



Trafikdage på Aalborg Universitet 25 og 26 august 2014

Intentions to use bike-sharing for holiday cycling: an application of the Theory of Planned Behavior

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- Parallelt med høje cykel-rater i 'cykel-lande' vokser den rekreative cykling hurtigt i mere bil-orienterede lande (Moudon et al., 2005; Heesch et al., 2012).
- Cykel-lande har stort potentiale ifht. rekreativ cykling og cykel-turisme, men andre destinationer som bl.a. Italien, Spanien, Ungarn, og Polen satser også på - og har stor vækst inden for cykel-turisme (Weston et al., 2012).
- Interessen i cykel-turisme er ny og hovedfokus har ligget på rekreative ruter, oplevelsesruter mv. (Deenihan et al., 2013).
- Der er bycykel systemer i (mindst) 375 byer, inklusive store turist destinationer som London, Paris og Rom, men undersøgelser har hidtil alene fokuseret på den lokale befolknings efterspørgsel (Shaheen et al., 2011; Fishman et al., 2012).
- Turister og 'midlertidige beboere' er en gruppe i vækst. Skønnes: 35-45000 'udenlandske' personophold/dag i København i sommermånederne





- Hangzhou, 66500 cykler; 2700 stationer
- London, 10000 cykler; 720 stationer
- Paris, 20000 cykler; 1800 stationer





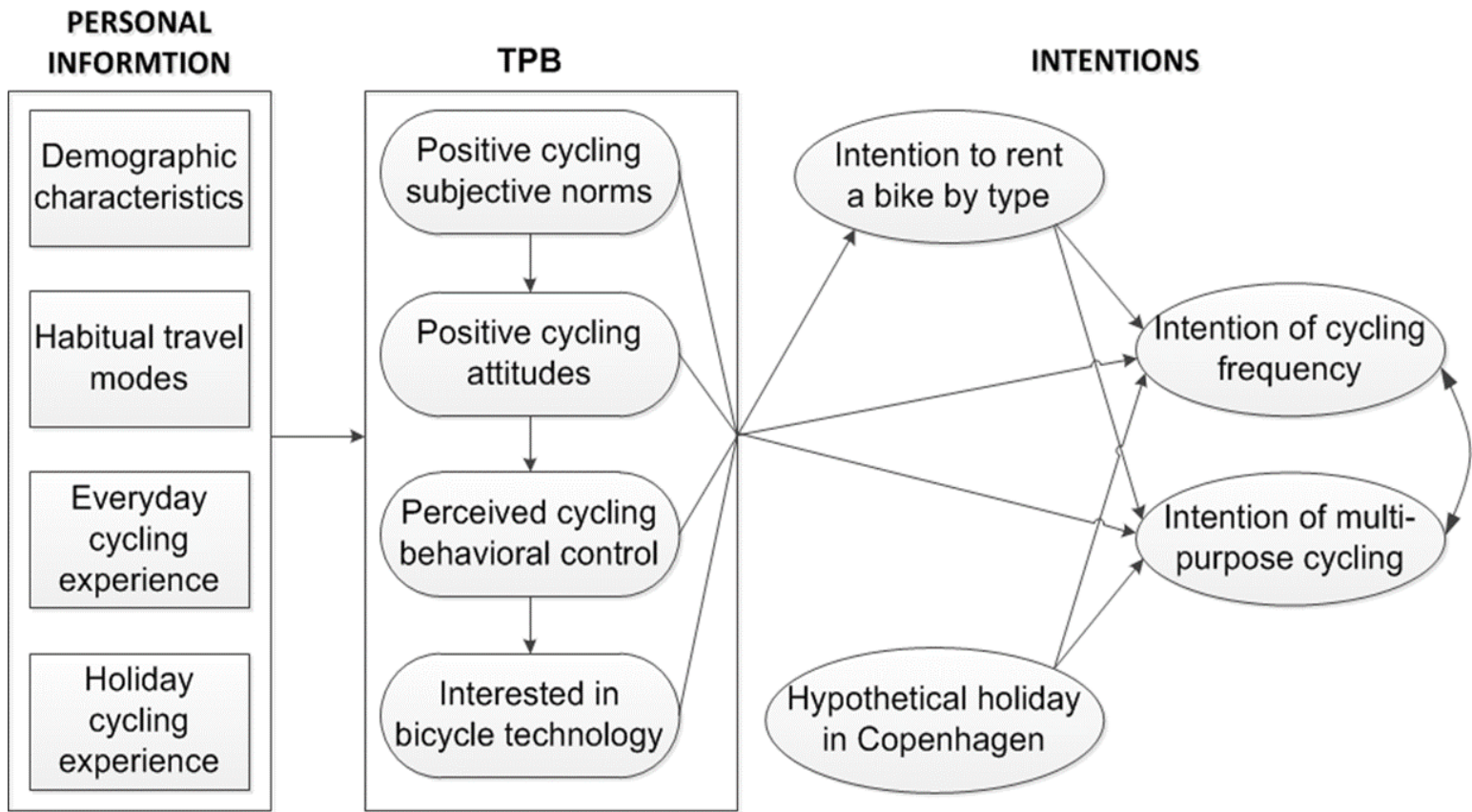
- Potentiale for cykel turisme baseret på bycykler /GoBike systemet:
 - ✓ 350 km cykelstier i Københavns Kommune
 - ✓ Der opstilles 2000 'almindelige' og e-cykler fordelt på 60 cykel stationer
 - ✓ Fuld integration med kollektiv trafik og rejseplanen
 - ✓ Konkurrencedygtig prisstruktur for lokale og turister
- Bycyklerne er udstyret med GPS baseret tablet rejseguide:
 - ✓ Anbefaling er hurtigste eller smukkeste ruter
 - ✓ Rabatter/tilbud til turister
 - ✓ Mulighed for cykel 'billetter' på hoteller, krydstogtsskibe, og rejsebureauer

Vi undersøger baggrunden for potentielle turisters interesse i at bruge bycykler under et besøg i København.



Hypoteser og teoretisk ramme

- Undersøgelse og analyse baseret på 'Theory of Planned Behavior' (Ajzen, 1991):



- Adfærdsmodellen analyseres vha. en '**structural equation model**'
 - Indikatorer repræsenterer respondenternes latente egenskaber

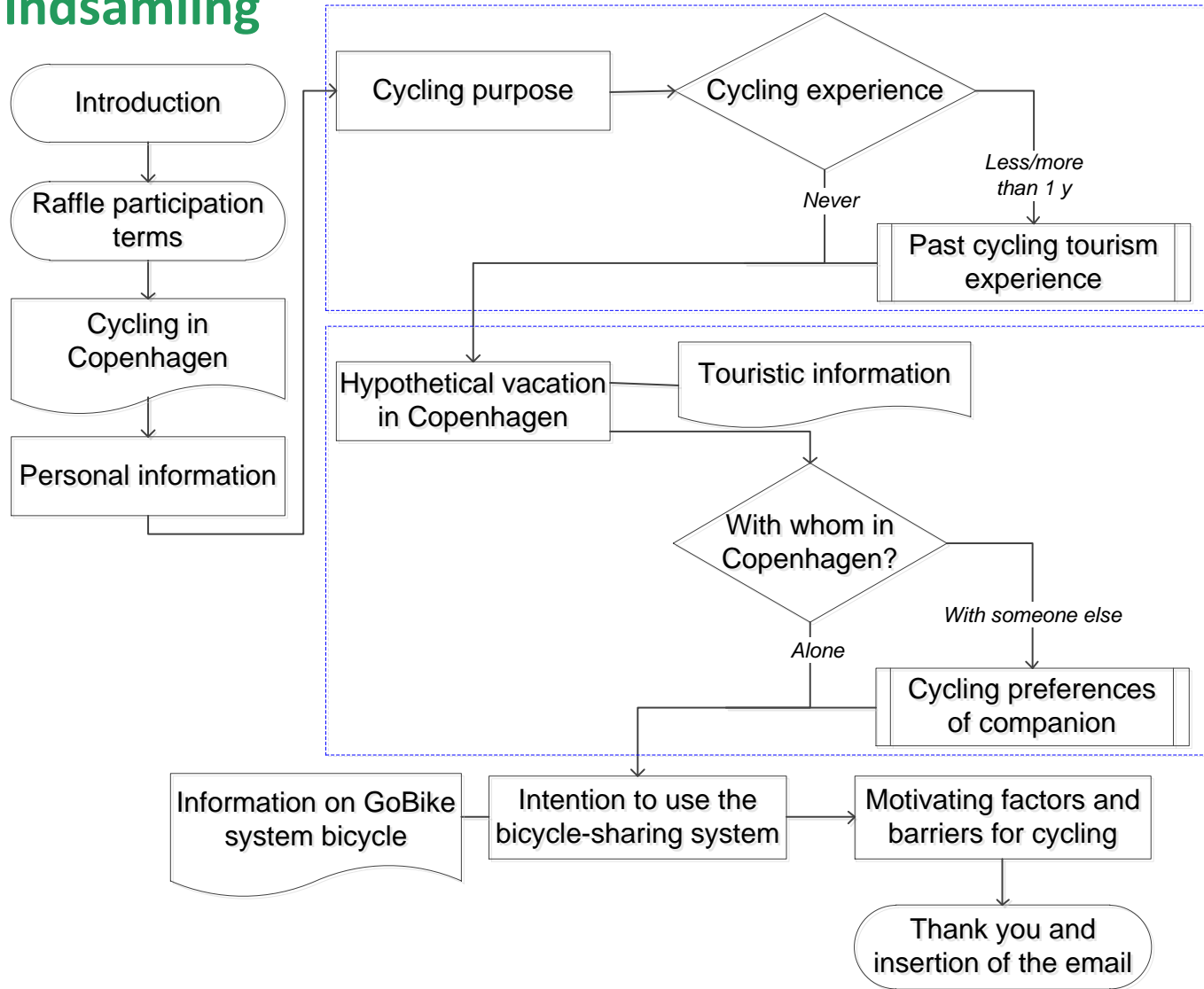
$$I_m = X_{ln}^* \alpha_r + \varepsilon_m \quad \text{for } r = 1, \dots, R$$

- Strukturelle ligninger kæder respondenternes latente egenskaber sammen med deres observerbare karakteristika.

$$X_{ln}^* = X_{ln} \beta_l + \omega_{ln} \quad \text{for } l = 1, \dots, L$$

- Modellen estimeres baseret på Maximum Likelihood med Huber-White kovarians justering for beregning af standard fejl
- Som **Goodness of fit** mål anvendes Comparative Fit Index (CFI), Standardiseret root mean residual (SRMR) og Root Mean Square of Approximation (RMSEA)





***14. Which transport modes are you most likely to use during your stay in Copenhagen?**

	Highly unlikely	Unlikely	Neither likely nor unlikely	Likely	Highly likely
Rent a car: 280 € per week for a 4-person car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rent a car: 150 € for three days for a 4-person car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3-day city transit pass: 25€ per person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1-day city transit pass: 10€ per person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public transport: 27€ for 10-trip travel card per person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Normal bicycle shared pass (10 €): 30 minutes free, then 0.55 € per hour per person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric bicycle shared pass (10 €): 30 minutes free, then 0.80 € per hour per person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

+ Add Question ▼ Split Page Here

Q15 Edit Question ▼ Add Question Logic Move Copy Delete

***15. If you decide to use the bicycle-sharing system, how frequently would you use it?**

- Once a week or less
- 2-3 a week
- Daily



***17. How do you feel about cycling during a holiday in Copenhagen?**

Please state your degree of agreement with the following statements:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I will be interested to experience the Danish cycling culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will be interested in having an environmentally-friendly vacation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will be interested in staying physically active during my vacation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to cycle in order to save money on transport during my vacation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to cycle instead of searching for parking or to wait for public transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to cycle because it is very convenient for short distances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will be interested to ride this high-tech electric bike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will be interested to ride electric bike because they are faster and easier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will be interested to try the bicycle-sharing system because of the GPS system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





Baseret på sociale netværk

- Vedligeholdelse af sociale relationer er en vigtig motivationsfaktor for national og international turisme (Backer, 2012)
- Sociale netværk bruges i stigende grad til at promovere turistmål (Zhou and Wang, 2014).
- Gør det muligt at indsamle internationale data i høj kvalitet men med lave omkostninger (Efthymiou and Antoniou, 2012)

The screenshot shows a Facebook event page for 'Questionario Party / Survey Party'. The event is scheduled for Saturday, December 14, 2013, in Copenhagen, Denmark. The host is Francesco Manca. The event description is in Italian, asking for help with a survey for a Master's thesis. It includes links to the survey in English and Italian. The page lists several guests, including Ludovica Ibba, Ni De Coña Mi Niño, Alessandro Vacca, Arianna Manca, and Emiliano Medda. There are also sections for 'Maybe' and 'Invited' guests. A pinned post by Francesco Manca shows a photo of a person on a bicycle and a link to the survey.



- 655 komplette besvarelser (82% af alle deltagere):

Variable	Categories				
Gender	Male	Female			
	45.2	54.8			
Age	< 25	25-34	35-44	45-54	55+
	23.5	53.3	12.4	6.4	4.4
Residence in a cycling-friendly country	No	Yes			
	79.7	20.3			
Habitual car use frequency	Daily	2-3 weekly	1 weekly	2-3 monthly	Rarely
	37.6	16.8	10.5	8.9	26.3
Habitual bicycle use frequency	Daily	2-3 weekly	1 weekly	2-3 monthly	Rarely
	20.8	12.4	6	9	51.9
Habitual cycling purpose	Non-cyclist	Recreation	Utilitarian	Both	
	17.1	28.1	25.2	29.6	
Visited cycling cities	No	1-2 times	Often		
	35.7	47.8	16.5		
Rented a bike or used bike-sharing	Never	1-2 times	Often		
	60.8	32.2	7.0		



Nøglevariable

- 74.3% vil 'sandsynligvis' eller 'meget sandsynligt' benytte bycykler under et besøg i København
- 31.3% foretrækker 'almindelige' cykler, mens kun 8.2% foretrækker e-cykler
- 48.4% forventer at cykle dagligt mens 36.5% forventer at cykle 2-3 gange om ugen
- 89.5% ville cykle i naturområder
- 86.0% ville cykle i byen
- 80.2% ville cykle med venner og familie

Questionario Party / Survey Party

Friends of Guests · By Francesco Manca

Going (173)

- Francesco Manca (Host)
- Ludovica Ibba
- Ni De Coña Mi Niño
- Alessandro Vacca
- Arianna Manca
- Emiliano Medda

Recent guests (20+ new)

Maybe (27)

- Alan Castellano
- Fabio Zecchini
- Andrea Floris
- Agostino Mascia

Invited (1,272)

- Marco Artusi
- Matteo Manca
- Zirellu Melone
- Saoro Estruch

Export · Share

Saturday, December 14, 2013

What time?

Aiutatemi!!! Rispondete a questa esilarante indagine per favore, contribuirete alla buona riuscita della mia tesi di Master!

Please Help!!! Answer to this very exciting survey!!! It is so important for my Master's thesis! :)

Thank you all!!!

English version: <https://www.surveymonkey.com/s/English-Final-Version-5HRZWXG>

Versione italiana: <https://www.surveymonkey.com/s/Versione-Finale-Italian-5BW6XF6>

Copenhagen, Denmark

Write Post Add Photo / Video Ask Question

Write something...

Pinned Post

Francesco Manca

<https://www.surveymonkey.com/s/Versione-Finale-Italian-5BW6XF6>

Intenzione di utilizzare il bike-sharing in una vacanza a Copenhagen Survey



- Faktor analyse:

Description	Pro-cycling	Technology	Norms	Cycling ease
I am interested to experience the Danish cycling culture	0.592	0.167	-0.098	0.178
I am interested in having an environmentally-friendly vacation	0.607	0.062	-0.133	0.073
I am interested in staying physically active during my vacation	0.591	-0.031	-0.005	0.047
I prefer cycling in order to save travel money during my vacation	0.592	0.100	0.000	-0.048
I prefer cycling over parking search or waiting for public transport	0.656	0.180	0.020	0.090
I prefer cycling because it is very convenient for short distances	0.663	0.164	0.083	0.123
I am interested to ride high-tech electric bicycle	0.222	0.751	-0.158	0.017
I am interested to ride electric bicycle because they are fast and easy	0.222	0.759	-0.119	-0.114
I am interested to try the bike-sharing system because of the GPS	0.297	0.537	-0.011	0.082
Many of my family and friends cycle	0.085	0.004	0.606	0.003
People usually cycle in the city	-0.044	0.032	0.722	-0.067
People usually cycle for recreation	0.020	0.189	0.265	0.067
People think that cycling for recreation is cool	0.048	0.095	0.439	0.098
People feel safe to cycle alone at night	-0.051	-0.117	0.755	0.011
Drivers think that roads are only for cars (R)	-0.135	-0.059	0.603	-0.083
Cyclists generally wear helmets	0.069	-0.093	0.157	0.028
Cyclists generally are not afraid to cycle on the road	-0.064	-0.054	0.492	-0.033
Cycling is not safe for children (R)	-0.061	-0.096	0.593	-0.024
Cyclists are expected to cycle only in parks or off-road cycling paths	0.046	0.138	-0.561	0.002
Drivers generally do not respect cyclist (R)	-0.125	-0.133	0.675	-0.039
I do not like to cycle in the rain or in a hot day (R)	0.298	-0.301	0.240	0.386
I do not like to cycle long distances (R)	0.432	-0.304	0.176	0.465
I will not feel safe cycling through cross-roads with much traffic (R)	0.062	-0.044	0.129	0.604
I will be afraid to bump into cyclists in a crowded cycling path (R)	-0.003	0.044	-0.038	0.436
It will be difficult to look at the GPS while cycling (R)	0.069	0.140	0.010	0.508
I do not like to pay by credit card via the automatic system (R)	0.003	-0.013	-0.059	0.348
I am afraid to leave the bike because it can be stolen or forgotten (R)	0.005	-0.035	0.047	0.445



RMSEA = 0.05
SRMR = 0.06

- Delelementer i analysen I

Pro-cycling attitudes (F1)

Variable	Est.	C.R.
Cycling-friendly country	-0.392	-4.78
Male	-0.188	-3.09
Cycling daily	0.420	3.64
Transit use 2-3 times weekly	-0.122	-1.42
Bike rent often on holiday	0.539	4.36
Recreation & utility cyclist	0.196	2.13
Often visit cycling cities	-0.136	-1.61

Interest in bicycle technology (F2)

Variable	Est.	C.R.
Cycling-friendly country	-0.169	-1.57
Past cycling country	-0.398	-1.59
Using car daily	0.299	2.68
Rarely visit cycling cities	0.213	1.80
Never visit cycling cities	0.298	2.30
Bike rent often on holiday	0.257	1.37

Pro-cycling subjective norms (F3)

Variable	Est.	C.R.
Cycling-friendly country	0.658	7.99
Cycling 2-3 times monthly	0.168	1.86
Cycling 2-3 times weekly	0.133	1.37
Cycling daily	0.413	4.05
Recreation & utility cyclist	0.230	2.83
Utilitarian cyclist	0.094	1.25

Perceived cycling ease (F4)

Variable	Est.	C.R.
Cycling-friendly country	-0.146	-1.75
Male	0.275	4.33
Cycling daily	0.301	2.62
Transit use 2-3 times weekly	-0.237	-2.77
Transit use daily	-0.186	-2.25
Car use 2-3 times weekly	-0.222	-2.46
Car use daily	-0.254	-2.86
Bike rent rarely on holiday	0.173	2.46
Recreation & utility cyclist	0.163	1.79
5-year cycling experience	0.309	4.72



- Delelementer i analysen II

Variable	Only regular bicycle (ORB)		Only electric bicycle (OEB)	
	Est.	C.R.	Est.	C.R.
Pro-cycling attitudes	-0.045	-0.57	0.148	1.67
Interest in Bicycle technology	-0.620	-12.35	0.400	5.89
Pro-cycling subjective norms	0.144	1.57	-0.357	-2.87
Perceived cycling ease	0.241	2.63	-0.213	-2.03

Variable	Regular or electric bicycle (REB)		No bike rental (NOB)	
	Est.	C.R.	Est.	C.R.
Pro-cycling attitudes	0.534	7.59	-0.736	-9.29
Interest in Bicycle technology	0.661	14.56	-0.456	-8.13
Pro-cycling subjective norms	-0.149	-1.84	0.211	2.28
Perceived cycling ease	0.349	4.11	-0.647	-6.95



- Delelementer i analysen III

Holiday cycling frequency (CFR)			Multi-purpose holiday cycling (CMP)		
Variable	Est.	C.R.	Variable	Est.	C.R.
Pro-cycling attitudes	0.405	3.79	Pro-cycling attitudes	0.847	6.11
Interest in Bicycle	0.187	1.59	Interest in Bicycle technology	0.644	3.88
Pro-cycling subjective norms	-0.166	-2.07	Pro-cycling subjective norms	-0.010	-0.08
Perceived cycling ease	0.280	2.89	Perceived cycling ease	0.295	2.33
Only regular bicycle	0.137	2.09	Only regular bicycle	0.227	2.66
Only electric bicycle	-0.162	-2.41	Only electric bicycle	-0.002	-0.02
Regular or electric bicycle	0.026	0.46	Regular or electric bicycle	-0.126	-1.68
No bike rental	-0.076	-1.28	No bike rental	0.046	0.61
Likely/highly likely car rental	-0.220	-1.39	Partners likely to cycle	0.577	3.94
Likely/highly likely transit use	-0.143	-1.46	Partners highly likely to cycle	0.966	4.72
Partners likely to cycle	0.269	2.43			
Partners highly likely to cycle	0.632	4.81			
Correlation between holiday cycling frequency and multi-purpose cycling			0.243	3.62	



- Der er stor interesse blandt potentielle turister for at bruge bycykler, og for at cykle i forbindelse med en tur til København. Interessen i at benytte e-cykel er dog lille i sammenligning med interessen i 'almindelig' cykling.
- Intentioner om at cykle ofte og til mange forskellige mål på ferien – hænger sammen med en positiv holdning til cykling, interesse i cykel-teknologi, cykel-orienterede normer, samt en oplevelse af at det er let at cykle.
- Theory of Planned Behavior elementerne har signifikant sammenhæng med bopæl i et cykel-venligt land, transportvaner, erfaring med og interesse i cykelturisme.
- Transportmiddelvalg på ferien er en højere grad en gruppe-beslutning end en individuel beslutning. 98.2% af respondenterne forventer at holde ferie med en eller flere andre, og den 3. mest populære ferie-aktivitet er cykling med venner og familie.





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Spørgsmål?



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