



ON THE USAGE OF PORTABLE ELECTRONIC DEVICES: A QUALITATIVE STUDY OF CYCLIST BEHAVIOUR

M. Nilsson,
C. Englund,
M. Amanuel
Viktorias Swedish ICT
maria.nilsson@viktorias.se

VISUAL DISTRACTION AND BICYCLISTS

When nomadic devices (cell phone, Mp3 player, exercise and tracking equipment) attracts the gaze of cyclists, and take the attention from the primary task, cycling.

Research has shown that electronic devices was NOT a determining factor for accidents



Research show that portable devices increase the likelihood of accidents in 12-34 years olds.



Research gap

Visual distraction of vehicle drivers is well explored. Visual distraction of bicyclists is underrepresented and more research is needed

HOW DO ELECTRONIC DEVICES AFFECT BICYCLIST BEHAVIOUR?



A STUDY IN PERFORMANCE AND EXPERIENCE

A MULTI-METHOD DESIGN APPROACH

A multi-method design approach involves qualitative and quantitative surveys, which are relatively complete on their own, for the purpose of triangulation to reach a more comprehensive whole

1. Market survey

- *Internet activity pattern*
- *Target: Swedish Market*
- *Analysis: frequency /popularity*
→ 24 electronic devices

2. STRADA database investigation

- *Accident rates*
- *The Swedish national database 2010-2013*
- *Target: mobile, cyclist etc.*
- *Analysis: descriptive statistics, qualitative categorisation*
→ 97 device related accidents out of 27364 identified cyclist accidents

3. Interview study

- *Perceived experience*
- *Target: 7 participants*
- *Analysis: Qualitative- grounded theory*
→ *Compensatory strategies*

THE MARKET SURVEY (1)

The market survey is retriced to the devices avialable in Sweden at the time of the survey

- 24 devices
 - training
 - service
 - Pleasure
- User groups
 - Athlete
 - Commuter
 - Causal
- Difference
 - Level of integration
 - Data captured

Category	Type	Disseminated data	Motivation	Interface	Example ¹	Target group ²
Training	Smartphone application	Distance/ speed/ location/ time (average, trip, yourself, others)/ calories / motivational talk	Competition /personal development (yourself/others)	Visual Auditory	CykelAppen Endomondo Strava Runkeeper Stockholm City Bikes CycleMeter Roadbud CardioTrainer Imapmyrid+	Commuter/ athlete
	Bicycle computer	Location/speed/ distance/run time/ speed comparison/ average speed/ time distance/ total distance	Competition /personal development (yourself/others)	Visual	Garmin Sigma CicloSport SecurityPlus Trelock Cateye	Athlete
	Pulse watch	Pulse/speed/ distance	Competition /personal development	Visual	Garmin, Polar	Athlete
Service	Smartphone application	Nearest service location/ pump facilities / rent options /map/ feedback to authorities on road network	Information dissemination	Visual	PunkApp, googlemap, Cykelrapporten	Casual, commuter
	Navigator	Map/directions	Information dissemination	Visual	Garmin, Polar	Casual
Pleasure	Smartphone application	Music, sound book	Flow/increased focus/self motivation	Visual	Spotify, MP3	Casual / commuter

THE STRADA INVESTIGATION (2)

- 97 out of 27364 (*about 0,35%*)
 - Electronic devices are involved in a small extent of the identified accidents. Less severe accidents are more common than fatal outcome.
- Likely causes include:
 - failure to notice hinder/events,
 - failure to manoeuvre the cycle
 - failure to foresee hinder.
 - Motoric and visual demand contribute to accidents.

THE INTERVIEW STUDY (3)

- Compensatory strategies are used to minimise the distraction that electronic devices may cause
 - Alternation (choice) of device
 - Placement of device
 - Continuous safety evaluations
 - Focus of attention
 - Alternation of speed
 - Performance of mini-interactions
- The context determine the use of electronic devices
 - Physical (e.g., traffic)
 - Social (e.g., type of activity)
 - Cultural (e.g, time of day)
 - Mental (e.g., subjective experience of risk)
- The perceived behavioural effects of electronic device usage
 - Alternation of speed
 - pausing activity,
 - focus of attention,
 - increased cautiousness

CONCLUSION

1. Many devices exist and are used on the market
2. Relatively low accident rate
3. Compensatory strategies and behaviour

→ The current use and the strategies identified may be an explanation of the relatively low accident rates that can be contributed to the portable electronic device usage.

WWW.VIKTORIA.SE

A project supported by

