

STUDY OF INTERPRETATION AND DECISION MAKING AROUND MOBILITY BY DIFFERENT TYPOLOGIES OF PASSENGERS

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1. INTRODUCTION

The way of
making a
journey

Social Media

- Great Impact in various aspects of current lifestyle.
- Different habits have been transformed.

Social Activities

- People have a wide spatial distribution of Social Activities.
- Social Networks allow this fact and encourage to make longer journeys.

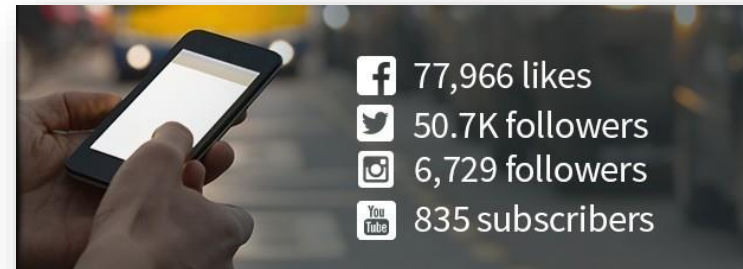
Current transport
Models

- Models are not equipped to deal with this new social structure.
- They are based on past travel behaviours, social demand and Social habits.

**ANALYSE HOW TRANSPORT OPERATORS UNDERSTAND
SOCIAL MEDIA AND HOW PASSENGERS USE THIS**

What was the main objective of this research?

It was to contribute to the exchange of different personal experiences and to assess the role of Social Media on travel behaviour for Passengers and Public Transport Operators.



Steps in this project:

- To develop a preliminary study (e.g. Literature review, Interviews, Meetings and phone calls, etc.) which was focused on the general objective.
- In reference to passengers: To highlight characteristics of passengers related to the use of Social Media, different roles, patterns when they make a journey using Social Media by Public Transport, etc.
- In reference to transport operators: To highlight the possible use of Social Media which Transport operators can integrated among their service, the main problems with this aspect, how are using it now, etc.
- All of this allows to establish different patterns/characteristics of journey, passengers, transport operators and future challenges.



2.- LITERATURE REVIEW

Three main findings, which support this project, are found in the literature:

- Diverse studies have demonstrated that the characteristics of people's Social Media, specifically Social Networks, has a crucial influence in Travel Behaviour (e.g. Picornell et al., 2015; Axhausen, 2005; Carrasco and Miller, 2009; etc.).
- A suitable service of transport and the participation in social activities allow people to interact with others and , in consequence, to access a great variety of resources (Social resources) (Van den Berg et al., 2013).
- Usually, transport and Social Media are linked due to the majority of current social activities are arranged through Social Media and derive in Social Travel Demand (de Abre e Silva et al., 2016).

People keep in touch with others who live in farther areas

To be updated of any event which take places in anywhere

To plan a journey by the way it fixes optimally to the requirements

Necessity of new models of mobility

Public Transport

SOCIAL MEDIA AND PUBLIC TRANSPORT

- ✓ Still little is known about this field.
- ✓ Traditionally, studies have been focused on socio-demographic and land use variables to explain individual (social) travel behaviour and these have not considered Social Media.
- ✓ Public Transport Operators consider Social Media like:
 - Source of data
 - Variable
 - Channel of communication

SOCIAL MEDIA IN DISRUPTIONS SITUATIONS

- ✓ These types of information have the potential to raise travel satisfaction by managing travel time expectations and allow passengers to adjust travel choices according to their preferences and needs.
- ✓ It has also been shown that the availability of information obtained from others has potential to raise the efficiency and utility drawn from travel choices, particularly in relation to non-recurrent travel behaviours
- ✓ This function is highlighted crucial in order to provide early warnings regarding unscheduled disruptions and information about safety and comfort-related aspects associated with travel alternatives.

3.- METHODOLOGY AND DATA SOURCE

METHODOLOGY

Qualitative Interviews

This kind of interview allows to put great emphasis on the formulation of initial research ideas. This aspect is crucial in this kind of research which is starting to be studied.

Main advantages:

- It allows to focus on the interviewees' own perspective which can highlight crucial aspects.
- Interviewer does not follow a schedule and encourage to go off at tangents.

Bryman, A., 2015. Social research methods. Oxford university press.

Thematic Analysis

To identify, analyse and report patterns (Themes) within data which have been gathered by the interviews.

Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), pp. 77-101.

Pilot Survey

It was developed in order to get more data about different aspects which need deeper research. It has 3 parts:

1. Regular use of Social Media.
2. The use of Social Media to travel by Public Transport.
3. Socioeconomic and demographic characteristics.

4.- RESULTS

RESULTS OF INTERVIEWS WITH PASSANGERS

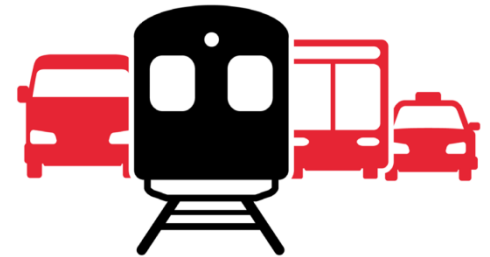
Block 1: The role of Social Media in regular journeys

- All the interviewees said Social Media represents a crucial role in their lifestyle.
- Kind of use of Social Media:
 - ✓ With «Social» objectives: informal communications, information about an events or contact with relatives, etc. (i.e. Facebook, WhatsApp, QQ, Instagram, etc.).
 - ✓ With «Professional» objectives: search job, on line CVs, opportunities in business, etc. (i.e. LinkedIn, E-mail, etc.).
- Social Media, specifically Social Networks, have a role of organizer of activities, mainly social activities. And Apps, Web of Transport Companies or Google Maps have a role more like planner of the journey.
- All interviewees said that Social Media is important in no regular journeys. They do not consider necessary to consult Social Media in order to make regular journeys.



Block 2: The role of Public Transport in regular journeys

- The majority of interviewees consider it very important in their lifestyle and the majority of them do not have own private car.
- However, the frequency of using Public Transport varies between the interviewees and depends on the motives. It is a crucial support in order to do social activities, but it loss relevance in their regular journeys to job or university.
- Although in general interviewees were satisfied. One third of them said that they had problems, specifically, in night services.



Block 3: Online and Social Media performance of Public Transport companies

- Interviewees said that in the websites of Public Transport companies, the information is updated and is very useful to plan the journey. However, they detected that these websites can be understood difficultly by people who are not familiarized with the city, the transport or even the language.
- Passengers usually ignore the presence of Public Transport companies in Social Media (e.g. in Facebook, YouTube, Google+, etc.) or the existence of transport companies' Apps.



Block 4: Behaviour before making a journey

- Regular steps to make a journey:
 - 1.- To get information about the event through the official Website of event or Social Media.
 - 2.- To organize the activity with friends through Social Media.
 - 3.- To use Google Maps in order to plan the journey.
 - 4.- Occasionally, to consult websites of Public Transport or Apps.
- Interviewees were specially worried about the punctuality. They would prefer the Taxi if the journey by Public Transport was long or challenging.



Block 5: Behaviour facing an occasional/unexpected event before to start the journey

- The most chosen options:
 - 1.- Ask people who are waiting for the same bus/train or staff. In less grade, to call company.
 - 2.- Use Google Maps to find a alternative route.
 - 3.- Call a Taxi.
- No interviewees would use Social Media or Apps to find information about the reasons. No useful information.

Arrivals From	Due	Plat	Status
Birmingham New St	14:17	-	Delayed
Birmingham New St	14:27	-	Cancelled
Watford Junction	14:33	-	Delayed
Wolverhampton	14:34	-	Delayed
Tring	14:38	-	Delayed
Chester	14:38	-	Delayed
Manchester Picc	14:42	-	Delayed
Milton Keynes Ctl	14:45	-	Cancelled
Birmingham New St	14:54	-	Cancelled

Page 2 of 2 14:49:46

Arrivals From Arrival Time

Block 6: Behaviour facing an occasional/unexpected event during the journey

- Same possible options which have been showed in the case of Block 5.
- Interviewees “whatsapp” their friends in order to alert about this situation and, in less grade, share information through Social Media about this experience.



Block 7: Behaviour facing an occasional/unexpected event after the journey

- The majority of interviewees would come back their home by Taxi or relative's/friend's car. Only two would use the same Public Transport service.
- All of them never would look for Social Media if the problem have been solved in this situation.



Block 8: Reaction through Social Media when they face with these situations

- All the interviewees said that they would tell their experience to their friends and family through Social Media and, if they know about someone who are going to the event, they would inform him too.
- One third of the all the interviewees said that they share openly their experience in Social Media. However, all of them would search in Social Media in order to get information about this adverse event.



Active Role

- Totally integrated Social Media in all their activities.
- Large networks and presence in many Social Media platforms.
- They share all kind of information in Social Media and look for information from others actively for their daily activities.
- Intense social life in their leisure time and show a big dependence of ICT and Social Media.

Passive Role

- Integration in a less grade Social Media in their activities.
- Presence in Social Media only in which they consider useful and important in order to keep in touch with friends or get relevant information.
- They do not share any information about themselves, only privately with close friends or relatives. However, they consider Social Media important in order to get information.

Communication
role

- Their only use of Social Media is to communicate with friends, relatives, partner, etc.
- They do not share or look for any information although they could know about the different functions of Social Media.

RESULTS OF INTERVIEWS WITH PUBLIC TRANSPORT OPERATORS

Block 1: The use of Social Media to share information about the service

- Operators use a wide range of Social Media (i.e. Google+, Twitter, Facebook, etc.). However, it depends on the kind of information to share.
 - 1.- To urgent information: Social Networks (i.e. Twitter, Facebook, Google+, etc.).
 - 2.- To no urgent information: Through any channel of Social Media.

Block 2: Type of information which is usually shared

- E.g.: Special offers about tickets, information about special services due to events new lines of bus, traffic information, news about their products and services, travel tips, practical information and inspiration, information about disruption, surveys, etc.
- The kind of demanded information depend on the typology of passengers and their socioeconomic and demographic characteristics. Also, it is necessary to highlight that each moment and situation needs a kind of specific information.

Block 3: Special offers in Social Media

- They provide the same offers in all their channels.



Block 4: The available channels to contact with Public Transport Companies

- They provide a customer service, mainly via Facebook and Twitter, with a timetable. However, other channels of communication (e.g. email, Apps, Google+, etc.) are available to contact with them too, but the answer time is not immediately.

Block 5: Disruption and events: Uses of Social Media

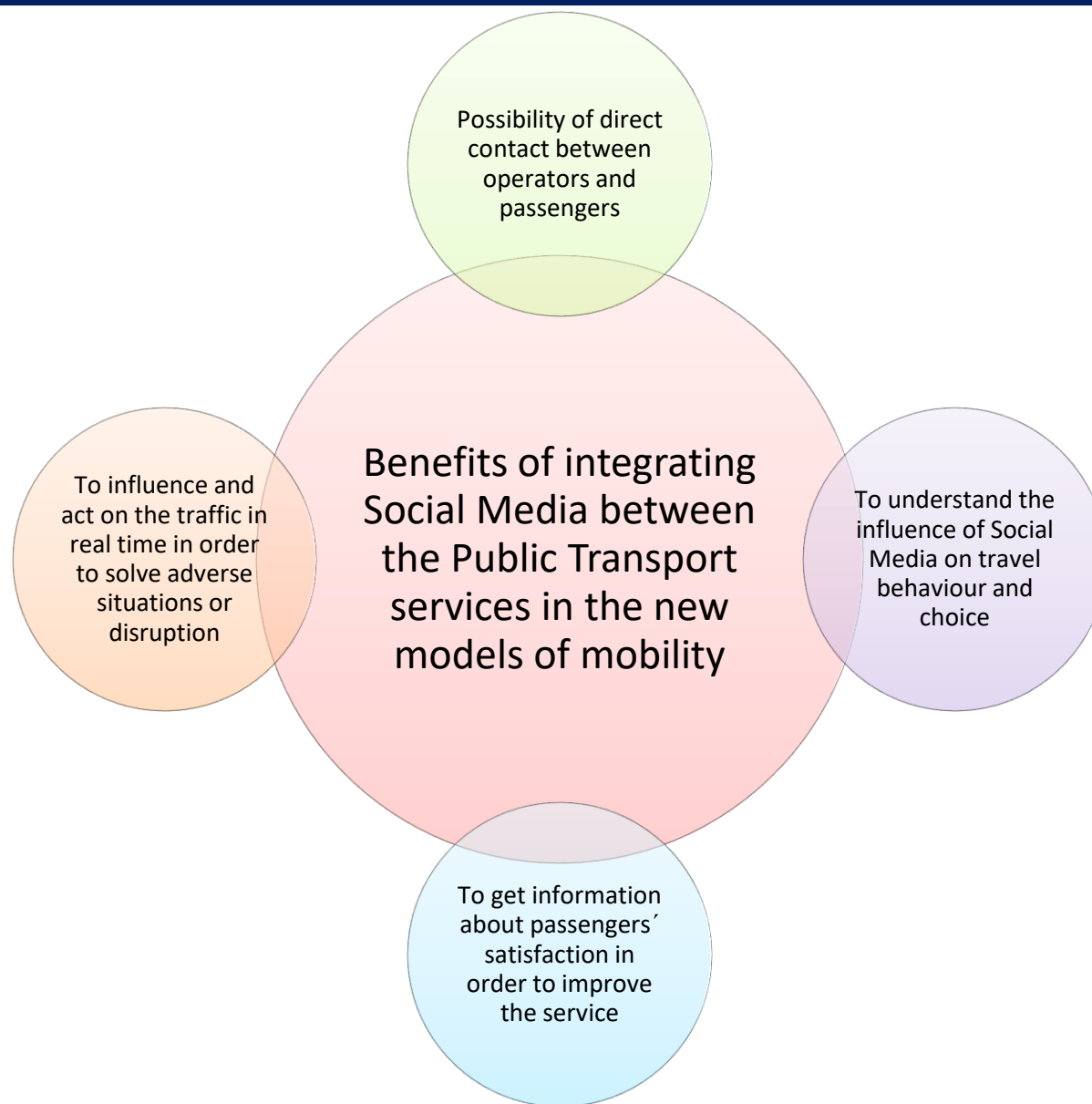
- They use the same Social Media that for regular information and consider that the information in this situations through Social Media, which represents a useful and direct channel of contact, can provide calm to the passengers.
- And all the event which could affect the service are showed in Social Media.

Block 6: Main problems to share information in Social Media

- To provide a quick customer service by Social Media.
- To know how many people have gotten the information which they have sent through Social Media.

Block 7: Social Media and the quality of Public Transport

- They consider Social Media in surveys about their performance, but it is not regular to use like a variable in studies about the service quality.



5.- CONCLUSIONS AND FUTURE RESEARCHES

- The brief literature and operators' interviews shows that Social Media has three main functions for Public Transport Operators:
 - a. **Source of data:** It represents a useful tool to extract different kind of data (e.g. opinions, patterns, behaviors, etc.).
 - b. **Variable:** In studies about service quality, to understand travel behavior, develop models of mobility, etc.
 - c. **Channel of communication:** Like a customer service.
- Passengers' interviews show Social Media is totally integrate in their lifestyle and Public Transport represents a crucial support in order to do social activities.
- Functions of Social Media according to passengers: **Social Networks to organize** the activities, and **the rest of Social Media** (i.e. Google Maps, PT Apps or Websites) **to plan** the journey.
- Role of people in Social Media were extracted:
 - a. **The active role:** They use Social Media in all their daily activities, show opinions and share information and experience with all the people in their networks.
 - b. **The passive role:** They use Social Media like a source of information, although, they never share information/opinions through it, only with close friends or relatives.
 - c. **The communication role:** They use Social Media like a way of communication, they do not look for information and do not share information or opinions.

- Passengers consider Social Media crucial in disruption events. It is supported by the answers in the pilot survey and shows that timetable, maps and information about disruptions are the most useful aspects in order to do a journey.
- According to the results of the interviews, literature review and pilot survey, people generally use Social Media to make a journey by Public Transport in order to do social activities. Therefore, operators must focus on this kind of activities to develop new models which support the new model of transport.
- Future researches:
 - a. To **improve the pilot survey** and achieve a better sample of passengers of Public Transport.
 - b. A further research about **the methodology to analyze Social Media** like source of data.
 - c. To develop more specifically **the role of people in Social Media.**
 - d. To research about why some **people do not see Social Media like a useful tool** to inform in adverse situations and how the service of **Public Transport can be improved** in this sense.
 - e. To identify more specifically **the problems of Public Transport operator to integrate Social Media** between their services and to propose solutions to them.

6.- BIBLIOGRAPHIC REFERENCES

- Arentze, T. and Timmermans, H., 2008. Social networks, social interactions, and activity-travel behaviour: a framework for microsimulation. *Environment and Planning B: Planning and Design*, 35(6), pp. 1012-1027.
- Aronson, J., 1995. A pragmatic view of thematic analysis. *The qualitative report*, 2(1), pp. 1-3.
- Asur, S. and Huberman, B., 2010. Predicting the future with social media. In *Web Intelligence and Intelligent Agent Technology (WI-IAT)*, 2010 IEEE/WIC/ACM International Conference on, 1, pp. 492-499.
- Austin, J., 2010. Use of social networking to promote PT and sustainable travel. *Local Transport Today, ITS Review*
- Axhausen, K., 2005. Social networks and travel: some hypotheses. Donaghy, K.P., Poppelreuter, S., Rudinger, G. (eds.) *Social Aspects of Sustainable Transatlantic Perspective*, pp. 90-108. Ashgate, Aldershot.
- Axhausen, K., 2007. Activity spaces, biographies, social networks and their welfare gains and externalities: some hypotheses and empirical results. *Mobilities*, 2(1), pp. 15-36.
- Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), pp. 77-101.
- Bregman, S., 2012. TCRP Synthesis 99: Uses of Social Media in Public Transportation, Washington, DC.
- Bryman, A., 2015. *Social research methods*. Oxford university press.
- Burke, M., Kraut, R., and Marlow, C. (2011). Social capital on Facebook: Differentiating uses and users. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 571-580). ACM.
- Carrasco, J. and Cid-Aguayo, B., 2012. Network capital, social networks, and travel: an empirical illustration from Concepción, Chile. *Environment and Planning A*, 44(5), pp. 1066-1084.
- Carrasco, J. and Miller, E., 2006. Exploring the propensity to perform social activities: a social networks approach. *Transportation*, 33(5), pp. 463-480.
- Carrasco, J. and Miller, E., 2009. The social dimension in action: A multilevel, personal networks model of social activity frequency between individuals. *Transportation Research Part A: Policy and Practice*, 43(1), pp. 90-104.
- Carrasco, J., Hogan, B., Wellman, B. and Miller, E., 2008. Collecting social network data to study social activity-travel behaviour: an egocentric approach. *Environment and Planning B: Planning and Design*, 35(6), pp. 961-980.
- Cassell, C. and Symon, G., 2004. *Essential guide to qualitative methods in organizational research*. Sage.
- Chan, R. and Schofer, J., 2014. The role of social media in communicating transit disruptions. Washington, DC: Transportation Research Board (TRB) – 93rd Annual Meeting.
- Chorus, C.G., Arentze, T.A., Timmermans, H.J., Molin, E.J. and Van Wee, B., 2007. Passengers' need for information in traffic and transit: Results from a web survey. *Journal of Intelligent Transportation Systems*, 11(2), pp. 57-67.
- De Abreu e Silva, J., de Oña, J. and Gasparovic, S., (2016). The relation between travel behaviour, ICT usage and social networks. The design of a web based survey. In *3rd Conference on Sustainable Urban Mobility*, Volos, Greece. *Transportation Research Procedia*
- Díez-Mesa, F., de Oña, R. and de Oña, J., (Under Review). The effect of Service attributes' hierarchy on passengers' segmentation. A light rail transit service case study. In *XII Conference on Transport Engineering, CIT 2016*, Valencia, Spain. *Transport Research Procedia*.
- Dugundji, E. and Gulyás, L., 2008. Sociodynamic discrete choice on networks in space: impacts of agent heterogeneity on emergent outcomes. *Environment and Planning B: Planning and Design*, 35(6), pp. 1028-1054.
- Efthymiou, D. and Antoniou, C., 2012. Use of Social Media for Transport Data Collection. *Procedia-Social and Behavioral Science*, Transport Research Arena 2012, 48, pp. 775-785.
- Frei, A. and Axhausen, K., 2007. Size and Structure of social network geographies. *Arbeitsberichte Verkehrs-und Raumplanung*, vol. 439, IVT, ETH Zürich, Zürich.

- Gal-Tzur, A., Grant-Muller, S., Minkov, E. and Nocera, S., 2014a. The impact of social media usage on transport policy: Issues, challenges and recommendations. *Procedica-Social and Behavioral Sciences, Transportation: Can we do more with less resources? – 16th Meeting of the Euro Working Group on Transportation – Porto*, 111, pp. 937-946.
- Gal-Tzur, A., Grant-Muller, S., Kuflik, T., Minkov, E., Nocera, S. and Shoor, I., 2014. The potential of social media in delivering transport policy goals. *Transport Policy*, 32, pp. 115-123.
- Kaplan, A. and Haenlein, M., 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), pp. 59-68.
- Kowald, M. and Axhausen, K., 2012. Focussing on connected personal networks: selected results from a snowball sample. *Environment and Planning A*, 44(5), pp. 1085-1100.
- Kroesen, Maarten, and Susan Handy. (2015). Is the Rise of the E-society Responsible for the Decline in Car Use Among Young Adults? Results from the Netherlands. *Transportation Research Board 94th Annual Meeting*. No. 15-2626.
- Kwak, H., Lee, C., Park, H., and Moon, S. (2010). What is Twitter, a Social Network or a news media?. In *Proceedings of the 19th international conference on World wide web* (pp. 591-600). ACM.
- Larsen, J., Urry, J. and Axhausen, K., 2005. *Social Networks and Future Mobilities*. Report to the Horizons Programme of the Department for Transport, Department of Sociology, University of Lancaster and IVT, ETH Zürich, Lancaster and Zürich.
- Nunes, A.A., Galvao, T., e Cunha, J.F. and Pitt, J.V., 2011. Using social networks for exchanging valuable real time PT Information among travellers. In *2011 IEEE 13th Conference on Commerce and Enterprise Computing*, pp. 365-370.
- Ohnmacht, T., 2006. *Mapping Social Networks in Time and Space*, Arbeitsberichte Verkehr und Raumplanung, vol 341. IVT, EHT Zürich.
- Páez, A. and Scott, D., 2007. Social influence on travel behaviour: a simulation example of the decision to telecommute. *Environment and Planning A*, 39, pp. 647-665.
- Pender, B., Currie, G., Delbosc, A. and Shiwakoti, N., 2014. Social Media use during unplanned transit network disruptions: A review of literature. *Transport Reviews*, 34(4), pp. 501-521.
- Picornell, M., Ruiz, T., Lenormand, M., Ramasco, J.J., Dubernet, T. and Frías-Martínez, E., 2015. Exploring the potential of phone call data to characterize the relationship between social network and travel behaviour. *Transportation*, 42, pp. 647-668.
- Rosenbloom, S., 2001. Sustainable and automobility among the elderly: and international assessment. *Transportation*, 28(4), pp. 375-408.
- Selwyn, N., 2008. The use of ICT in education and the promotion of social inclusion: a critical perspective from the UK. *Educacao & Sociedade*, 29(104), pp. 815-850.
- Silvis, J., Niemeier, D. and D'Souza, R., 2006. Social network and travel behaviour: report from an integrated travel diary. In: *Proceedings of the 11th International Conference on Travel Behaviour Research*, Lucerne.
- Vaismoradi, M., Turunen, H. and Bondas, T., 2013. Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & health sciences*, 15(3), pp. 398-405.
- Van den Berg, P., Arentze, T. and Timmermans, H., 2009. Size and composition of ego-centered social networks and their effect on geographical distance and contact frequency. In: *Proceedings of the 88th Annual Meeting of the Transportation Research Board*, Washintong, DC.
- Van den Berg, P., Arentze, T. and Timmermans, H., 2011. Estimating social travel demand of senior citizens in the Netherlands. *Journal of Transport Geography*, 19(2), pp. 323-331.
- Van den Berg, P., Arentze, T. and Timmermans, H., 2013. A path analysis of social networks, telecommunication and social activity-travel patterns. *Transportation Research Part C*, 26, pp. 256-268.

THANK YOU FOR YOUR ATTENTION

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