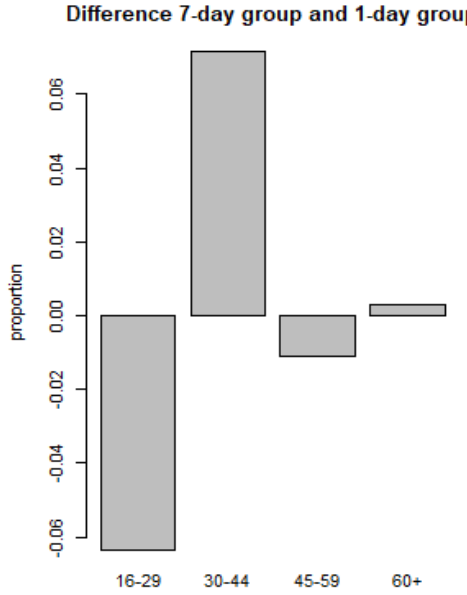
Survey stage	1 day group, % survival	7-day group, % survival
Invitation letter	1158	1139
Registration: Registered in app	12% (N =133)	14% (N=160)
Activity: Logging ≥ 1 activity	11% (N=127)	13% (N=144)
Logging ≥ 12 hours on one day	8% (N=88)	9% (N=106)
Completion: Keeping app installed for study period 1-day group: ≥ 1 day 7-day group: ≥ 7 days	7% (N=84)	8% (N=87)

Conditional completion on registration =
63% for 1-day group, 54% for 7-day group

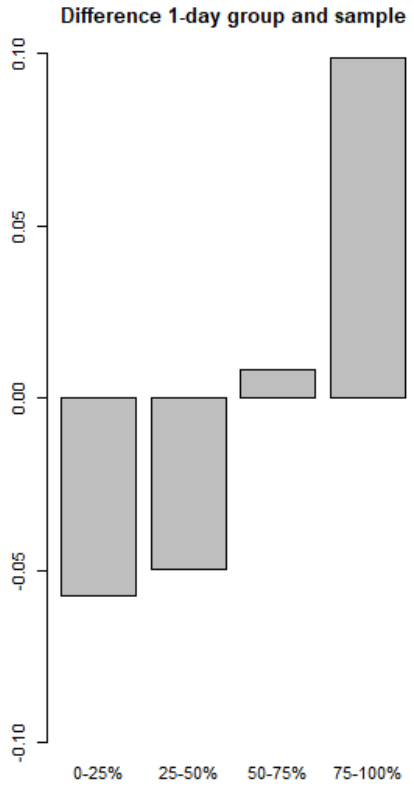
Representation 1 vs 7 compared to sample: Age

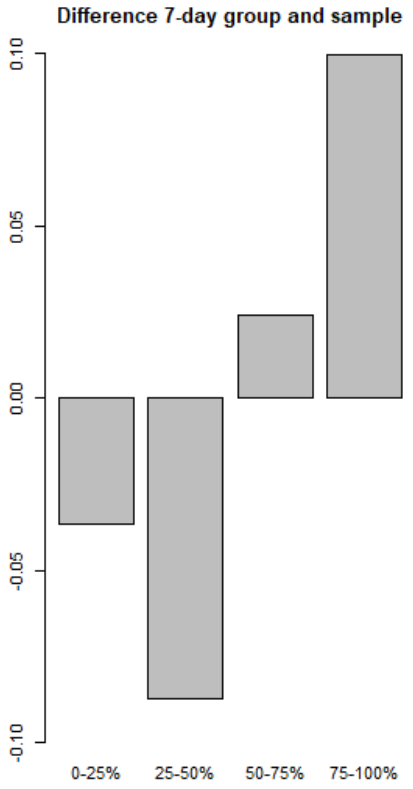


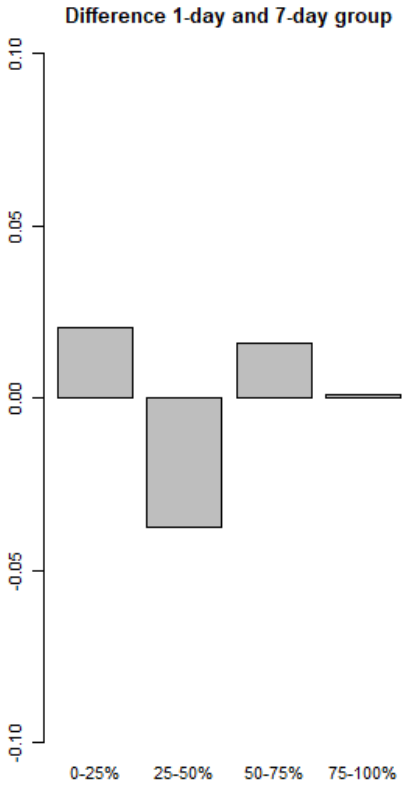




Representation 1 vs 7 compared to sample:







Data quality 1 vs 7 – comparison of first days

	1st day of 1-day group	1st day of 7-day group	mean day of 7-day group
Time spent in app per day	48 seconds	50 seconds	52 seconds
% trips labeled	71%	76%	80%
% stops labeled	75%	77%	80%

Evaluation survey

No differences between 1-day and 7-day group regarding experienced time spent on study, and battery usage of the app

1-day group

- Rated the app more user friendly
- Experienced fewer technical issues

Other findings:

- 99% always had their phone on them
- Most respondents would use app again for similar travel survey

Preliminary conclusion

1-day

+ lower burden for respondents

+ more user friendly

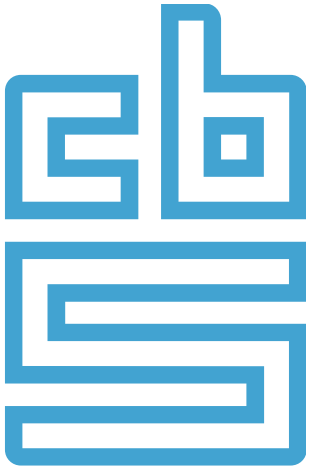
- specific starting date

7-day

+ higher initial response rates

+ higher activity rates

+ higher labeling rates

Where to next? Future research paths

- Representativity:
  - (How) do the 1-day and 7-day groups differ in representativity?
  - Mode comparison between the app study and the web questionnaire
- Data quality:
  - Compare if daily distance travelled differs between the 1-day and 7-day groups