1 July 2016 | Session 7: The potential of open data and big data for territorial information

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anding Committee on Regional and Urban Statistic

designed to respond to the PT07 – Mainstreaming Gender Equality and Promoting Work Life Balance (2nd Open Call - Support the development of tools and methods to promote gender equality at the local level) under the European Economic Area Financial Mechanism (EEA GRANTS)

Conference 2016



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Exploring space-time mobility through a telegeomonitoring approach

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OUTLINE

About the project | why is it important? goals and expectations About the methodology | how do we address the problem?

Analysis & results | space-time proxies

From physical to digital spaces | synthesis & conclusions



why is it important?

Gender awareness of mobility/travel behaviours: implications for city planning and transport planning.

Wider understanding of gender differences in daily trips associated with gendered divisions of labour.

Wider understanding of time uses between paid employment and unpaid work (in the home, care, personal, leisure and related) in urban space.

New methodology VGI (Volunteered Geographic Information) using smartphones, trackers, software, GIS and the Web.

why is it important?

According to HETUS/Harmonised European Time Use Survey 1998-02 (EUROSTAT, 2008) and the Statistics in Focus (2006), in the EU the time-use patterns show significant differences between men and women and between countries.

Household activities	Women	Men
Spain	4.5h /day	1.4h /day
Italy	5.2h /day	1.3h /day
UK	4.1h/day	2.2h /day

Daily Telegraph, 23 February 2016. What superpower do you wish to had? Melinda Gates: "**More time**". Recognizing, redistributing, and reducing the **unpaid work** that women do.

why is it important?



why is it important?

In Portugal there is a gap (Queirós & Costa, 2012): there are no systematic studies on mobility and the use of time with a territorial/local demonstration...

The National Statistics Institute (INE) conducts a national survey without a stabilized frequency (1999, 2016?...), based on questionnaires (sociodemographic) and diaries (users are asked to annotate their tracks with the activities they have done each 10 minutes, for week and weekend days) Employed population – domestic work and care work

I.12- População empregada – trabalhos domésticos e cuidados à família – dia útil



Source: INE, Inquérito à Ocupação do Tempo, 1999

why is it important?



Workplace in relation to place of residence Grande Lisboa



M F

Different mobilities...

Source: INE, Census 2001, 2011





Fortugal (Mainland). Transport mode for journey purpose (household-working/place-school)

Transport mode for journey purpose (household-working/place-school)

goals and expectations

- Complying with objectives Europe 2020 (smart, sustainable and inclusive growth), Community directives and regulations, Portuguese Constitution, Portuguese laws
- Combining smart cities and big data analysis with qualitative research
- Developing tools and methods for promoting gender equality at the local level (balancing professional/private life)

THEORETICAL AND METODOLOGICAL

(accurate knowledge about the differences in daily trips, use of time, and implications for the labour market; low cost methodology to be replicated in similar studies)

COOPERATION

(fostering the exchange of knowledge; partnership for internationalization; synergies universitybusiness-authorities)

The nature of GenMob goals

EDUCATIONAL

(produce outputs for wide dissemination – e.g. dashboard, video)

POLITICAL

(identify gaps in national and local policies and propose measures to overcome them)

how do we address the problem?

Why not do we use "XXI century technology" / mobile operating systems?

GenMob project fills this gap tracking data using GPS, using a reliable, original and innovative methodology:

- makes use of smartphones with GPS and App's available at no market charge (Moves)
- enables the implementation of the data collected by its application to a digital platform for geovisualization
- the project recipients (participants(volunteers) are co-producers of information (VGI)





how do we address the problem?

Traditional Surveys/Diaries	GenMob Approach
Based on surveyed memory	Real – Time Data acquisition
Subjectivity – Depends on each surveyed	Accurate and objective
person's perception of the trip/activity	Data Georeferenced
Census track data: only for home-work trips or home-school trips for each parish to home parish or municipality destination	Detailed Spatial Statistics
	Low cost for data acquisition
	Faster data manipulation
	VGI – bottom-up, open process, data co- creation; positive emotional value to users, (satisfaction, social connection and ethics)

how do we address the problem?



Tomei conhecimento do fim a que os meus dados pessoais se destinam, colaborarei voluntariamente e dou autorização para o estudo e tratamento dos meus dados.

how do we address the problem?



how do we address the problem?





- 1....

MONTIJO 1st Visit: 05 /02 / 2016

2nd Visit: 15 / 02 / 016 3rd Visit: Visita:17 / 02 / 2016 Total: 157km 6 Participantes

OEIRAS 1ª Visita: 10 Fevereiro 2016 2ª Visita: N.D Total:40km N.D. Participantes

SETUBAL

1st Visit: 12 / 02 / 2016 2nd Visit: 02 / 03 / 2016 3rd Visit: 03 / 03 / 2016 4th Visit: 10 / 03 / 2016 Total:336km 17 Participantes

SEIXAL 1st Visit: 17 / 02 / 2016 2ª Visita:N:D Total:23km N.D. Participantes

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2nd Visit: N.D Total: N.D km N.D. Participantes

TOTAL

Total: 2353km 131 Participants (+) Study Pilot



GenMob VGI (participants / volunteers /citizens actors/ people as sensors)

(Jan – May 2016)

Space-time proxies

A sample from Lisbon Metropolitan Area: Alcochete, Montijo and Lisbon

Percentage of Stops

	Women	Men
Alcochete	72%	28%
Barreiro	80%	20%
Lisboa	70%	39%

Nr of Participants

	Women	Men	Total
Alcochete	9	4	13
Barreiro	14	4	18
Lisboa	12	8	20
Total	35	16	51

Avg Distances, Nr of paths, Paths executed from A to B

	Avg Distance (km)	N° Path	Path Length (avg)
Men	21,55	5,25	4104,91
Women	22,41	6,18	3628,32





Avg time spent (hours) by sex for the following motives:



Space-time proxies

Avg time (hours) spent on each activity

	Home	Paid Work	Leisure	Shopping & Services	Care Work	Sports	Meals (out)	Volunteering
Men	13,75	6,81	1,44	0,52	0,19	1,99	0,82	0,00
Alcochete	13,92	6,63	0,00	0,57	0,00	0,00	0,78	0,00
Barreiro	13,24	6,98	0,00	0,52	0,07	1,99	0,00	0,00
Lisboa	13,93	6,82	1,44	0,46	0,24	0,00	0,84	0,00
Women	13,32	6,93	0,58	0,58	0,41	1,14	0,74	1,49
Alcochete	13,24	6,85	0,38	0,47	1,04	0,76	0,91	0,00
Barreiro	13,09	7,23	0,29	0,69	0,46	0,83	0,64	1,49
Lisboa	13,64	6,67	1,28	0,55	0,07	1,84	0,00	0,00

GENMOB Source: GenMob, 2016

Space-time proxies

ALCOCHETE

High Frequency

Male 7 pm t<u>o 0 am</u>

Low Frequency

Es4, HERE, DeLorme, NapmyIndia, © OpenStreelWap contributors, and the OK



Space-time proxies



Space-time proxies



Space-time proxies



FROM PHYSICAL TO DIGITAL SPACES

Synthesis & conclusions

- Place-based indicators
- Bottom-up methodology and synchronic data
- VGI, turning people into sensors (the willingness of women and men to contribute to data collection, sharing and ... to causes that matter)
- BIG... messy data (real time insights)
- Sensors (measuring, evaluating) coming together with infrastructure/machines functioning with the cloud (IoT – Internet of Things)
- Smartphones/trackers as mobile sensors for enhancing public policies

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FROM PHYSICAL TO DIGITAL SPACES

Synthesis & conclusions

Men

Do less activities than women Spend less time traveling... but travel longer distances Spend more time in leisure activities

Women

Do more daily activities than men Use more the car for traveling than men Spend more time in care work and travelling (multiple trip chain) Spend more time in shopping activities Walk more, but slower (shopping and caring)

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FROM PHYSICAL TO DIGITAL SPACES

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Thanks for your attention!

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http://genmob.ceg.ulisboa.pt/