Using smartphones for data collection

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Overview of presentation

- Introduction
- Why a smartphones mode
- The SmartER study
- Willingness to respond by smartphone

The SmartER project
(Smartphone Enabled Responding)

Why?
- Impressive growth of smartphone ownership to >50% of the Dutch population

Purpose
- Investigate the use of smartphones for data collection
    - → Using the case of the Dutch Travel Survey

Advantages for the respondent

- Fill in independent of place and time
- Fill in piece by piece
- Use smartphone sensors to help questionnaire completion (e.g. GPS, photo)
- Lower response burden
- User friendliness

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Advantages for data collection / quality

- 24-7 overview
- Measure actual behaviour (audio, video, photo, GPS)
- More objective measurements
- Less memory effects
- Less data correction required (direct coding and correction by respondent)
- Less measurement error, improved data quality
- Lower response burden $\rightarrow$ higher response

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Likely candidates for smartphone mode

- Time expenditure survey
- Mobility survey
- Road transport survey
- Buget survey
- …

SmartER

The Mobility Survey
- Departure and arrival location of trips
- Departure and arrival time of trips
- Means of transportation (autodetected)
- Reason for trips

Why this survey?
- Questionnaire completion is time consuming
- Difficult task: distances, addresses

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The SmartER study

Method
- App developed with external partner: MoveSmarter:
  - Background questionnaire
  - Measurement of trips
- 60 participants used
- 1-week measurement period
- Variation in sex, age, smartphone type and OS

Purpose
- Evaluation of user experiences
- Evaluation of technical fuctioning

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Screen shots of the MoveSmarter app

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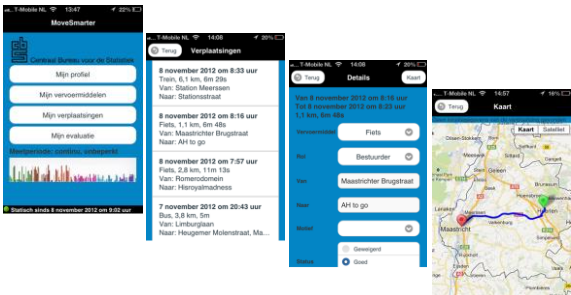
General results

User experiences
- Participants are positive about using an app
- App interface is user friendly
- Questionnaire works well, though small adjustments are desirable

Technical issues
- Stability and performance app
- Quality of trips is insufficient
- The registration should be improved

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Trips

- **Errors:**
  - Departure and arrival locations (addresses)
  - Departure and arrival times
  - Registration of non-existing trips
  - Wrong means of transportation
  - Compound/multiple trips by train, bus, metro and on foot
  - Route is shown incorrect, incomplete or not at all

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Technical issues

- **High battery use**
- **Smartphone sometimes became slower**
- **App works slow**
- **Crashing of the App (Android)**

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Conclusion

- Resolve technical issues (battery, stability app)
- Improve quality and precision of measurements
- Increase possibilities for manual trip adjustment:
  - Split, join, add, remove, hide trips
  - Correct locations
  - Change routes on the map
- Improve autodetection of means of transportation
- Further develop the questionnaire functionality (routing, additional question types)
- Data storage, data protection

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Willingness to respond by smartphone

Additional questions in Mobility Survey:
•Smartphone possession
•Willingness to fill in the Q on smartphone
  - Automatic registration
  - Manual completion
•Willingness to install app

Administered in CAPI, CATI and CAWI
Total response ± 13,000 (80%)

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Preliminary results

Ownership 44%
- CAPI 50%, CAWI 46%, CATI 39% (<45 yr)
- Higher in younger respondents

Willingness 49%
- CAPI 53%, CATI 48%, CAWI 45%
- Higher in younger respondents (<55 yr)
- Majority automatically

Conclusion: highest probability of smartphone responding in CAPI respondents aged 12-35 years (37-51%).

88% is prepared to install an app.

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Reasons not to respond by smartphone

- Privacy issues e.g. anonymity
- Don't want to   e.g. effort, lazy
- Usability   e.g. screen or font size
- Use   e.g. skill, business phone
- Lack of time   e.g. busy, other priorities
- Smartphone   e.g. no wifi, no data, old
- Mode   e.g. prefer other mode
- Other