E-commerce Consumers' Behavior: Generation of B2C Parcel Delivery Location Preferences

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Urban deliveries are changing

- Increasing share of freight deliveries are now destined for home addresses (fragmentation, multiple delivery attempts, on-demand deliveries, free returns) (Dablanc, 2019).

- Many (small) actors playing a role (Heitz & Beziat, 2016).

- Cities only starting to pay attention (Browne et al., 2019).

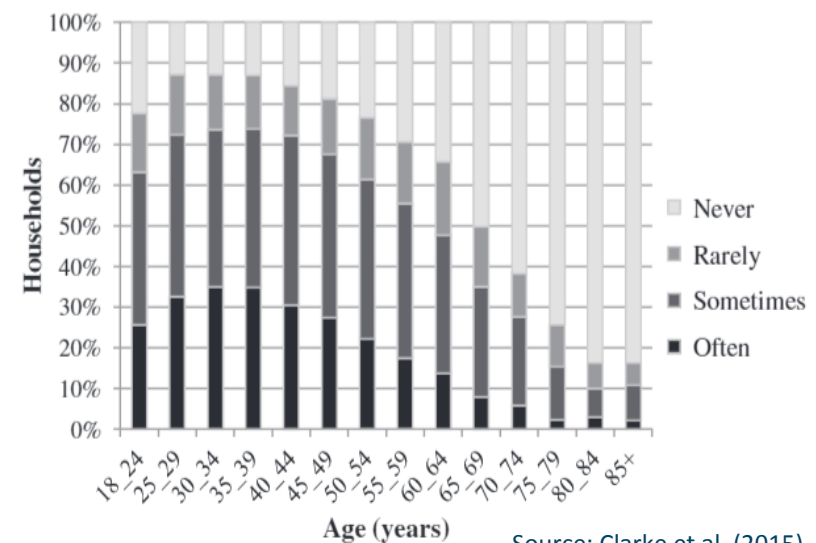BUT: No data, insights are scarce

Some studies (partially) exploring this interface

- Increasing attention towards consumers' shopping behaviour (Buldeo Rai et al., 2019; Lee et al., 2017; Zhou & Wang, 2014)

- Research on who buys online:
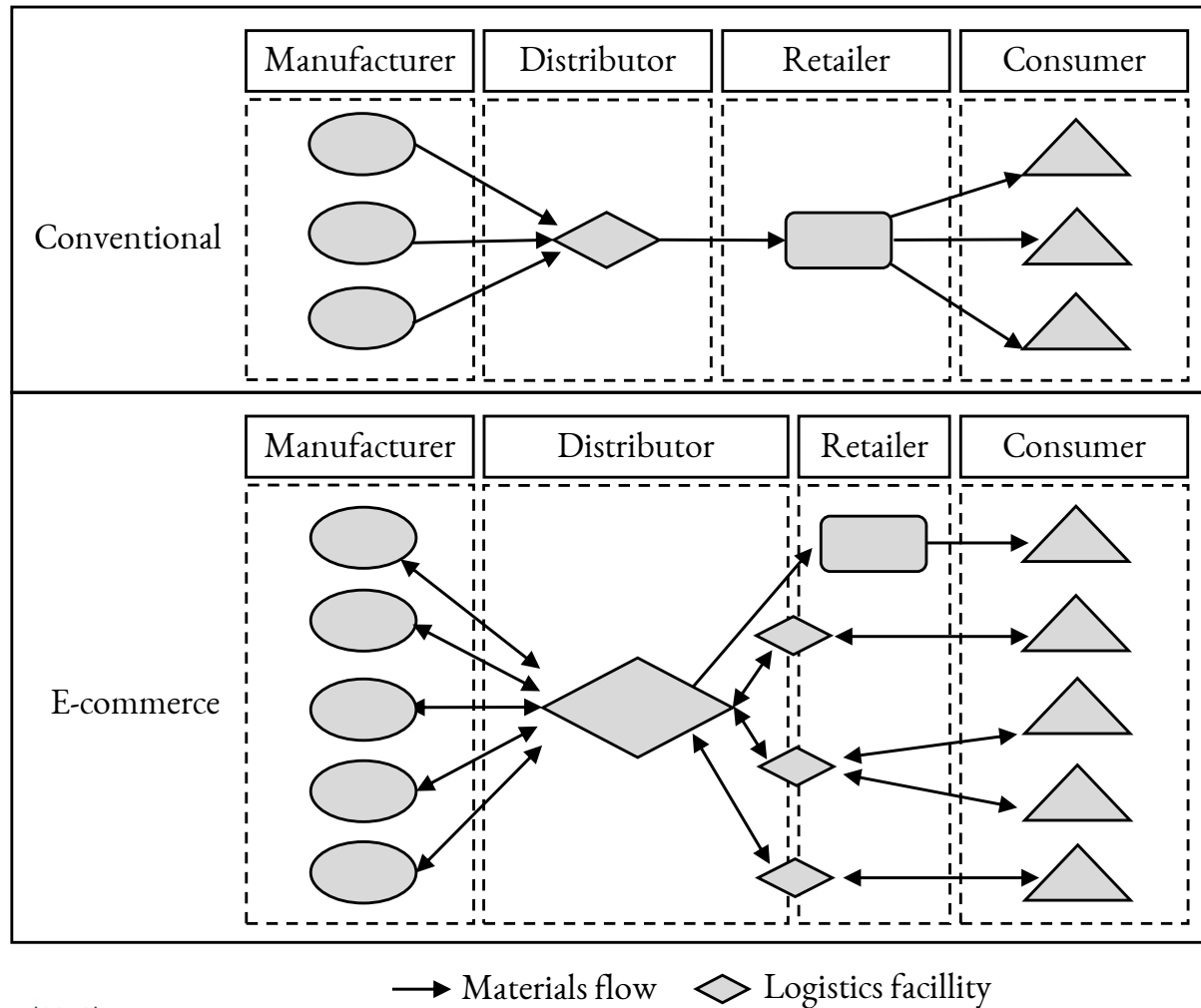 - Well educated man in his thirties, high income
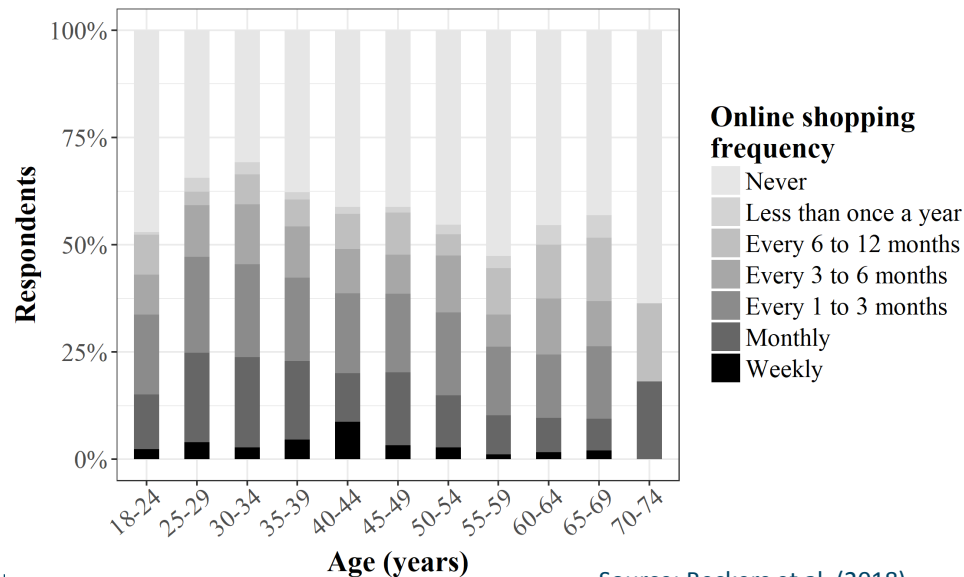
Source: Beckers et al. (2018)
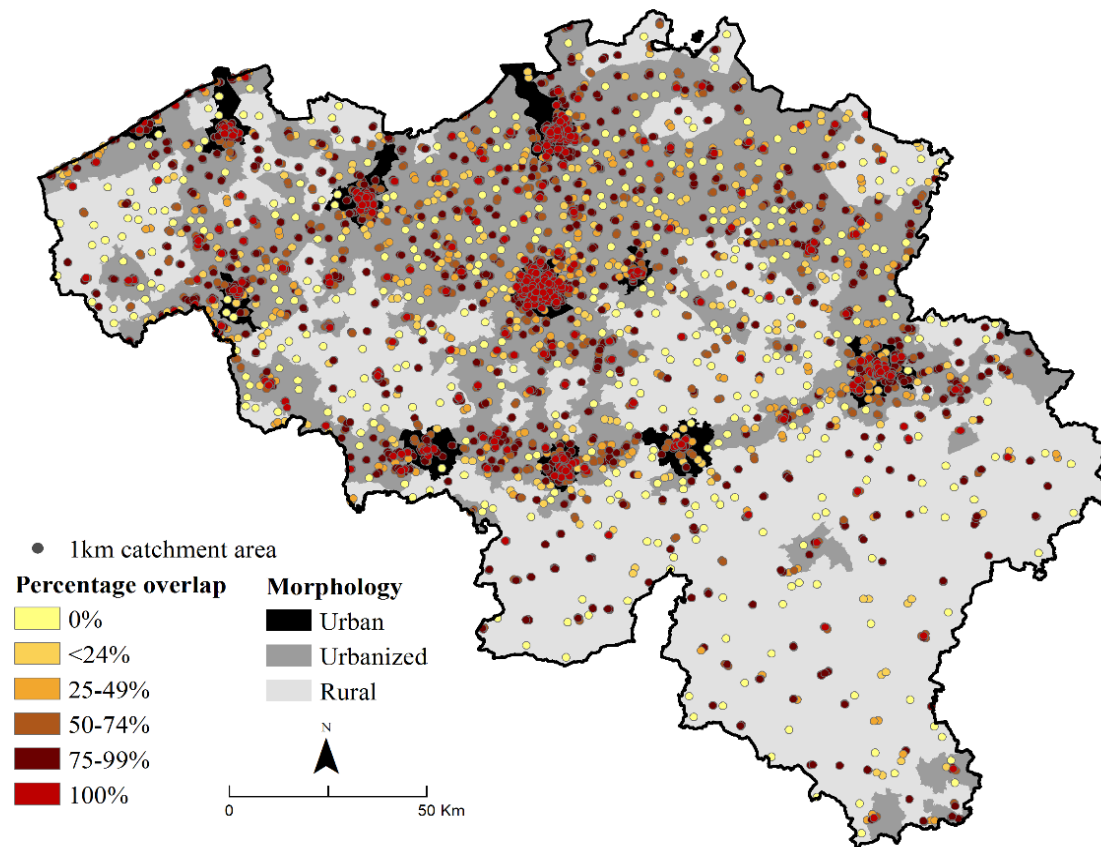
Source: Clarke et al. (2015)

B2C leads to a fluid fetail-logistics interface

Materials flow   Logistics facillity

Some studies (partially) exploring this interface

- The fluid interface gets materialized in urban logistics facilities

Source: Beckers (in press)

Research questions

⇒ Analyses of B2C freight flows remain absent
   (due to data limitations)

This in co... ...ht trip
generatio... ...iaz, 2017)
assessing ... ...eas.

Research questions

1) **Explore** relevant consumer and good characteristics explaining the frequency of online deliveries and their delivery location

2) **Forecast** the frequency and delivery location of online orders

Methodology

- E-commerce in Belgium 2016 questionnaire

    - E-commerce related questions

    - Socio-economics variables

- Logit models:

    - Frequency: based on shopping fequency (ordinal logit)

    - Location: based on preferred delivery location (multinomial logit)

Frequency of online purchases

Dependent variable:

_____

Order frequency

_____

|	Order frequency
income 500-1249	1.33* (.76)
income 1250-1749	1.51** (.75)
income 1750-2499	1.94*** (.75)
income 2500-3249	2.03*** (.75)
income 3250-4250	1.95** (.77)
income > 4250	3.54*** (.89)
gender Male	.18 (.13)
age 30-39	-.05 (.22)
age 40-49	.09 (.20)
age 50-59	-.02 (.20)
age 60-69	.20 (.22)
age 70	-.04 (.75)
High School	.62*** (.24)
Higher Education	.77*** (.24)
University	.72*** (.26)
1 child	.20 (.20)
2 children	.14 (.22)
3 children	.18 (.35)
4 children	.45 (.67)
4+ children	.30 (1.52)
Suburban	-.57*** (.15)
Rural	-.35** (.18)

- **Income** & **Education**: significant positive impact on frequency

- **Suburban** & **Rural** areas: significant negative impact on frequency

- **Number of children**, **Age**, **Gender**: no significant impact
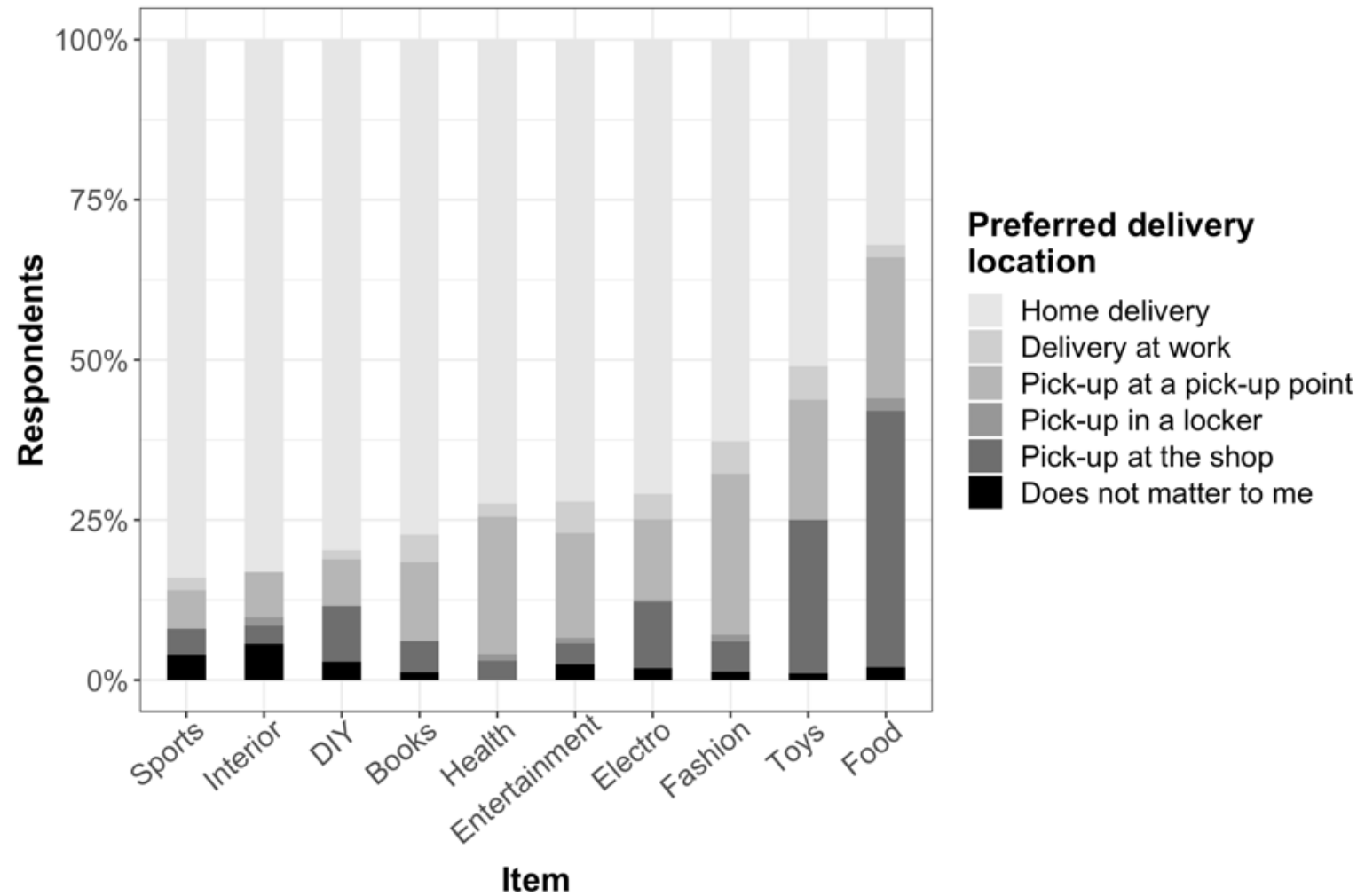
Frequency of online purchases
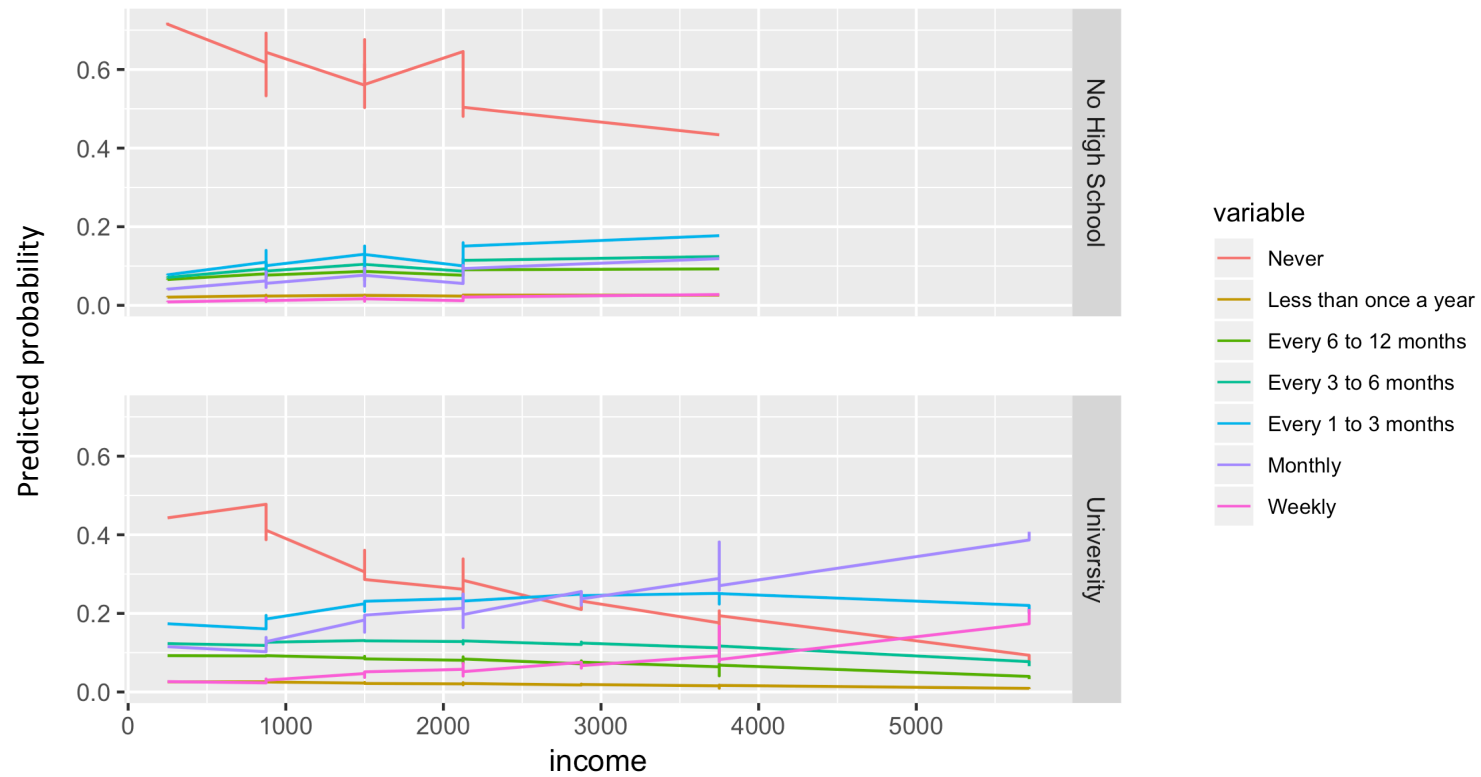
But where are these deliveries going to?

- FG is not only about frequencies, it is also about locations.
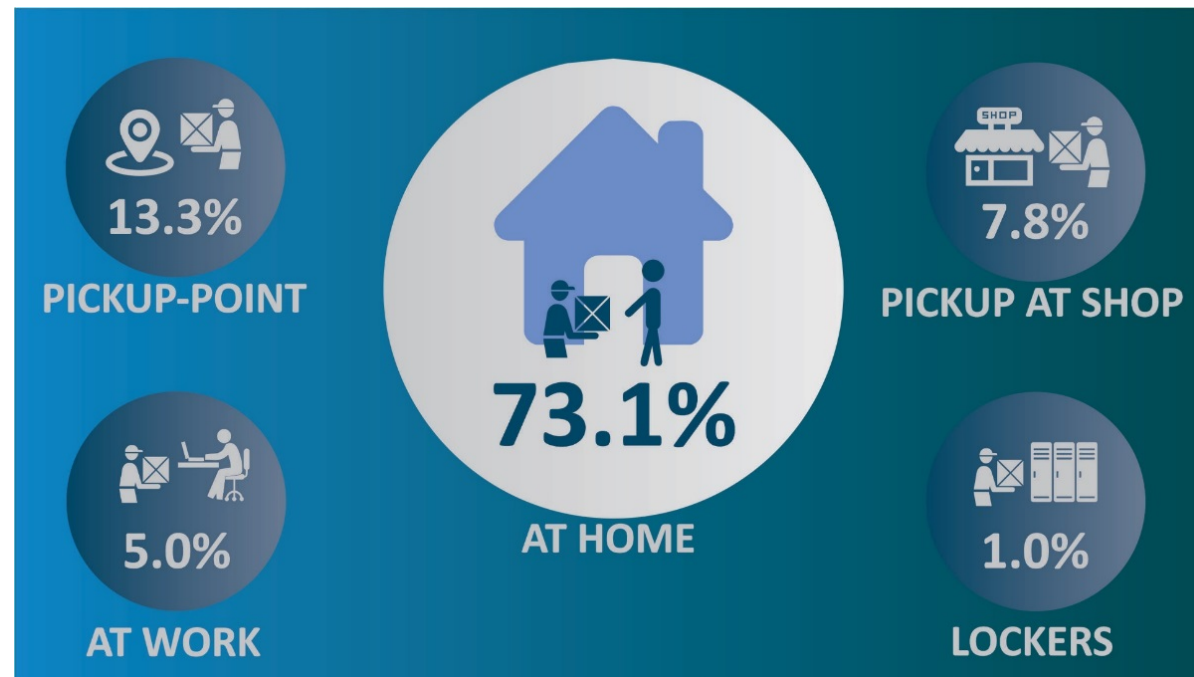
Source: Comeos (2016)

Delivery location

Delivery location

	Delivery at work	Pick-up point	Locker	Pick-up at shop	Does not matter
Health	-0.76	-0.02	0.73	-0.47	-14.26***
Interior	-15.23***	-1.35**	-0.66	-0.63	1.26**
Toys	0.29	0.21	-14.18***	1.93***	-0.24
Sports	-1.31	-1.37**	-14.78***	-0.38	0.32
DIY	-1.24	-1.14**	-14.38***	0.48	0.44
Food	0.05	0.81**	0.76	3.01***	1.40
Electro	-0.19	-0.46**	-0.89	0.75	-0.03
Female	0.12	0.46**	-0.02	-0.17	-1.38**
Age	-0.06***	-0.01	-0.07**	0.00	-0.03
Frequency	-0.01	0.00	0.04***	-0.01	-0.06
Constant	-0.57	-1.15***	-3.00***	-2.60	-1.74*
Observations	1,586				
Chi-Square	18113.04		Prob > Chi-Square		0.0000***

Note: *p<0.1; **p<0.05;***p<0.01

Conclusions

Considering the exploration:

- Socio-economic characterstics clearly impacting the frequency of online shopping.

- Type of goods strongly impacting location of deliveries.

Considering forcasting:

- Publicly available (aggregated) data income, age, gender & urbanization can (and will) be used to forecast B2C freight trips

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Frequency of online purchases