RiDER

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

PRACTICAL GUIDE

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

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PRACTICAL GUIDE – CONTENT

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LEARNING MATERIALS

PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

1. INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO (DAVIDE LEONE)

With the support of the Erasmus+ Programme

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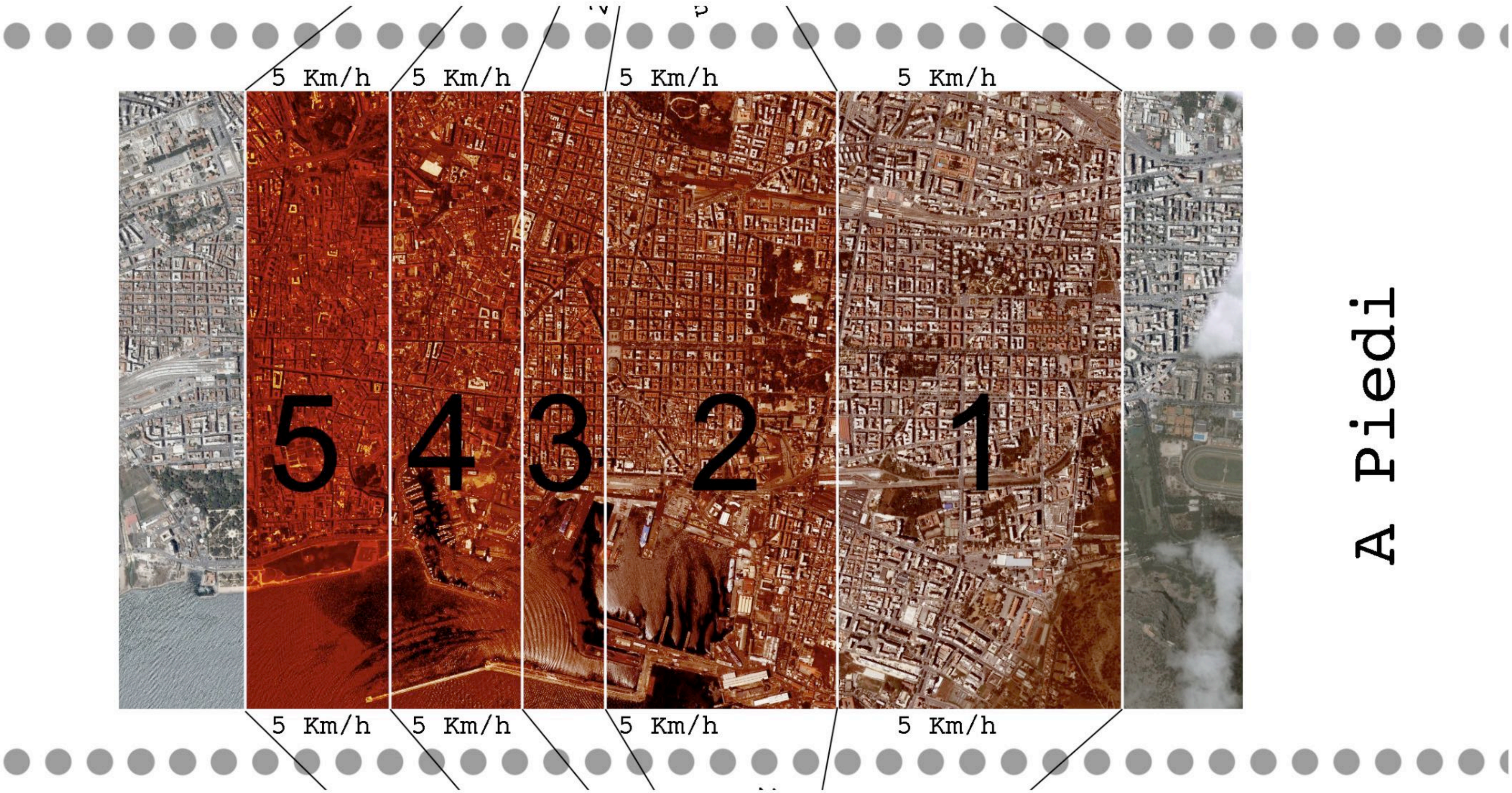
INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

Le infrastrutture come tubi: il movimento come flusso Bike vs Car



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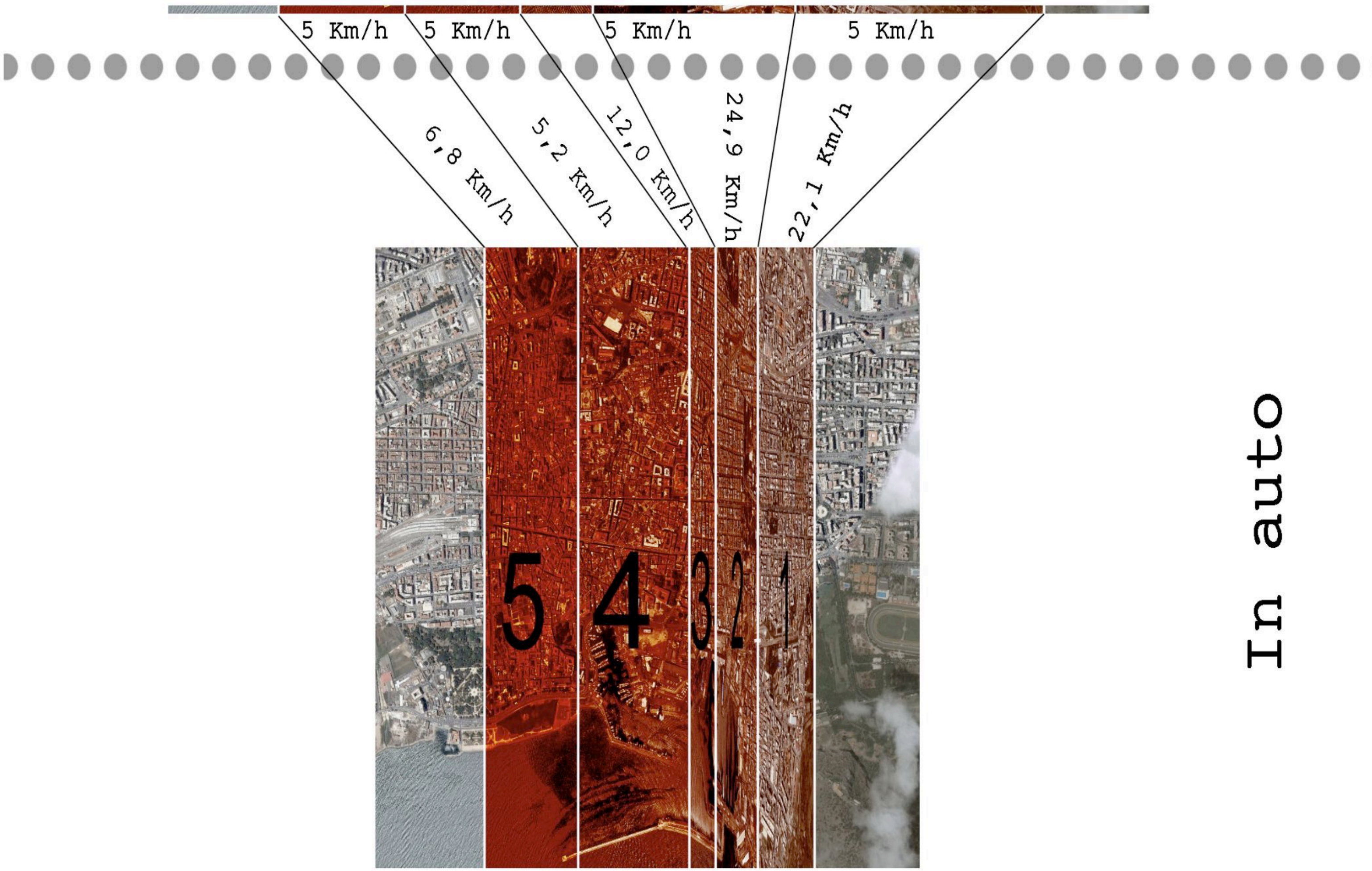

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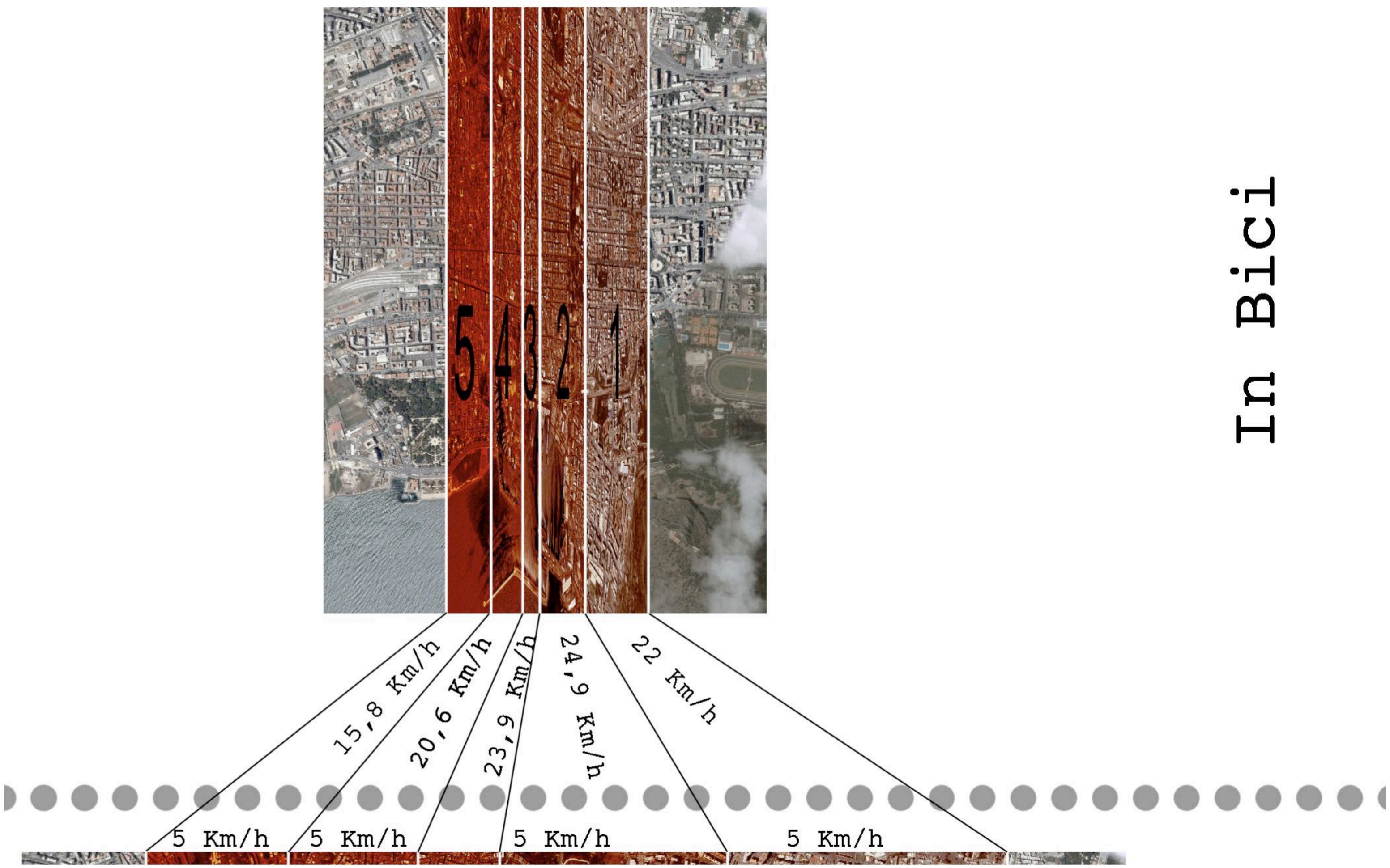
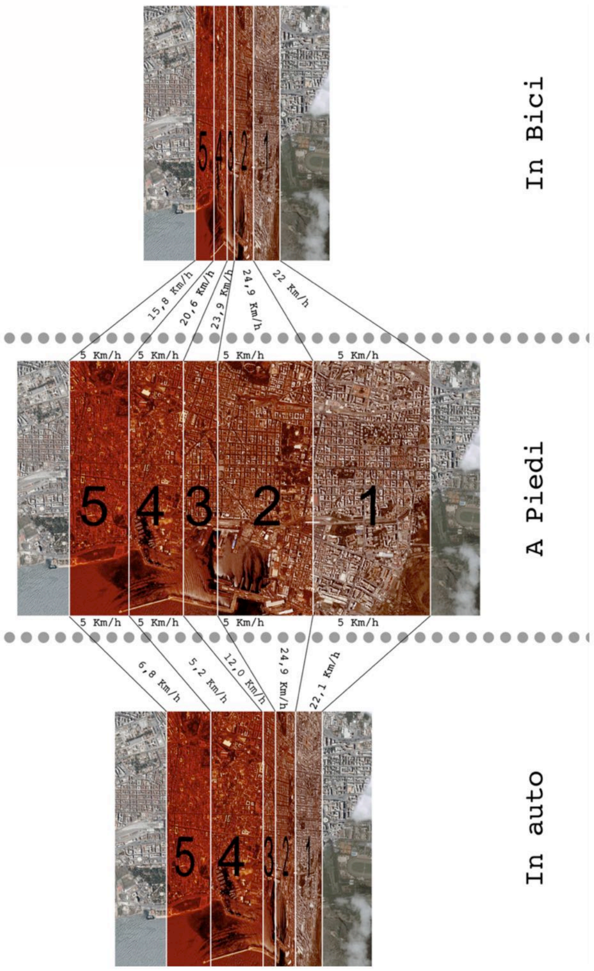


INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

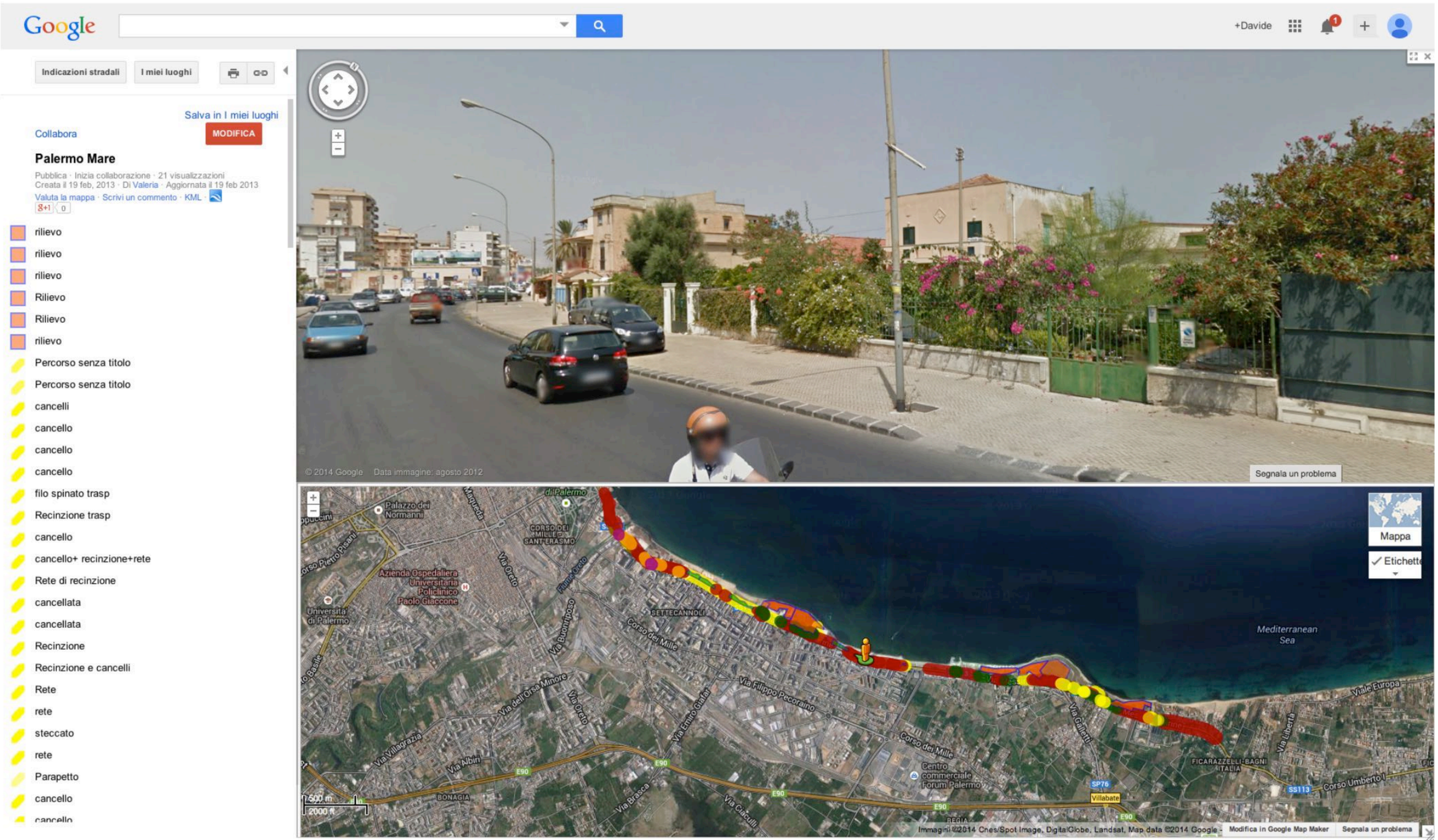
Le infrastrutture come tubi: il movimento come flusso Bike vs Car

- La mappa è stata elaborata per la settimana europea della mobilità
- Questo esempio è una manifestazione di un approccio top/down
- La mappa aveva la funzione di argomentare il pensiero dell’autore riguardo alla mobilità



INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

Le infrastrutture come palchi: la transvisibilità del mare



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LEARNING MATERIALS

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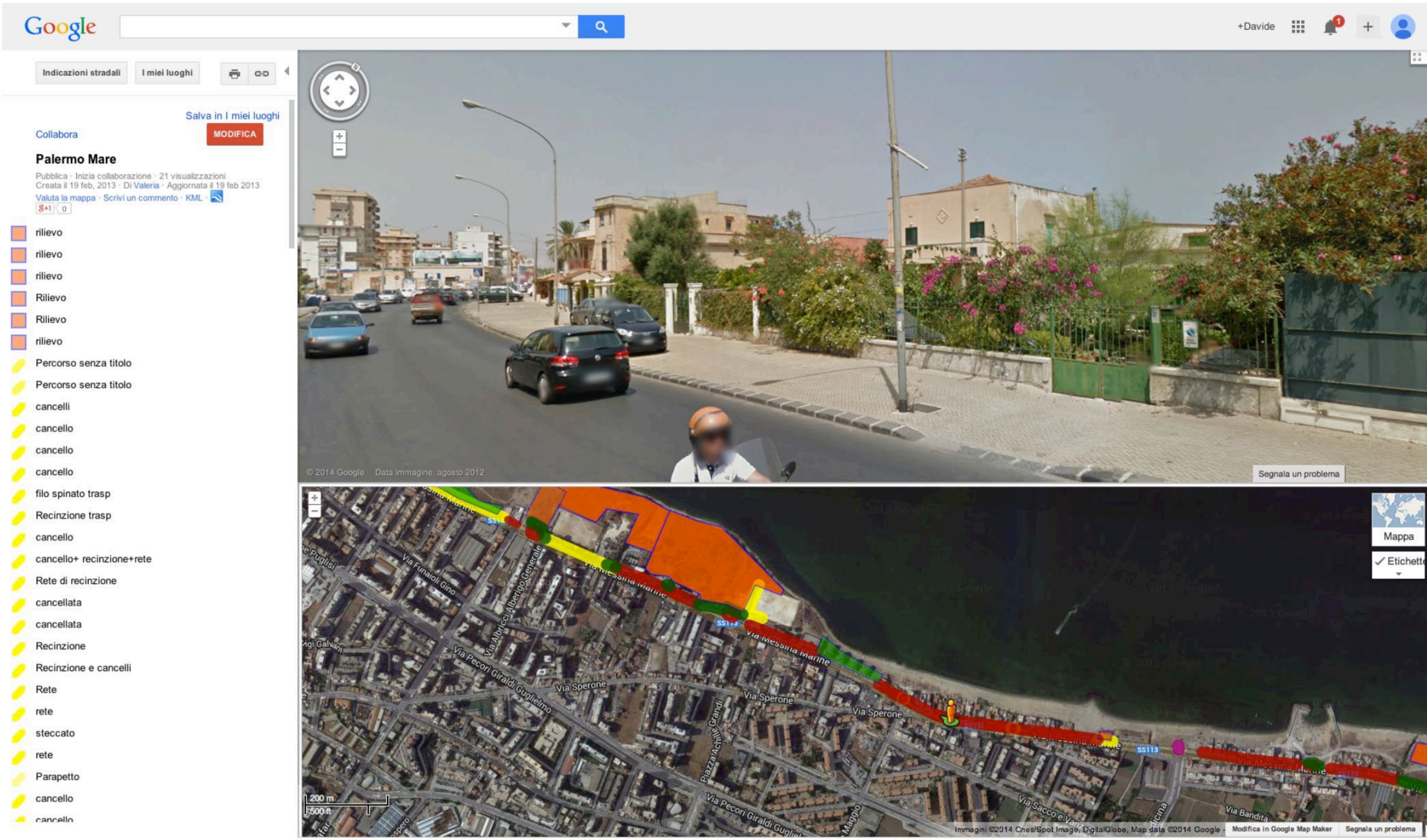

LEARNING MATERIALS

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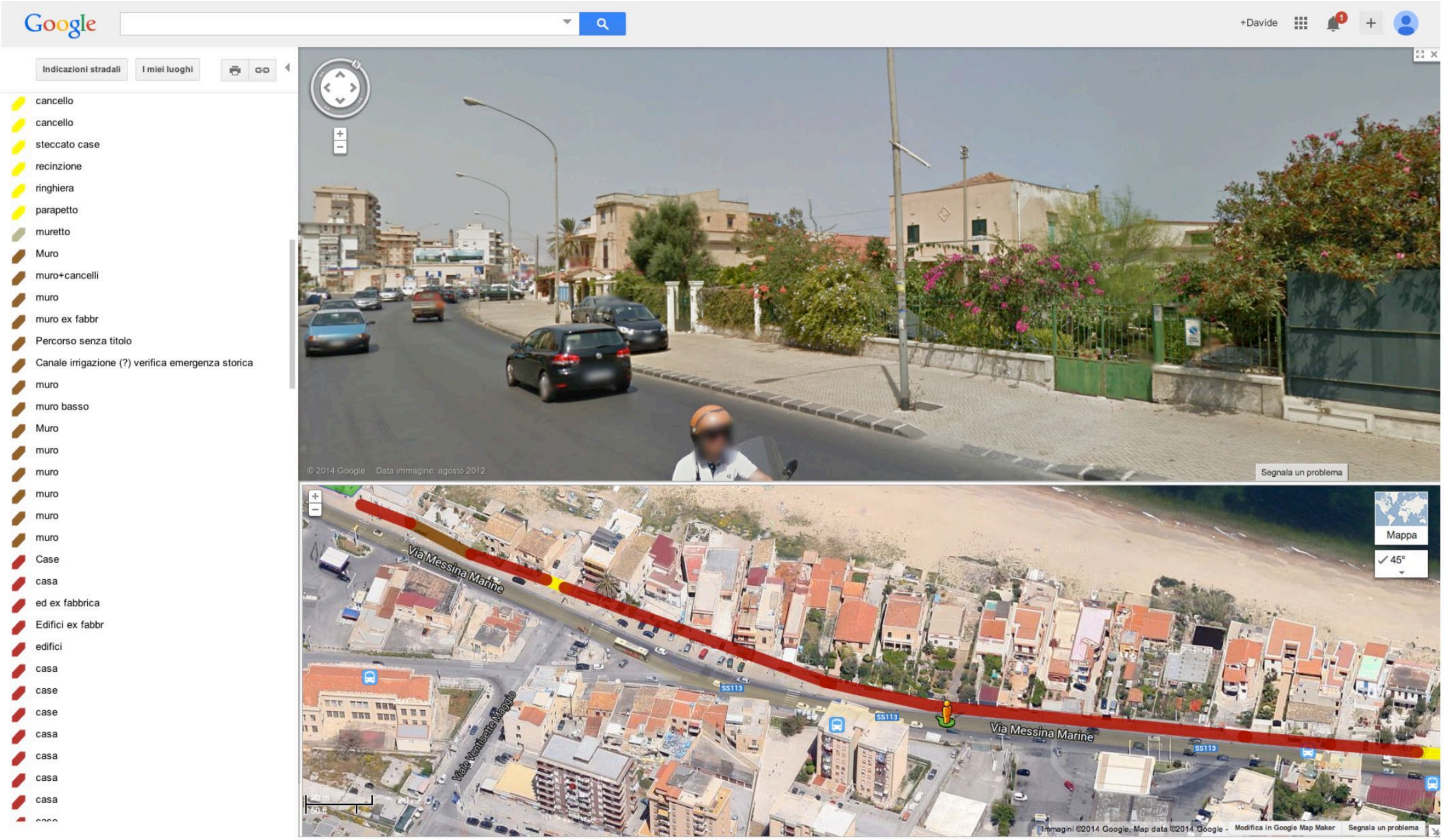

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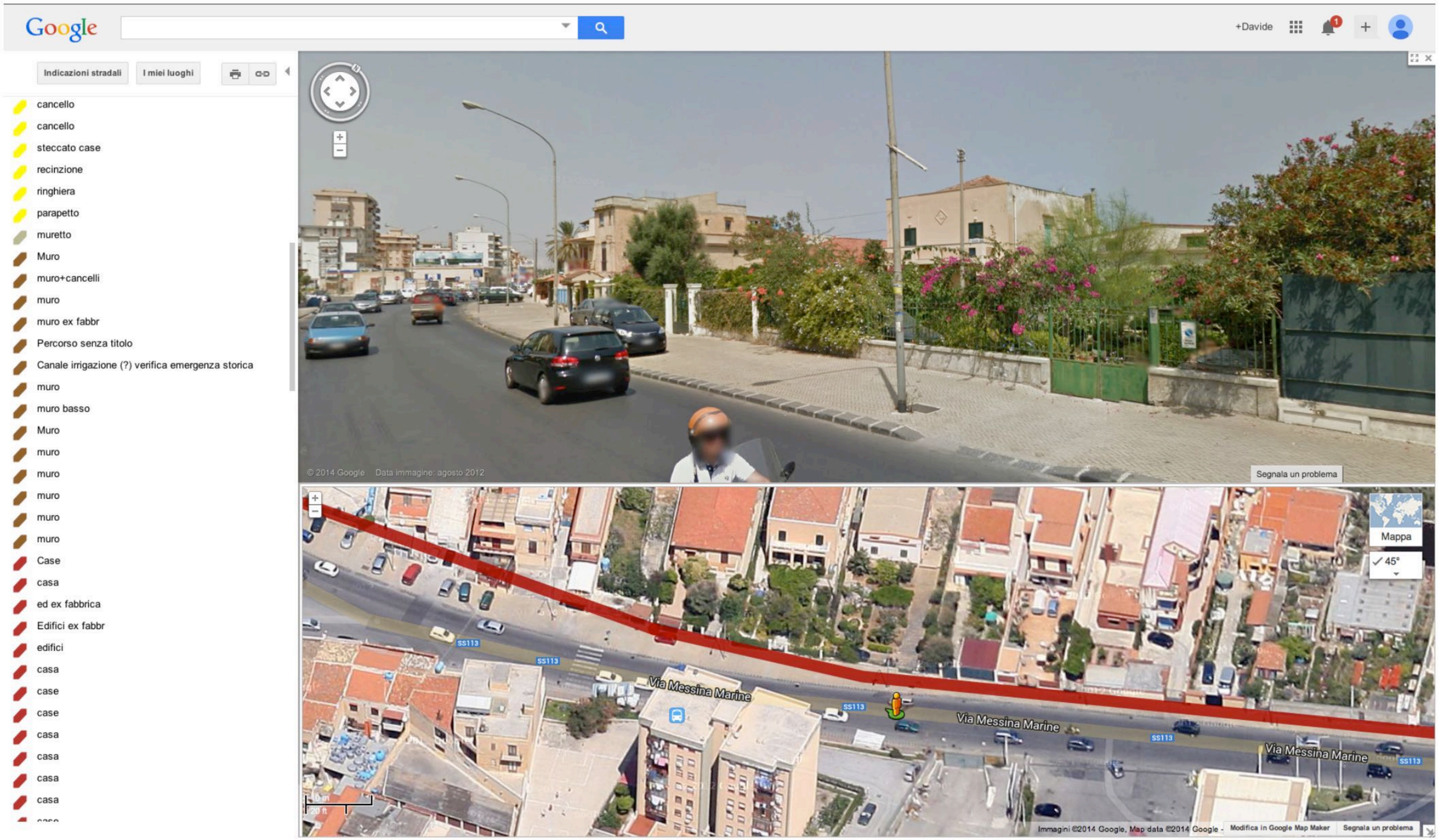

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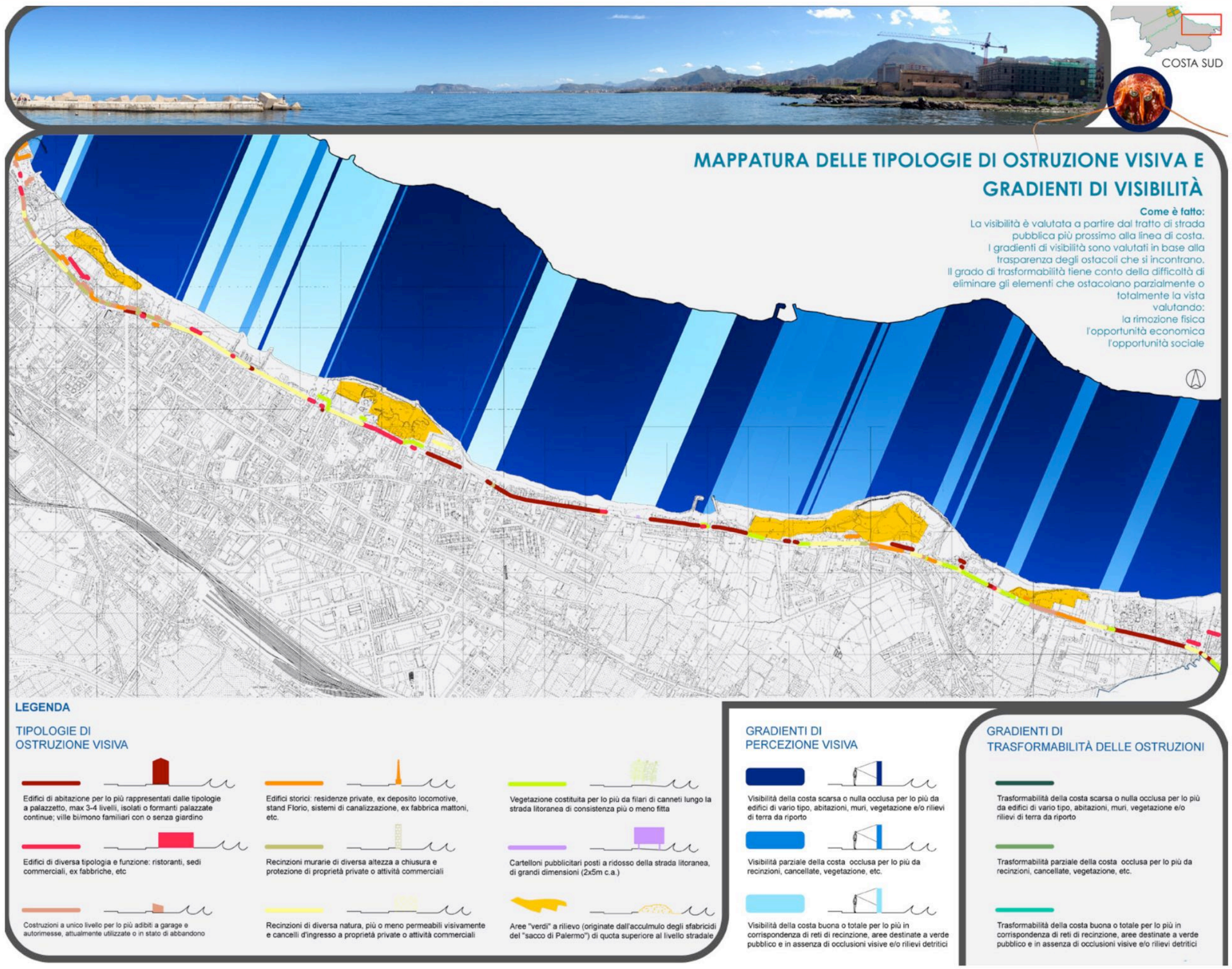

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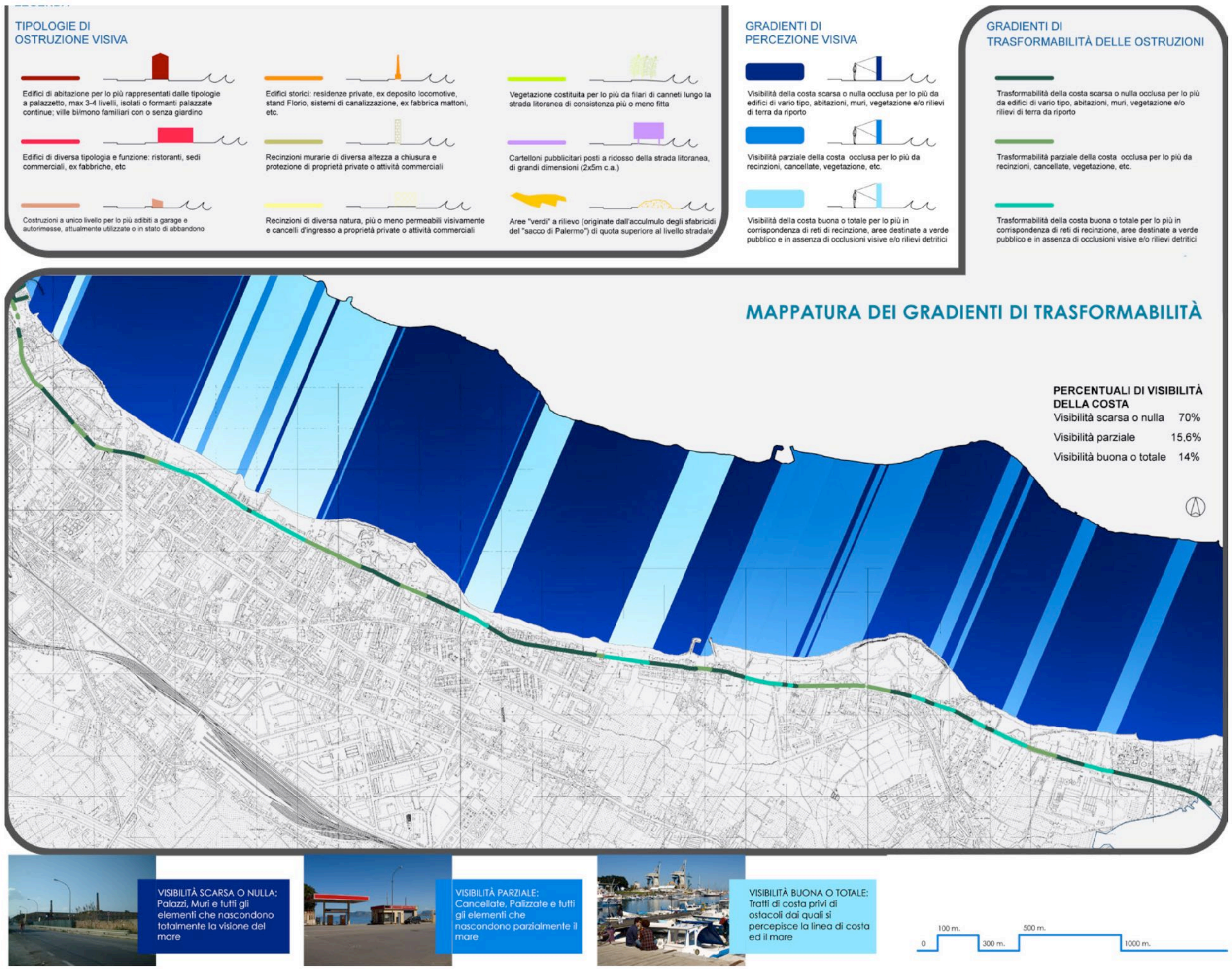

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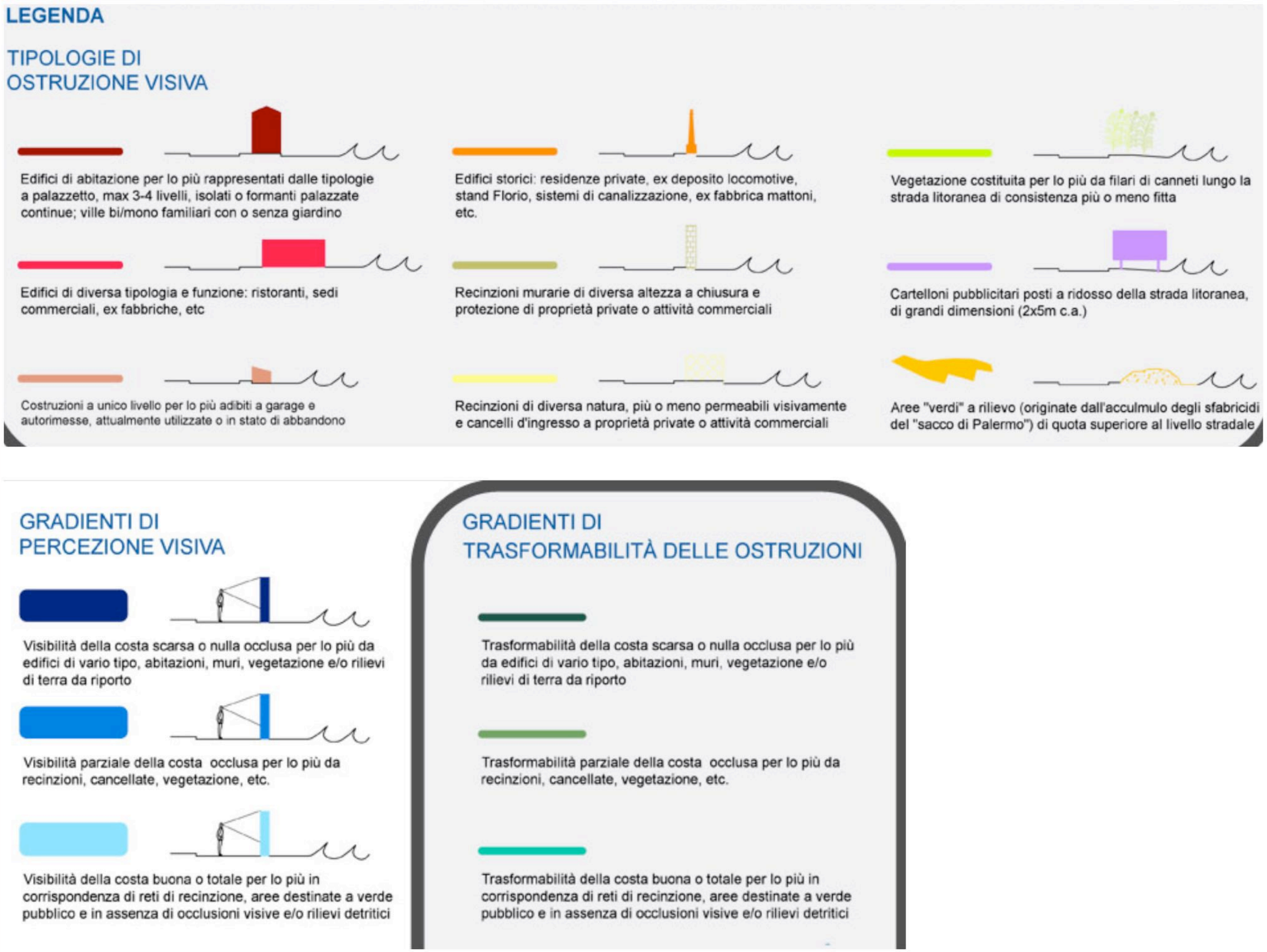
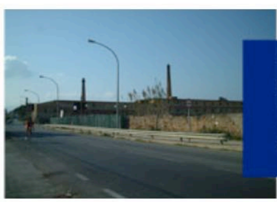


INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

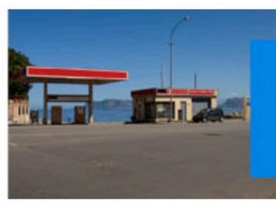
Le strade come generatrici di paesaggio

PERCENTUALI DI VISIBILITÀ DELLA COSTA

Visibilità scarsa o nulla	70%
Visibilità parziale	15,6%
Visibilità buona o totale	14%



VISIBILITÀ SCARSA O NULLA:
Palazzi, Muri e tutti gli elementi che nascondono totalmente la visione del mare



VISIBILITÀ PARZIALE:
Cancellate, Palizzate e tutti gli elementi che nascondono parzialmente il mare

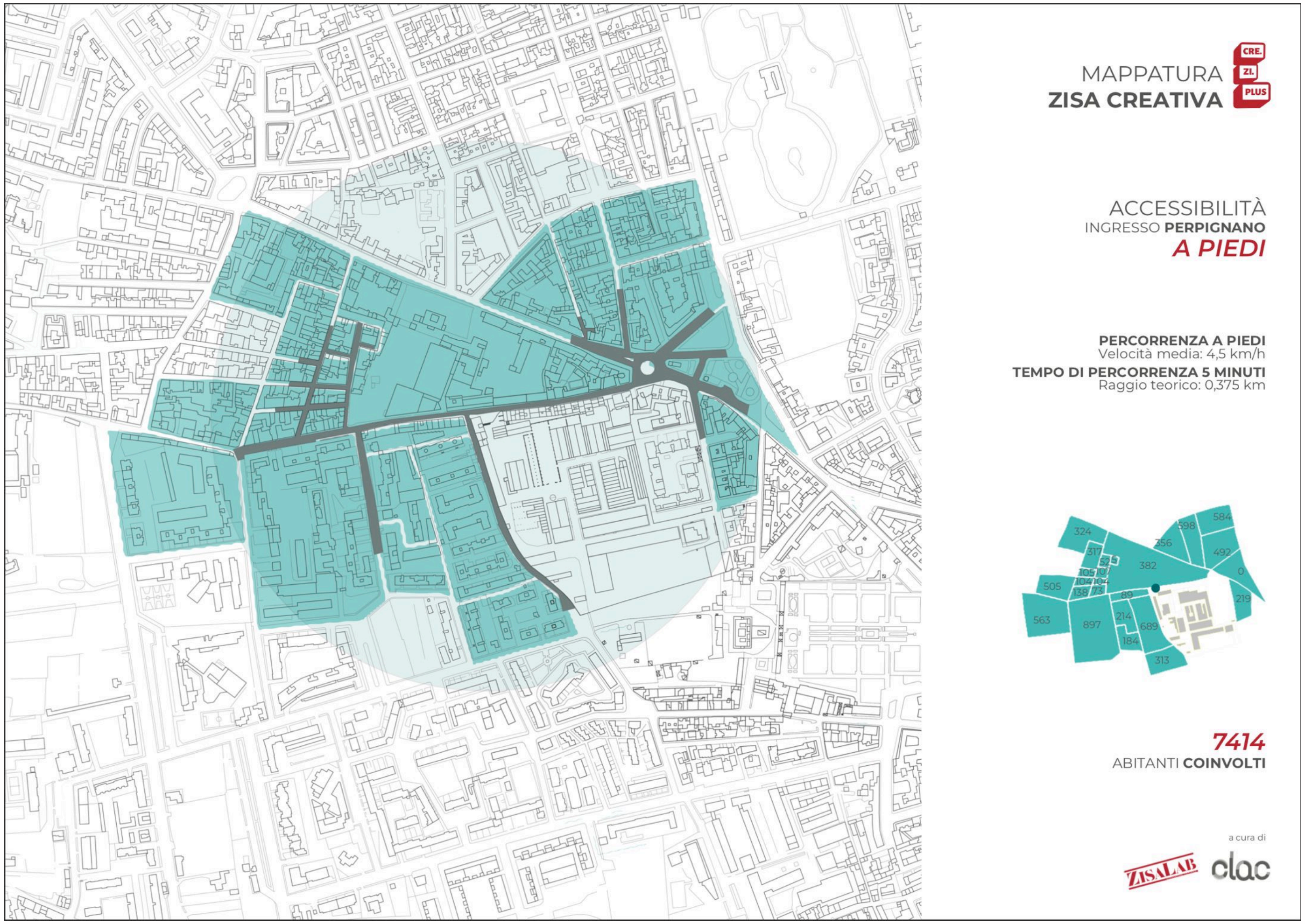
VISIBILITÀ BUONA O TOTALE:
Tratti di costa privi di ostacoli dai quali si percepisce la linea di costa ed il mare

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

Mappatura ZISA Creativa

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

Mappatura ZISA Creativa



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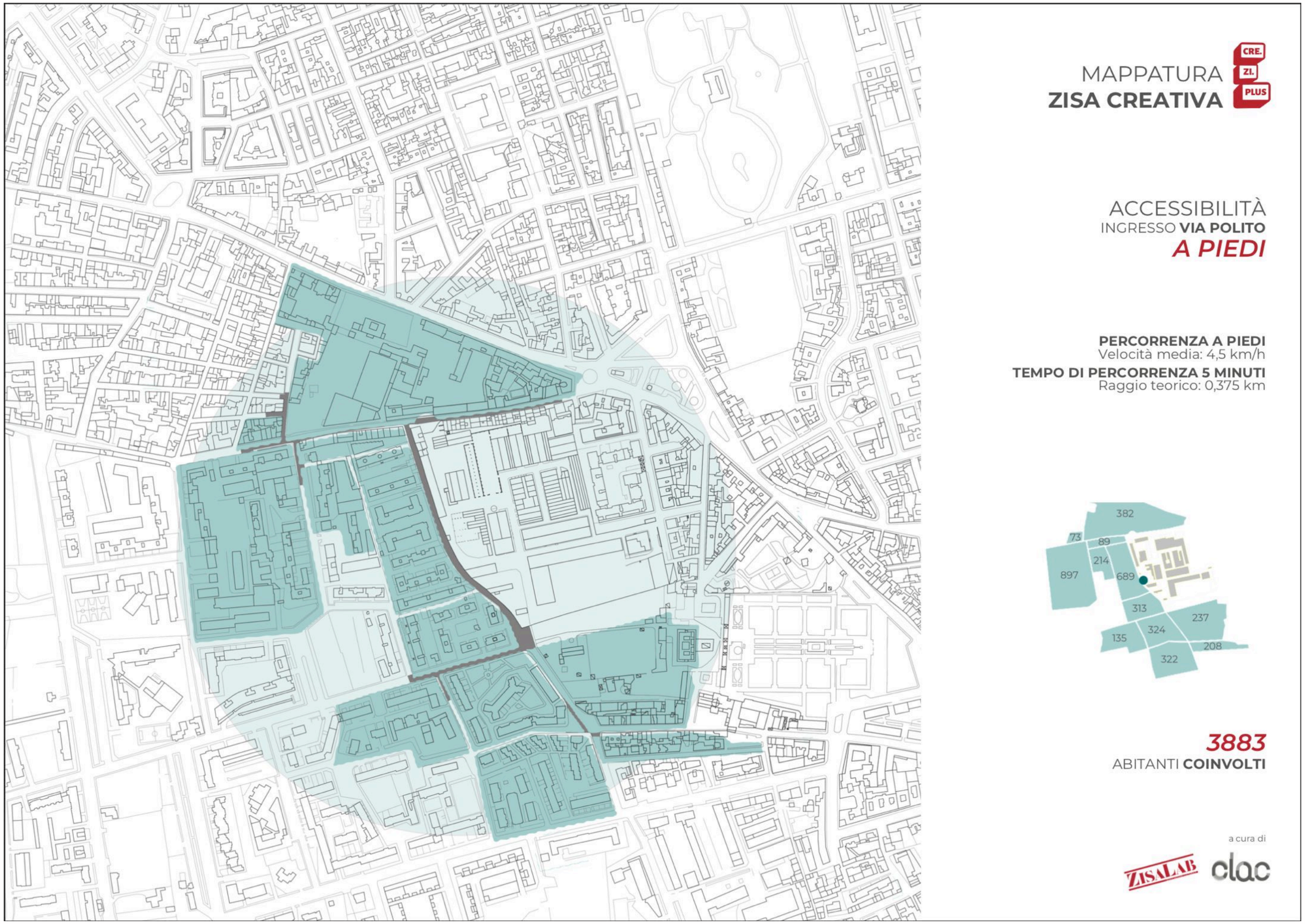
Mappatura ZISA Creativa



INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

Mappatura ZISA Creativa

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ZISALAB clac

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

Mappatura ZISA Creativa

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

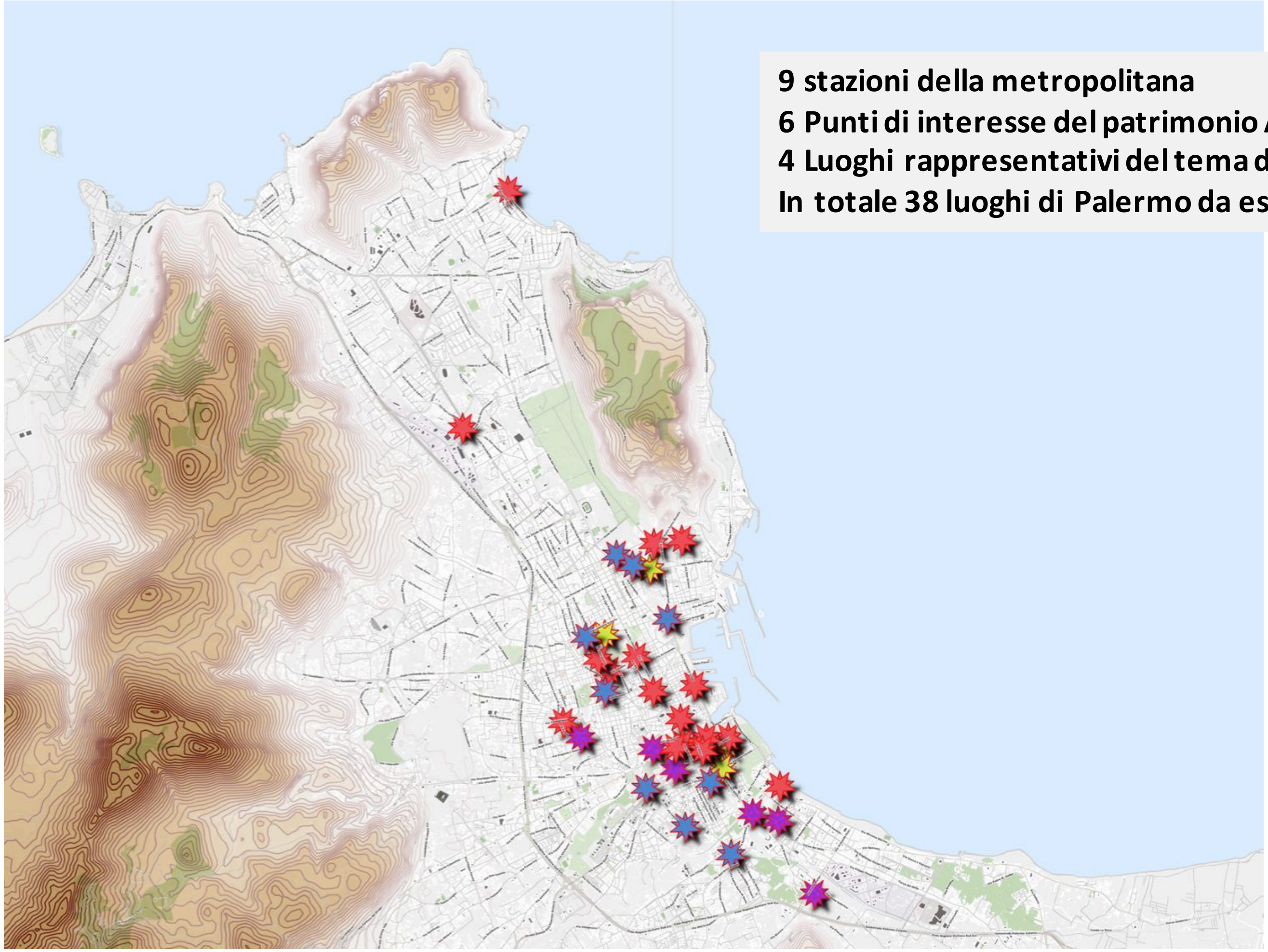
Mappatura ZISA Creativa

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

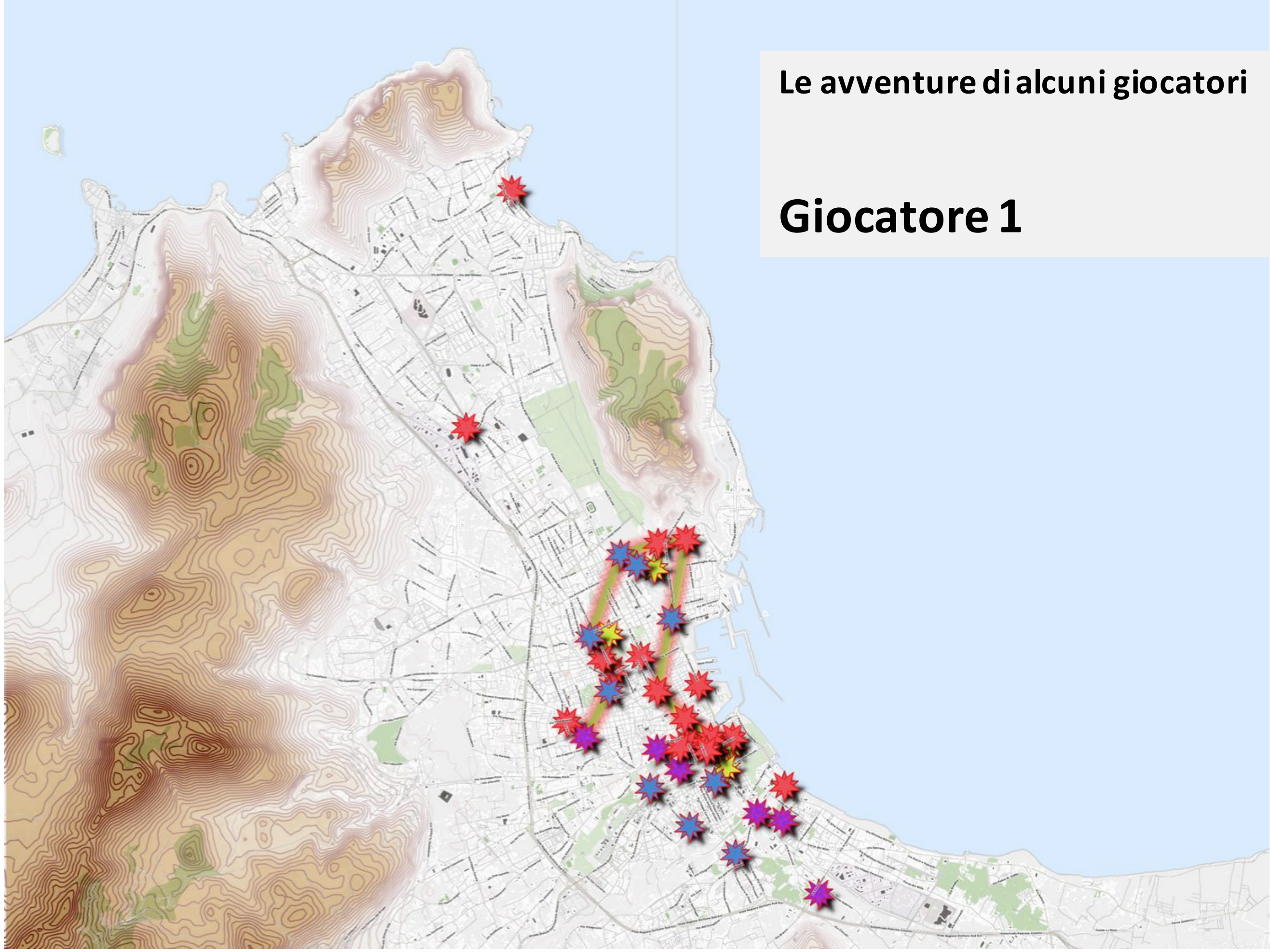
La città come campo da gioco



9 stazioni della metropolitana
6 Punti di interesse del patrimonio Arabo Normanno
4 Luoghi rappresentativi del tema della legalità
In totale 38 luoghi di Palermo da esplorare

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco

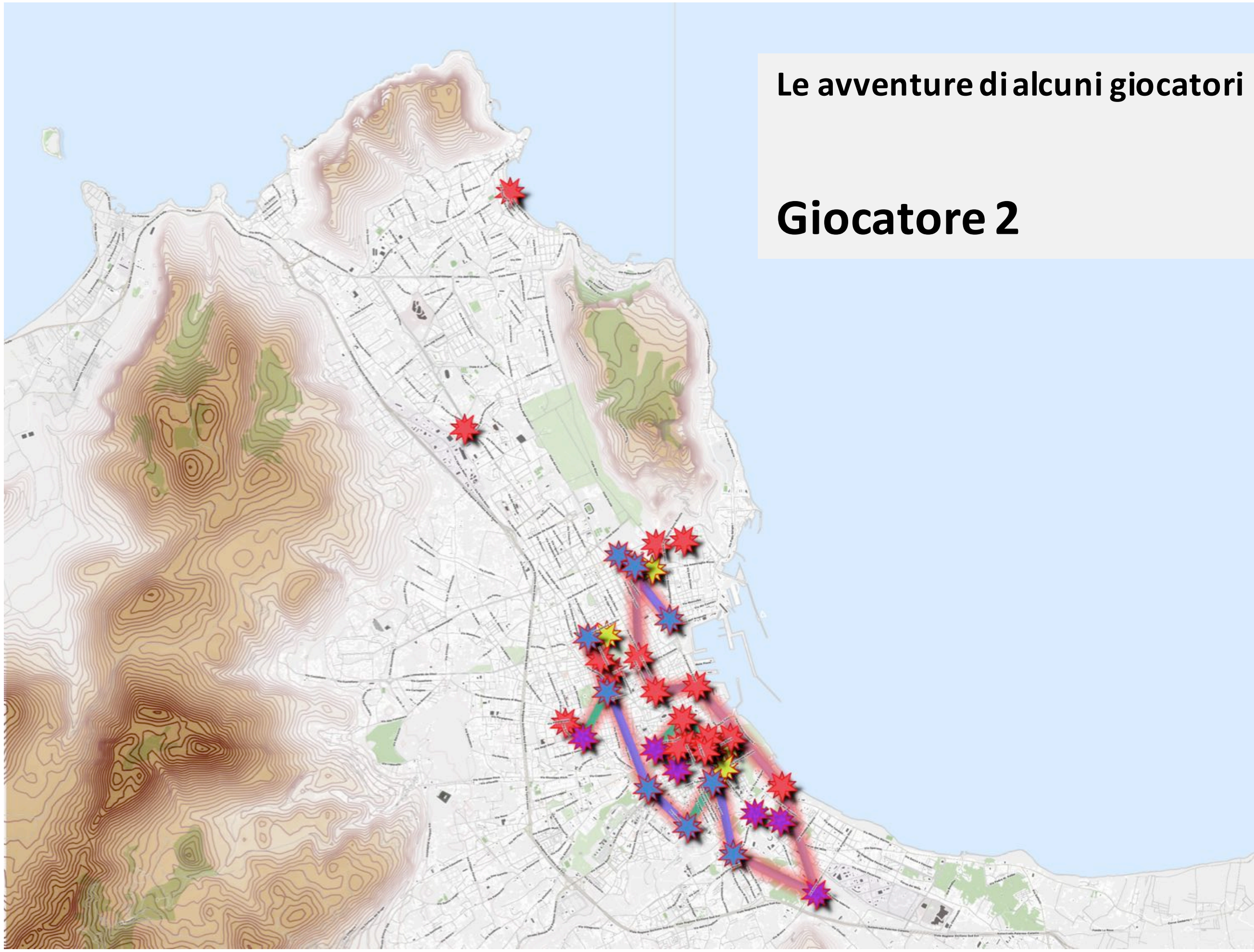


Le avventure di alcuni giocatori

Giocatore 1

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco

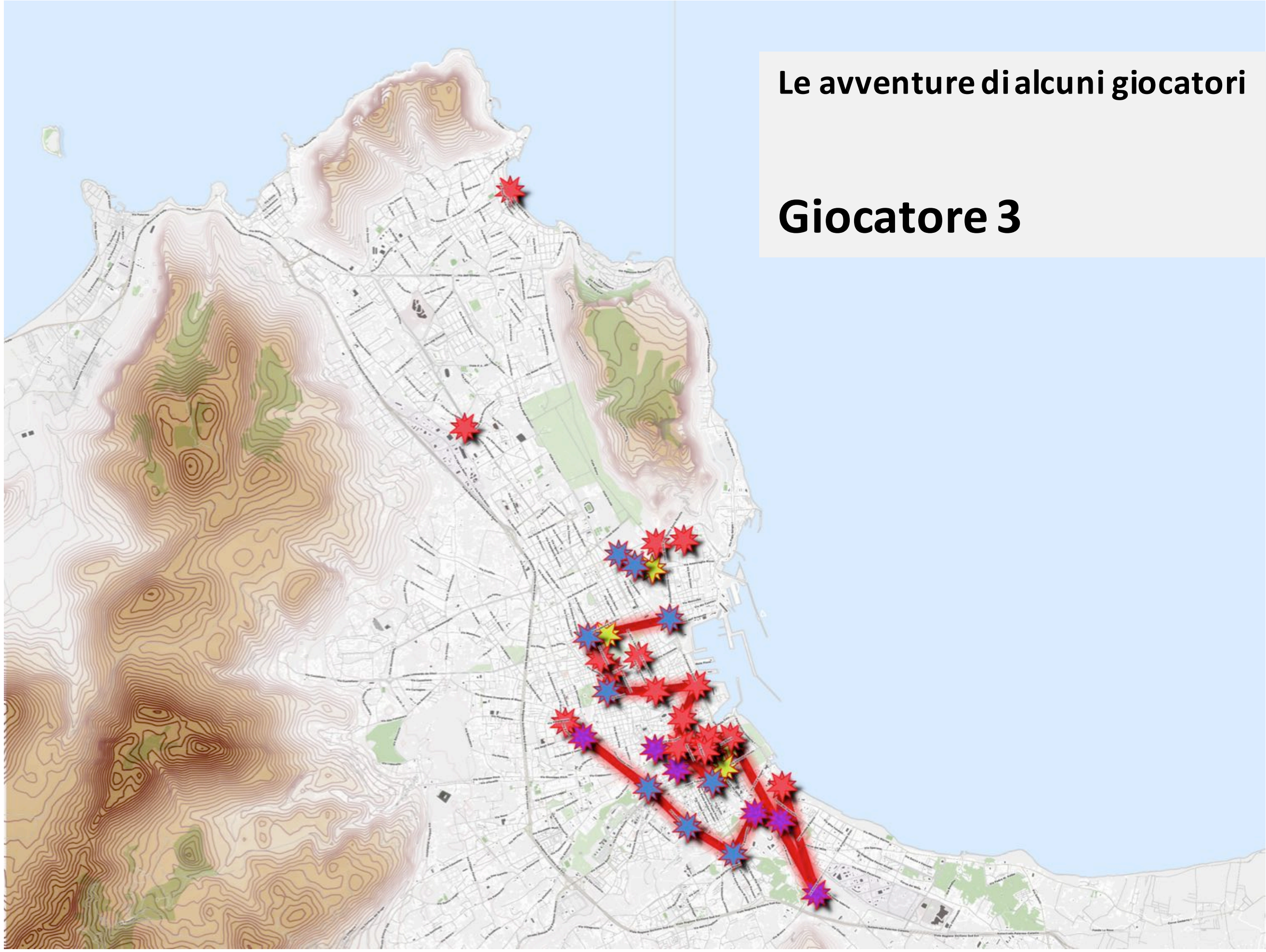


Le avventure di alcuni giocatori

Giocatore 2

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco

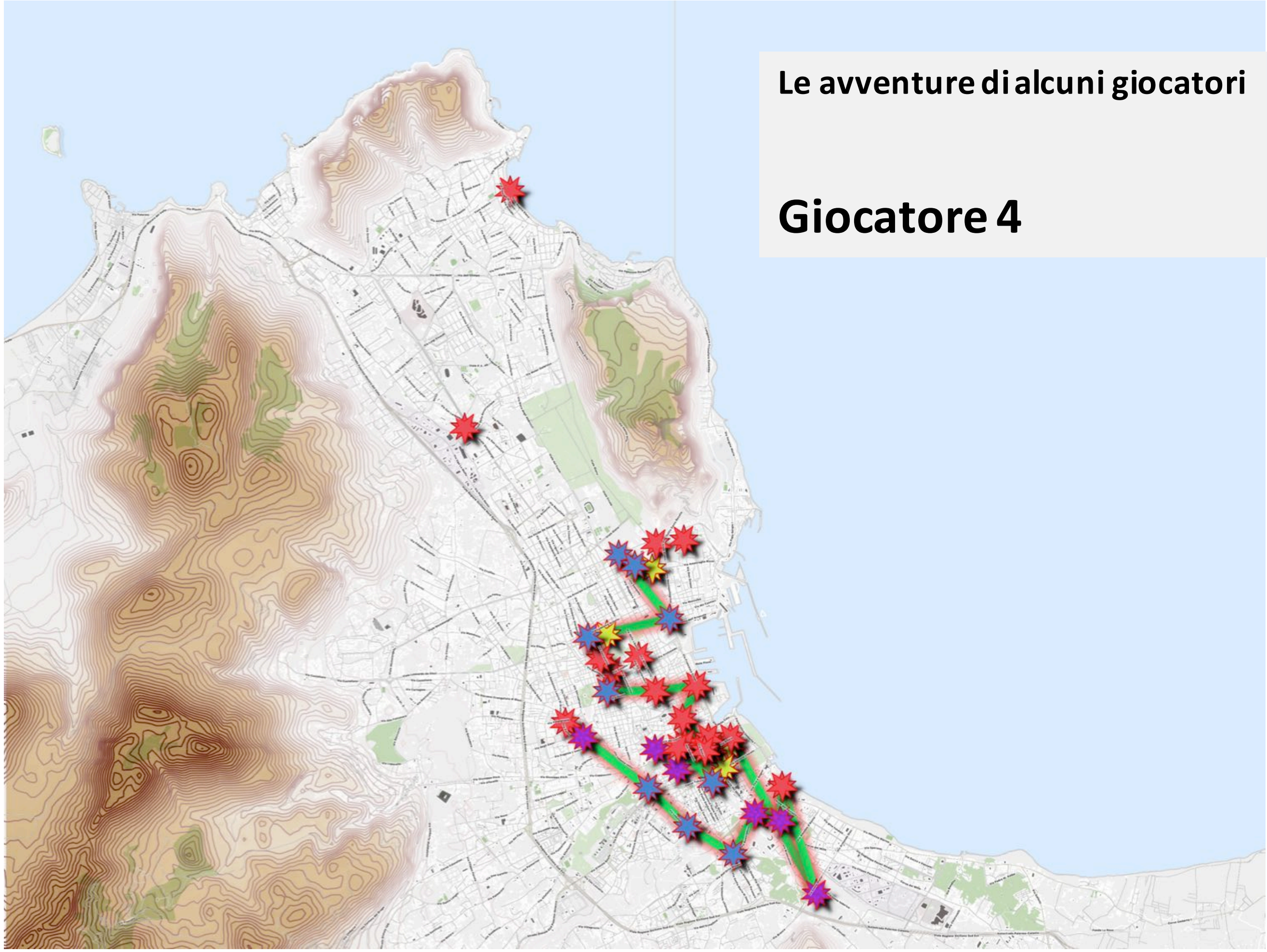


Le avventure di alcuni giocatori

Giocatore 3

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco

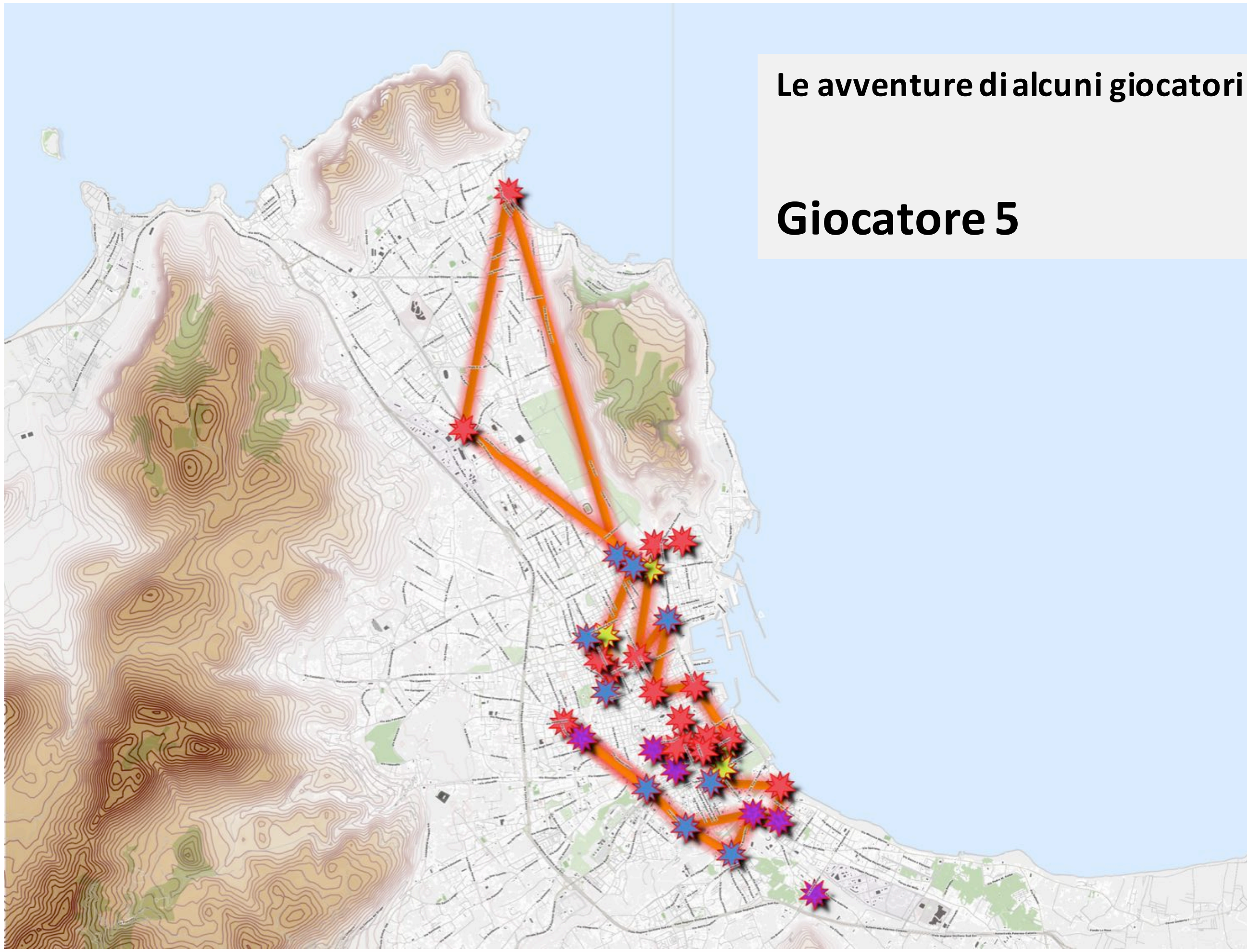


Le avventure di alcuni giocatori

Giocatore 4

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco

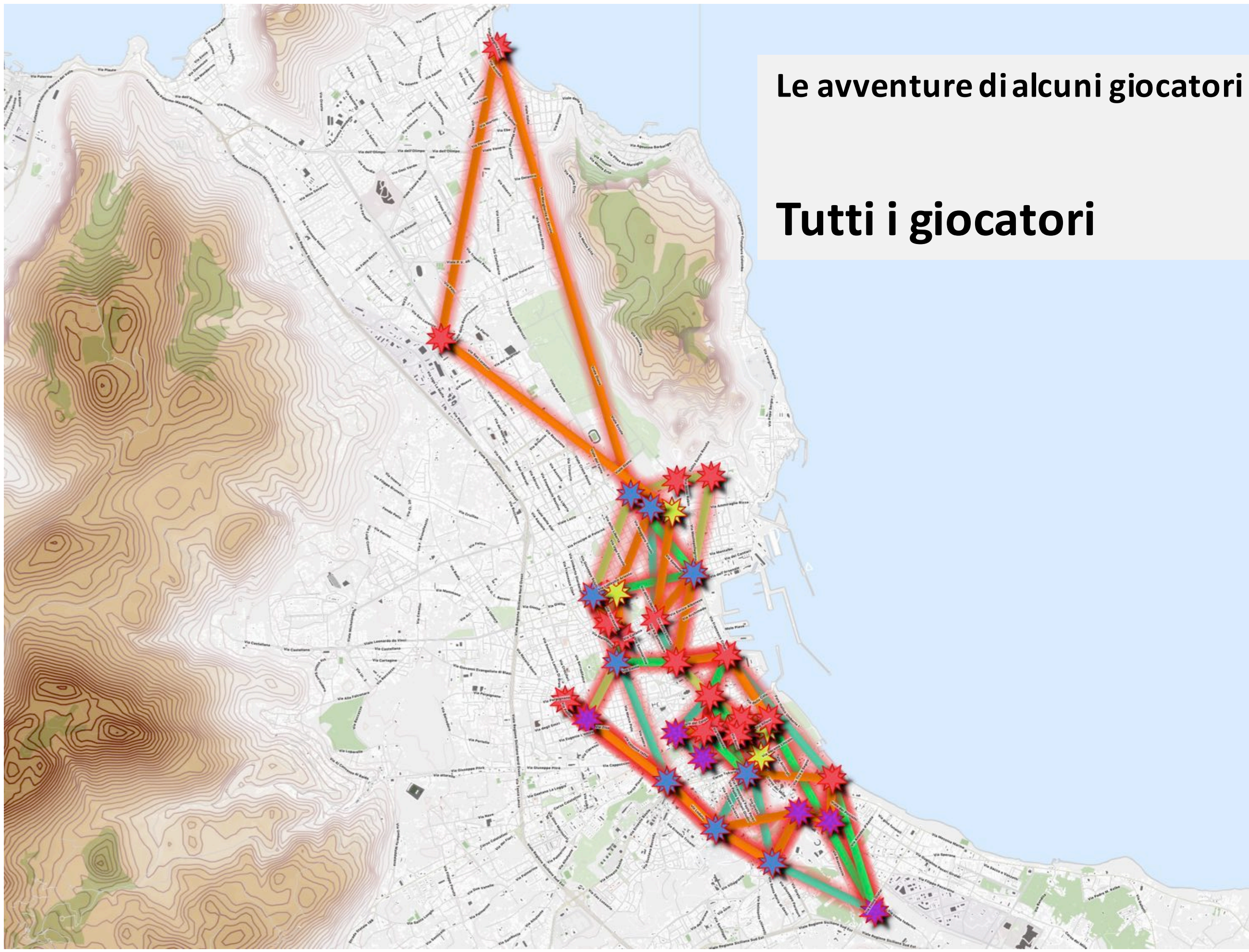


Le avventure di alcuni giocatori

Giocatore 5

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco

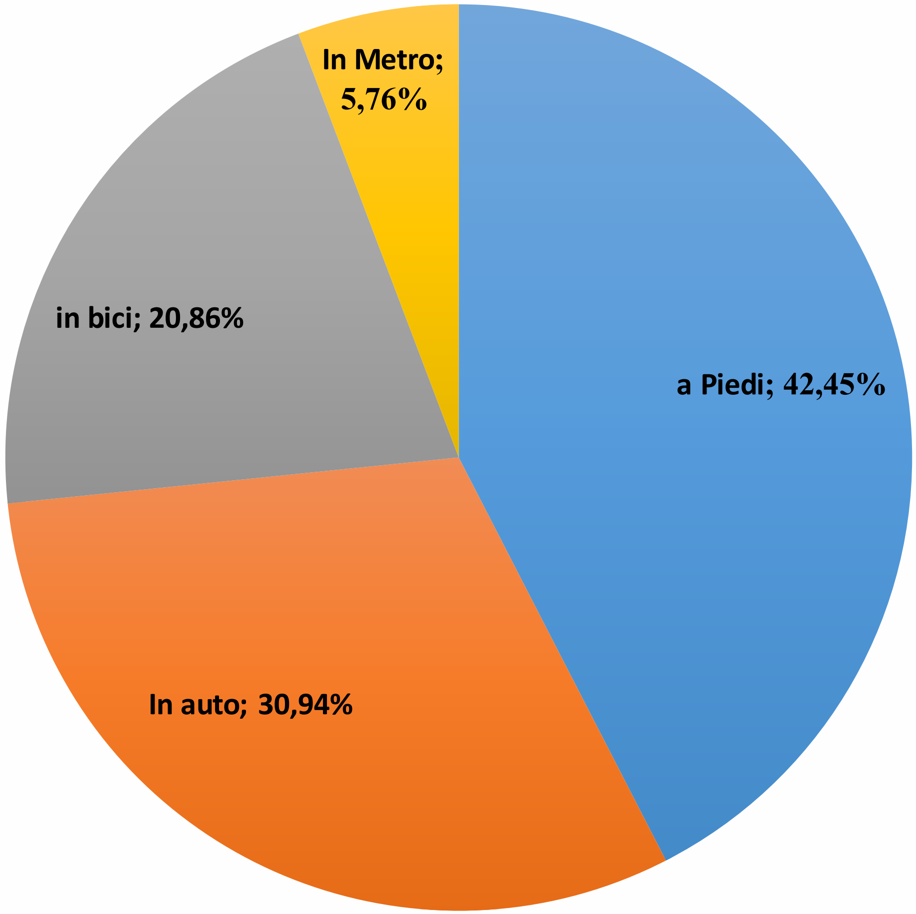


Le avventure di alcuni giocatori

Tutti i giocatori

INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

La città come campo da gioco: statistiche sugli spostamenti dei giocatori



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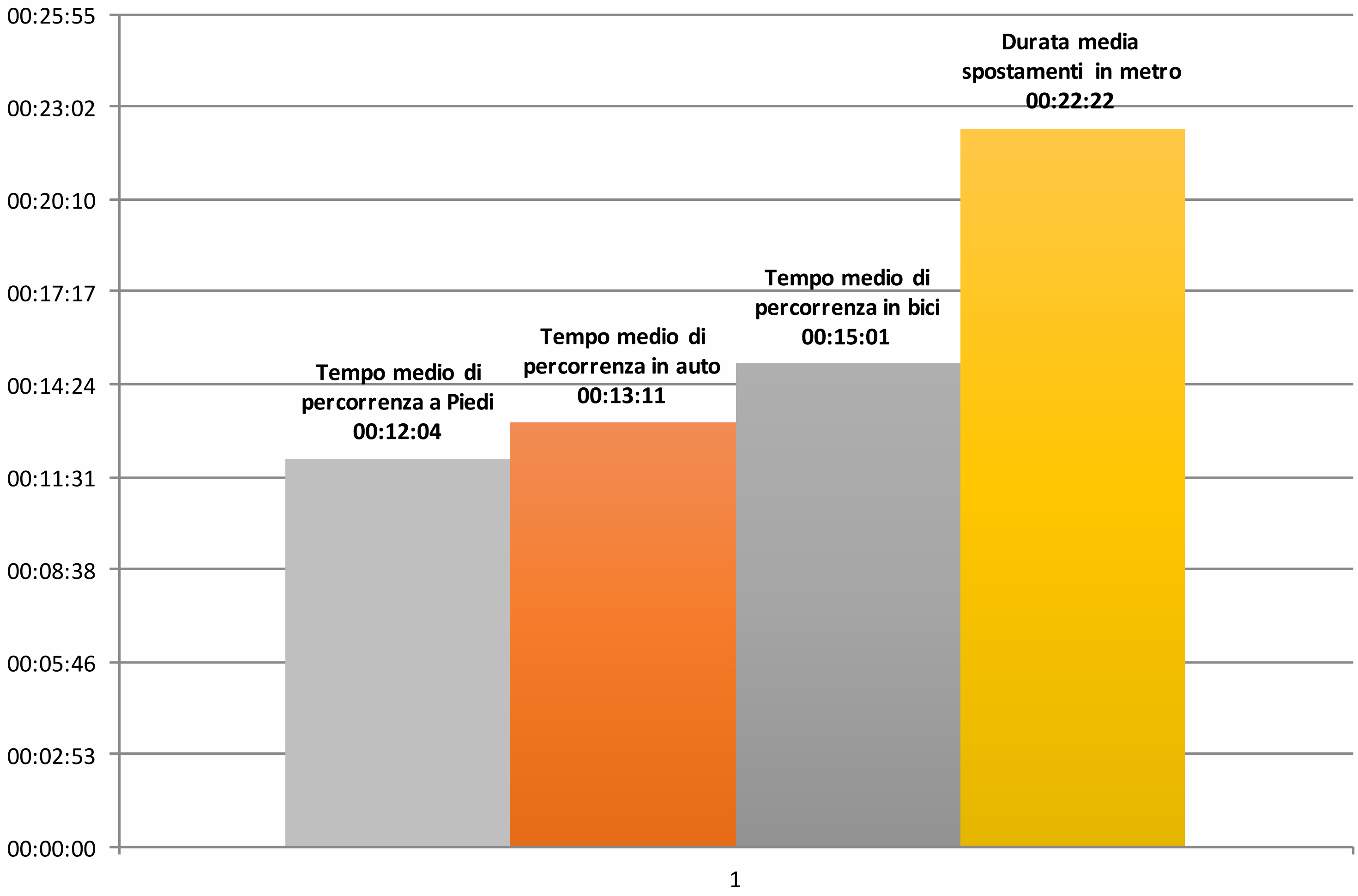
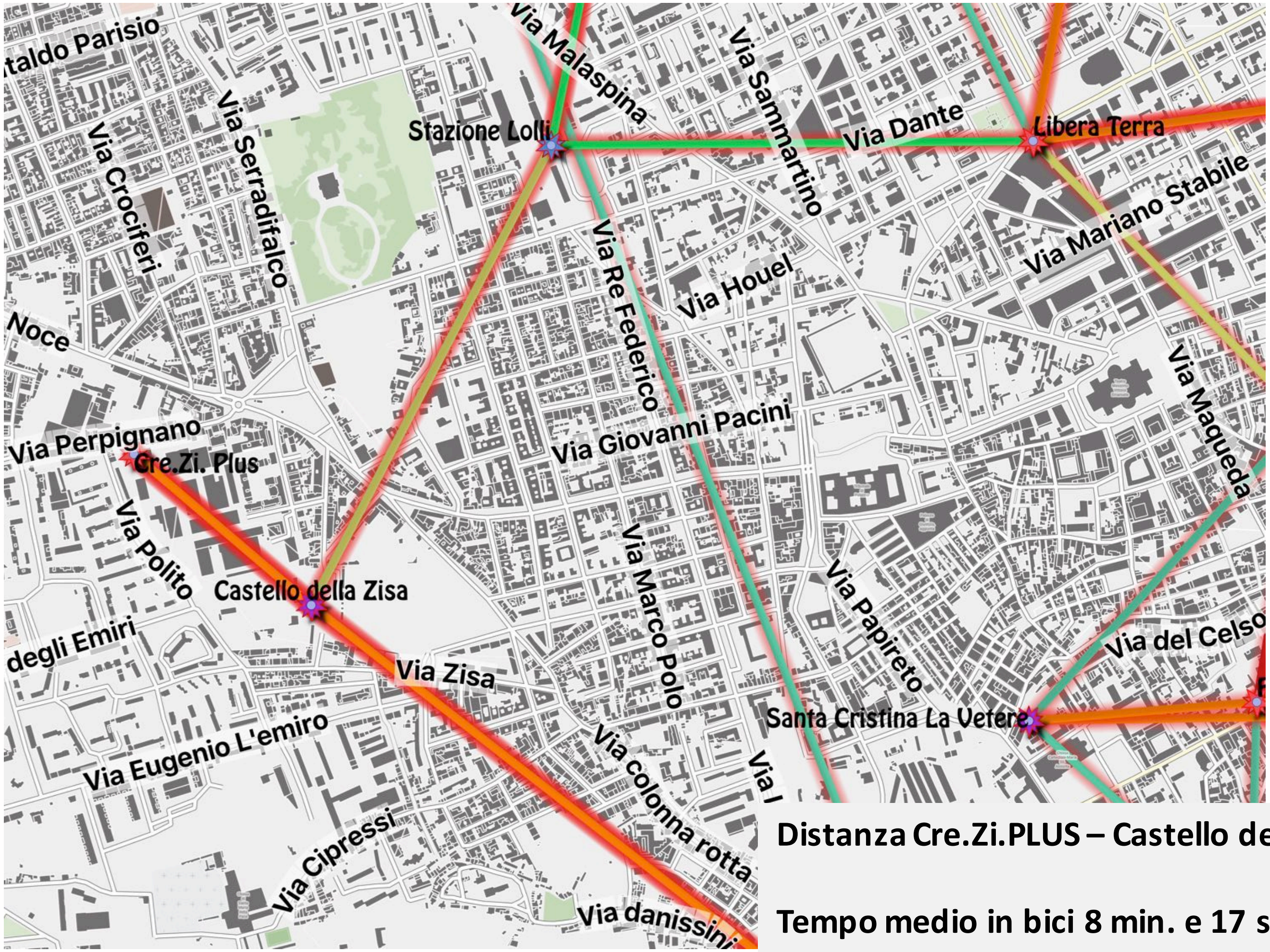


INTERPRETAZIONI DELLO SPAZIO DELLA MOBILITÀ A PALERMO

L'accessibilità al Castello della Zisa dai Cantieri Culturali



Distanza Cre.Zi.PLUS – Castello della Zisa 406 m.

Tempo medio in bici 8 min. e 17 sec.
Tempo medio in auto 34 min. e 37 sec.
Tempo medio a piedi 13 min. e 28 sec.
Tempo teorico di accesso a piedi 5 minuti circa!

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

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PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

2. L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO (MARCELLO MARCHESE)

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

L’EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Palermo: laboratorio di mobilità

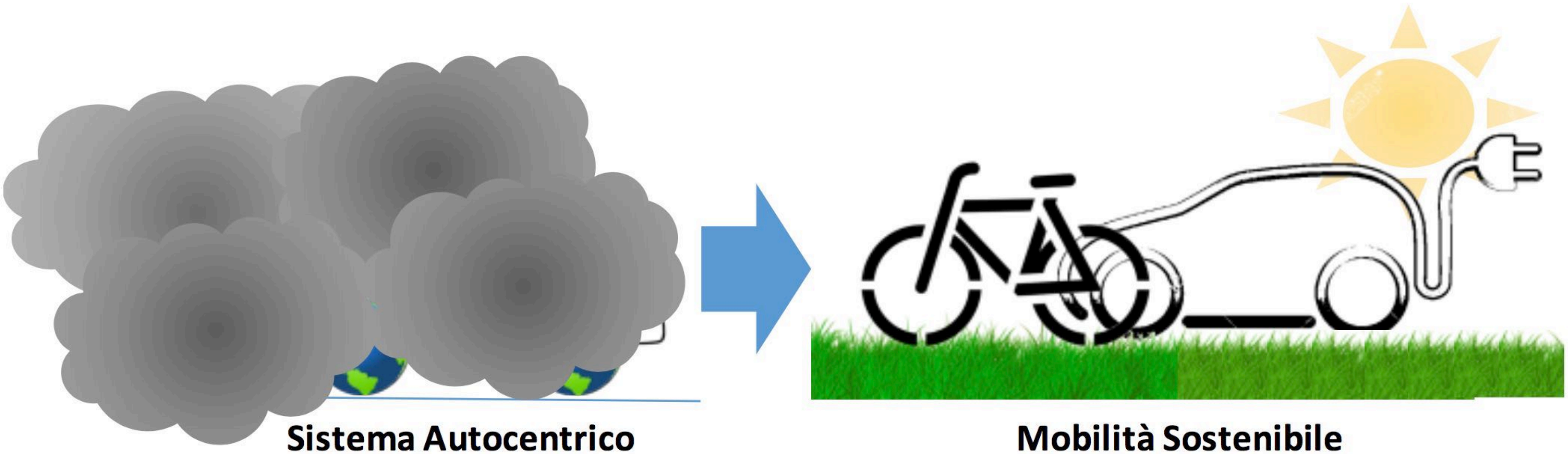
I sistemi di mobilità costituiscono un fattore cruciale nell’evoluzione socio-economica della città di Palermo. La spinta verso una graduale evoluzione della mobilità in ottica di sostenibilità, sta richiedendo una specifica attenzione alla combinazione di problematiche legate alla domanda e di fattori tecnologici ed organizzativi legati all’offerta.
Il ruolo delle politiche pubbliche dell’Amministrazione Comunale sta giocando un ruolo fondamentale nella cultura del cambiamento.

Drivers del cambiamento:

- Dilatazione del ciclo di sostituzione dell’auto privata
- Riduzione all’utilizzo dell’auto propria per spostamenti medio/piccoli
- Minore interesse delle nuove generazioni (18-29 anni) all’auto di proprietà
- Spostamento dell’interesse del cittadino verso la cultura dell’utilizzo più che del possesso

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Palermo: laboratorio di mobilità



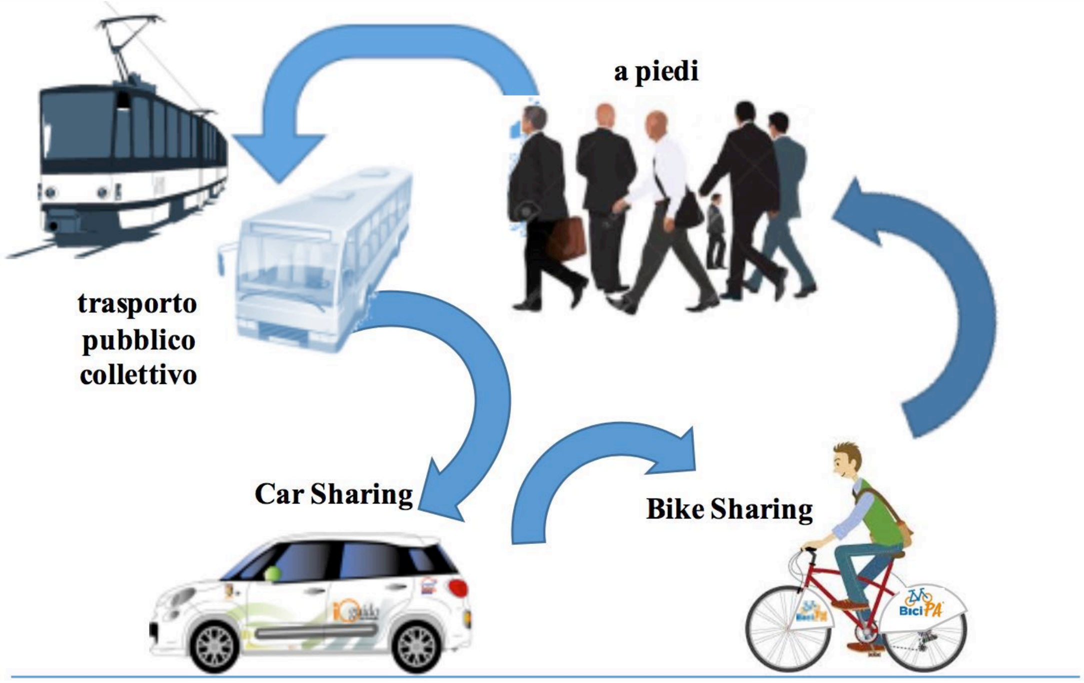
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Palermo: laboratorio di mobilità

L'azione dell'azienda municipalizzata dei trasporti – **AMAT** – viene sviluppata nell'ambito delle linee guida dell'Amministrazione Comunale

Realizzazione di una rete intermodale che consente:

1. Elevare il livello di accessibilità urbana
2. Ridurre la dipendenza dal mezzo privato
3. Recuperare la rete stradale e gli spazi pubblici per ciclo-pedoni
4. Incentivare i comportamenti corretti di mobilità



L’EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

AMAT nel segno del cambiamento

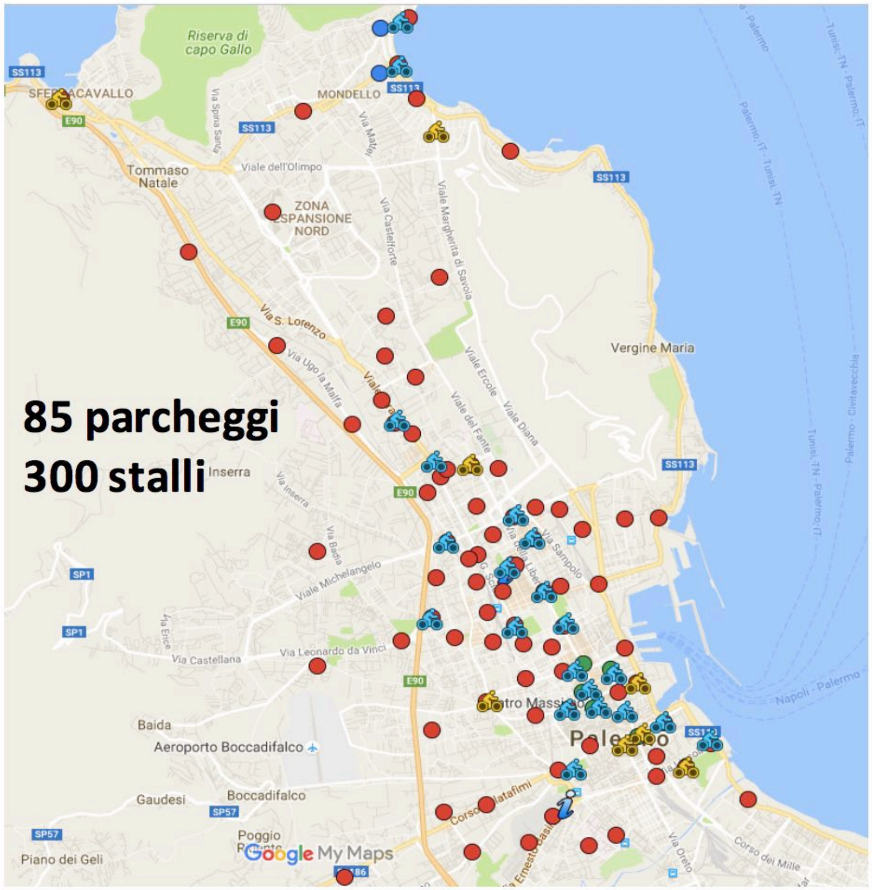
io guido CAR SHARING

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Car Sharing a Palermo: territorio interessato

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Car Sharing a Palermo: diffusione ed utilizzo



Utilizzi al disotto delle 2 ore e 7 Km
30 %

Lunghezza media dello spostamento in car sharing
43 km

Durata media della corsa
6,5 ore

Utilizzo prevalente
7-22

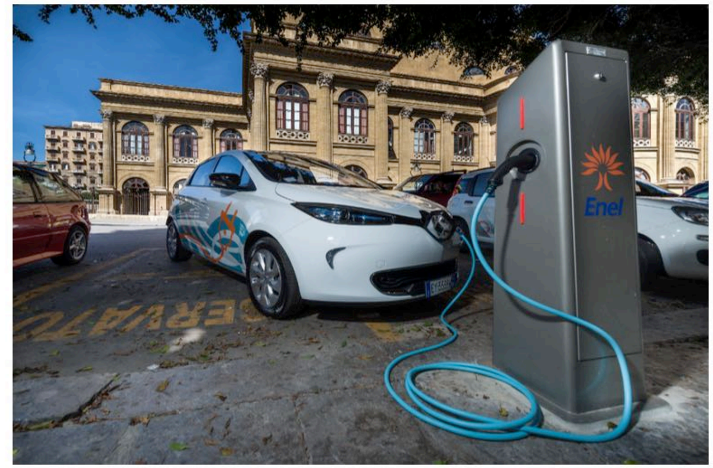
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Car Sharing a Palermo: la flotta

n. auto	159
Auto a metano	80
Auto elettriche	24
Auto termiche diesel	55

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

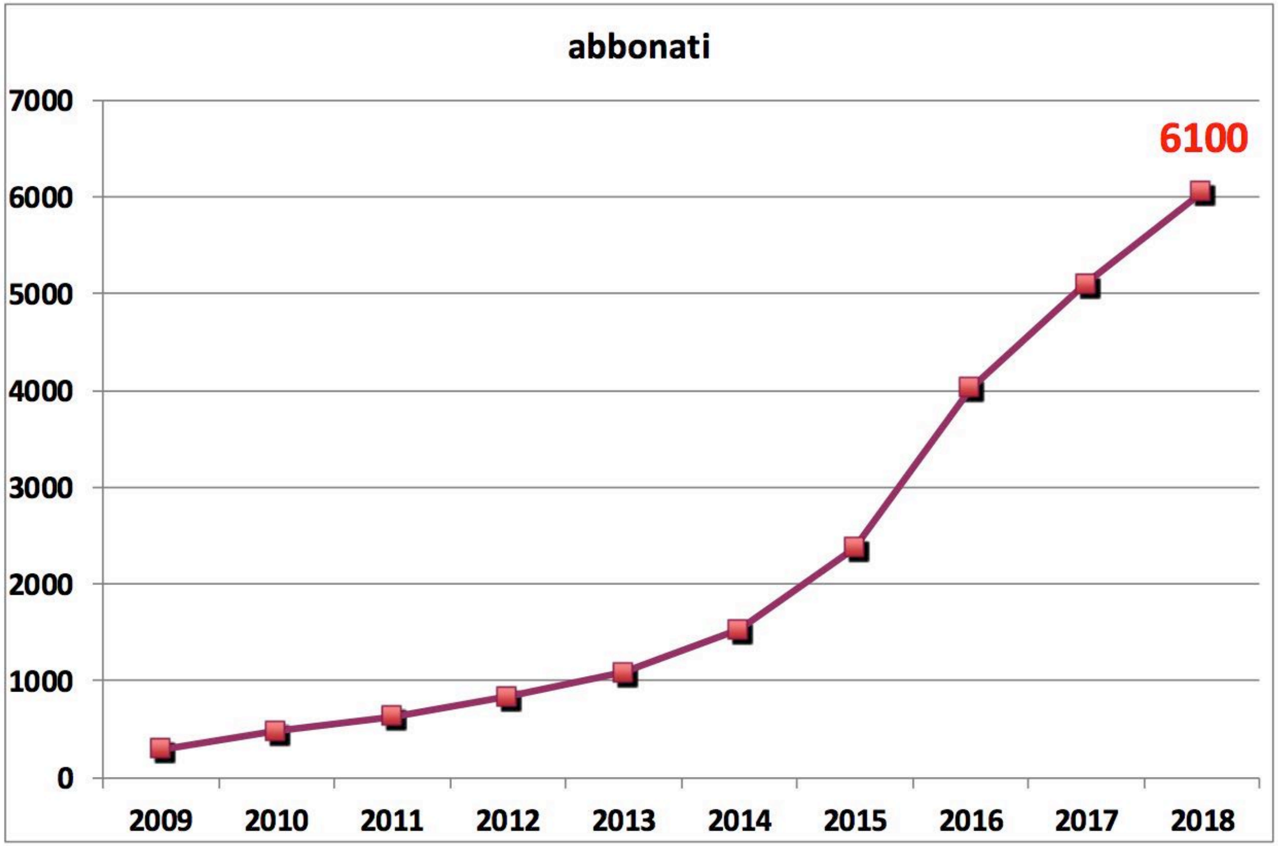
Car Sharing a Palermo: distribuzione territoriale



- lunghezza media dello spostamento da 7 - 15 km
- durata media della corsa da 3,5 a 6,5 ore
- utilizzo per il cittadino della vettura per 1 corsa/die
- libera circolazione nelle zone a traffico limitato del centro storico e nei siti storici patrimonio UNESCO

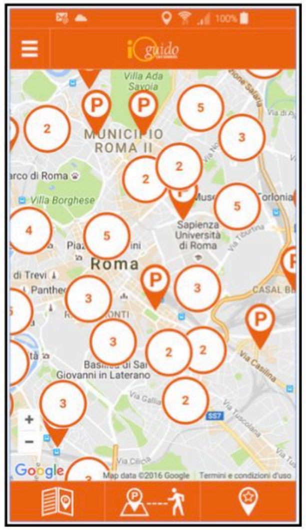
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

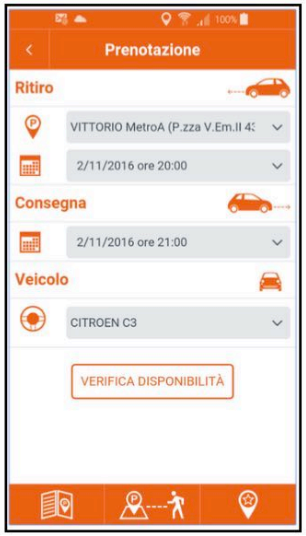
Car Sharing a Palermo: i numeri

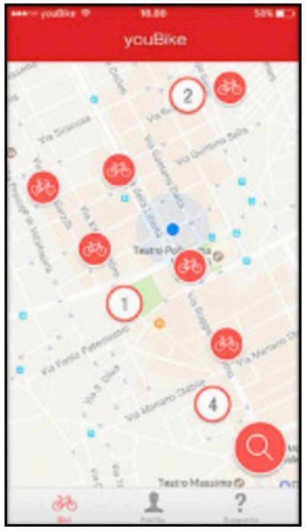


L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Car Sharing a Palermo: le app IO Guido e Amunì







- Iscrizione on line al servizio
- Sgancio della bici;
- Disponibilità in tempo reale per le singole stazioni bike sharing;
- Dettaglio di ogni singola stazione bike sharing;
- Navigatore con indicazioni stradali per raggiungere le stazioni bike sharing dislocate nella città;
- Dettaglio profilo;
- Possibilità di ricaricare il credito

L’EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

L’inclusione come valore per i servizi di mobilità

guidoiO

A Palermo il car sharing diventa servizio per TUTTI i Cittadini

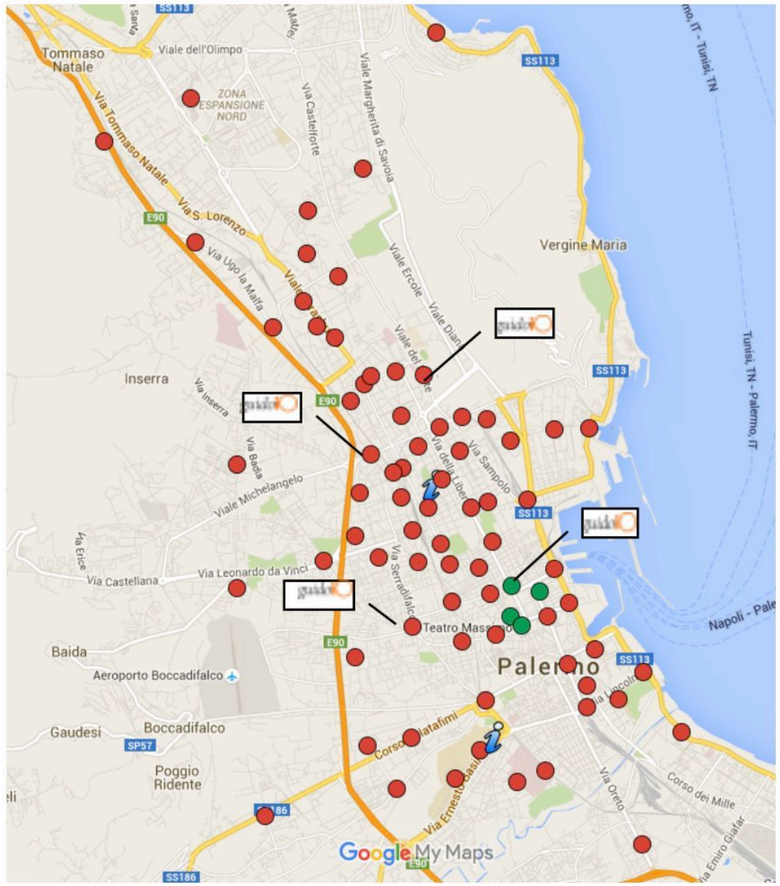
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Guido IO

1° Car Sharing in Europa per utenti con disabilità

Ubicazione parcheggi

1. Viale del Fante
2. Via Aquileia ang. Lazio
3. Piazza P. Camporeale
4. Via Libertà ang. Politeama



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Non solo auto: Bici PA

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Bike Sharing a Palermo: consistenza del servizio

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Sistema integrato Bike Sharing + Car Sharing

A Palermo, per la prima volta in Italia, l'integrazione dei sistemi car e bike sharing consente di poter usufruire dei due servizi utilizzando la stessa tessera di abbonamento per lo sgancio della bicicletta o l'utilizzo dell'auto termica ed elettrica.

Questo sistema rende il progetto DEMETRA unico nel panorama dei sistemi di mobilità sostenibile.

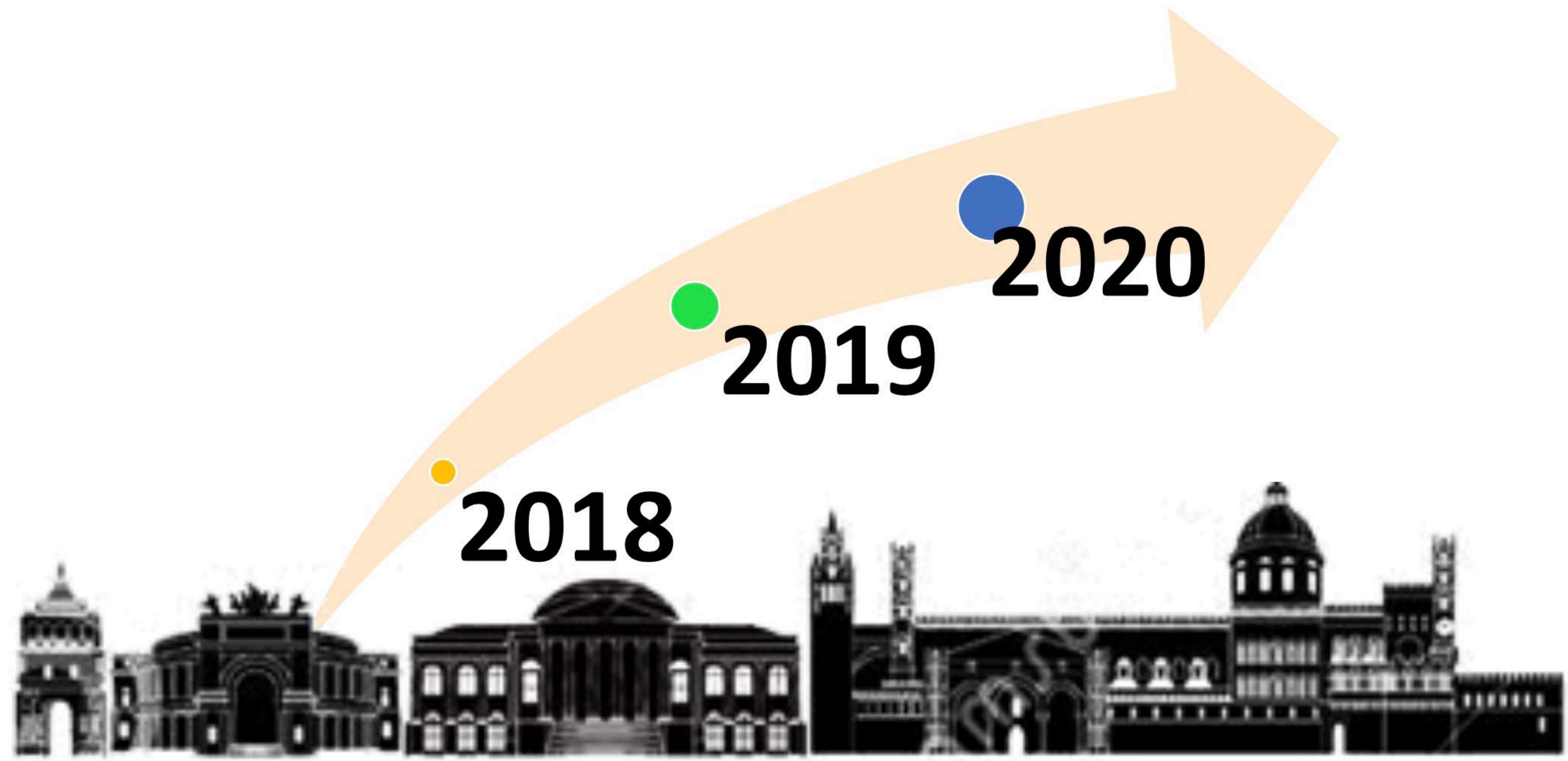
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Bike Sharing: i nuovi parcheggi Bici PA

n.	LOCALITA'
2	Cittadella Universitaria
2	Cantieri Culturali alla Zisa
1	Piazza Magione
1	Stazione Lolli
1	Piazza Acquasanta
1	Stazione Vespri
1	Stazione Giachery
10	Parcheggi progetto Go2School da identificare

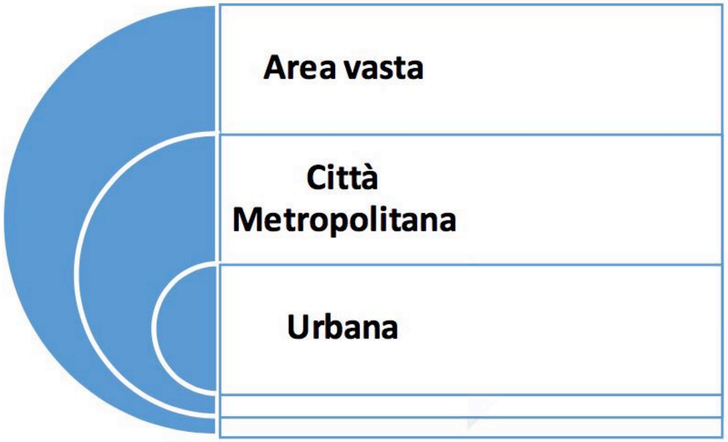
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

AMAT: il cambiamento delle strategie e dei servizi



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Car Sharing: la strategia 2018-2020

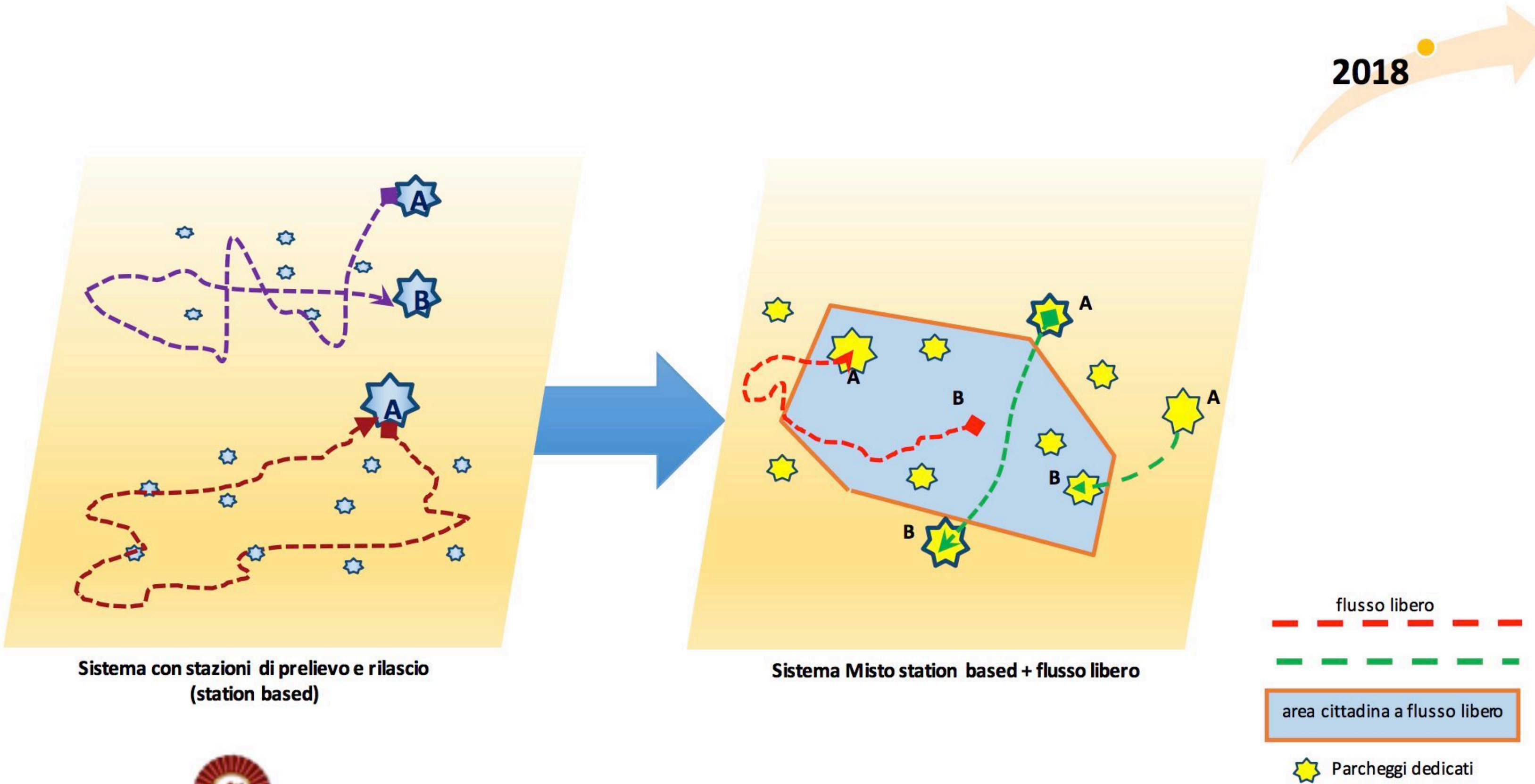


- Tipologia di servizio intermodale station based e free floating
- Nuovi servizi telematici ed integrazione tariffaria
- Incremento Flotte ecocompatibili

Servizio	auto	bici	infrastrutture	Fonte finanziamento
CAR SHARING	60 (20 in sostituzione + 40 nuove)		50 parcheggi	POD MATTM
BIKE SHARING		97 singole 250 biposto	18 cicloparcheggi	PON METRO COMPLEMENTARE

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

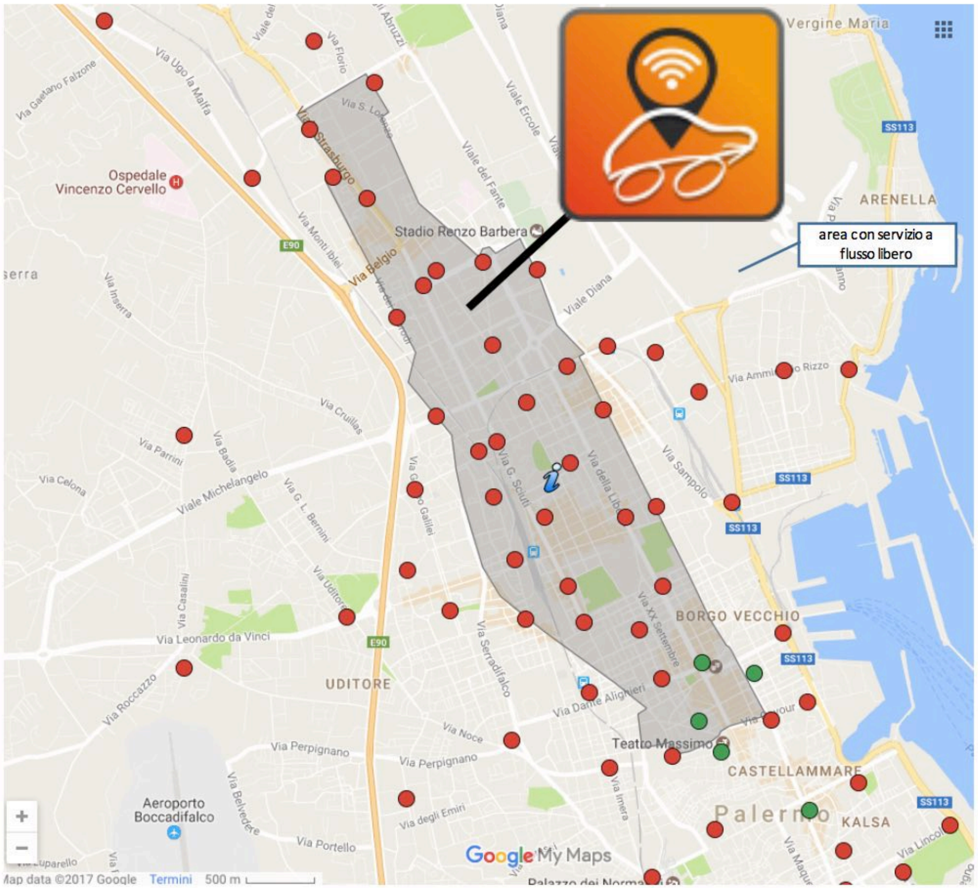
Car Sharing: l'evoluzione del servizio 2018-2019



1° modello italiano di gestione mista station based + free floating

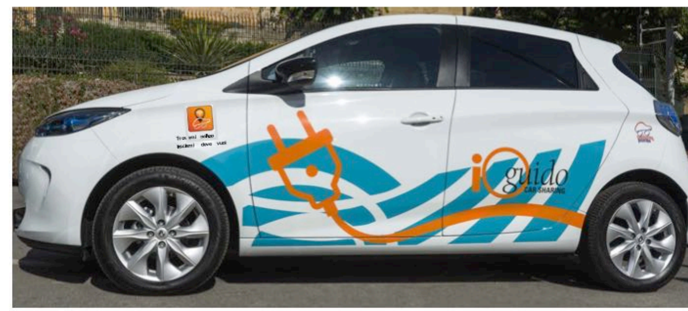
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Car Sharing: il servizio Free Floating



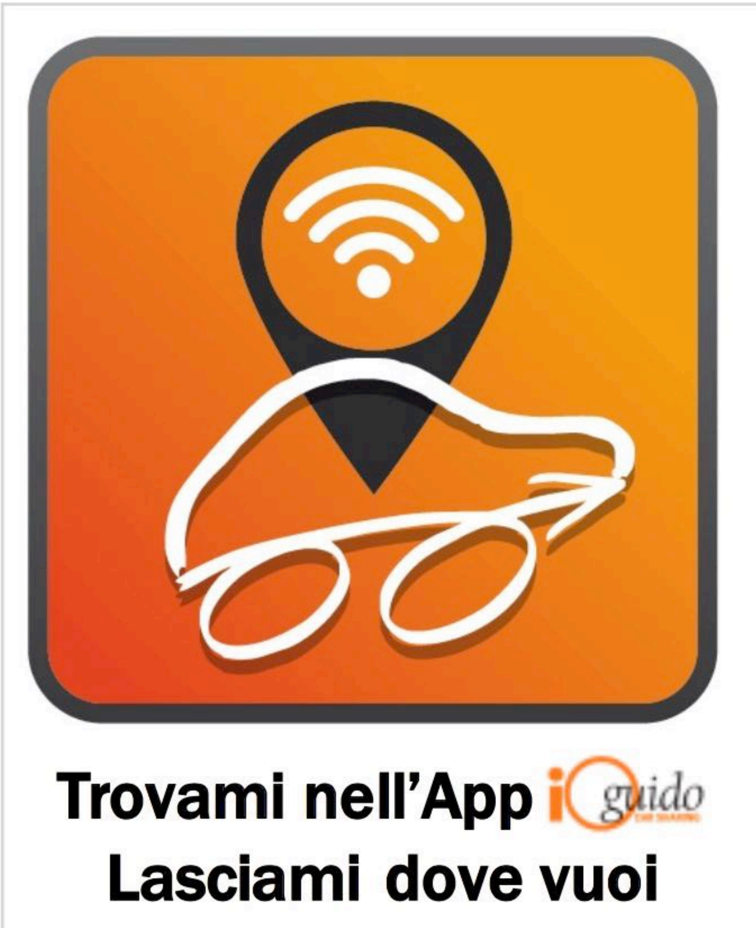
Caratteristiche dell'Area/servizio a flusso libero:

Superficie coperta: 4,83 Km^2
N. Auto: 45 (20 elettriche + 25 termiche)
Tipologia auto: city car
Tipologia tariffazione: €/min



L’EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

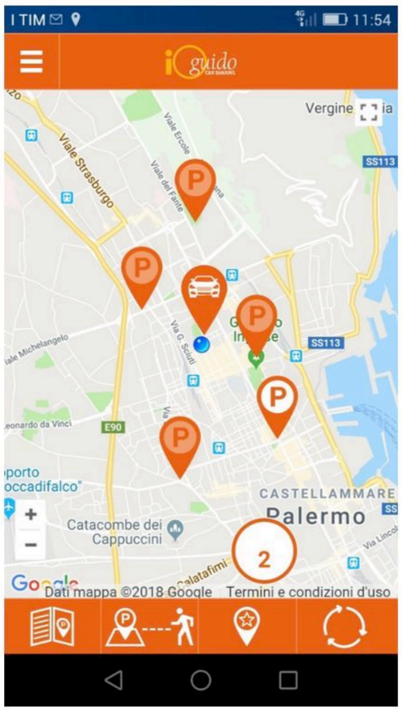
Car Sharing: il Free Floating nell’app IO Guido



Servizio attivo dal 27 settembre 2018

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

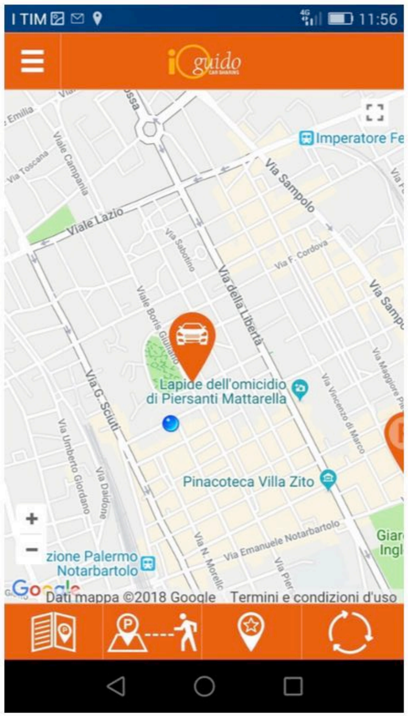
Car Sharing: il Free Floating nell'app IO Guido



1. Scaricare l'app dedicata "Io Guido" sul proprio smartphone/tablet iOS o Android.
2. L'utente ritroverà l'interfaccia che già conosce e potrà scegliere, come consueto, dai parcheggi station base dalla mappa o cliccando per avere l'elenco.
3. Le vetture all'interno dell'area FF vengono visualizzate con una grafica diversa dallo station based.

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Car Sharing: il Free Floating nell'app IO Guido



4 L'App effettuerà la geolocalizzazione dell'utente e mostrerà sulla mappa la sua posizione (pallino blu), e la vettura disponibile più vicina.

5 Sarà possibile specificare un range in mt entro il quale effettuare la ricerca ed una volta opzionata la vettura il cliente sarà guidato verso la stessa e la distanza sarà aggiornata in real time.

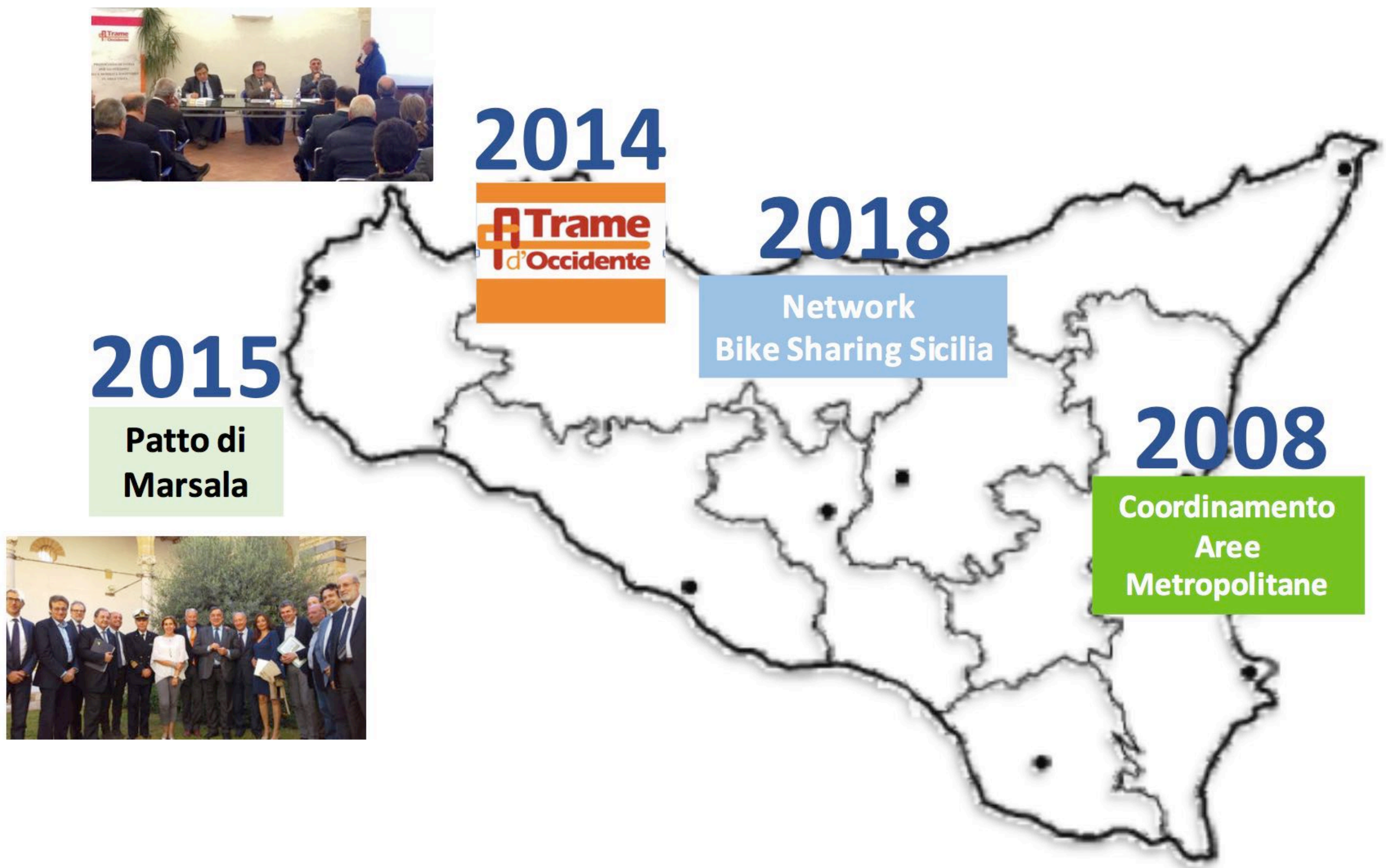
6 L'apertura sarà possibile solo se l'utente si trova entro i 15mt dall'auto, il comando può essere inviato dallo smartphone oppure tradizionalmente passando la tessera.

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Aree urbane interessate dal Free Floating

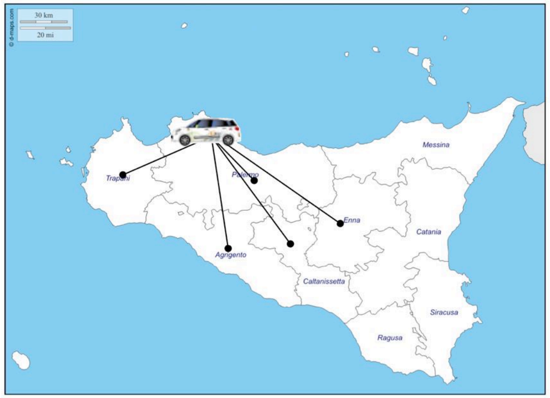
L’EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

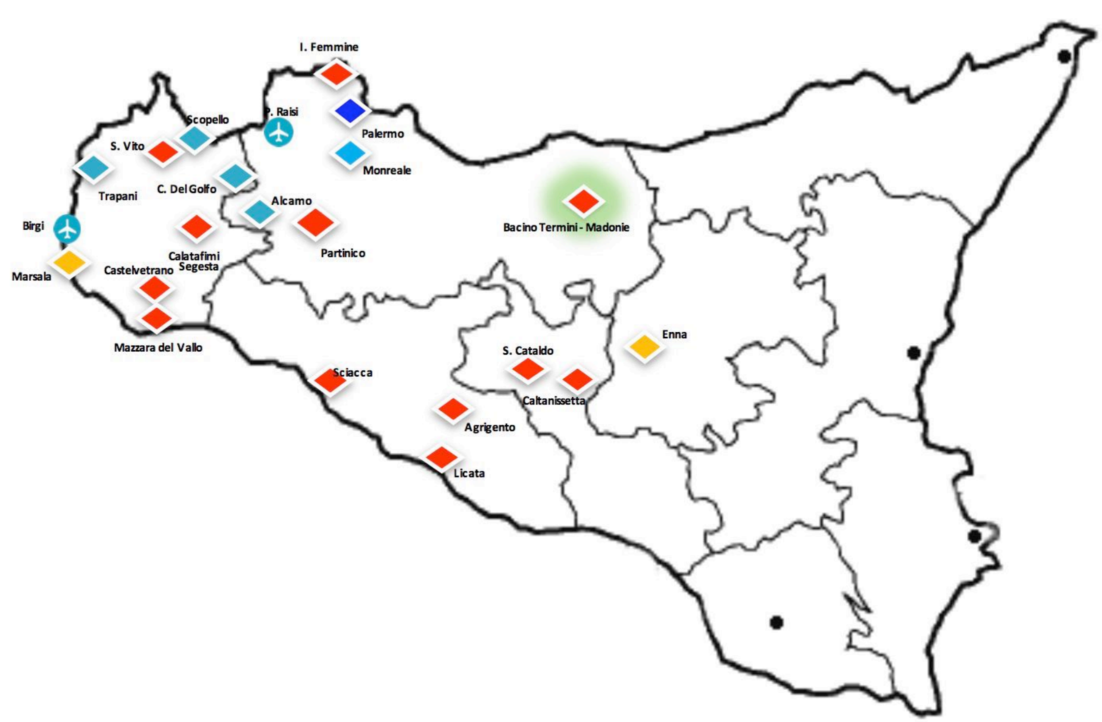
Diffusione del Car Sharing AMAT nella regione: gli accordi interistituzionali



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

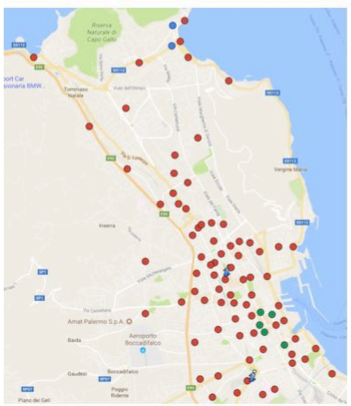
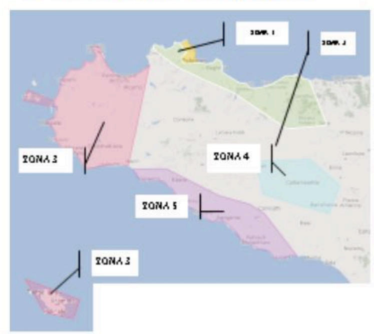
Il Car Sharing nell'Area Vasta della Sicilia Occidentale





L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Tipologie di gestione dei servizi di Car Sharing

PALERMO AREA URBANA Tipo servizio: Station based	AREA VASTA Tipo servizio: Station based	PALERMO AREA CENTRALE Tipo servizio: Free floating
 Auto termiche/elettriche per servizi di medio e corto raggio Palermo città 	 Auto termiche per servizi di medio e corto raggio Zona 2: Provincia di Palermo Zona 3: Provincia di Trapani Zona 4: Provincia di Enna - Caltanissetta Zona 5: Provincia di Agrigento 	 Auto termiche/elettriche per servizi per servizi di ultimo miglio Zona 1: Palermo centro 

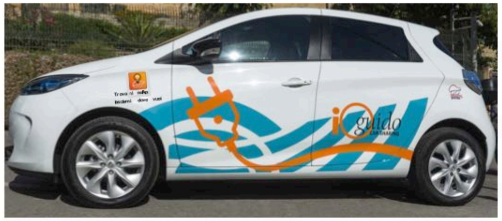
L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Tipologie di gestione dei servizi di Car Sharing

Autovetture termiche per servizi di medio e corto raggio
SERVIZIO STATION BASED Palermo città e provincia, Trapani,

CATEGORIA	Tariffe h 7-22	Tariffe h 22-7	Tariffa fino a 100km	Tariffa da 101 a 300km	Tariffa oltre 301km
CITY	€ 2,40	€ 0,90	€ 0,54	€ 0,47	€ 0,40
UTILITARIE	€ 2,85	€ 0,90	€ 0,58	€ 0,50	€ 0,40
MEDIE	€ 2,95	€ 1,20	€ 0,66	€ 0,52	€ 0,40
MONOVOLUME	€ 3,15	€ 1,20	€ 0,72	€ 0,55	€ 0,42
VAN	€ 3,60	€ 1,45	€ 0,84	€ 0,64	€ 0,52
ELETTRICHE	€ 2,40	€ 0,90	€ 0,54	€ 0,47	€ 0,40

CATEGORIA	1gg	2gg	3gg	4gg	5gg	6gg	7gg	Al giorno oltre il 7°	Costo km
CITY	€ 20,00	€ 36,00	€ 48,00	€ 65,00	€ 82,00	€ 98,00	€ 115,00	€ 17,00	€ 0,35
UTILITARIE	€ 25,00	€ 45,00	€ 68,00	€ 85,00	€ 100,00	€ 115,00	€ 135,00	€ 20,00	€ 0,35
MEDIE	€ 30,00	€ 55,00	€ 72,00	€ 94,00	€ 110,00	€ 125,00	€ 150,00	€ 25,00	€ 0,35
MONOVOLUME	€ 35,00	€ 65,00	€ 92,00	€ 118,00	€ 131,00	€ 147,00	€ 175,00	€ 28,00	€ 0,35
VAN	€ 40,00	€ 75,00	€ 108,00	€ 135,00	€ 150,00	€ 170,00	€ 200,00	€ 30,00	€ 0,35
ELETTRICHE	€ 20,00	v36,00	€ 48,00	€ 65,00	€ 82,00	€ 98,00	€ 115,00	€ 20,00	€ 0,35



Vetture elettriche e termiche
Per servizi di ultimo miglio
Modalità FREE FLOATING per Palermo centro

CATEGORIA	Tariffe h 7-22	Tariffe h 22-7
Renault Zoe / Fiat Punto	€/min 0,24	€/min 0,17

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School

Sistemi di mobilità casa-scuola e casa-lavoro del Comune di Palermo

Go2School

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School

Il progetto Go2School afferisce al cosiddetto "PON Metro Complementare", programma di finanziamento statale per le aree urbane che contempla una durata biennale (ottobre 2018/settembre 2020). Il Progetto ha un budget complessivo di un milione di euroe, è articolato in 4 differenti azioni e annovera le scuole come partner realizzatori delle molteplici attività previste.

Comune di Palermo (capofila)
AMAT Palermo spa
Università degli Studi di Palermo
Liceo Scientifico Albert Einstein
Liceo Linguistico Statale Ninni Cassarà
Istituto Tecnico Vittorio Emanuele III
Istituto Tecnico Commerciale Pio La Torre

Anno Scolastico: 2018/2019	**Popolazione Scolastica Target**		
Scuola	**Maschi**	**Femmine**	**Totale**
Liceo Scientifico Statale "Albert Einstein" via Vivaldi	508	326	834
Istituto Tecnico Industriale" VE III" via Duca della Verdura	1498	23	1521
Liceo Linguistico "Ninni Cassarà" Via Don Orione	167	439	606
Istituto tecnico "Pio La Torre" via Nina Siciliana	453	485	938
	2626	**1273**	**3899**

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: azioni chiave

	Azioni	mesi
A.1	Creazione di una struttura di coordinamento, presso il Comune di Palermo/AMAT, preposta all' organizzazione, alla pianificazione, alla programmazione e controllo dell' iniziativa	24
B.1	Attività ex ante alternanza scuola lavoro	2
B.2	Progettazione di dettaglio delle azioni	3
C.1	Realizzazione di percorsi protetti per gli spostamenti in bicicletta degli studenti e degli operatori scolastici	18
C.2	Attività Programma di Alternanza Scuola - Lavoro	24
C.3	Formazione specialistica Mobility Manager Scolastici	4
D.1	Effettuazione di servizi di Bike Sharing, dedicati agli spostamenti casa-lavoro e casa-studio espletati attraverso il contestuale utilizzo di biciclette del servizio BiciPA.	12
D.2	Effettuazione di servizi di parking e bike–care con i quale studenti ed operatori della scuola avranno a disposizione anche un servizio di monitoring e custodia giornaliera delle proprie biciclette presso le stazioni BiciPA.	12
D.3	Lattivazione di servizi innovativi a supporto del modello di gestione per gli spostamenti casa-lavoro e casa-studio, quali ad esempio un portale portale dedicato a questo specifico utilizzo e i "voucher della mobilità sostenibile" per l' incentivazione dei cittadini all'uso del car/bike sharing.	12
E.1	Piano di comunicazione e promozione dei servizi di mobilità individuale condivisa casa-lavoro e casa-scuola	16
E.2	Diffusione dei risultati	4
E.3	Monitoraggio e valutazione di efficacia	18

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: azione chiave C1 - percorsi protetti e piste ciclabili

L'azione intende indentificare quali piste ciclabili si rendono necessarie per il collegamento delle scuole interessate dal progetto, ad integrazione con quanto già previsto nel piano della mobilità dolce redatto dal Comune di Palermo nell'Aprile 2015.

Con riferimento alla normativa oggi vigente, verranno fissati i criteri per la realizzazione di itinerari ciclabili, secondo le varie tipologie da considerare caso per caso, in coerenza a quanto previsto nel predetto piano, necessari per la progettazione esecutiva.

L’EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

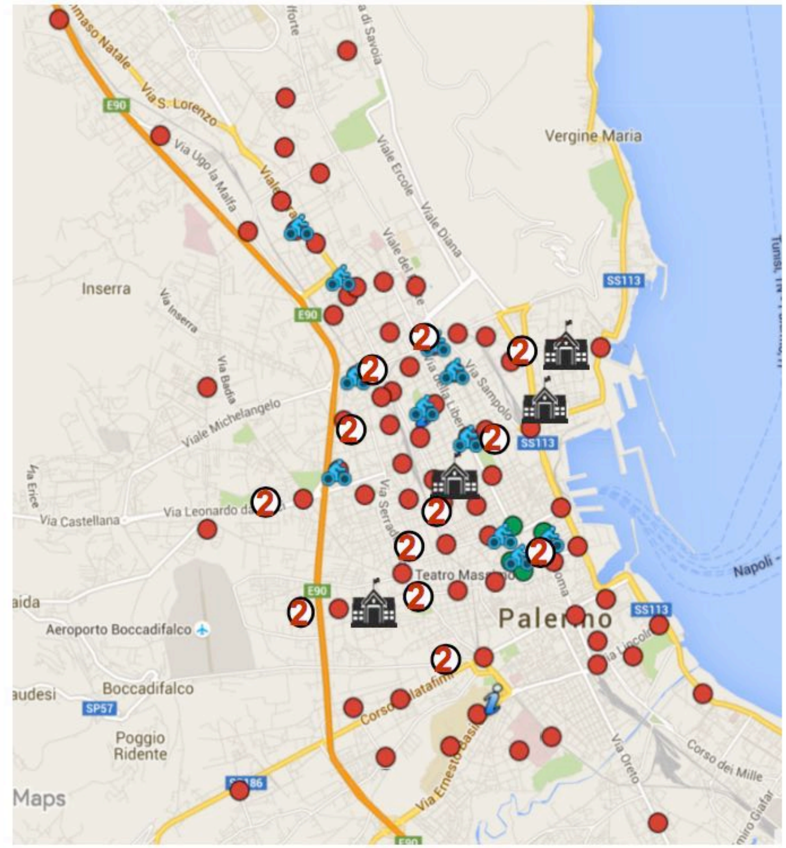
Il perché del progetto Go2School

1. ...perché saranno **2 i modalità** per andare da casa a scuola e viceversa con il Bike Sharing o con la Bici privata
2. ...perché saranno **2 le persone per equipaggio** (biciclette biposto/tandem 2 posti)
3. ... perché saranno **2 i macro obbiettivi** del progetto: la formazione alla mobilità sostenibile con l’alternanza scuola lavoro e la realizzazione di un sistema di trasporti integrato per studenti e lavoratori della scuola

2

L’EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: azione chiave D1 - Progettazione e realizzazione di servizi di Bike Sharing



Stazioni Go2School

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: dimensionamento del sistema (fase ex ante)

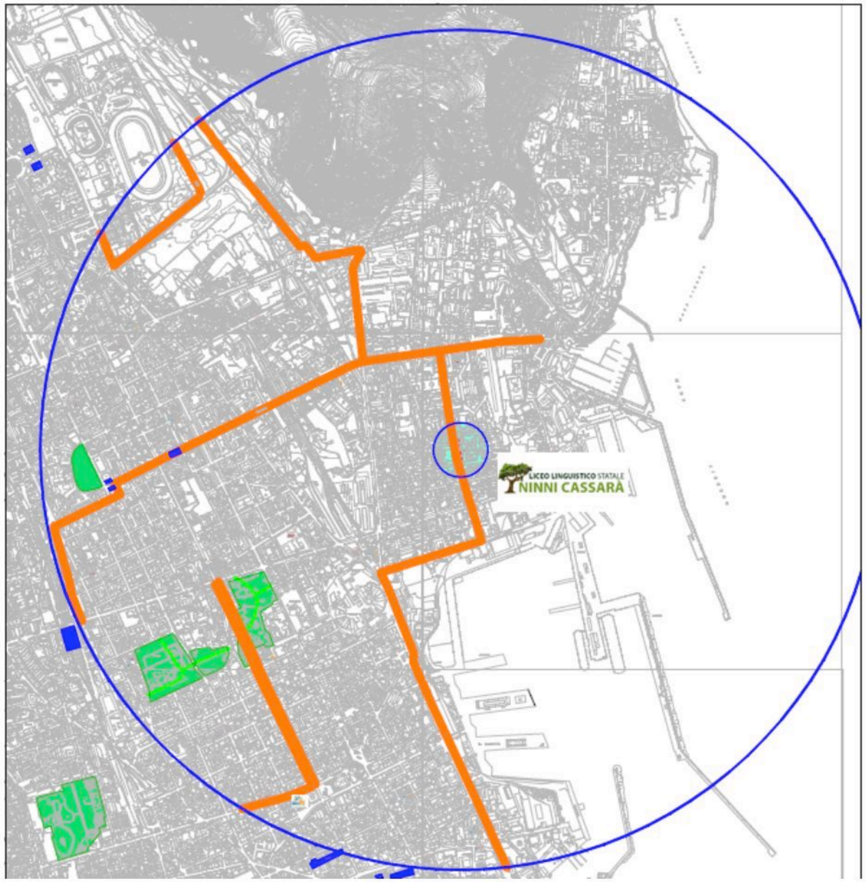
- Costruzione di un questionario da distribuire nelle scuole
- Raccolta, codifica e inserimento dati
- Elaborazione dati

- **DATI:** questionario sui mezzi di trasporto utilizzati e sui tempi di percorrenza scuola-casa-scuola somministrato agli studenti delle 4 scuole scelte (CHIEDEREMO ai ragazzi di interrogare Google Maps per vedere quanto tempo impiegano a piedi, in auto o con i mezzi pubblici per arrivare a scuola).
- **RISULTATO:** Carta di Palermo tematica per numero di studenti/tempi di percorrenza/mezzi di trasporto utilizzati
- **OBIETTIVO:** Allocazione ottima delle risorse per la costruzione di una rete di piste ciclabili accessibile al maggior numero di studenti
- **COME:** attraverso metodi matematici di ottimizzazione vincolati (risorse economiche/ rete stradale/piste già esistenti)
- **CHI LO FA:** AMAT e il Dipartimento di scienze economiche, Aziendali e Statistiche di UNIPA

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: infrastrutture Liceo Cassarà

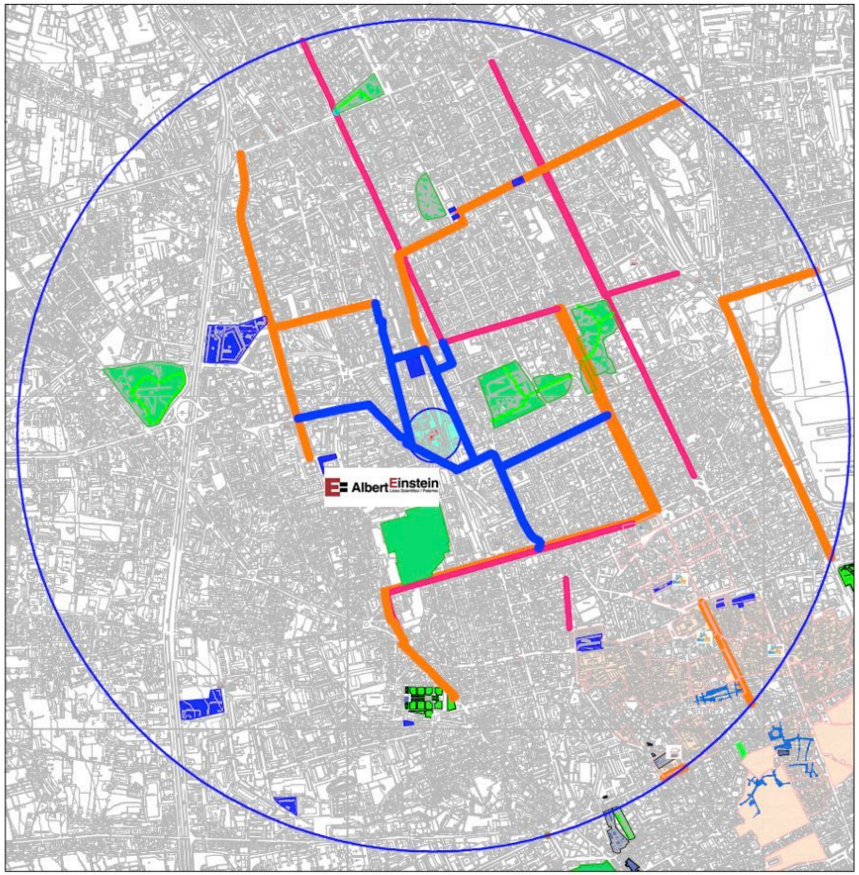
	Pista ciclabile progetto G2School
	Pista ciclabile esistente in sede propria
	Pista ciclabile esistente in corsia bus
	Pista ciclabile esistente promiscua



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: infrastrutture Liceo Einstein

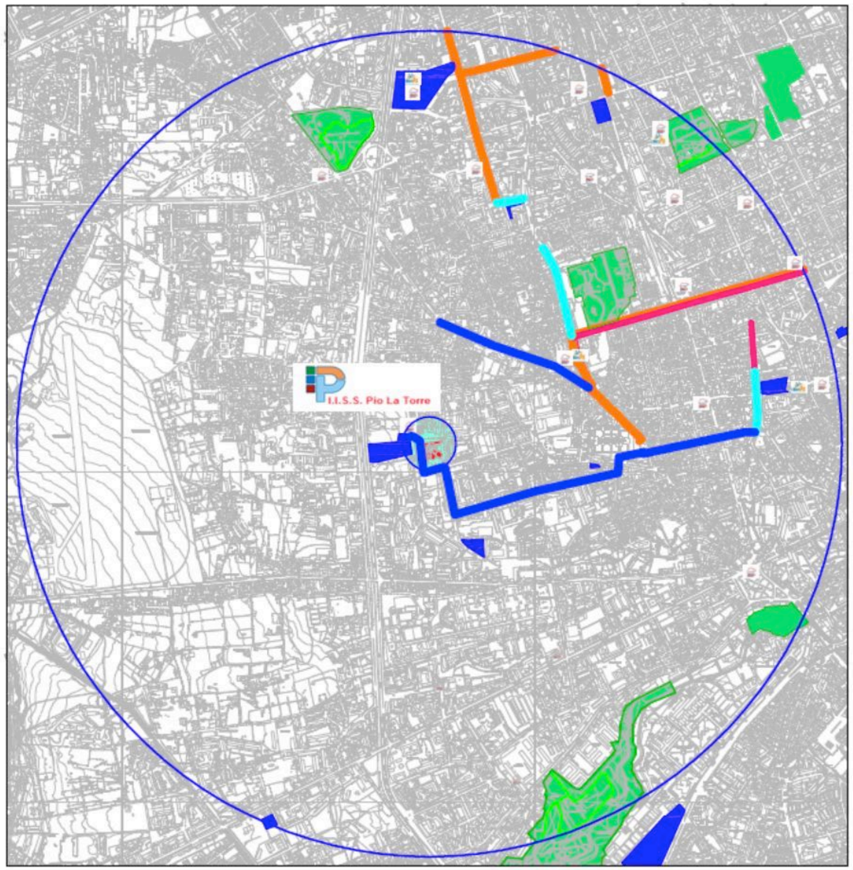
	Pista ciclabile progetto G2School
	Pista ciclabile esistente in sede propria
	Pista ciclabile esistente in corsia bus
	Pista ciclabile esistente promiscua



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: infrastrutture Liceo Einstein

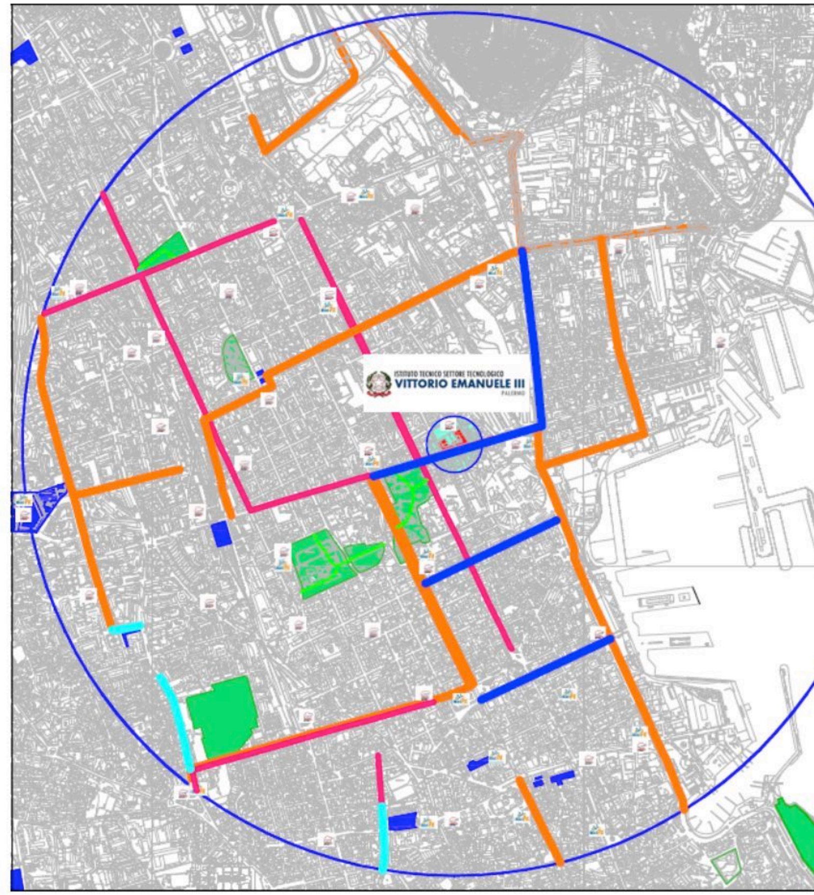
	Pista ciclabile progetto G2School
	Pista ciclabile esistente in sede propria
	Pista ciclabile esistente in corsia bus
	Pista ciclabile esistente promiscua



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: infrastrutture Istituto Tecnico V. Emanuele III

	Pista ciclabile progetto G2School
	Pista ciclabile esistente in sede propria
	Pista ciclabile esistente in corsia bus
	Pista ciclabile esistente promiscua



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

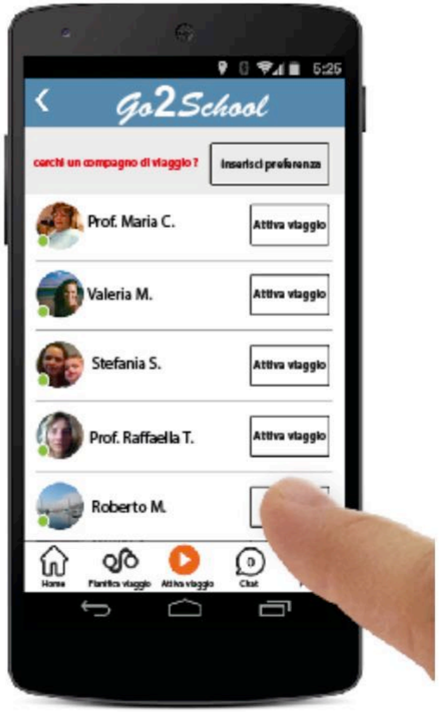
Il progetto Go2School: azione chiave D3 - Servizi innovativi a supporto del modello di gestione

Realizzazione della piattaforma Go2School per la realizzazione della smart community fra gli alunni delle scuole aderenti al progetto

Creazione di una piattaforma telematica che attraverso un' App possa mettere in rete 2 soggetti:

- La School Comunity
- Servizio bike sharing BiciPA

al fine di pianificare tragitti e formare gli equipaggi per gli spostamenti quotidiani casa-scuola – casa con tandem bici individuali



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: azione chiave D3 - Servizi innovativi a supporto del modello di gestione

Responsabile – AMAT/Comune di Palermo

- L'azione prevede l'utilizzo di un incentivo per gli studenti e gli operatori della scuola che aderiranno al progetto ed utilizzeranno i servizi di bike sharing per gli spostamenti casa-lavoro e casa-scuola denominato "Go2School Coupon" con l'obiettivo di premiare chi decide di recarsi a scuola bicicletta.
- Il Coupon *Go2School,* con validità temporale e chilometrica, per raggiungere quotidianamente il posto di lavoro/studio, avrà un valore di spesa in servizi di mobilità sostenibile e sarà distribuito dalle scuole attraverso l'Amministrazione Comunale/AMAT.

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

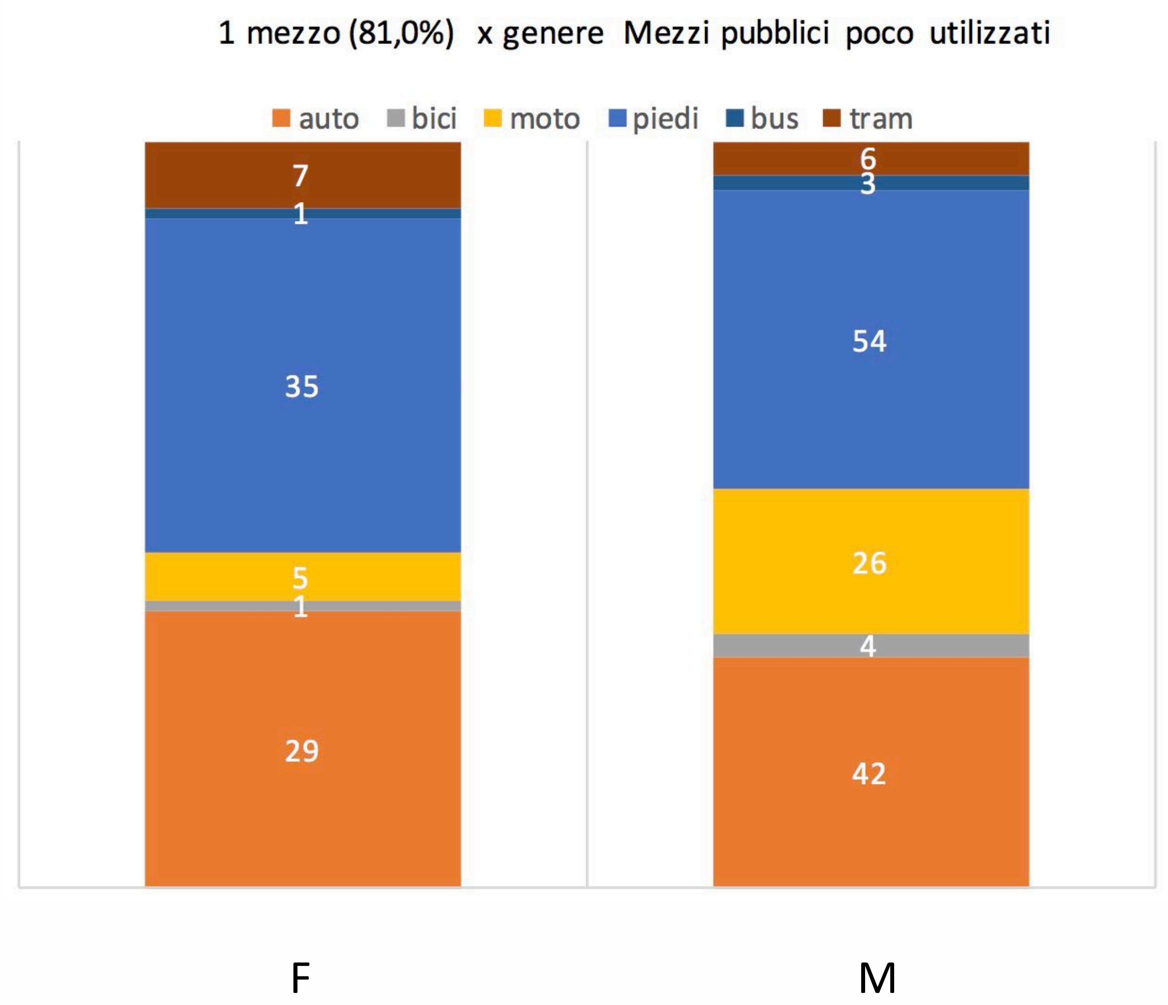
Il progetto Go2School: indagini preliminari

Interviste

- 244 Studenti intervistati
- 93 F e 151 M
- Mezzi di trasporto utilizzati
- Tempi di percorrenza
- Numero di tratte
- Uso del Bike Sharing

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: indagini preliminari



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School: indagini preliminari

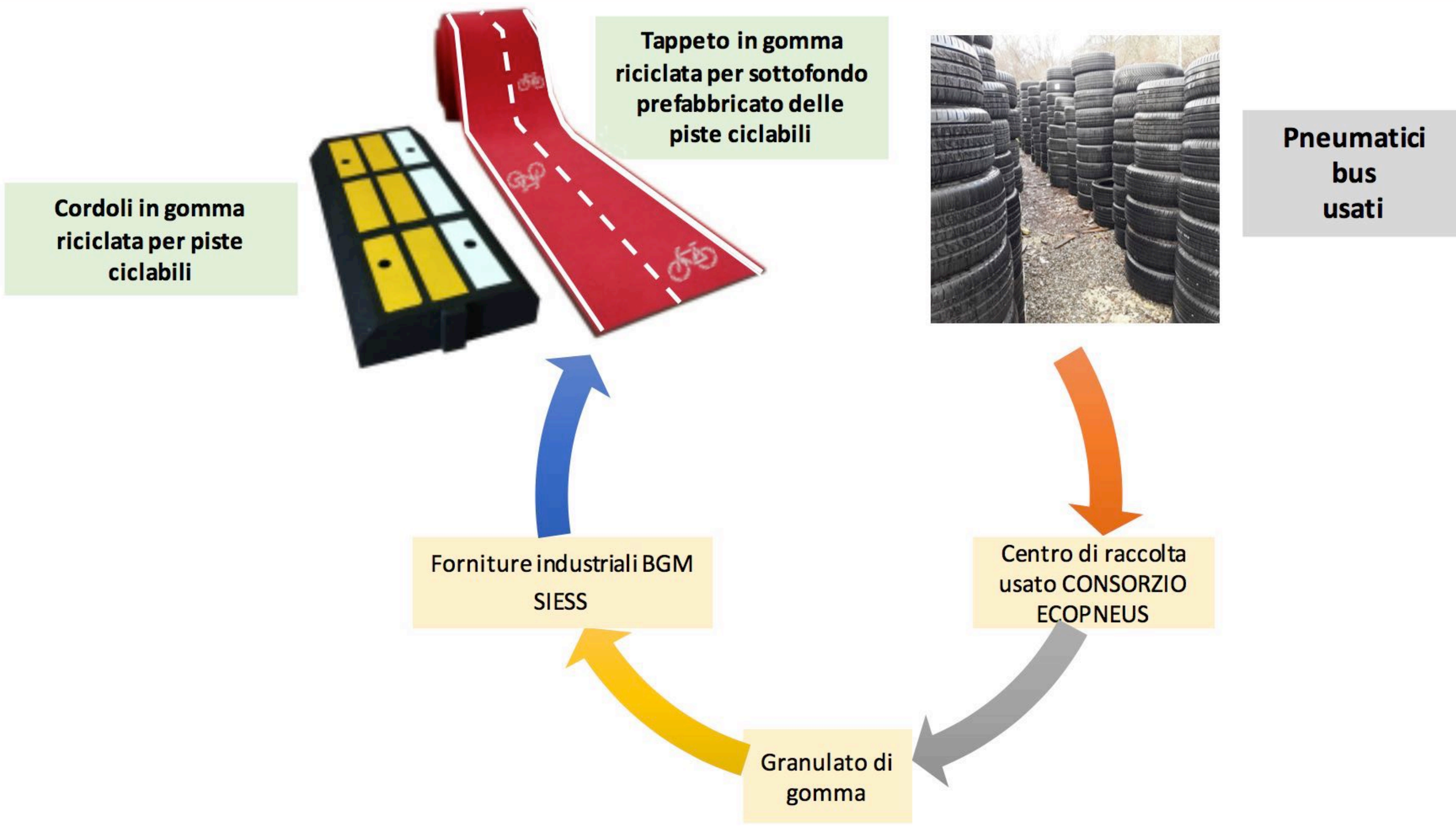
Saresti disposto ad andare a scuola con il Bike Sharing?

TEMPO DI PERCORRENZA CASA - SCUOLA

	"0-15"	"16-30"	">30"	nd	Totale	%
sì	39	30	3	2	74	30,3
certe cond	22	14	3		39	16,0
non so	51	26	4		81	33,2
nd	16	3		2	19	7,8
no	18	9	2		29	11,9
nd	16	3		2	19	7,8
Totale	146	82	12	4	244	
%	59,8	33,6	4,9	1,6		

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

Il progetto Go2School come supporto ad una economia circolare



L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

La Rete Sicilia Bike Sharing

Tavolo Partenariale inter-istituzionale denominato "**Rete Bike Sharing Sicilia**" per la promozione e lo sviluppo della mobilità dolce nel territorio della Regione Siciliana e la interconnessione dei servizi di Bike Sharing presenti sul territorio siciliano.

CITTÀ	Stazioni	Bici				Gestore	Anno di avvio	Fornitore	Finanziamento
Villafranca tirrena	7	49	29	29	Attivo	Ecobici	2014	Tmr	Ministero dell'ambiente
Tusa	4	30	26	26	Attivo	Halaesainbici	2015	Tmr	Ministero dell'ambiente
Palermo	37	400	254	0	Attivo	Bicipa	2015	Amat palermo	
Castellana sicula	2	12	12	12	Prossima attivazione	Castellaninbici		Comune	Ufficio pist 22 – "citta' a rete madonie – termini"
Cinisi	2	20	17	17	Attivo	Cinisi in bici	2017	Comune	Gal golfo di castellammare
Trabia-Casteldaccia-Bagheria-Aspra	4	20	35	35	Attivo	Progetto birutu	2016	Cooperativa migma	
Trappeto	2	25	25	10	Attivo	Bikegal golfo in bici trappeto	2016	Comune	Gal golfo di castellammare
Balestrate	3	25	17	17	Attivo	Bikegal golfo in bici balestrate	2016	Comune	Gal golfo di castellammare
Gagliano Castelferrato	3	30	24	24	Attivo	Gagliano a ruota libera	2016	Tmr	Gal rocca di cecere
Torrenova	1	3	3	1	Attivo	Torrenova	2017	Tmr	

L'EVOLUZIONE DELLA MOBILITÀ CONDIVISA A PALERMO

La Rete Sicilia Bike Sharing

Protocollo

Art. 2

*I Soggetti sottoscrittori del presente Protocollo d'Intesa concordano sulla necessità di istituire un Tavolo Partenariale inter-istituzionale denominato "**Rete Bike Sharing Sicilia**" per la promozione e lo sviluppo della Mobilità dolce nel territorio della Regione Siciliana e la interconnessione dei servizi di Bike Sharing presenti sul territorio siciliano.*

Il Tavolo Partenariale inter-istituzionale è aperto alle adesioni di Comuni, Enti Pubblici, Società di gestione di servizi di mobilità sostenibile, Trasporti locali e Regionali, Associazioni, Società operanti nel settore delle tecnologie e dei beni strumentali per i servizi di mobilità sostenibile, nel rispetto della continuità territoriale e/o di scelte e vocazioni dei rispettivi territori e delle rispettive competenze.

Art. 3

Alla struttura del Tavolo Partenariale inter-istituzionale sarà affiancato un gruppo di lavoro, formato da un numero massimo di due unità per ciascun Soggetto sottoscrittore, tra le quali comprendere, ove già designato, il Mobility Manager d'Area dei Comuni aderenti all'iniziativa.

Art. 4

I Soggetti che sottoscrivono il presente Protocollo manifestano la propria volontà e disponibilità a individuare strategie condivise e azioni da intraprendere, a vantaggio dei propri territori di riferimento, individuando politiche improntate all'innovazione tecnologica e allo sviluppo della Mobilità condivisa ed all'interconnessione dei servizi di bike sharing, presenti sul territorio della Regione Siciliana.

Art. 5

I Soggetti coinvolti concordano di declinare i temi dello sviluppo della Rete dei Servizi di Bike Sharing della Sicilia nei seguenti ambiti e azioni tra cui, in maniera descrittiva ma non esaustiva, si elencano:

-Interconnessione modale/tecnologica/commerciale dei servizi di mobilità collettiva, individuale, condivisa e mobilità dolce presenti sul territorio;

-Strategie e politiche di Mobility Management e Pianificazione della Mobilità Sostenibile;

-Programmazione ed elaborazione dei Piani di Spostamento Casa - Lavoro e dei Piani di Spostamento Casa – Scuola nonché piani per la mobilità turistica.

-Valutazione dei benefici ambientali conseguiti e conseguibili.

-Sviluppo di tecnologie ed attività condivise, al fine di realizzare complessive economie di scala nella gestione dei servizi di mobilità sostenibile.

Art. 6

I soggetti sottoscrittori si impegnano, altresì a cooperare per la programmazione e lo sviluppo, nei territori di competenza, di servizi condivisi di Mobilità Sostenibile e di processi, azioni e tecnologie per la mobilità a basso impatto ambientale con effettiva fattibilità tecnico-economica ed elevate potenzialità di replica.

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

3. THE ENVIRONMENTAL BENEFITS OF CARSHARING: THE CASE STUDY OF PALERMO (MARCO MIGLIORE, GABRIELE D'ORSO, DOMENICO CAMINITI)

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

The Environmental Benefits of Carsharing: the Case Study of Palermo

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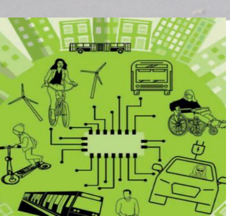
Speaker: Gabriele D'Orso



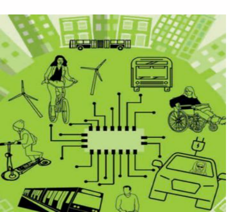
Sharing mobility and environment: outlining benefits and drawbacks

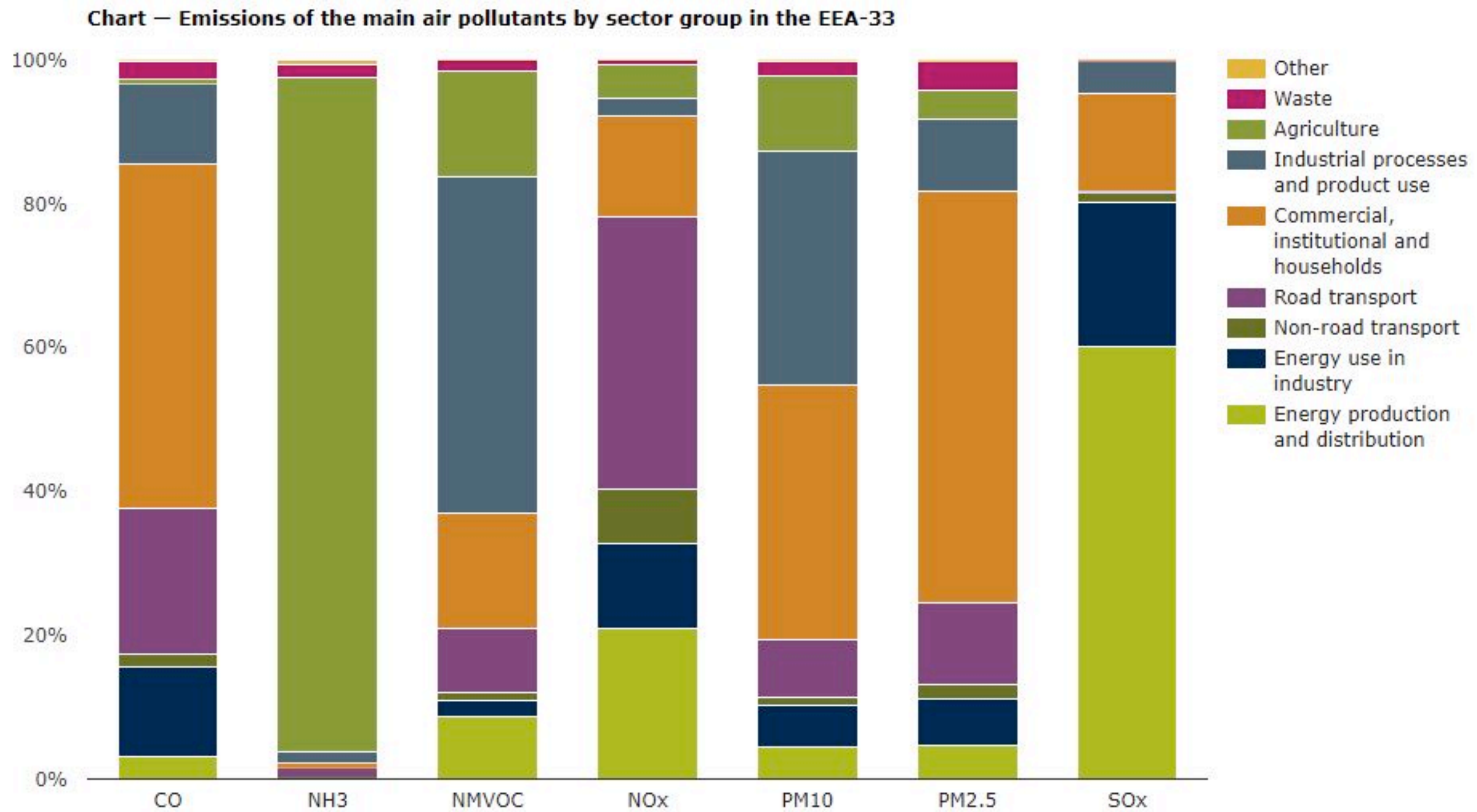
AIM OF THE STUDY

- **Aim** : Assessment of the environmental benefits of carsharing in urban contexts.

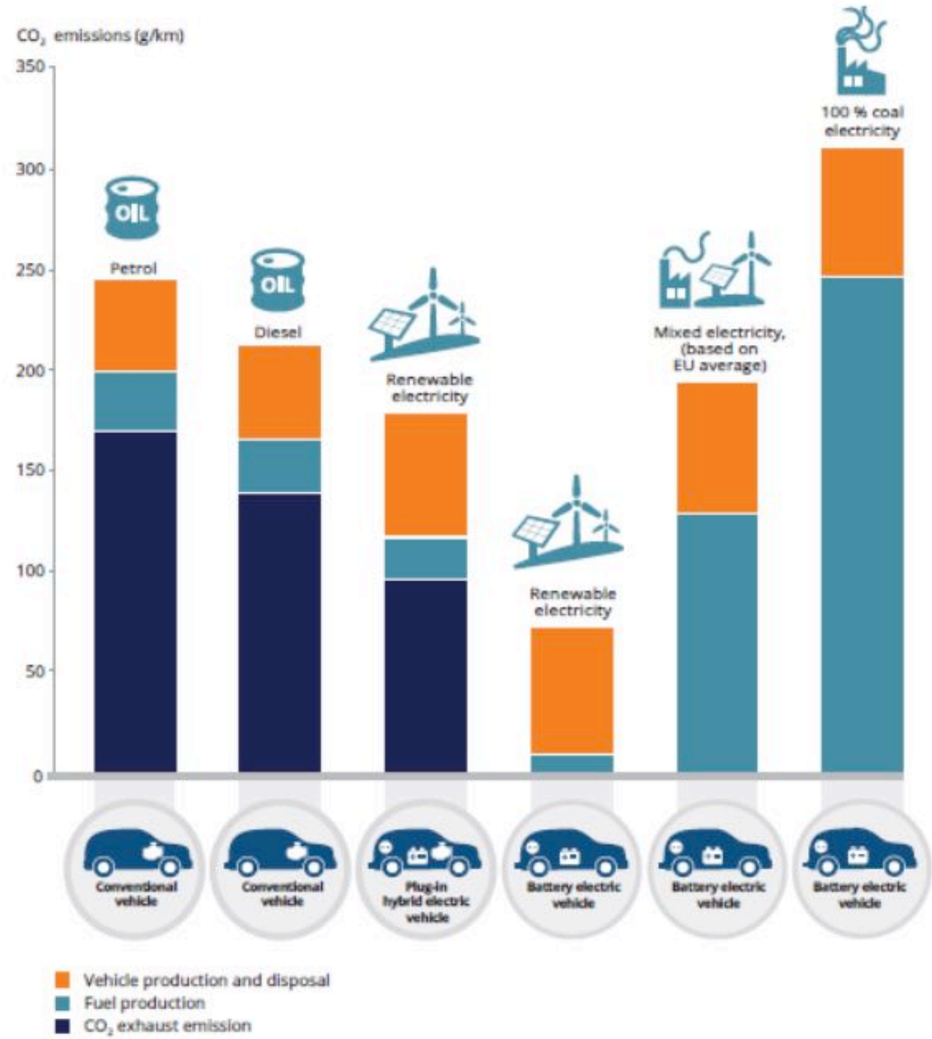
- **Contribution**: Using the COPERT's methodology to assess the emissions of the main air pollutants and their reduction due to the use of carsharing vehicles instead of private cars.

- This study **describes a case study.** Palermo has been chosen as a case study in order to apply the methodology. Thanks to the collaboration with AMAT (the public transport company that manages also the carsharing and the bike-sharing services in Palermo), all the inputs of the COPERT model are known.





Source: EEA, 2016



Note: The values are estimated for an average mid-size vehicle, based on 220 000 km.

Replacing conventional vehicles with EVs can help reduce emissions, although this is dependent on the source of the electricity used to charge vehicles, i.e. from renewable energy sources, nuclear or fossil fuel.

Low emissions during the electric vehicle's lifetime outweigh the environmental effects of the production and end-of-life phase. Electric vehicles can therefore significantly reduce the negative environmental effects of conventional passenger vehicles, as long as the electricity is provided by renewable sources.

Other strategies:

- Traffic management and transport demand management;

- Strenghtening the public transport system (Investments in infrastructure, tariff integration, reserved lanes, infomobility);

- Promotion of walking and cycling;
- Multimodality (e.g. Park and Ride)

- Introduction of driving restrictions (e.g. Limited Traffic Zones);

- Introduction of road pricing and parking fees;

- Shared Mobility:

1. Carsharing;
2. Bike-sharing;
3. Car pooling;
4. Ride sharing;

In many studies the environmental benefits of carsharing are assessed in relation to:

- the impacts of carsharing on vehicle ownership *(Martin and Shaheen, 2010)*;
- the reduction of mileage after joining carsharing *(Martin and Shaheen, 2016)*;
- the presence of electric vehicles or hybrid vehicles in the carsharing fleet *(Baptista et al., 2014)*;
- the increase in the use of public transport and walking after joining carsharing *(Chen and Kockelman, 2016)*;
- the reduction of parking demand *(Chen and Kockelman, 2016)*;
- the reduction of fuel consumption *(Chen and Kockelman, 2016)*.

COPERT’S METHODOLOGY

- **CO**mputer **P**rogramme to calculate **E**missions from **R**oad **T**ransport
- Developed within the framework of the Europen CORINAIR project.
- Used by many European countries for reporting official emissions data.
- It calculates emissions at a national, regional or local scale, and for annual to daily estimates.
- COPERT’s methodology is published (Ntziachristos et al., 2009; EEA, 2016) and peer-reviewed by experts of the UNECE*[1] LRTAP*[2] Convention.
- It includes all the main pollutants: nitrogen oxides NO_x, biazoto oxide N_2O, sulfur oxides SO_x, methane CH_4, non-metallic volatile hydrocarbons, carbon monoxide CO, carbon dioxide CO_2, ammonia NH3, particulate matter and lead compounds.

*[1]United Nations Economic Commision for Europe
*[2]Long-range Transboundary Air Pollution

COPERT'S INPUTS

- Fleet:
  - type of vehicle (passenger cars, light commercial vehicles, heavy commercial vehicles, buses, motorcycles and mopeds);
  - type of fuel (petrol, diesel, LPG, CNG);
  - year of production and emission standards (Euro I, II, III, etc.);
  - lifetime comulative mileage (distance traveled by each vehicle since the introduction in the market)
  - displacement for light vehicles or motorcycles and weight for commercial vehicles;
- Fuel consumption and fuel characteristics;
- Driving conditions:
  - average speed and kilometers traveled (urban, extra-urban or highway).
- Emission factors;
- Road slope;
- Environmental conditions:
  - max. temperature;
  - min. temperature;
  - relative humidity;
- Cargo for commercial vehicles.

COPERT'S METHODOLOGY

COPERT associates to each vehicle class and for each pollutant math functions for estimating emissions and fuel consumption **depending on speed**. These functions represent average emission and fuel consumption curves; they are derived from emissions measurements for different vehicle types and brands and refer to tests carried out in many European countries, on a variety of urban and extra-urban driving cycles.

The emissions are evaluated by COPERT as the sum of three types of contributions:

- **hot emissions**, produced during engine operation at operating temperature (about 90° C), i.e. when the engine is thermally stabilized;

- **cold start emissions**, produced during the engine warming-up phase. They include those generated during departure at ambient temperature and the effects of preheating. Conventionally, it is the emissions that occur when the temperature of the cooling water is below 70° C;

- **Non-exhaust emissions** consisting only of non-methane volatile organic compounds, due to fuel evaporation.

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83 rd most congested city worlwide (INRIX)

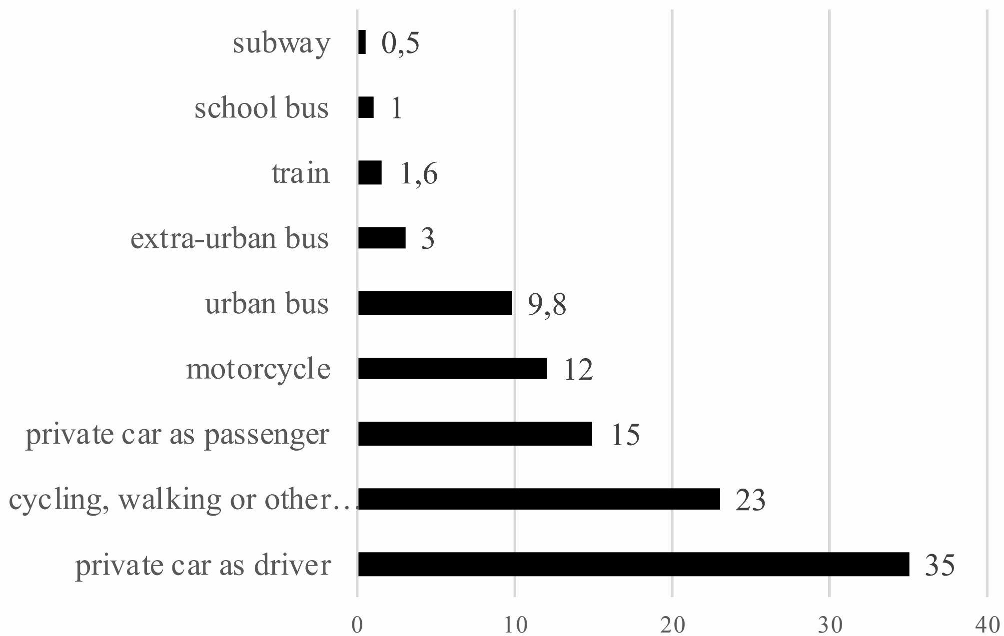
385,103 cars circulating in Palermo

119 hours lost in congestion in 2018 (INRIX)

58.2 cars/100 inhabitants

10 mph speed (INRIX)

1.3 car occupancy rate



Modal shares in Palermo (ISTAT, 2011)

50 % modal share of private car

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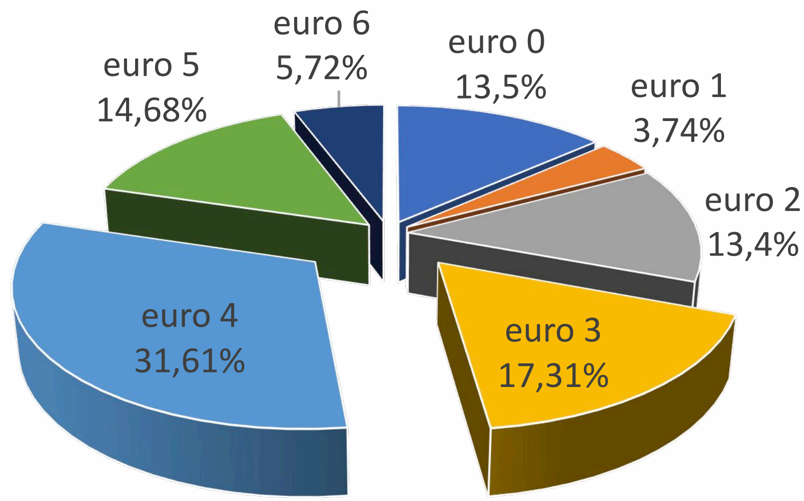
Passenger trips by travel time and mode of transport

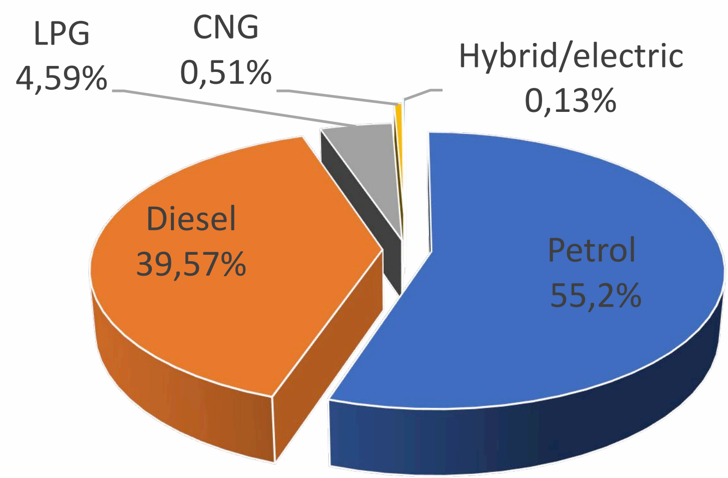
Mode/Travel time	10’	25’	45’	70’	TOTAL
Train	92	674	1,347	725	2,838
Urban bus and tram	2,172	6,976	4,625	665	14,438
Extra-urban bus	48	517	1,647	1,518	3,730
School bus	371	564	416	130	1,481
Private car as driver	15,074	23,616	8,798	1,521	49,009
Private car as passenger	12,178	7,808	1,989	197	22,172
Motorcycle	8,540	7,352	1,007	31	16,930
Cycling, walking or other modes	28,450	4,015	408	64	32,937
TOTAL	66,925	51,522	20,237	4,851	143,535

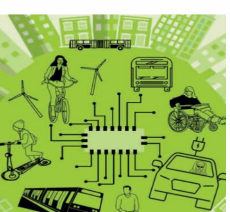
Many trips that lasts up to 10 minutes are travelled by private car.

MOBILITY IN PALERMO

Fleet	385103
Euro 0	13,54 %
Euro 1	3,74 %
Euro 2	13,40 %
Euro 3	17,31 %
Euro 4	31,61 %
Euro 5	14,68 %
Euro 6	5,72 %
Petrol	55,20 %
Diesel	39,57 %
LPG	4,59 %
CNG	0,51 %
Hybrid/electric	0,13 %







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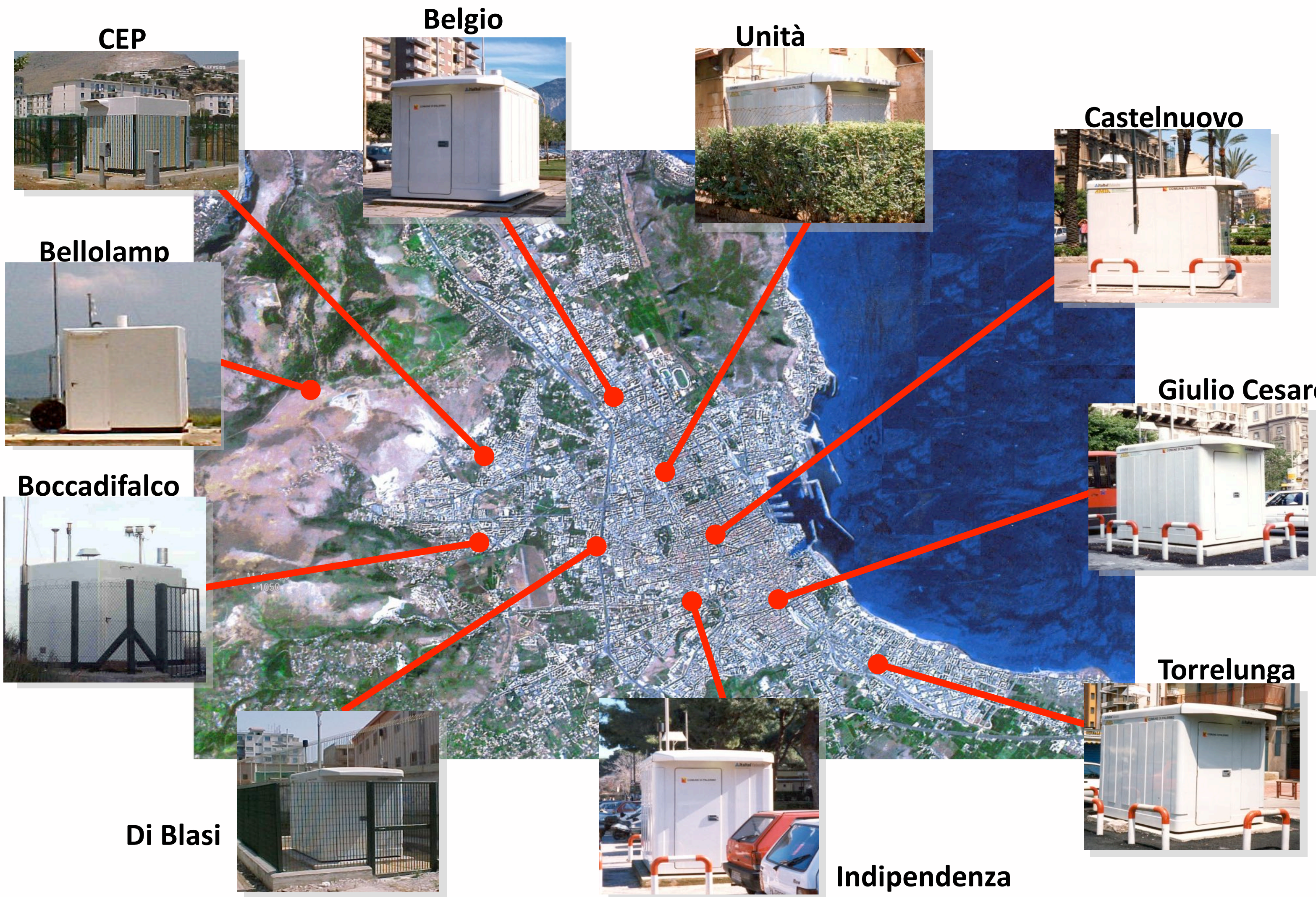
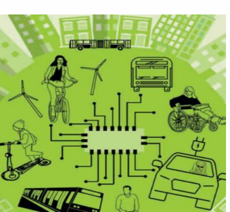
AIR POLLUTION IN PALERMO





AIR POLLUTION IN PALERMO

The excessive use of the private car and the lack of use of the public transport lead to frequent congestion in the main axes of the city, especially during peak hours, and to the overcoming of the legal limits for the concentrations of air pollutants.

Particularly PM10 exceed the limits several times a year (50 µg / m3 is the legal maximum daily value and the maximum number of exceedances allowed in a year is equal to 35), as can be seen from the air quality data collected by control units installed by RAP S.p.A.

Year	Boccadifalco	Indipendenza	Giulio Cesare	Castelnuovo	Unità d’Italia	Belgio	Di Blasi	CEP
2015	5	7	16	12	13	11	69	0
2016	7	16	20	14	20	15	45	13
2017	7	16	16	11	14	7	26	0
2018	11	27	21	25	15	n.d.	29	7
2019	9	16	18	3	18	n.d	10	3

Number of annual exceedances of the limit of the maximum daily value of PM10.

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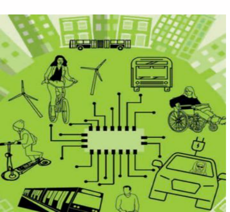
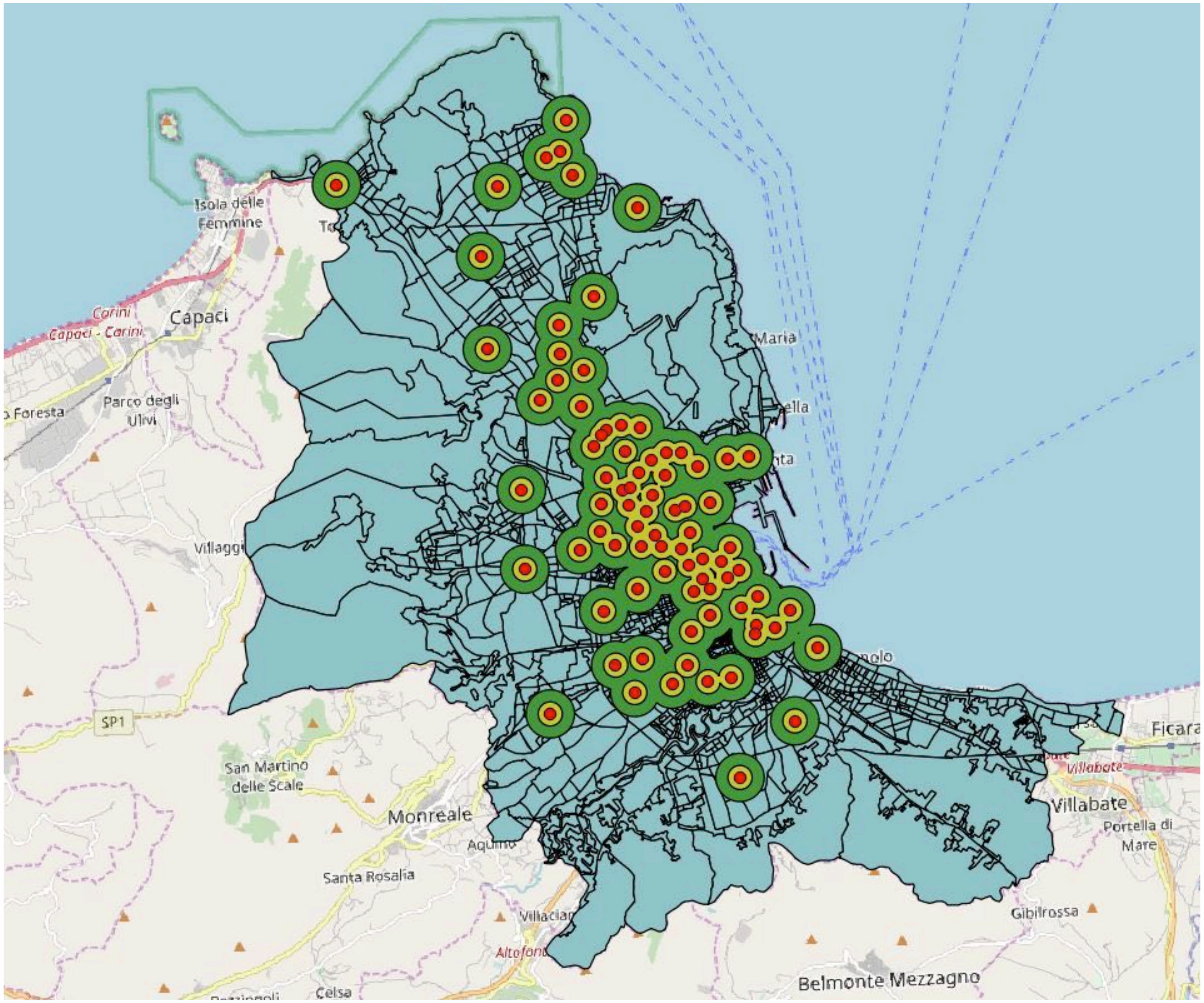
The service "Car Sharing Palermo" was launched by AMAT in **March 2009**, financed by the Italian Ministry of the Environment and identified by the national brand "**IO GUIDO Car Sharing**".

AMAT offers a **station-based** service (one-way and round trip) with **85 reserved parking areas** located throughout the city and a fleet of **159 cars**.

Booking is via app, via website or via call center.

Cost of the service:
- Annual subscription (24 €)
- Hourly rate and mileage rate





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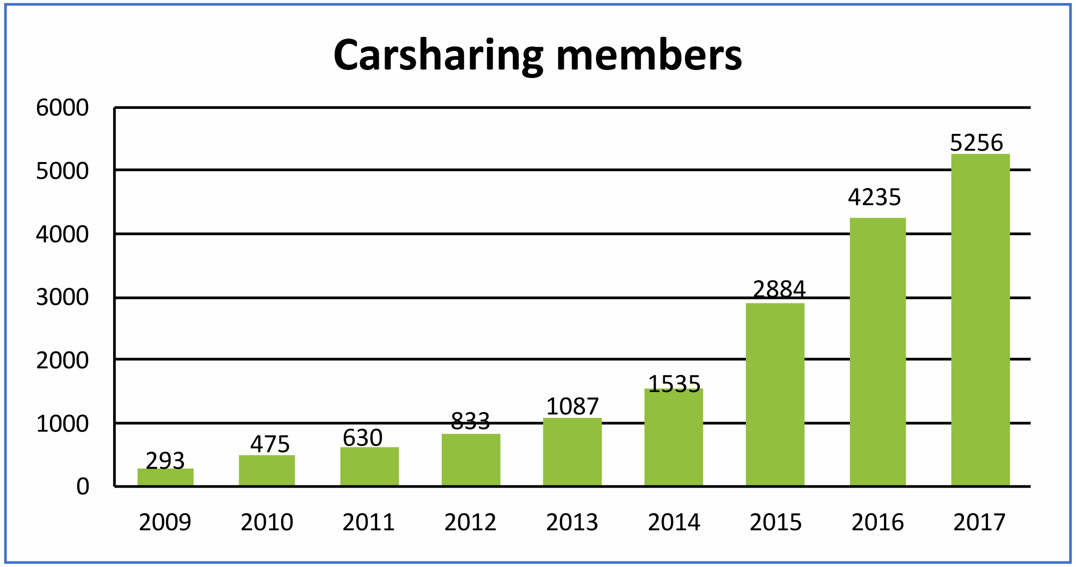
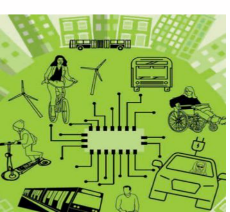


	Reservations	Trips	Kilometers	Hours
2014	12053	10956	458094	107044.94
2015	23399	20984	894051	187209.12
2016	34042	30009	959888	206461.86
2017	31913	28647	848498	210264.66



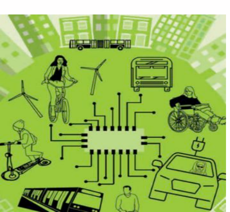
The carsharing fleet

Year	Car model	Number	Type of fuel	Displacement	Standard
2016	Fiat 500 L	9	Diesel	1,3 L	Euro 5
	Opel Combo	3	CNG Bifuel	1,4 L	Euro 5
	Volkswagen Golf	6	CNG Bifuel	1,4 L	Euro 6
	Volkswagen Golf Plus	1	CNG Bifuel	1,6 L	Euro 5
	Fiat Panda	10	CNG Bifuel	0,9 L	Euro 6
	Valkswagen Polo	20	CNG Bifuel	1,2 L	Euro 5
	Renault Zoe	24	Electric		
	Skoda Fabia	8	CNG Bifuel	1,2 L	Euro 5
	Volkswagen Touran	4	CNG Bifuel	1,4 L	Euro 5
	Volkswagen Up!	33	CNG Bifuel	1 L	Euro 5
	Opel Zafira	3	CNG Bifuel	1,6 L	Euro 6

121 vehicles

A customer satisfaction survey has been carried out by AMAT in 2017 and the results have been analyzed.

- **Anonymous online interview;**
- **Addressed to all the carsharing members;**
- Consisted of **25 questions** about the satisfaction achieved by the service and about how the respondents used the carsharing service.
- **718 users** completed the customer satisfaction questionnaire. It is possible to consider the data as **reliable and representative**.



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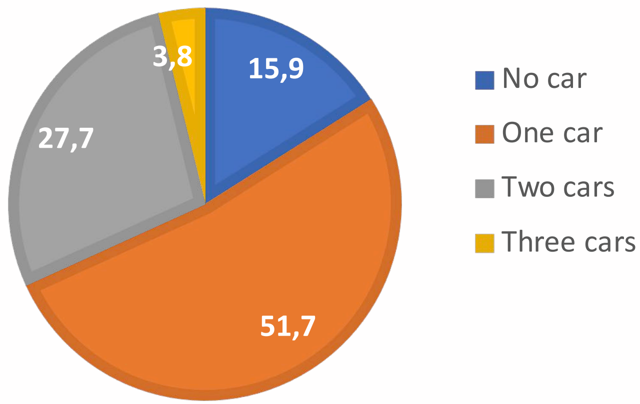
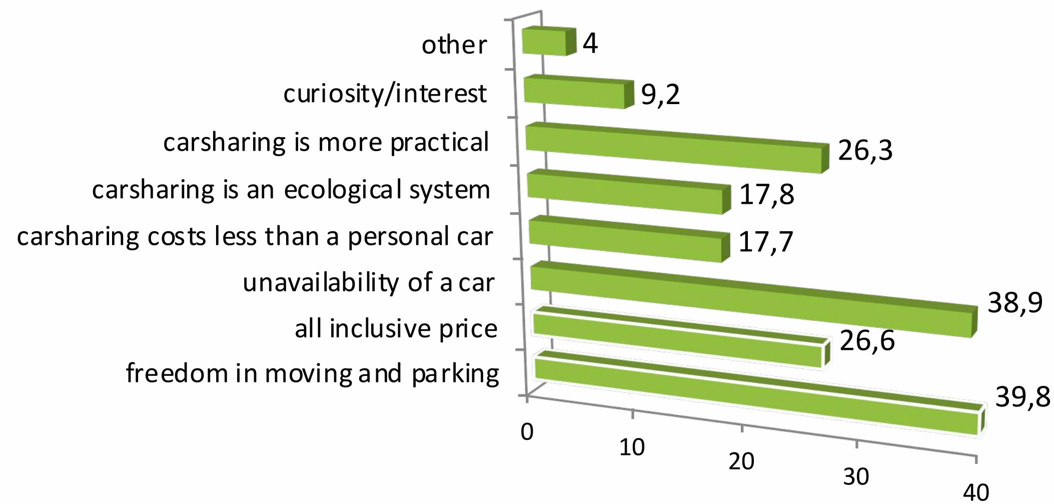
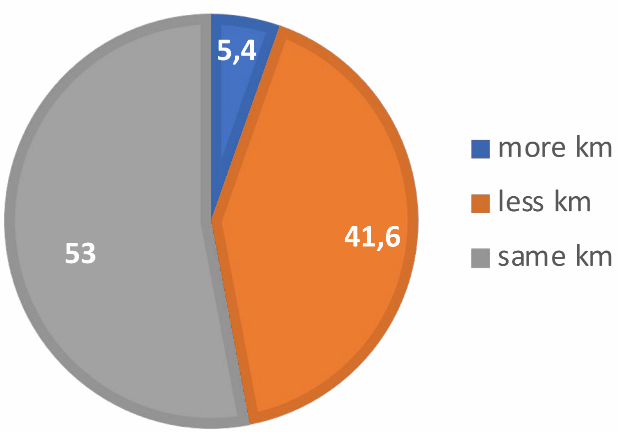
NUMBER OF CARS PER HOUSEHOLD



MAIN REASON FOR JOINING CARSHARING



VEHICLE KILOMETERS TRAVELED AFTER JOINING CARSHARING



The use of carsharing is very often linked to the **unavailability of a car** and actually replaces the purchase of a second car.

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1 shared car replaces **4** private cars

121 shared cars	484 private cars
• Average speed: 20 km/h • Fuel type: - Diesel - CNG - Electric • Displacement: data from the carsharing fleet • Kilometers travelled by each car: data from the carsharing database • Lifetime comulative mileage: data from the carsharing database	• Average speed: 16 km/h • Fuel Type: - Petrol • Displacement: small cars (Euro Market Segment B) • Kilometers travelled by each car: 2,500 km/year • Lifetime comulative mileage: 0 (new cars)

Results

Pollutant	Private fleet emissions [t]	Carsharing fleet emissions [t]	Difference [%]
CH_4	0.0258	0.0688	+ 167
CO	0.7309	0.4502	- 38
CO_2	334.5237	208.9314	- 38
NMVOC	0.1751	0.0291	- 83
NO_x	0.077	0.0892	+ 16
PM10	0.028	0.021	- 25

The NMVOC have the maximum reduction (83%), while the use of carsharing leads to an increase in CH_4 and NO_x emissions, because there are diesel and CNG vehicles. CO_2 and PM10, that are problematic for Palermo, have significant reduction with the use of carsharing instead of the private car.

CONCLUSION

- If the inputs are known, COPERT's methodology is **simple to use** for the assessment of the emissions by road transport and also for the impact of carsharing in improving air quality.

- The methodology and the speed-dependent emission factors applied have been drawn from European research projects and contributions from various European scientific sources, including official national inventories, and this make the model **reliable**.

- In absolute terms the use of the carsharing fleet has **positive effects** in terms of reducing emissions of pollutants.

- Considering the 385,103 cars circulating in Palermo these **effects are limited**. This is true also considering that the modal share of carsharing according to the application of a modal choice model is about 3.5%, therefore it has a fairly limited impact on Palermo's mobility (Catalano et al., 2008; Migliore et al., 2018).

- Furthermore, road transport is **not the only source** of pollution. For example, about 43% of the PM10 emissions in Palermo is due to heating systems, 42% is caused by road transport and the remaining part is due to industry, agriculture and other types of transport. About NMVOCs, 60% of emissions are produced by waste, while 33% by road transport.

What should AMAT do in order to increase the environmental benefits of carsharing?

- ✓ increase the number of users
- ✓ expand the fleet with electric or hybrid vehicles.
- ✓ Tough the conversion to all-electric is not feasible, the company should allocate all the electric cars to the most polluted and congested areas of the city;
- ✓ reduce vehicle relocation operations, which involve additional kilometers traveled by each shared car, applying optimization criteria.

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

4. FROM USER ACCEPTANCE TO IMPACTS OF SHARED MOBILITY (PATRÍCIA BAPTISTA)

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LARSyS
Laboratory of Robotics
and Engineering Systems

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From user acceptance to impacts of shared mobility

Patrícia Baptista
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Sharing mobility and environment: outlining benefits and drawbacks - **RIDER Project**

21st October 2019

FCT
Fundação para a Ciência e a Tecnologia

TÉCNICO LISBOA

Patrícia Baptista, Principal Researcher

Laboratory of Industrial Ecology and Sustainability

IN+ Center for Innovation, Technology and Policy Research, Instituto Superior Técnico

LARSyS – Robotics and Systems in Engineering and Science, Instituto Superior Técnico

1. Trends in mobility

Currently…

- **2007: For the first time, more people live in cities and not in rural areas.**

- **2050: More people will live in cities than the current world population.**

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1. Trends in mobility
This has consequences…

- **Average driving speed in major cities rounds 16 km/h.**
- **The population of São Paulo spend 27 days a year in traffic jams.**
- **The most expensive parking place has been sold in Hong Kong for 1.000.000 €.**

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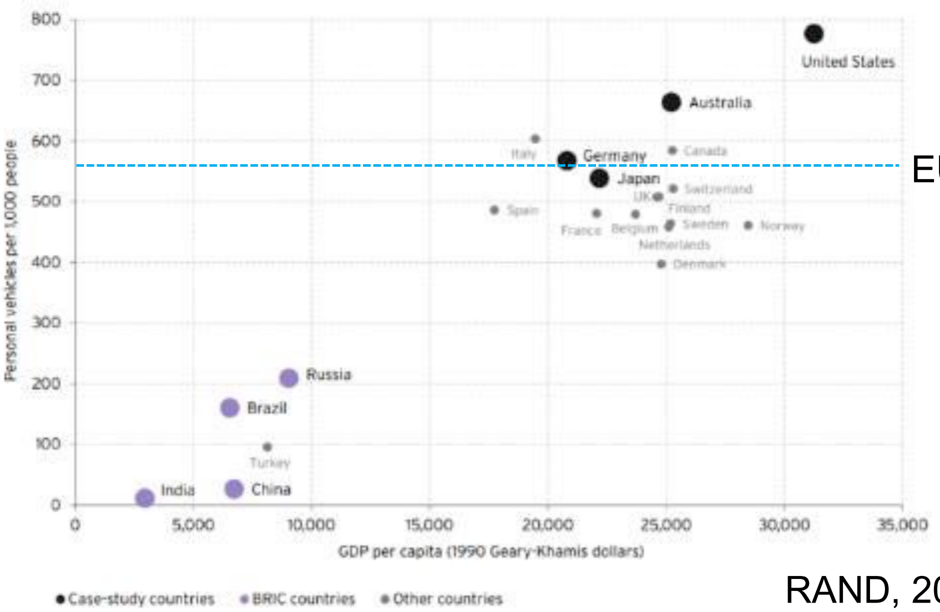
1. Trends in mobility

We are facing increasing motorization rates

(number of vehicles per 1000 inhabitants)



RAND, 2014

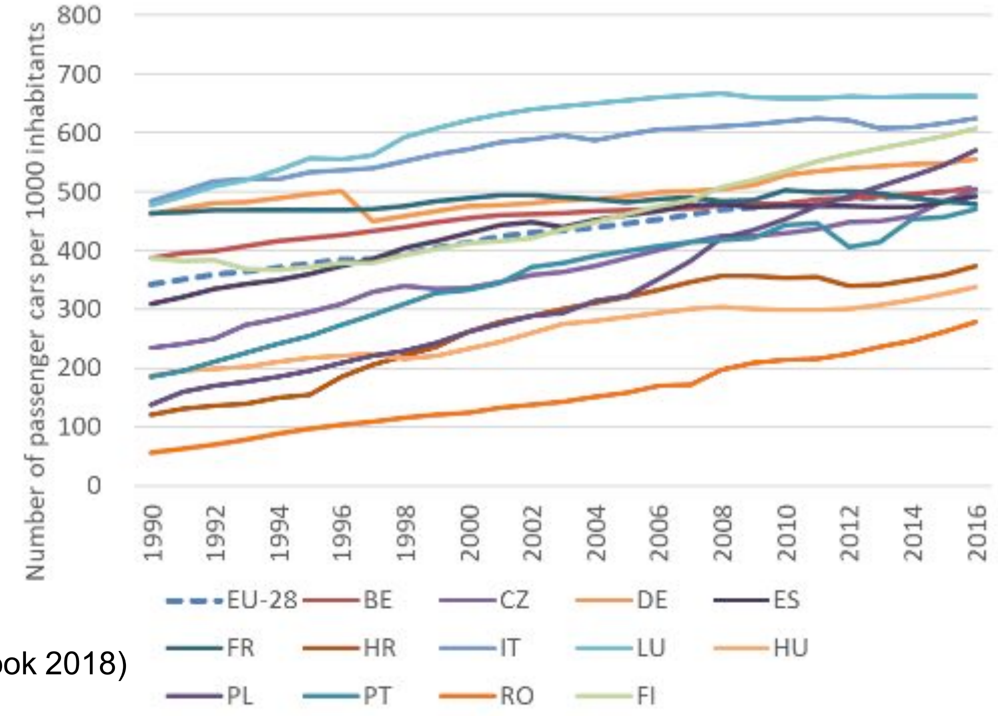
Figure 3.2. GDP Per Capita and Personal Vehicle Ownership per 1,000 People, 2008

1. Trends in mobility

We are facing increasing motorization rates

(number of vehicles per 1000 inhabitants)

Europe in more detail



(EU Transport Pocketbook 2018)

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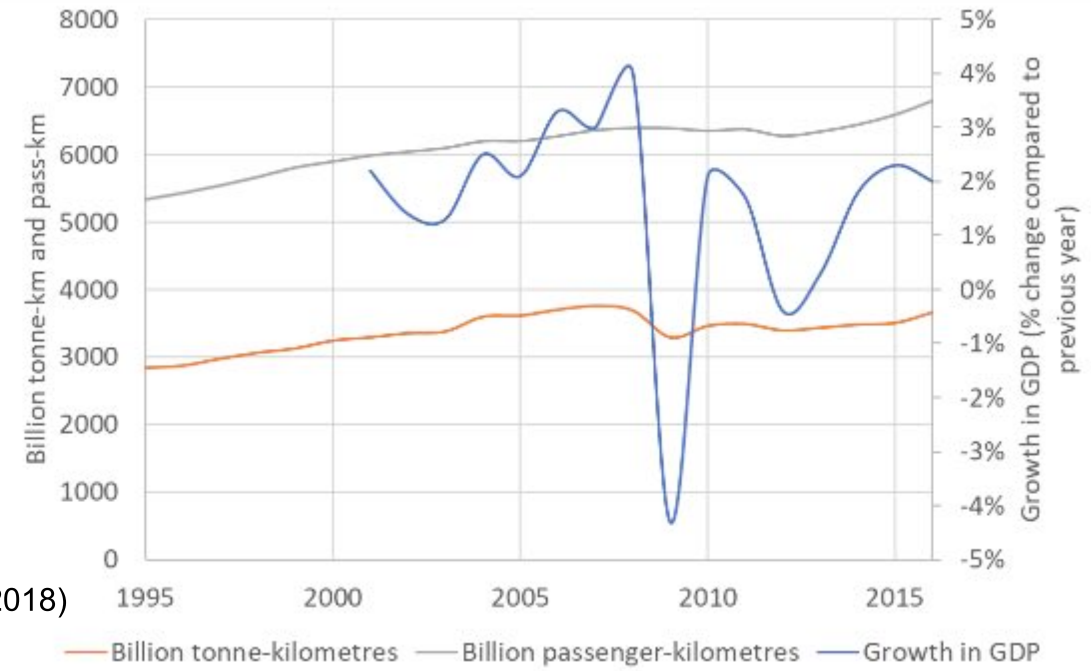
1. Trends in mobility

And we are transporting more passengers and goods

Europe transport activity



(EU Transport Pocketbook 2018)

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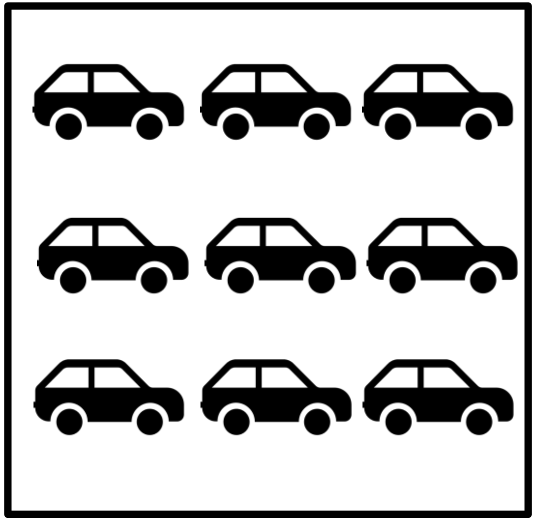
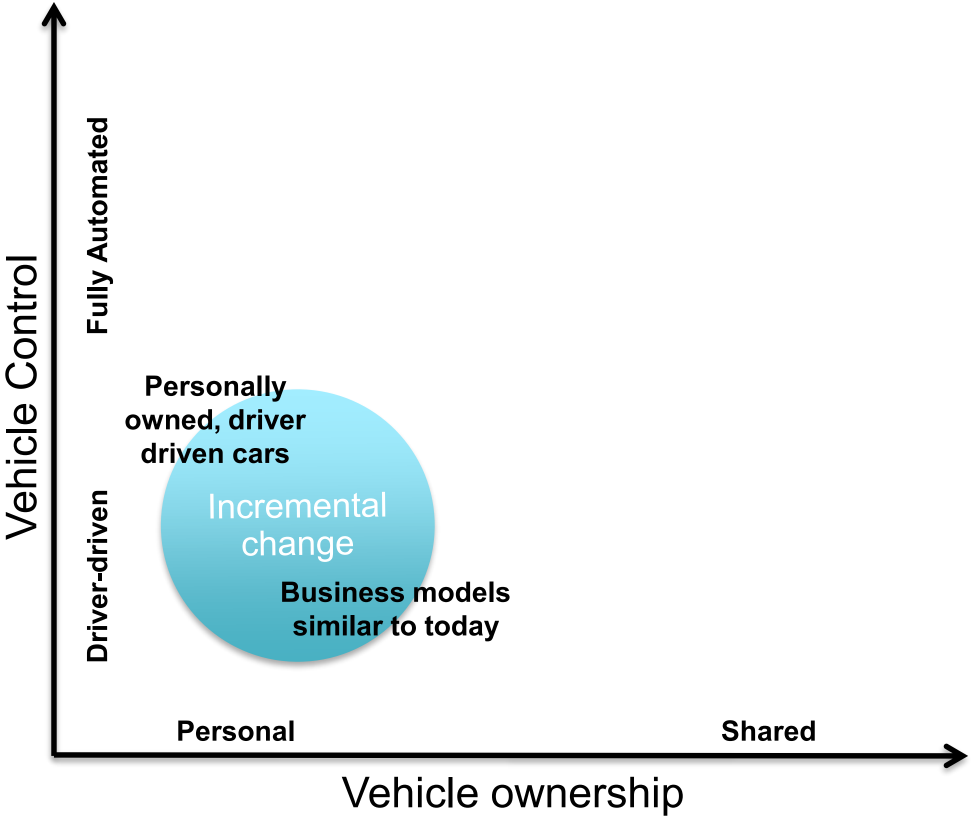
1. Trends in mobility

How will urban mobility evolve?

Life with **cars**

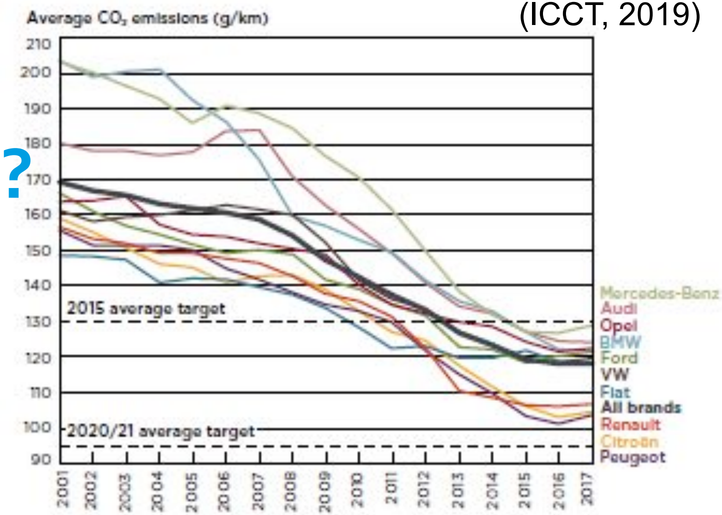




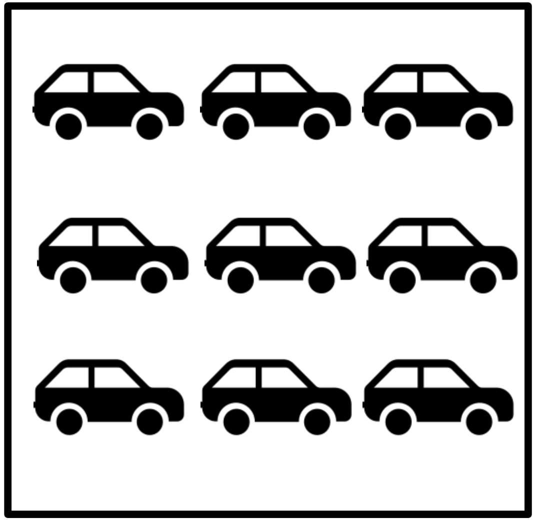
1. Trends in mobility

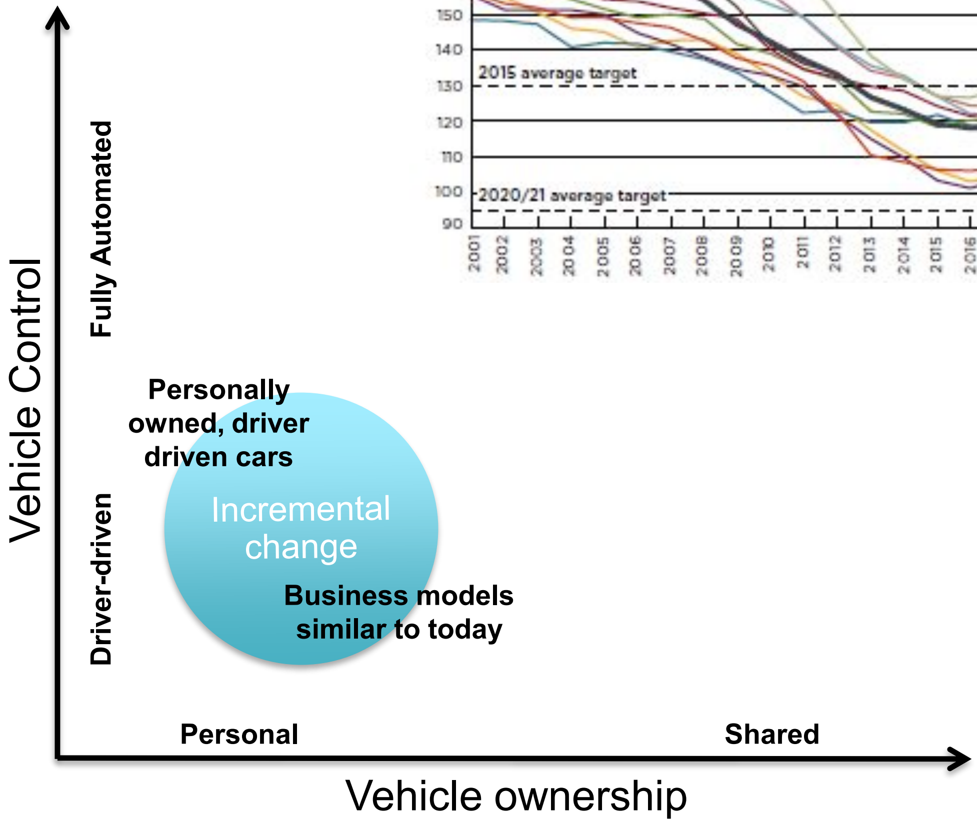
How will urban mobility evolve?

(ICCT, 2019)



Life with **cars**

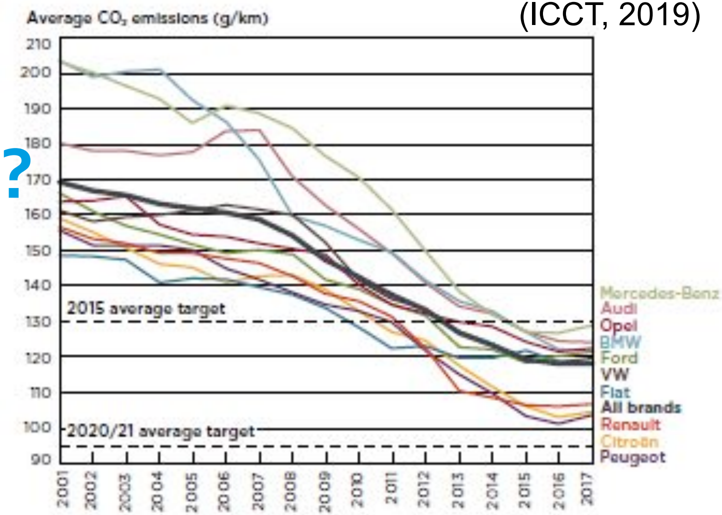




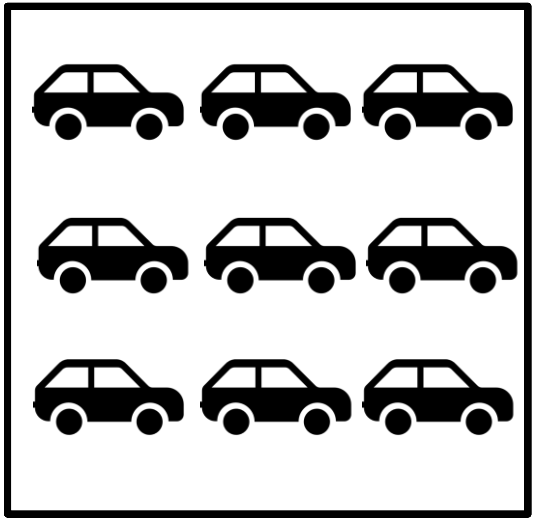
1. Trends in mobility

How will urban mobility evolve?

(ICCT, 2019)



Life with **cars**



Vehicle Control

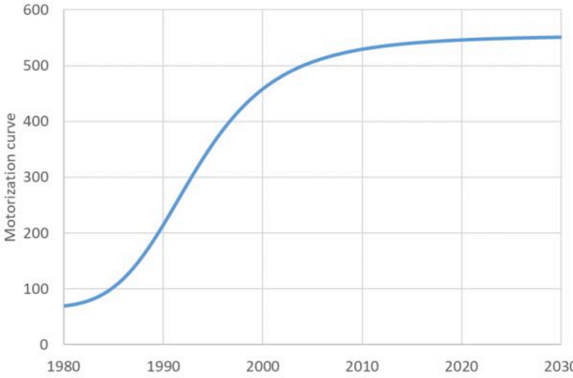
Fully Automated

Driver-driven

Personally owned, driver driven cars

Incremental change

Business models similar to today



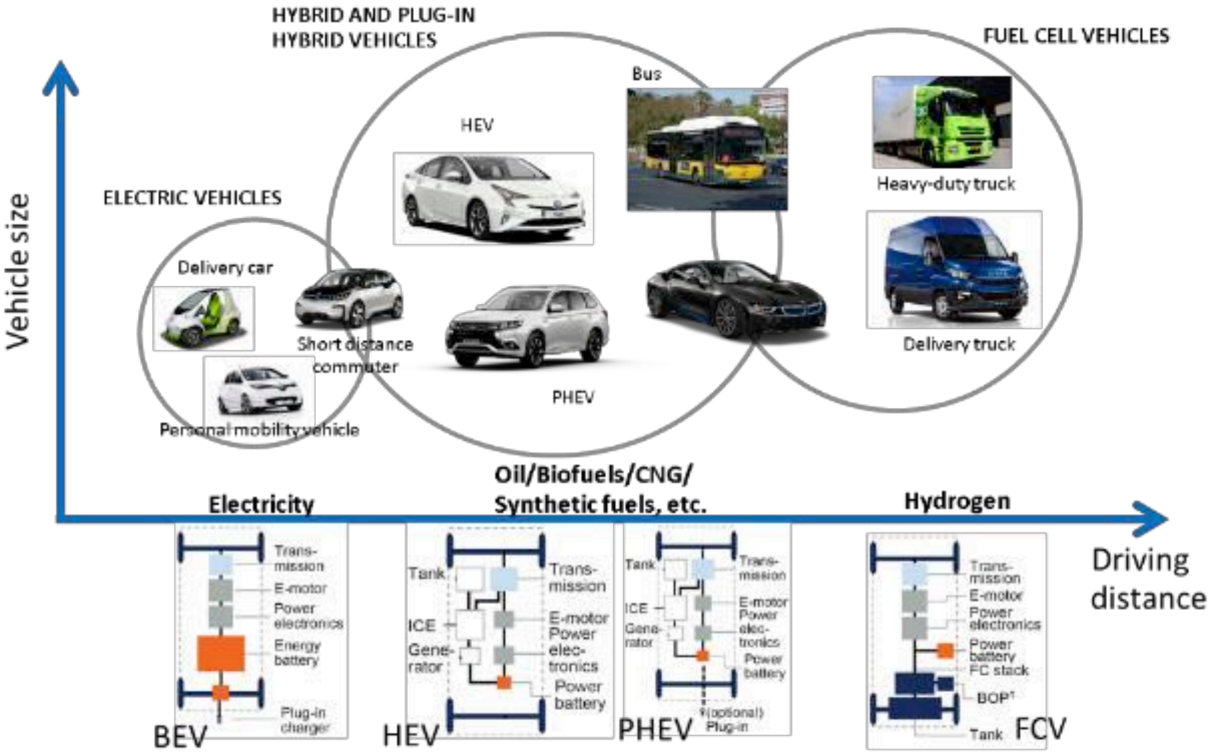
Personal

Shared

Vehicle ownership

1. Trends in mobility

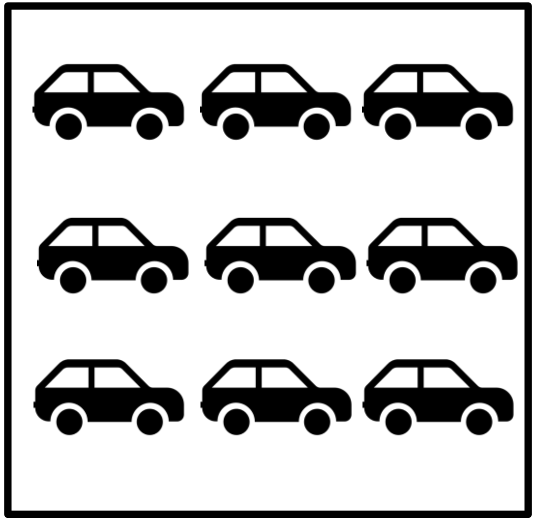
How will urban mobility evolve?

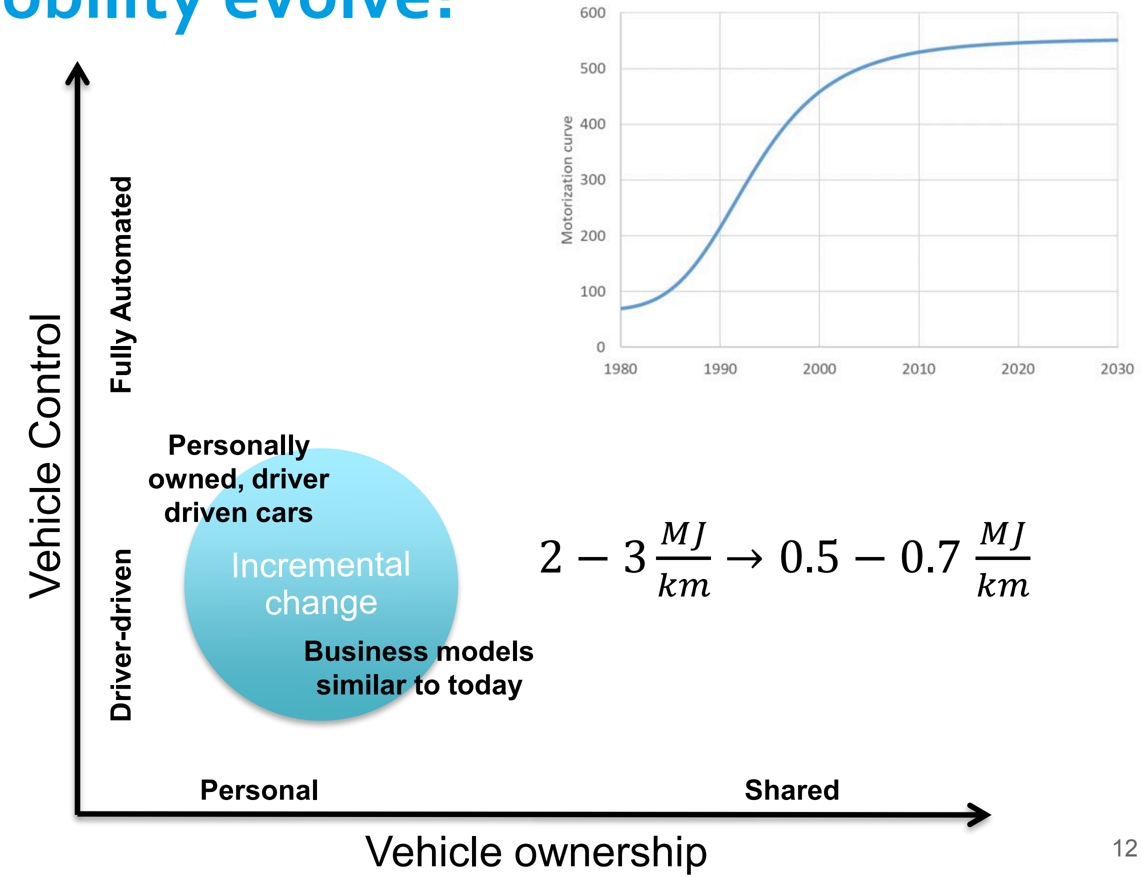


1. Trends in mobility

How will urban mobility evolve?

Life with **electric cars**





$$2-3\,\frac{MJ}{km} \rightarrow 0.5-0.7\,\frac{MJ}{km}$$

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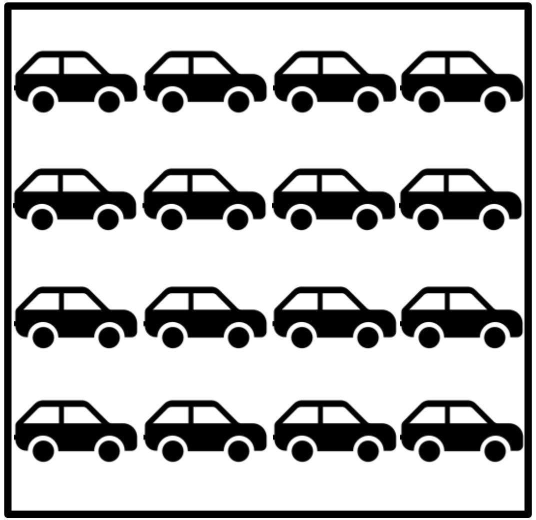
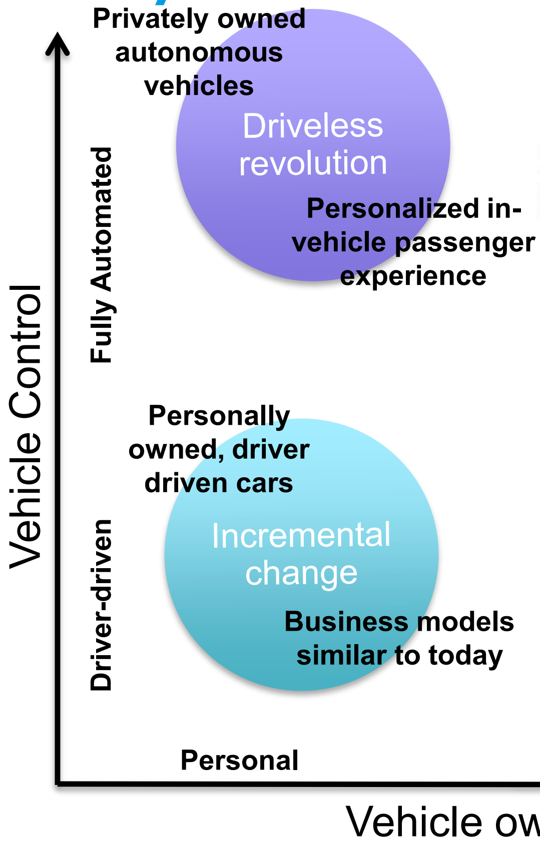
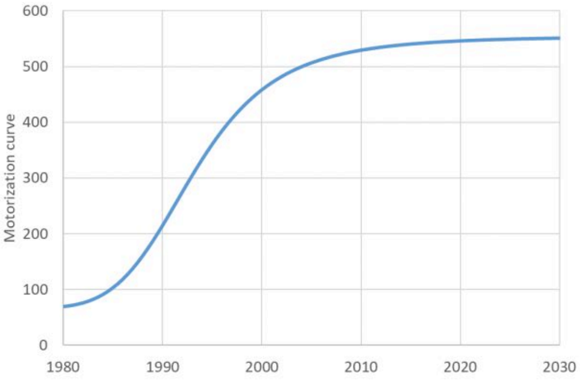
1. Trends in mobility

How will urban mobility evolve?

Life with **autonomous cars**





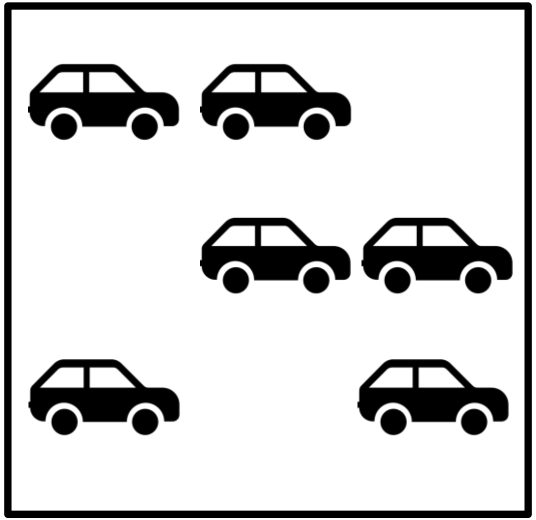


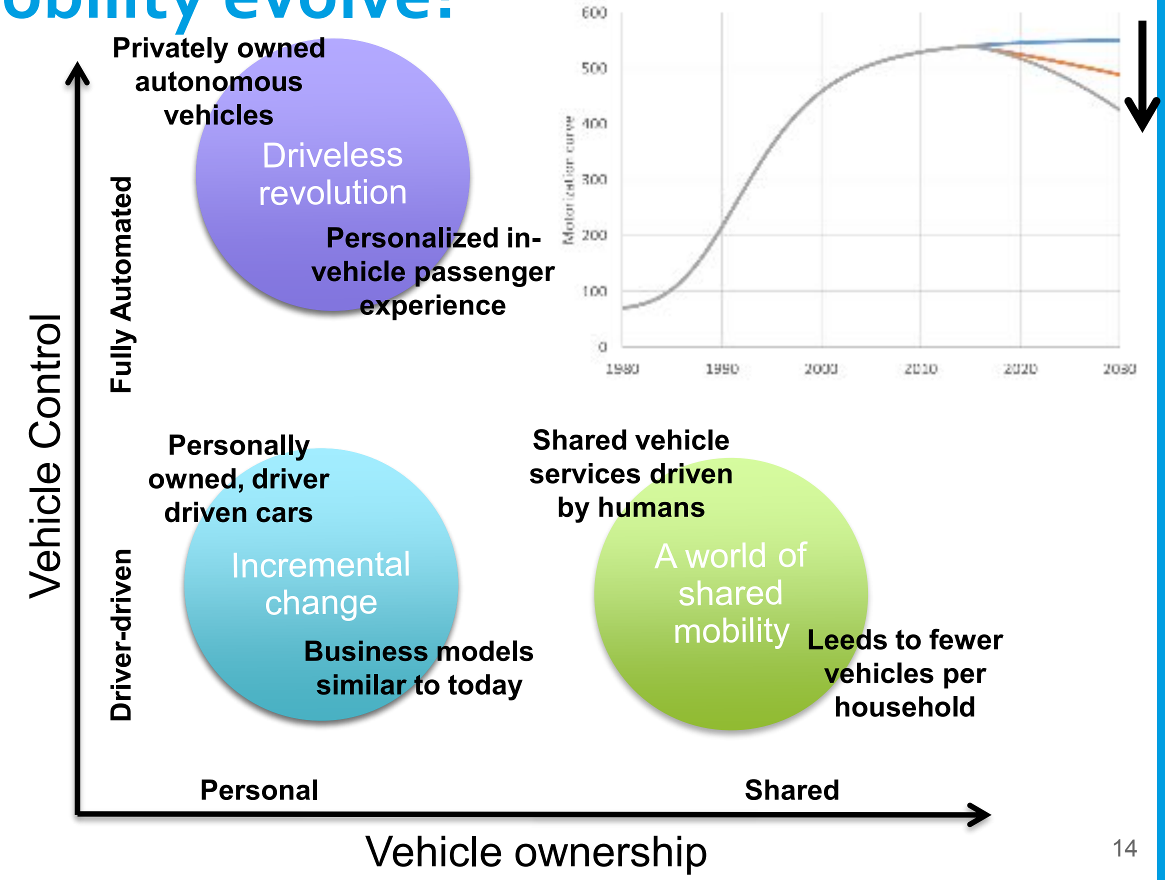
- **Rebound effects with increased VKT?**

1. Trends in mobility

How will urban mobility evolve?

Life with **shared** mobility





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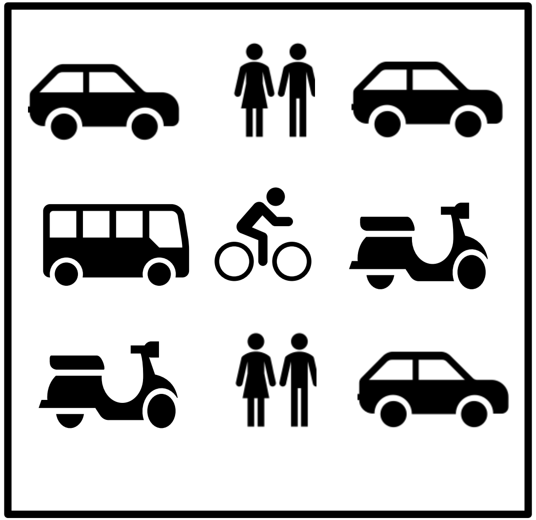
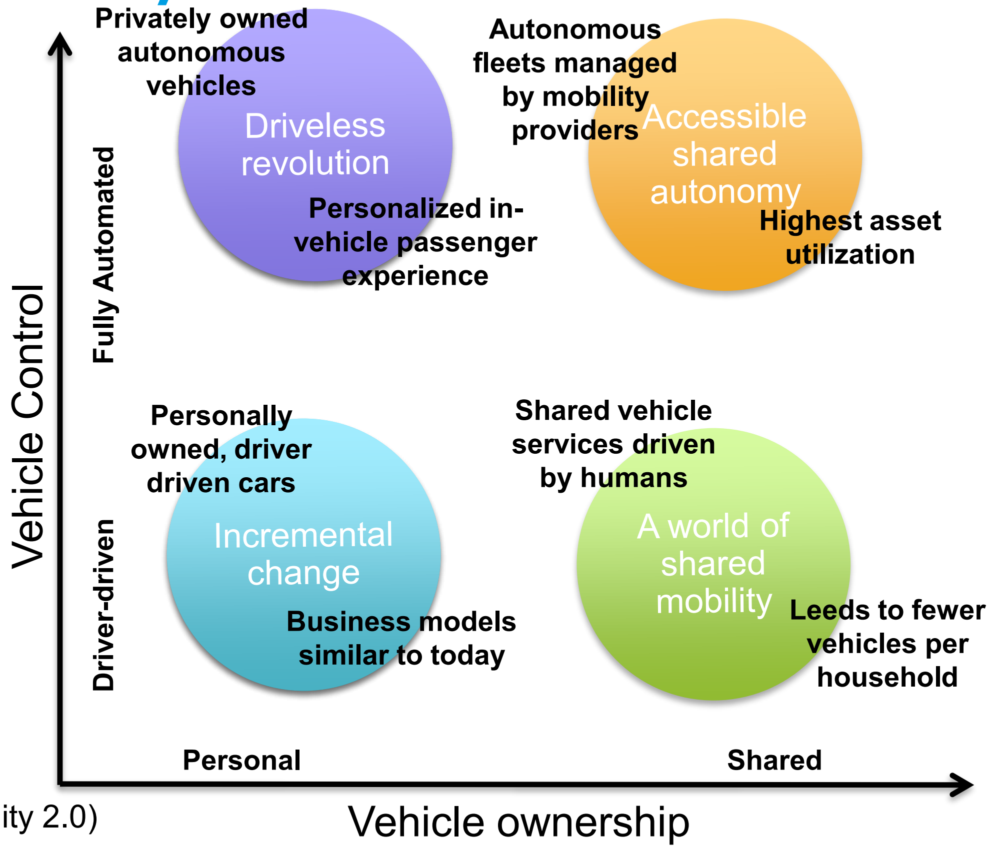
1. Trends in mobility

How will urban mobility evolve?

Life in **future cities???**





(adapted from CIVITAS, Cities towards Mobility 2.0)

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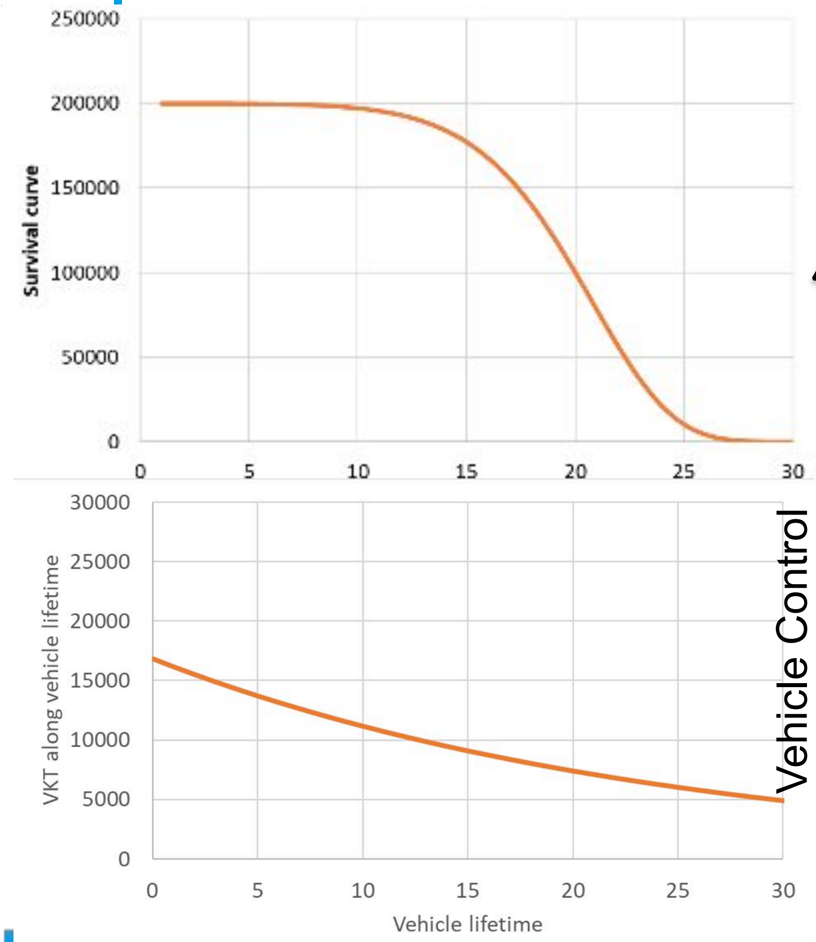
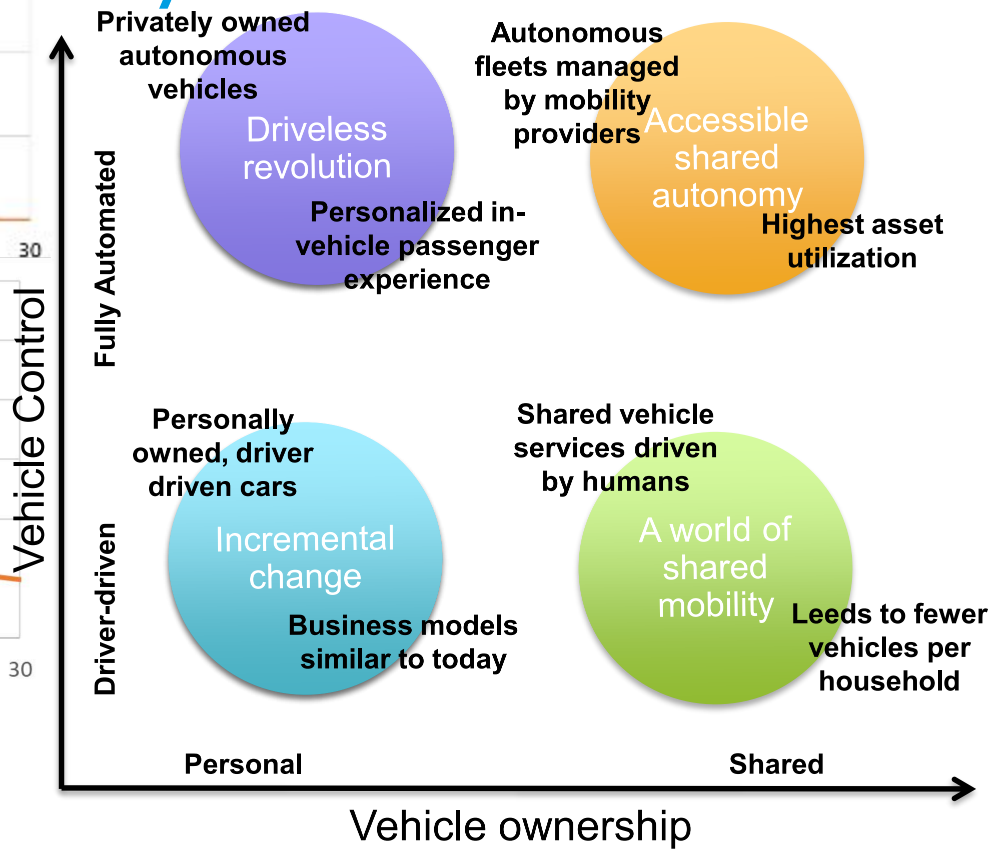
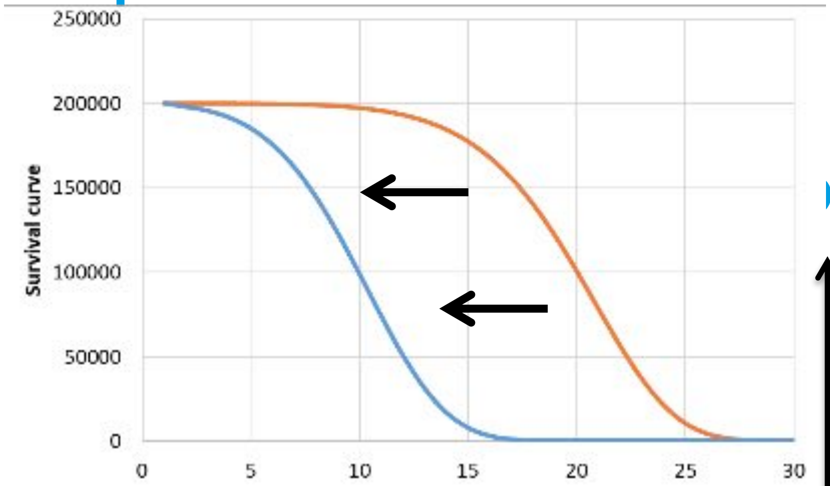
ility evolve?

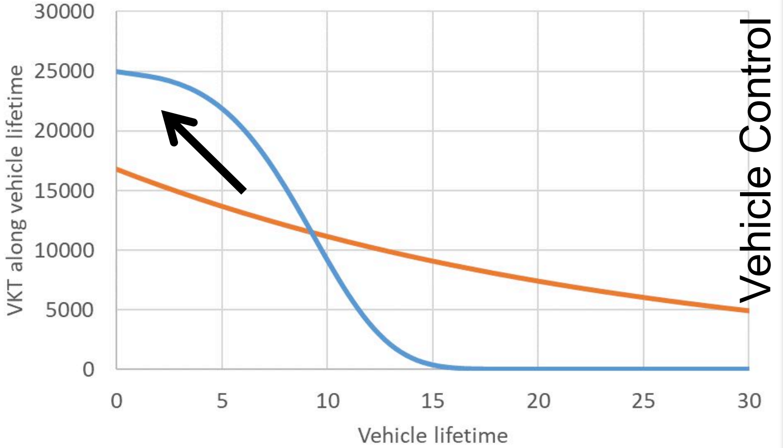


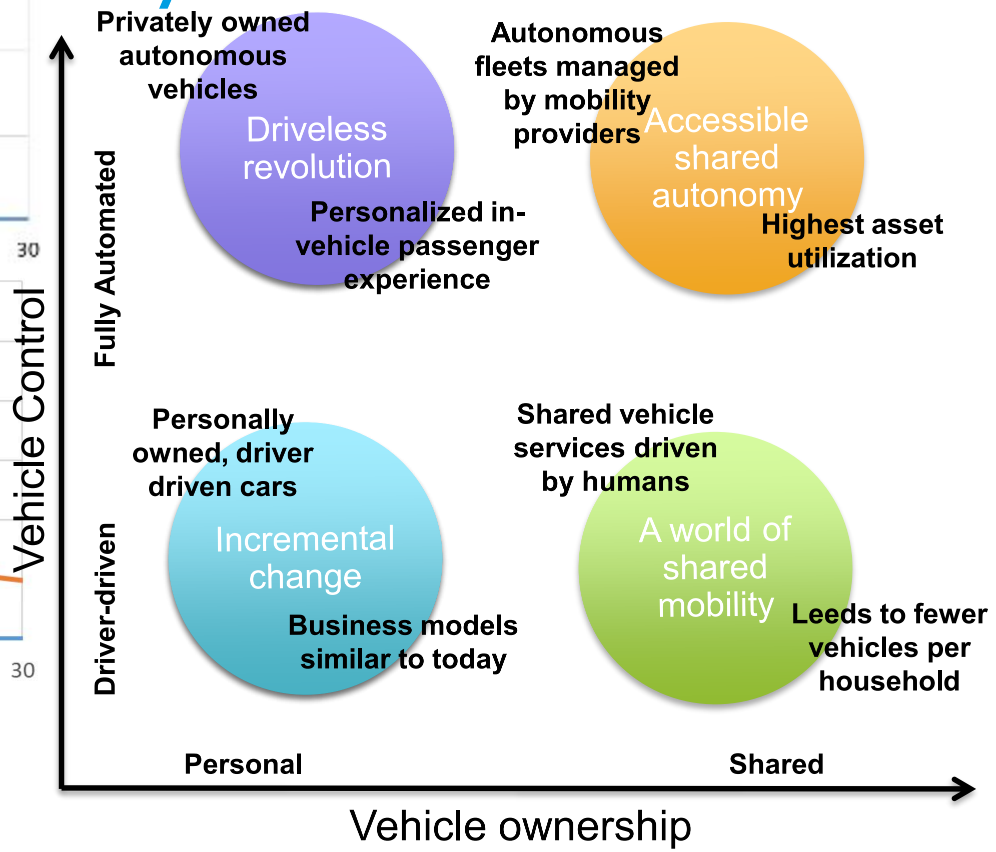


- Team involved: Tatiana Silva, Carlos Silva, Patrícia Baptista

ility evolve?







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- Team involved: Tatiana Silva, Carlos Silva, Patrícia Baptista

2. How to perform quantification of impacts

ICT for managing and sensing urban environment

2. How to perform quantification of impacts

Starting from vehicle usage

Case study evaluation - reductions of 35 or 47% in terms of energy consumption and 35 and 65% for CO_2 emissions, if a shift to Hybrid vehicles (Sc.1) or to Electric vehicles (Sc.2) is promoted, respectively

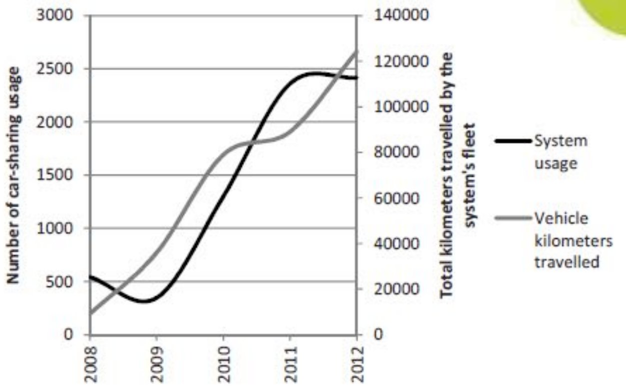


Fig. 1. Lisbon car-sharing system usage from 2008 to 2012 (MobCarsharing, 2013).

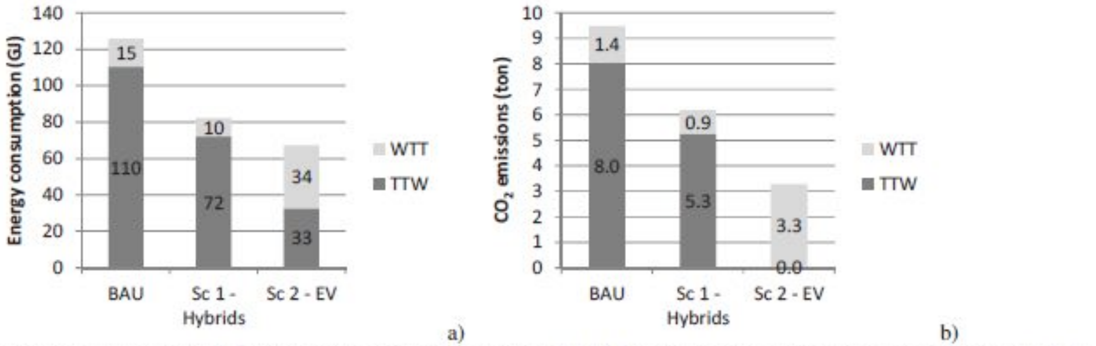
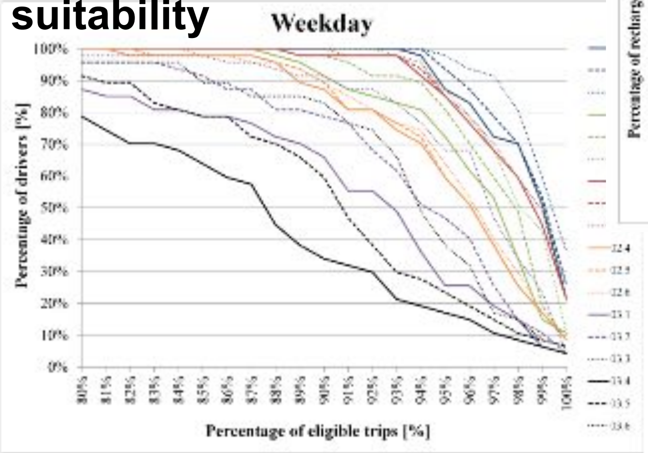


Fig. 2. WTW energy consumption and CO_2 emissions impacts resulting from the Lisbon car-sharing system usage for the 3 considered scenarios.

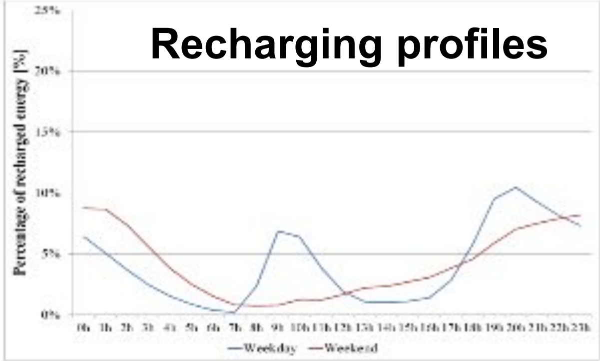
- Patrícia Baptista, Sandra Melo, Catarina Rolim, **Energy, environmental and mobility impacts of car-sharing systems. Empirical results from Lisbon, Portugal**, Procedia - Social and Behavioral Sciences 111 (2014) 28 – 37.

2. How to perform quantification of impacts
Shift in vehicle technology

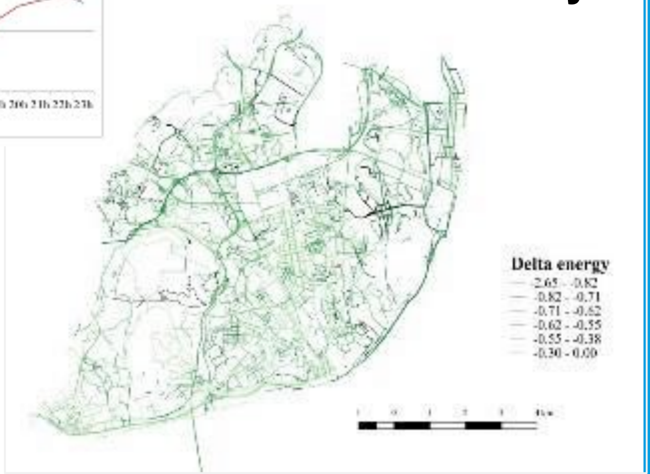
Electric mobility suitability



Recharging profiles



Street level analysis



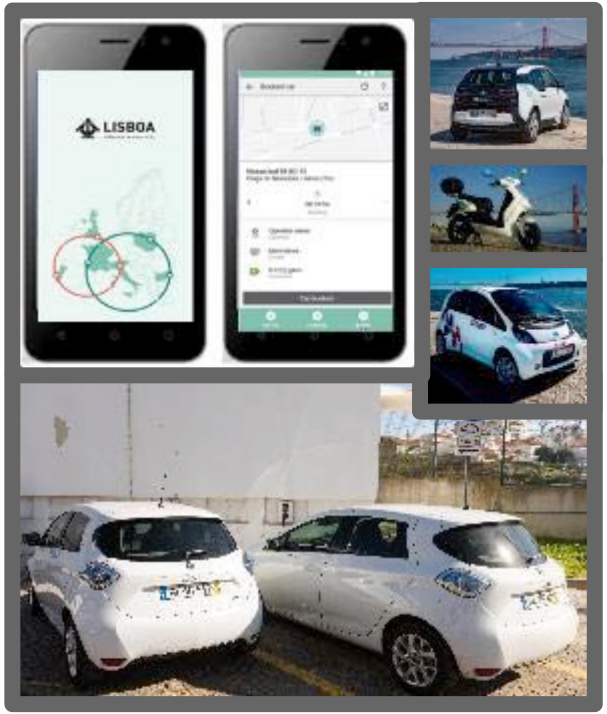
- M Faria, G Duarte, P Baptista, **Assessing electric mobility feasibility based on naturalistic driving data**, Journal of cleaner production 206, 646-660, 2019

2. How to perform quantification of impacts
To real world assessments

SHARINGCITIES

EV corporate carsharing

- Deploy a corporate EV car sharing in municipal fleet – 20 vehicles
- Supported with smart phone APP
- Implement smart fleet management system - monitoring and management of the fleet and providing fleet managers with important information regarding the scheme operations, vehicles usage patterns, maintenance needs, etc.



- Team involved: Catarina Rolim, Carlos Silva, Patrícia Baptista

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2. How to perform quantification of impacts

To real world assessments

SHARINGCITIES

Shared e-logistics

- Deploy EVs and eVans for Municipal logistic services - 150 vehicles (vehicle dedicated to one worker for multi-purpose usage)
- Enhance smart and sustainable urban logistics by engaging and motivating local services and businesses

- Team involved: Catarina Rolim, Carlos Silva, Patrícia Baptista

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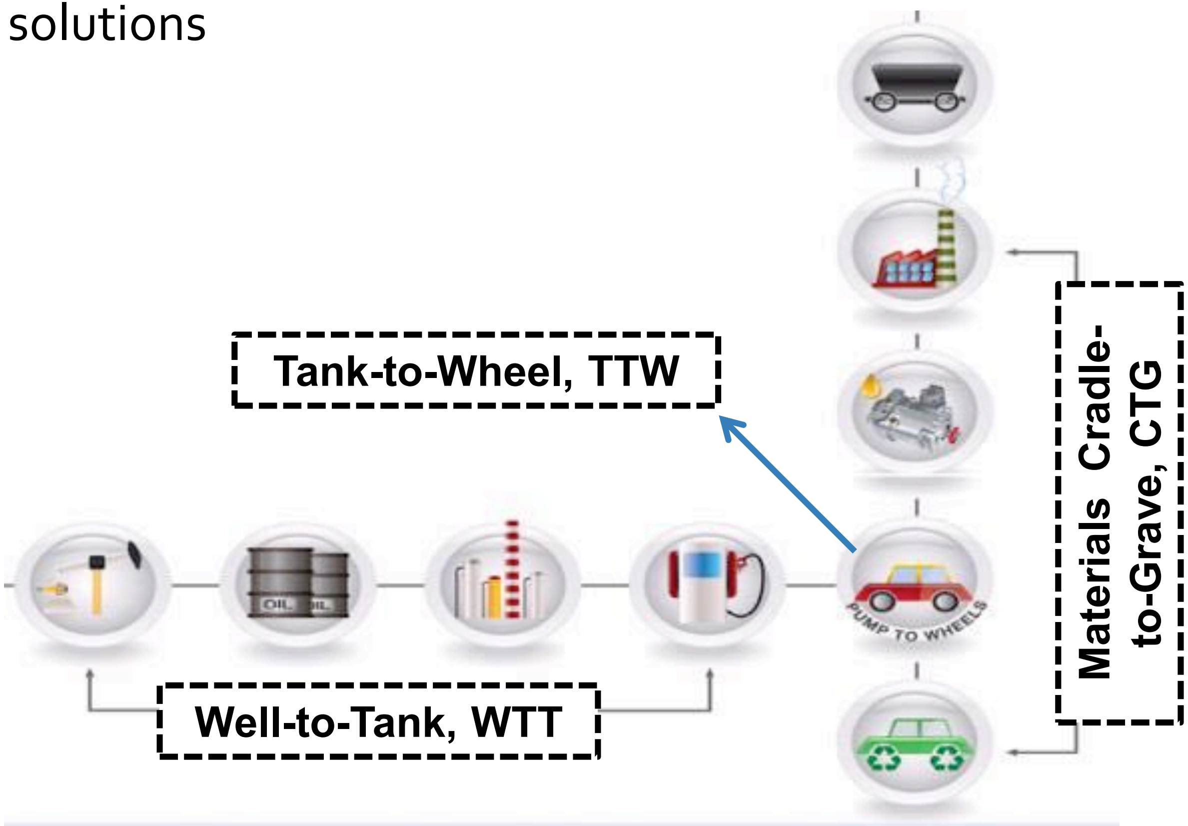
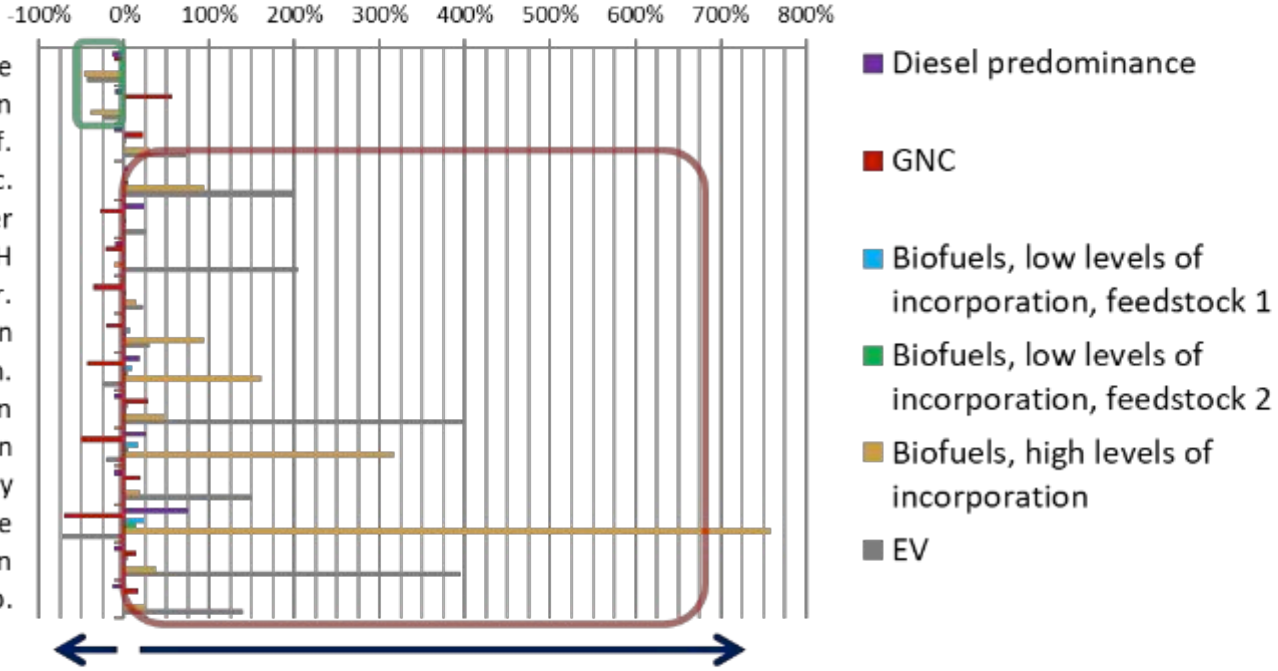
2. How to perform quantification of impacts

Production + Usage + End-of-life: Quantification of life-cycle impacts of alternative solutions



2. How to perform quantification of impacts

Production + Usage + End-of-life: Quantification of **life-cycle** impacts of alternative solutions



- F Paulino, A Pina, P Baptista, **Evaluation of Alternatives for the Passenger Road Transport Sector in Europe: A Life-Cycle Assessment Approach**, Environments 5 (2), 21, 2018

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2. How to perform quantification of impacts

Production + Usage + End-of-life: Quantification of life-cycle impacts of alternative solutions

- **Life-cycle assessment of shared electric mini-scooters** for the Portuguese case study application

Lisbon:
around 5500 e-scooters
9 operators
20 000 trips per day
500 jobs

- Team involved: Ana Filipa Reis, Filipe Moura, Patrícia Baptista

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2. How to perform quantification of impacts

Production + Usage + End-of-life: Quantification of life-cycle impacts of alternative solutions

Country scale analysis of shifting to alternative technologies: combined stock flow model and life cycle approach to assess impact of shifts in technology and energy source

Scenario 1 - BAU Scenario; Scenario 2 - 10% physical incorporation; Scenario 3 - Reference biofuel scenario; Scenario 4 - Gas booster; Scenario 5 – EV booster

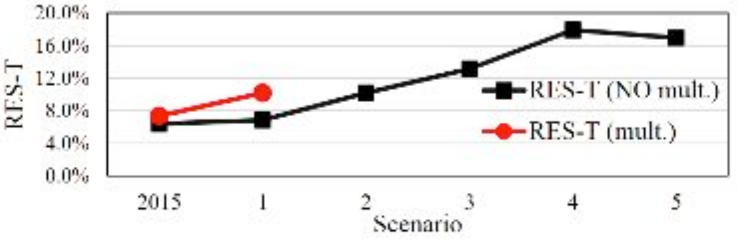

Fig. 2. Share of renewable energy in transport (Circle markers: with multiplicators. Square markers: without multiplicators).

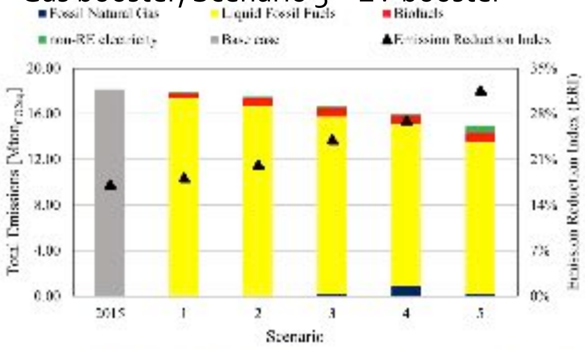

Fig. 3. Total emissions for the considered scenarios in comparison with 2015 and Emission Reduction Index (for a clear distinction of the colors refer to the online version). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

- G Lorenzi, P Baptista**, Promotion of renewable energy sources in the Portuguese transport sector: A scenario analysis**, Journal of cleaner production 186, 918-932, 2018.

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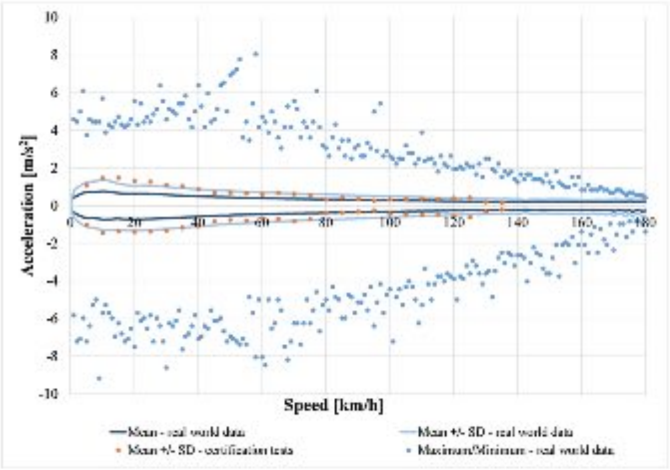
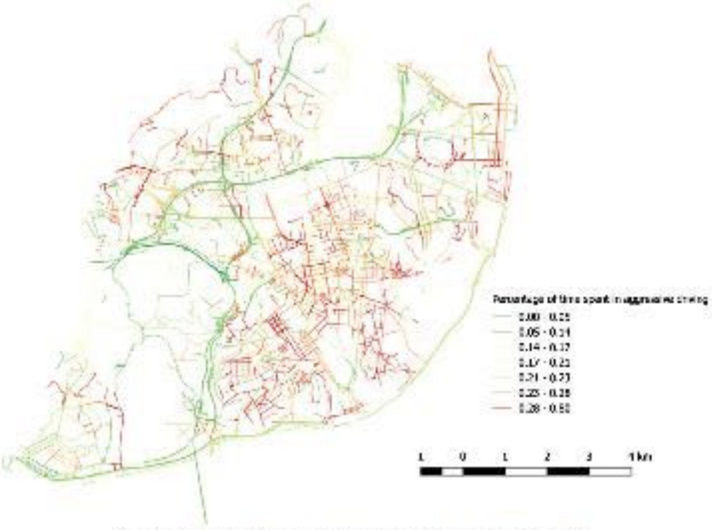
3. Assessing the role of the user in the shift for a more sustainable mobility

Driver behavior: Characterization of vehicle use from driver perspective. How much could we save of drivers were more aggressive





- MV Faria, GO Duarte, RA Varella, TL Farias, PC Baptista, **Driving for decarbonization: Assessing the energy, environmental, and economic benefits of less aggressive driving in Lisbon, Portugal**, Energy Research & Social Science 47, 113-127, 2019

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3. Assessing the role of the user in the shift for a more sustainable mobility

Driver behavior: Are drivers willing to change their behavior? What type of feedback is more effective?

- The type of feedback impacted driving performance differently

Improvements in some indicators | No improvements | Improvements in all driving indicators

Immediate impacts of feedback analysis – One Week

Driving indicator	One week after feedback		
	Neutral	Positive	Negative
Trips < 2km	↑	↑↑↑	↓↓↓
Excess Speeding (>120 km) Time	↓↓↓	↑↑↑	↓↓
Idling Time	↑↑	↑↑	↓↓
Excess rpm Time	↓↓	↑↑↑	↓↓
Aggressive Events	↑↑↑	↑↑↑	↓↓↓
Fuel Consumption	↓	↑↑↑	-

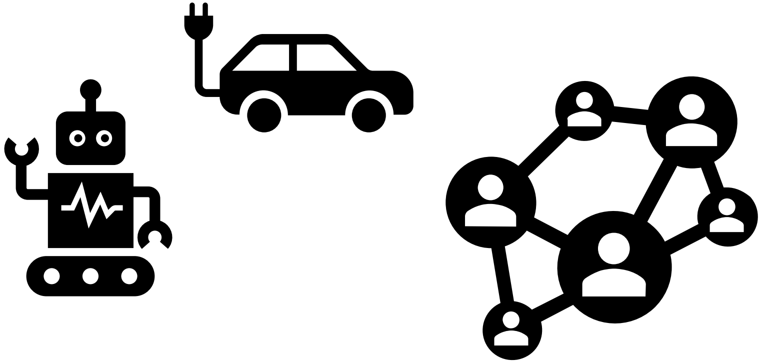
Difference<-20% ↓↓↓; -20%≤Difference<-10% ↓↓; -10%≤Difference<0% ↓; -0%≤Difference<10% ↑; 10%≤Difference<20% ↑↑; Difference>20% ↑↑↑. Significant results are highlighted in grey.

- C Rolim, P Baptista, G Duarte, T Farias, J Pereira, **Impacts of delayed feedback on eco-driving behavior and resulting environmental performance changes**, Transportation research part F: traffic psychology and behaviour 43, 366-378, 2016

3. Assessing the role of the user in the shift for a more sustainable mobility

User acceptance: Are users willing to accept shared autonomous vehicles in Lisbon Metropolitan Area?

- Willingness to accept and to adopt these alternative services based on cost and time of travel variables considering:
  - Demographic profile
  - Type of commute
  - Experience with alternative services
  - Others



- Team involved: Joana Vicente, Tiago Ribeiro, Catarina Rolim, Patrícia Baptista

3. Assessing the role of the user in the shift for a more sustainable mobility

User engagement: How can we **engage people in behavioral shift**?

Application from the Sharing Cities Project in Lisbon

Digital Social Market

- 3 schools competing for a prize: involvement of citizens in topics of energy efficiency and mobility

- Team involved: Catarina Rolim, Carlos Silva, Patrícia Baptista

3. Assessing the role of the user in the shift for a more sustainable mobility

User engagement: How can we **engage people in behavioral shift**?

Application from the Sharing Cities Project in Lisbon

<u>Digital Social Market</u>

- 3 schools competing for a prize: involvement of citizens in topics of energy efficiency and mobility

- Team involved: Catarina Rolim, Carlos Silva, Patrícia Baptista

4. The future in urban mobility…

- "<u>The future of mobility is data, not cars</u>. Making mobility convenient will depend on how well companies work together and manage and share data within mobility ecosystems."

- <u>Integration of systems and products</u>, from journey planners, to system operations, to integrated ticketing and data management, multi-modal transport products, etc.

- <u>CASE: Connected, Autonomous, Shared, Electric</u>

    - Digital cloud-based connectivity
    - Shared and autonomous mobility may proliferate
    - Personally managed in one centralized portable unit: our smartphones

4. The future in urban mobility…

- User behavior and citizen engagement play increasingly important role in adoption of alternative mobility products and the use of innovative strategies for engagement may be crucial for behavioral change.

- Scientific quantification methods of assessment of energy and environmental savings associated to these products is crucial.

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RIDER

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

5. IL SISTEMA DI MOBILITÀ URBANA E LE DINAMICHE DI INCLUSIONE/ESCLUSIONE SOCIALE: CONCETTI, EVIDENZA SCIENTIFICA E BUONE PRATICHE (MIRIAM RICCI)

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

Presentation by

Miriam Ricci

Senior Research Fellow

Centre for Transport & Society

UWE Bristol

13 Maggio 2019

Il sistema di mobilità urbana e le dinamiche di inclusione/esclusione sociale: concetti, evidenza scientifica e buone pratiche

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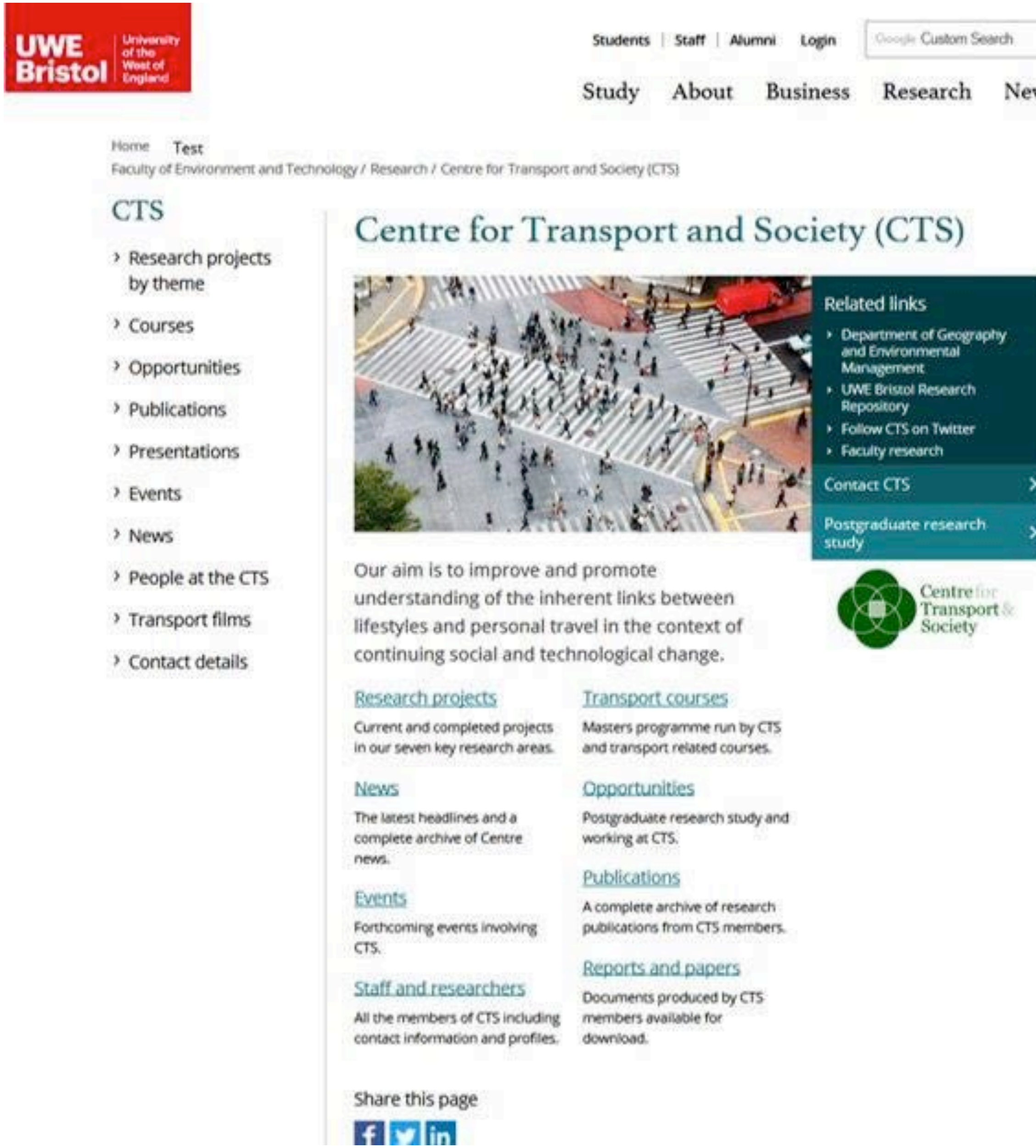

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http://www1.uwe.ac.uk/et/research/cts

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Concetti, definizioni ed evidenza scientifica

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Inclusione o integrazione sociale

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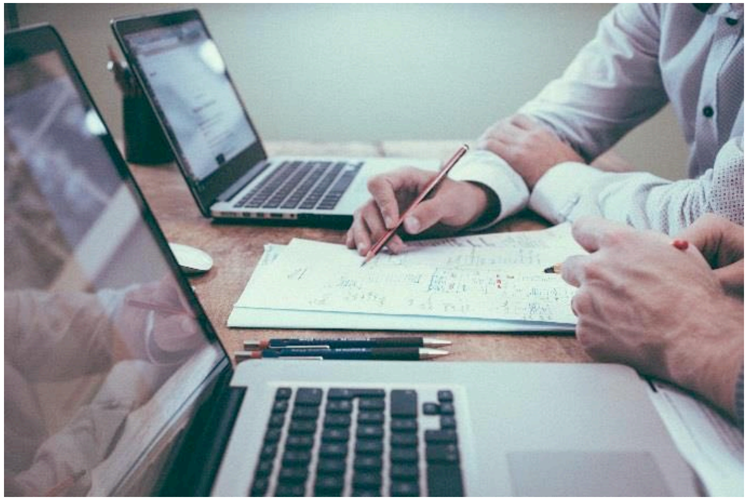

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Esclusione o emarginazione sociale

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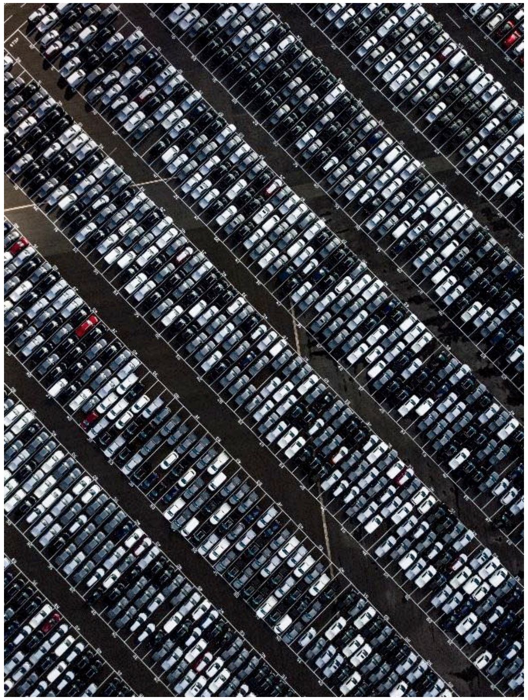
Il costo sociale della mobilità



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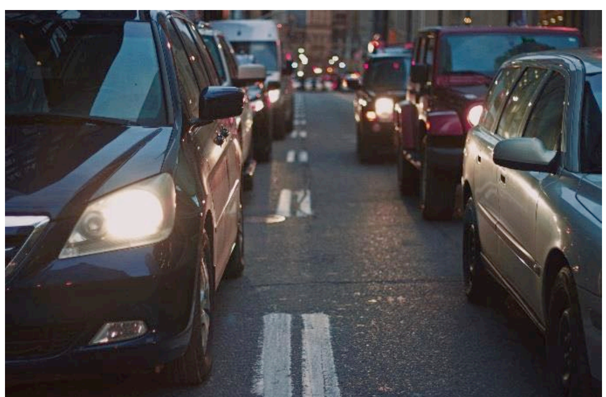

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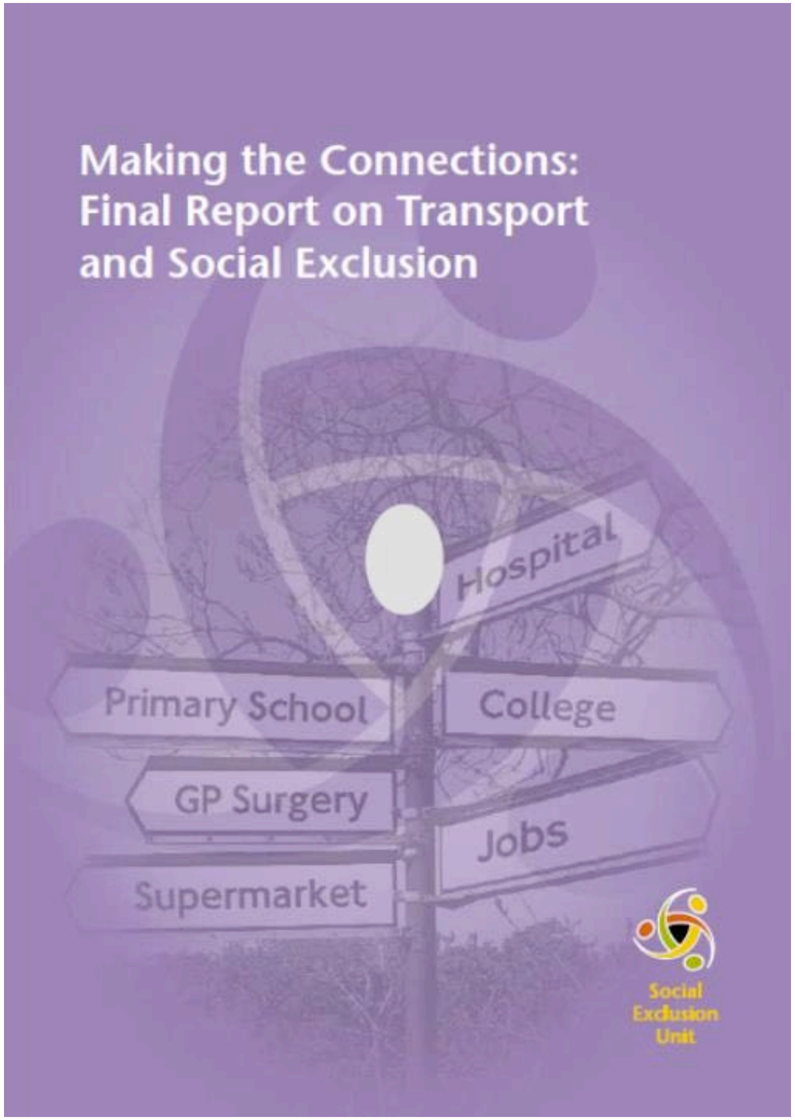
Il nesso tra esclusione sociale e trasporti



"Problemi dovuti alla disponibilità e all'accesso ai trasporti, e alla localizzazione dei servizi fondamentali, possono aggravare l'esclusione sociale, limitando la possibilità di accedere a stutture e servizi quali lavoro, sanità, formazione, negozi e attività culturali, sportive e ricreative."

(Social Exclusion Unit, 2003)

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Categorie a rischio di esclusione sociale collegata ai trasporti

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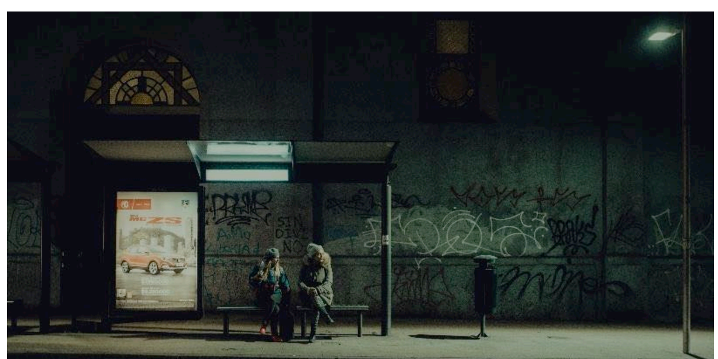

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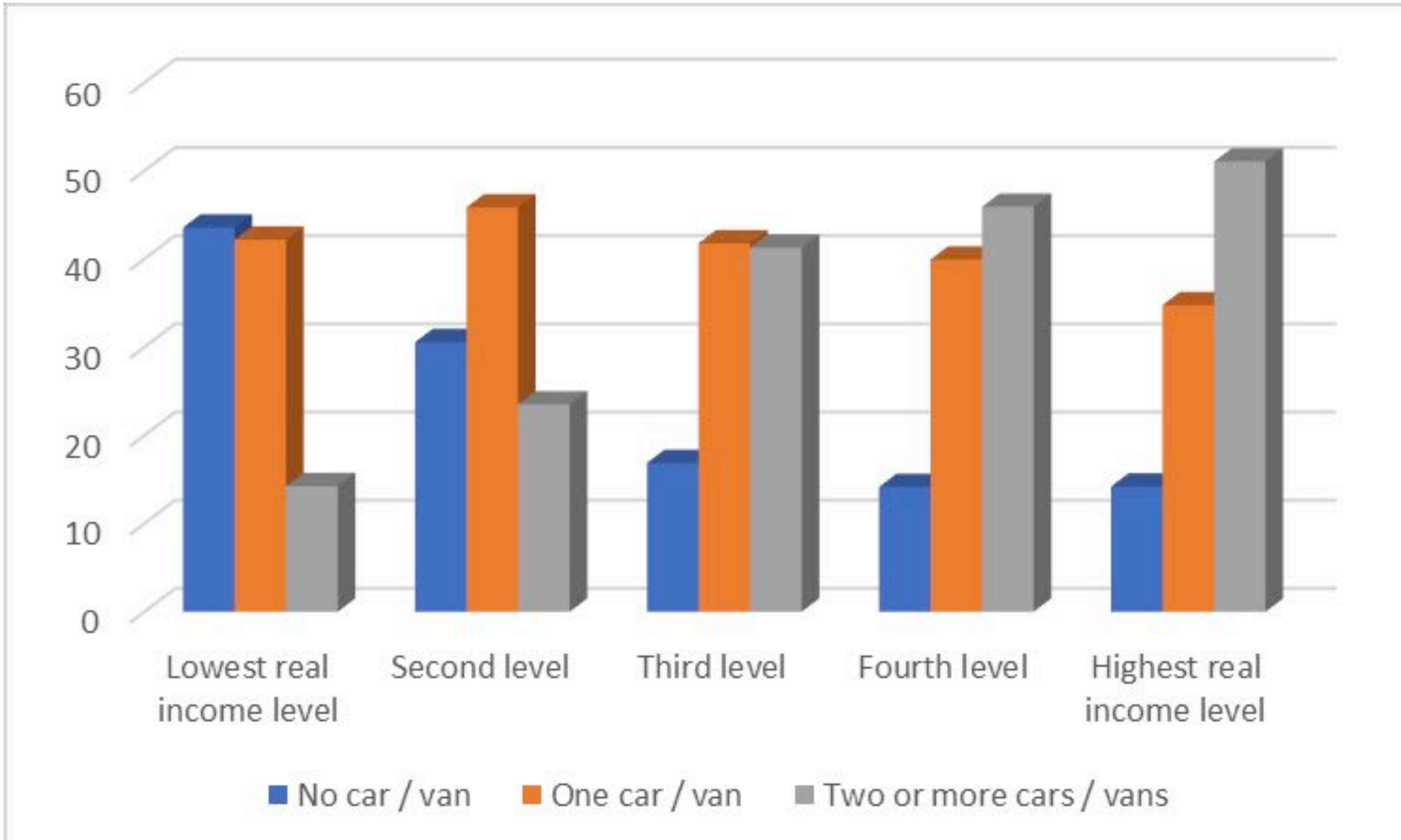
% in possesso di autovettura privata per quintile di reddito (NTS 2017)



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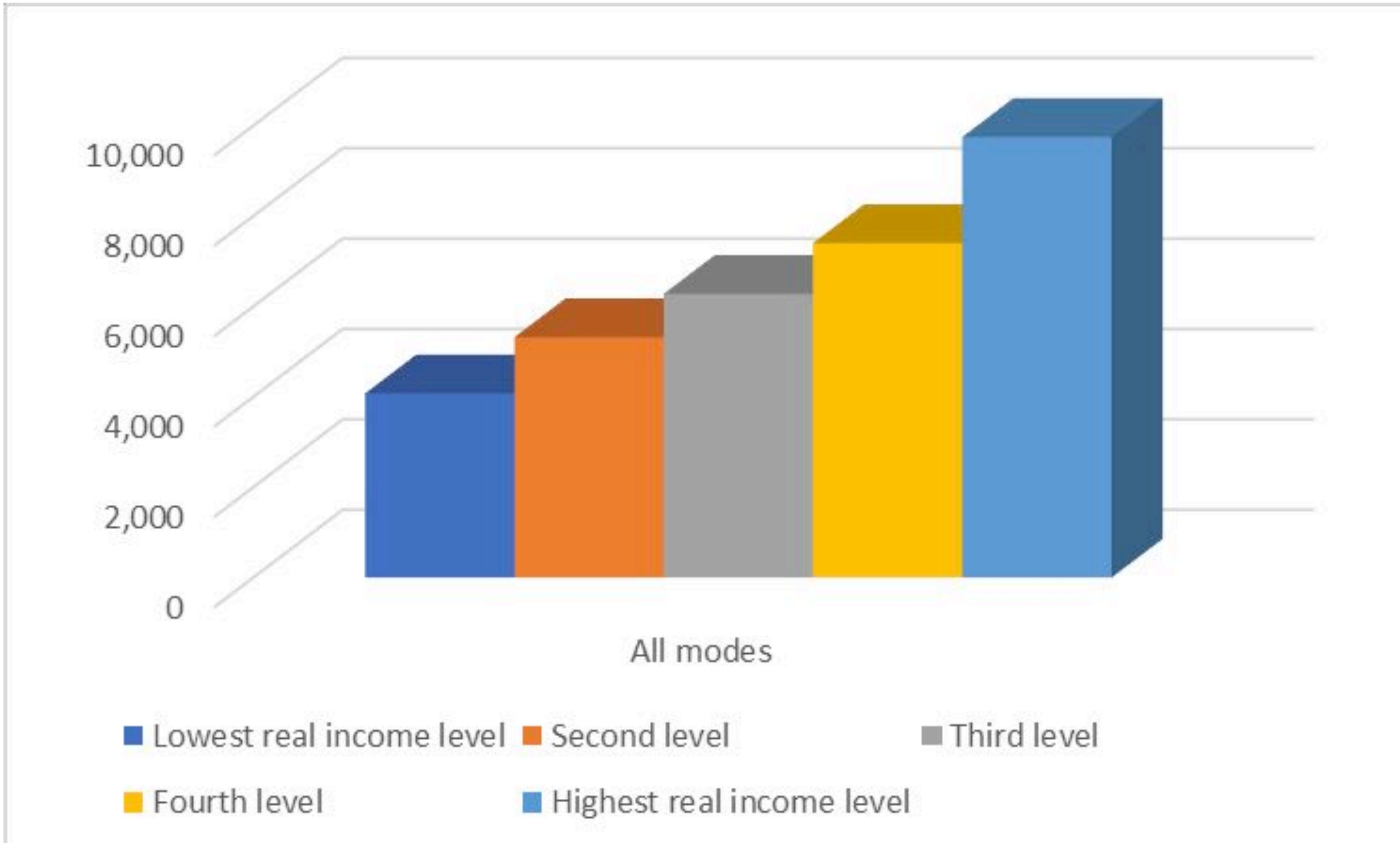
Distanza percorsa (miglia) per quintile di reddito (NTS 2017)



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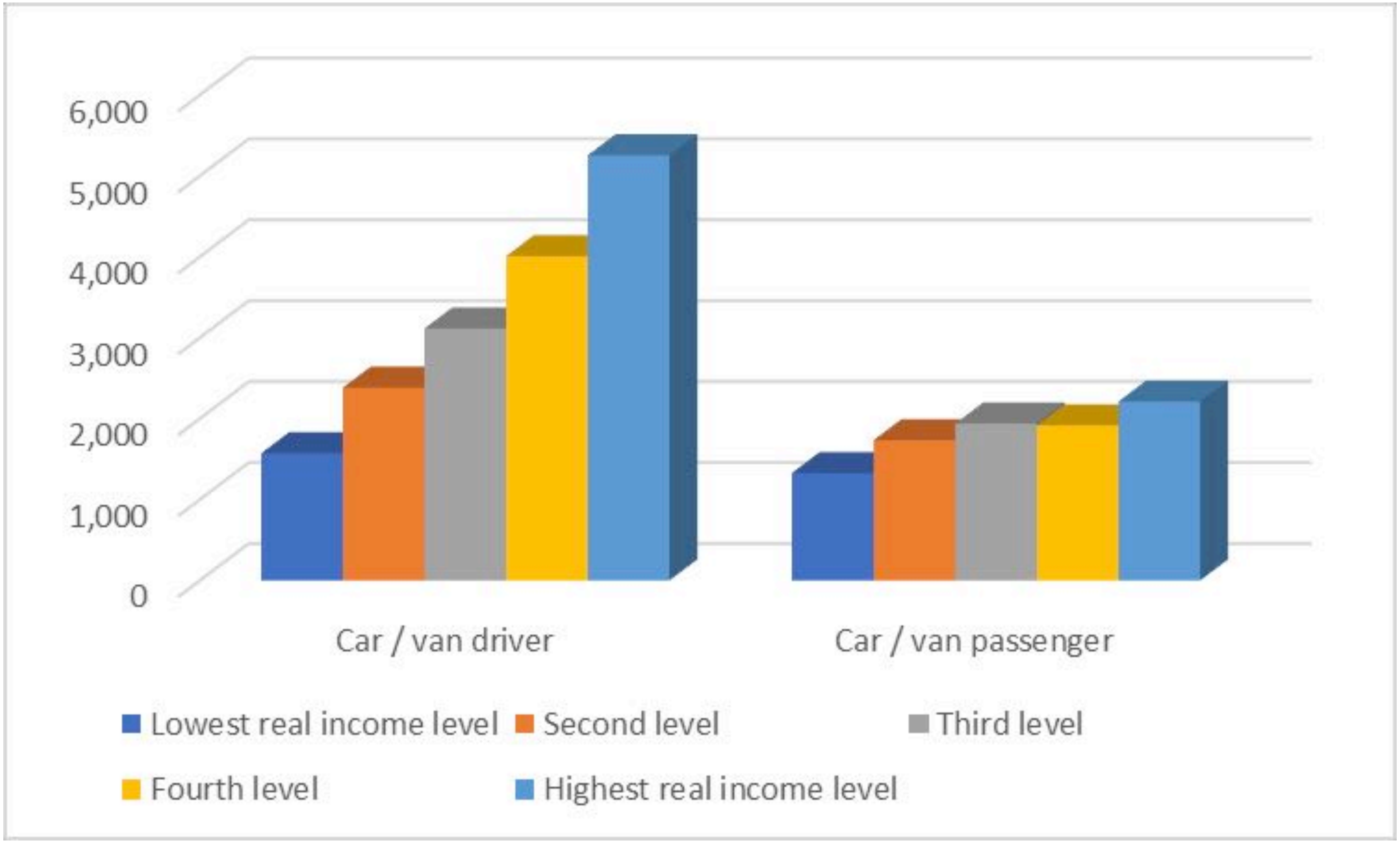
Distanza percorsa (miglia) per quintile di reddito (NTS 2017)



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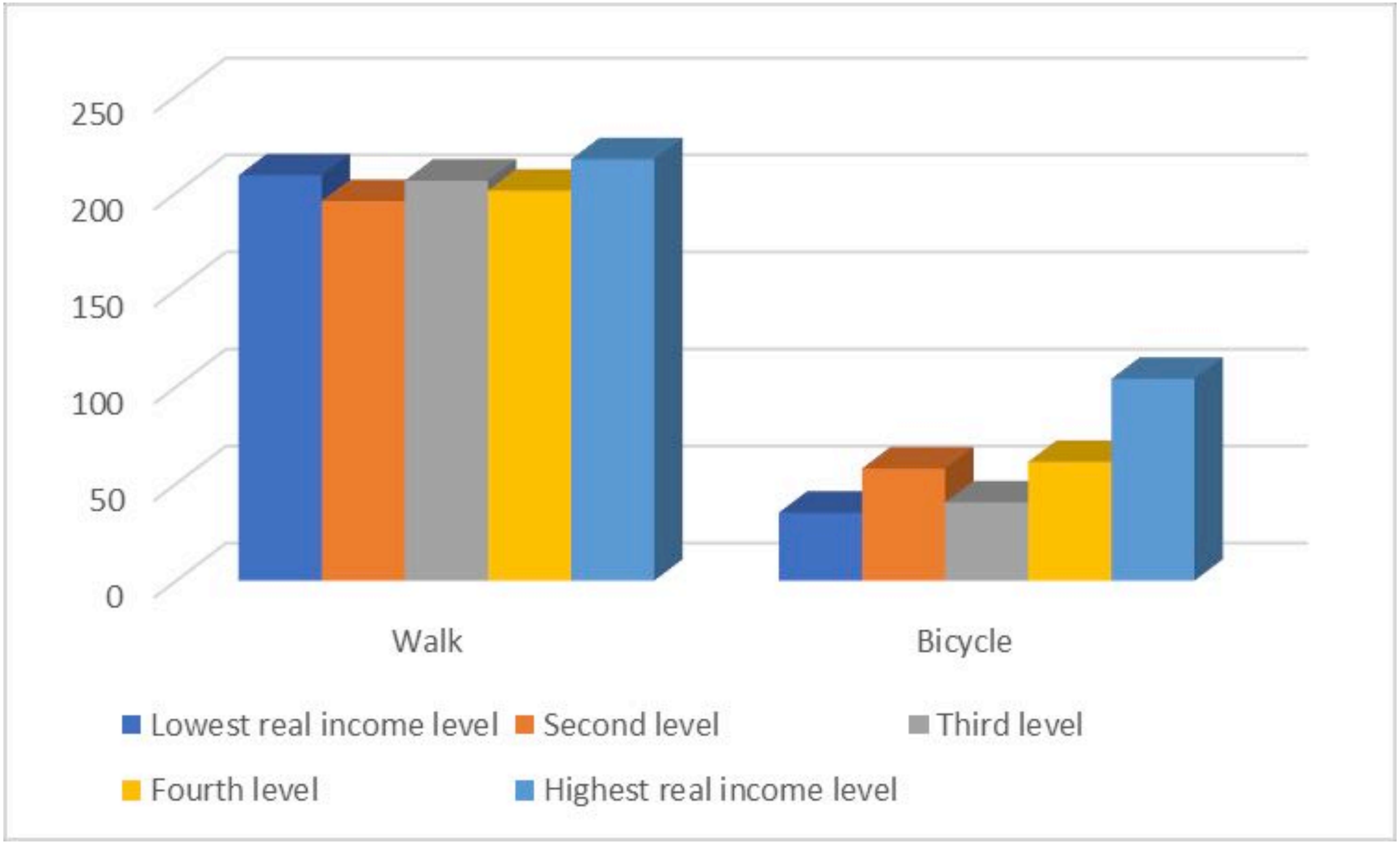
Distanza percorsa (miglia) per quintile di reddito (NTS 2017)



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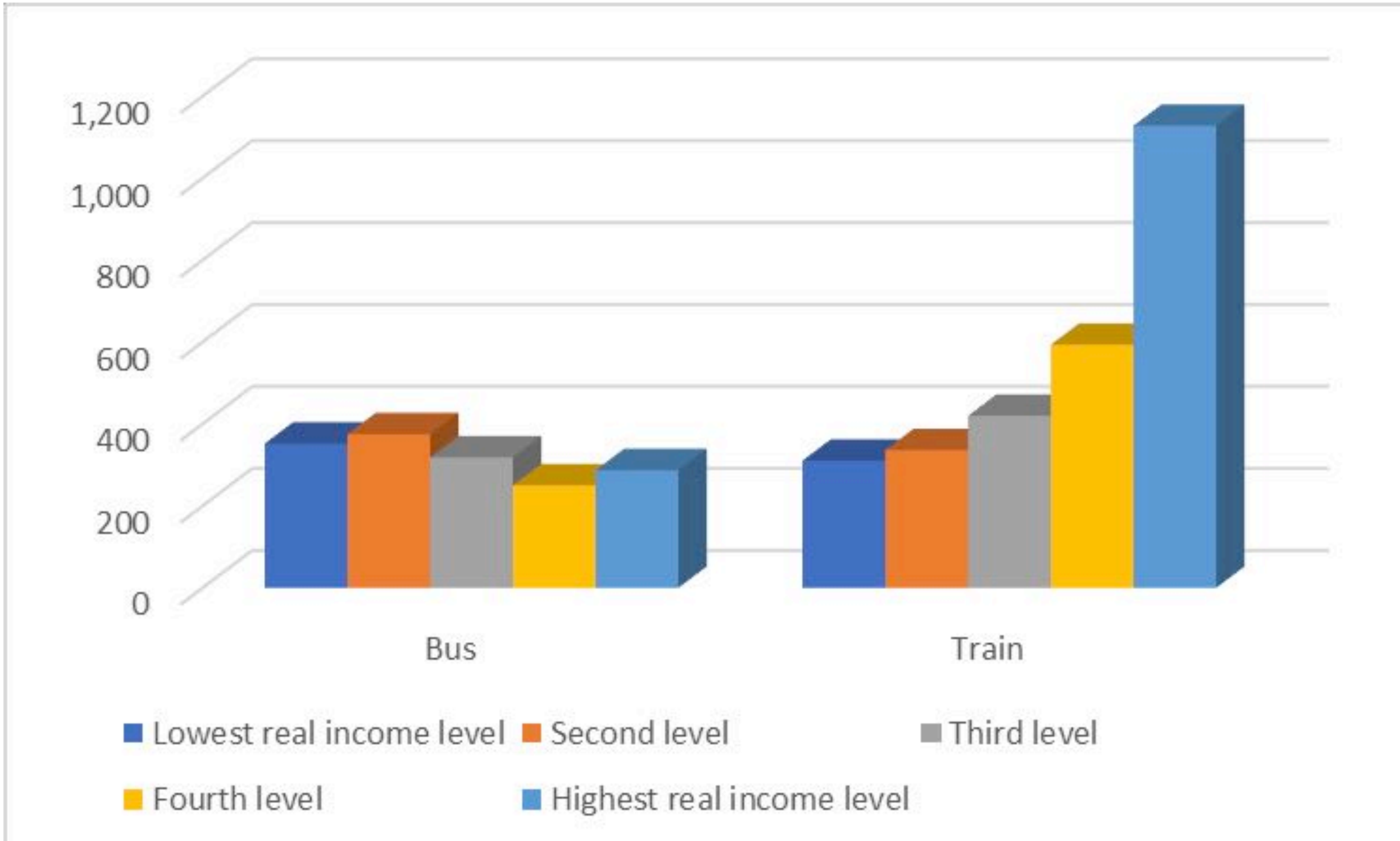
Distanza percorsa (miglia) per quintile di reddito (NTS 2017)



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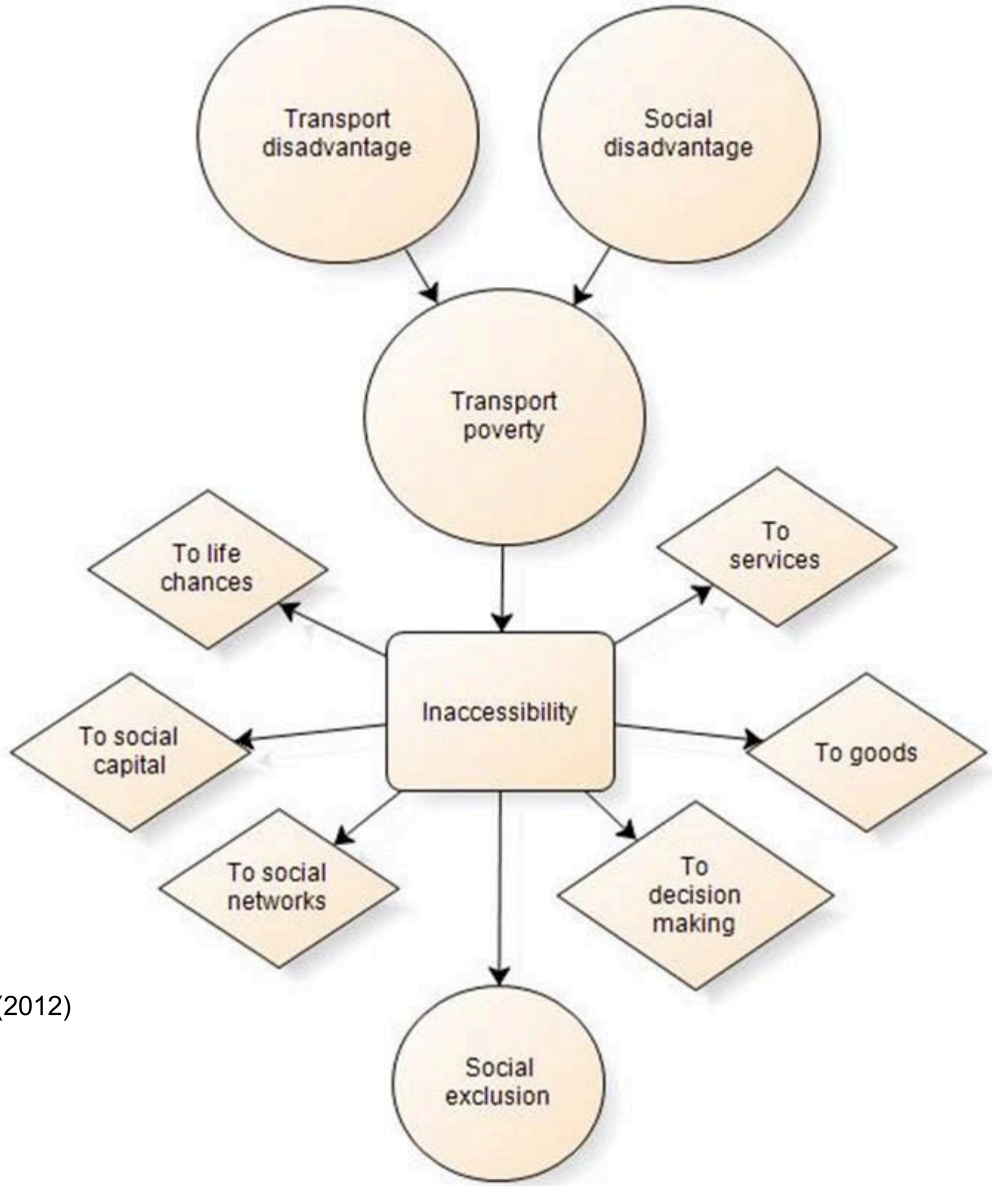
Il nesso tra esclusione sociale e trasporti



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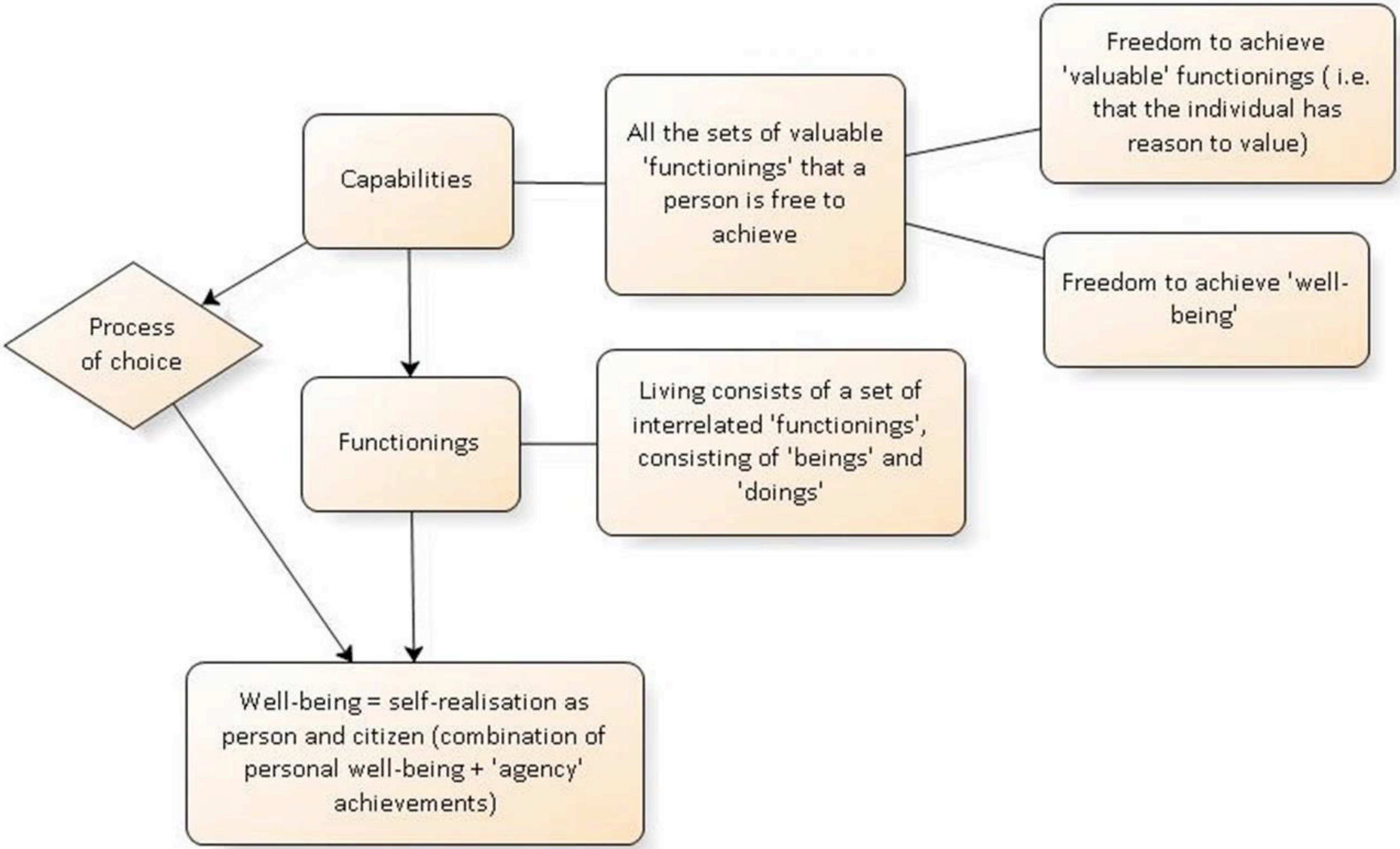
L’Approccio delle Capacità di Amartya Sen



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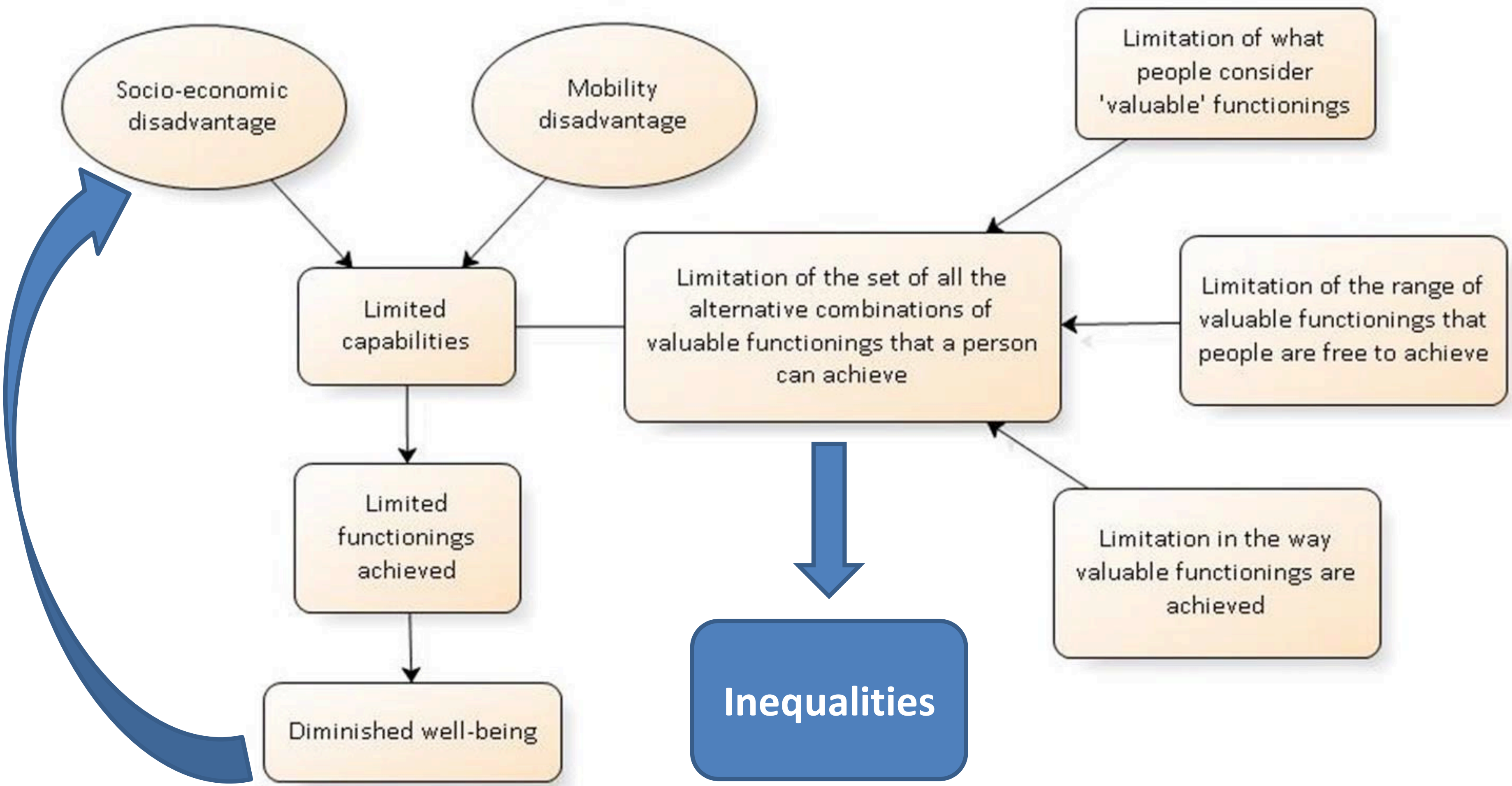
L'Approccio delle Capacità di Amartya Sen:

Applicazione all'analisi dell'esclusione sociale collegata ai trasporti



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Buone pratiche

https://tfl.gov.uk/fares/free-and-discounted-travel?intcmp=54647

https://como.org.uk/project/bikes-for-all/

https://travelwest.info/wheels-to-work-west

RiDER

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

6. ECONOMIC AND ENVIRONMENTAL IMPACTS OF ORGANIZED CAR SHARING SERVICES: A CASE STUDY OF IRELAND (BIDISHA GHOSH)

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

Economic and environmental impacts of organized Car Sharing Services: a case study of Ireland

By,

Prof. Bidisha Ghosh

bghosh@tcd.ie

In collaboration with Dr. Niamh Rabbitt

Dr. Bidisha Ghosh (B.E., Ph.D.)

Chair, Irish Transport Research Network (ITRN)
QUANT Research Group
Assistant Professor,
School of Engineering, Trinity College Dublin.

Research Expertise

- Modelling and developing insights of natural and pseudo-natural systems
- Sensors, measurements, data analytics, dynamic and statistical modelling for improved estimation, prediction and control of complex systems
- Health, economic, environmental impacts; sustainability; policy instruments

Research Activities

- Member: IEEE ITSS Technical Committee on Smart Cities and Smart Mobility, Editorial Board Transportation Research Part C: Emerging Technologies, Transportation Research Board (TRB) Statistical Committee
- >100 peer-reviewed publications, 1 book and 2 book chapters
- Editor: ITRN proceedings, 2010-12

Research Group:

QUANT

3 postdocs, 4 PhDs, 5 Masters students

Research Projects:

- Greening Transport
- Diesel Project
- Eco-HDV
- FlexAqua
- Map-HDV
- Wind-PEARL
- REDMAP

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

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Topics

- Definition & Research Objectives
- Methodology
- Data & data sources
- Modelling & potential impacts
- Concluding Remarks

Car-Sharing: Definition

*Definition 1: "Car-sharing is a service that provides members with **access to a fleet of vehicles on an hourly basis**. Members reserve a car online or by phone, **walk to the nearest parking space**, open the doors with an electronic key card, and drive off. They are billed at the end of the month for time and/or mileage."* by Millard-Ball (2005)

*Definition 2: "Car-sharing organizations (or short-term auto use) provide members **access to a fleet of shared vehicles on an hourly basis**, **reducing the need for private vehicle ownership**".* by Shaheen, Cohen, & Chung (2009)

Objectives

1. To investigate the suitability of Ireland and its main urban area, ‘Greater Dublin Area’ (GDA) for implementing organized car sharing

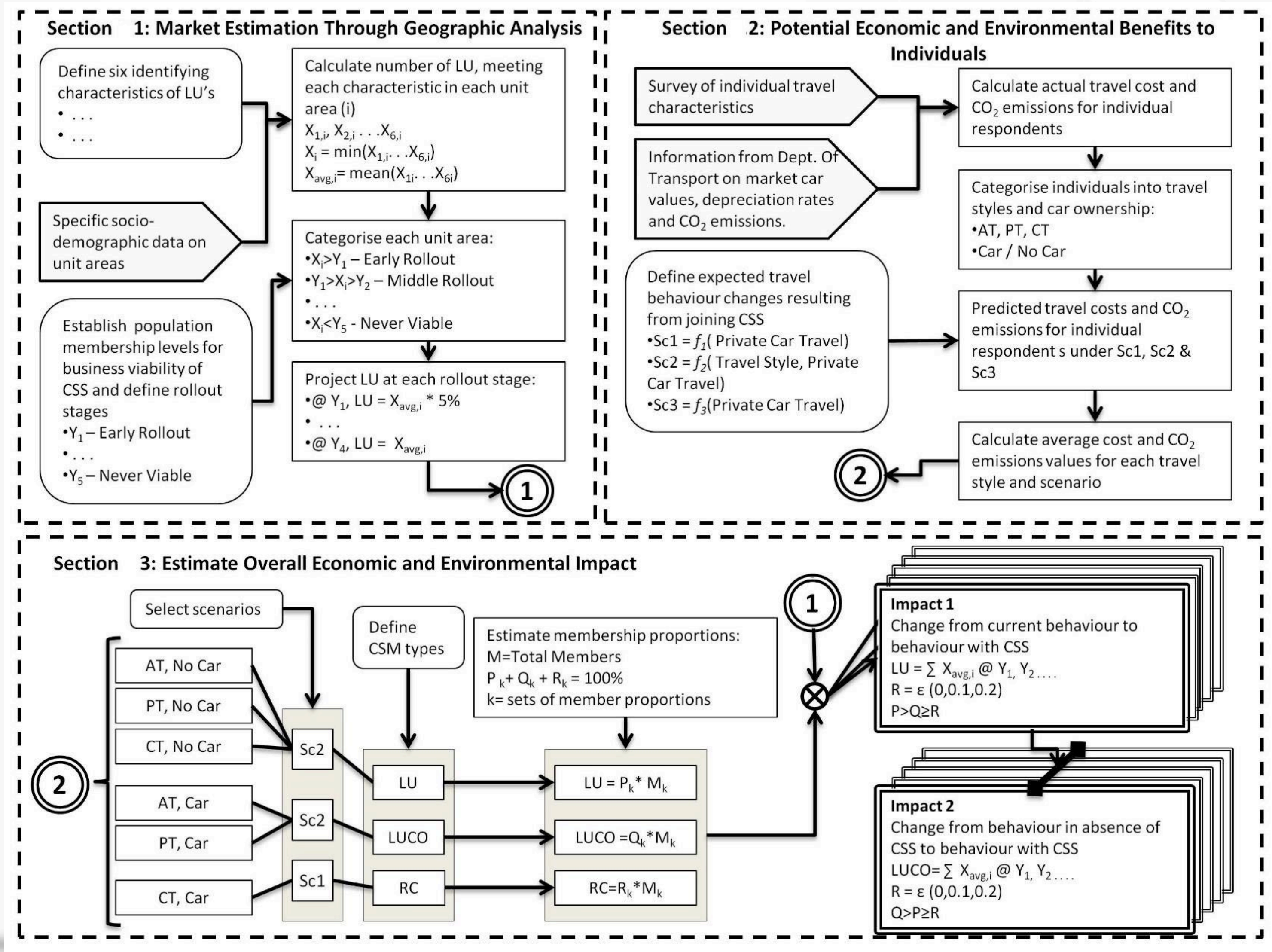
2. To estimate potential environmental impacts of car-sharing considering reduced travel and carbon saving

3. To estimate potential economic impacts of car-sharing societal savings from reduced car-ownership and travel expenses

Methodology

- Stage 1: Identifying potential car-sharing users
- Stage 2A: Measuring travel costs through travel survey (Activity Diary)
- Stage 2B: Simulation of potential behavioural changes with car-sharing using scenario design
- Stage 3: Estimating individual and overall potential economic & environmental impacts of organized car-sharing

Methodology



Data and Data Sources

1. **Irish Census Data:** Small Area Population Statistics (SAPS) dataset and the POWSCAR dataset.
2. **Irish Car Fleet Data**
3. **Vehicle Registration Tax, Market Price Data**
4. **Activity and Travel Diary**
5. **GoCar Pricing and Usage Data**
6. **Emission Data**

Stage1: Identify Feasible Areas

Key Dataset: Census Data

Population census conducted on all residents of the Republic of Ireland on Sunday 10th April 2011.

2 Datasets:

- Small Area Population Statistics (SAPS) dataset: 18,488 small geographic units (“Small Area”) with an average population of 248 and average area of 3.8 km^2 providing socio-demographic information
- POWSCAR dataset: Place of Work, School or College - Census of Anonymised Records provides journey-to-work data along with socio-demographic information

Stage1: Potential Users

Most likely members of Organised Car-sharing (OCS) based on North American and European case studies.

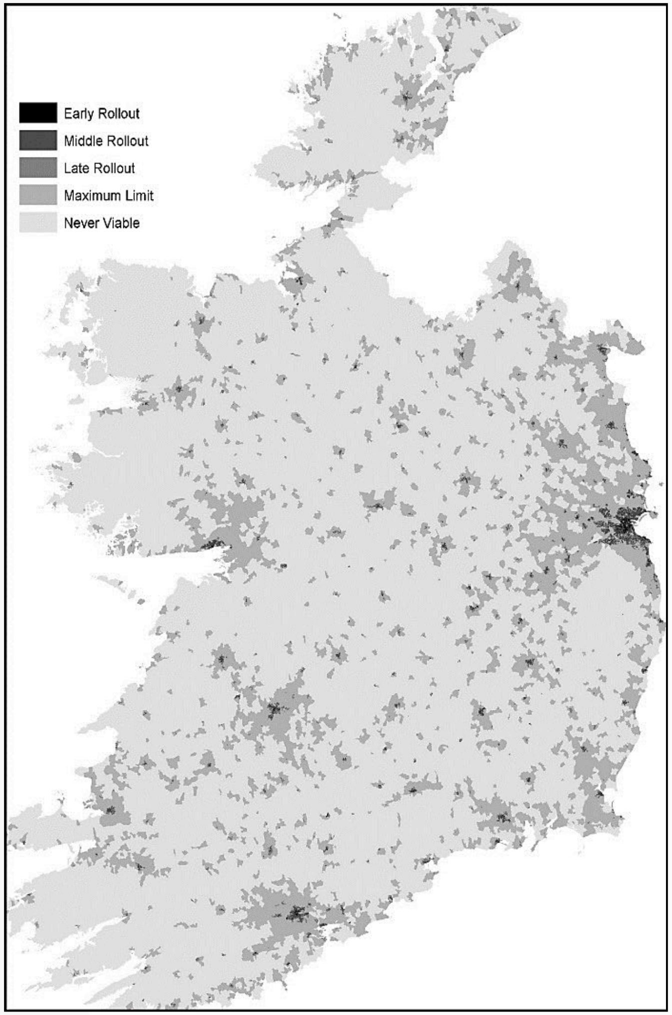
User characteristics (Likely Users LU):

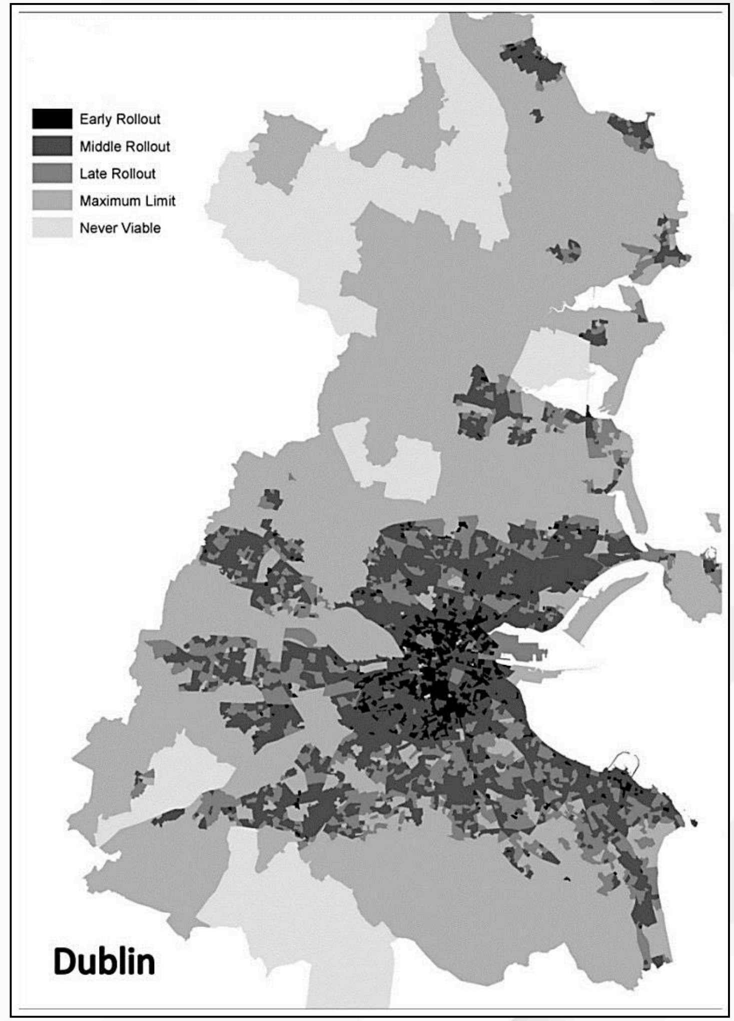
- Adult residents of 1-2 person households,
- Age between 25 - 49 years,
- Working or self-employed,
- Education qualification includes at least an ordinary degree,
- Adult residents of no car households,
- Adults who travel to work using modes other than driving

Stage1: Rollout Areas

- **Early Rollout Areas**: Areas most suitable for CSS with 1000 LU/km^2 and 5% will join CSS.
- **Middle Rollout Areas**: Areas suitable for CSS with additional policy and investment support with 100 LU/km^2 and 50% join CSS.
- **Late Rollout Areas**: Areas suitable for CSS with significant policy and investment support with 25 LU/km^2 and all join CSS.
- **Maximum Limit Areas**: Areas with population density of 25 adults/km^2, but has fewer LU than late rollout areas. Private car ownership would require restrictions.
- **Never Viable Areas**: Areas with insufficient population density (i.e. <25 adults/km^2) to support CSS.

Identification of Potential Locations





Potential Areas

	No. of small areas	% Of Land area	Population	Adult population	Estimated LU	Projected LU as CSM	Projected LU as CSM as% of adult population
Ireland							
Early roll out	1093	0.0	223,663	189,990	85,962	4298	0.1
Middle roll out	7150	0.6	1,733,223	1,309,339	490,611	245,306	7.4
Late roll out	9999	1.3	2,477,227	1,835,865	679,289	679,289	20.4
Maximum limit	14,436	19.4	3,637,354	2,649,730	964,951	964,951	29.0
Never viable	*4052*	*80.6*	*950,898*	*675,913*			
Dublin city and county							
Early roll out	923	1.8	193,331	163,675	74,815	3741	0.4
Middle roll out	3744	17.7	948,649	722,253	279,813	139,906	14.7
Late roll out	4449	27.1	1,159,237	871,867	332,910	332,910	34.9
Maximum limit	4795	82.3	1,269,145	949,728	360,121	360,121	37.8
Never viable	*11*	*17.7*	*3924*	*2867*			
Cork city							
Early roll out	85	4.4	15,159	13,373	5692	285	0.3
Middle roll out	414	50.7	91,308	73,557	26,184	13,092	13.9
Late roll out	499	82.6	114,443	90,766	31,713	31,713	33.7
Maximum limit	519	100.0	119,230	94,079	32,761	32,761	34.8
Never viable	*0*	*0.0*	*0*	*0*			
Limerick							
Early roll out	17	1.0	3710	3103	1279	64	0.1
Middle roll out	166	28.7	36,275	28,137	9731	4866	11.4
Late roll out	226	58.2	50,668	38,715	13,167	13,167	30.7
Maximum limit	258	100.0	57,106	42,867	14,511	14,511	33.9
Never viable	*0*	*0.0*	*0*	*0*			
Galway							
Early roll out	25	1.0	4068	3711	1520	76	0.1
Middle roll out	234	29.4	56,679	44,175	16,269	8135	14.0
Late roll out	281	45.3	68,768	53,166	19,694	19,694	33.9
Maximum limit	307	100.0	75,529	58,083	21,511	21,511	37.0
Never viable	*0*	*0.0*	*0*	*0*			

Stage 2: Individual Impact Analysis

A four step analysis was carried out.

First step: Travel and activity survey (2-week long travel diary in 2012 of 2639 respondents)

Second step: Individual travel CO2 emissions and cost of transport

Third step: Travel Style Classification

Final Step: Scenario based behavioural change design to estimate impacts

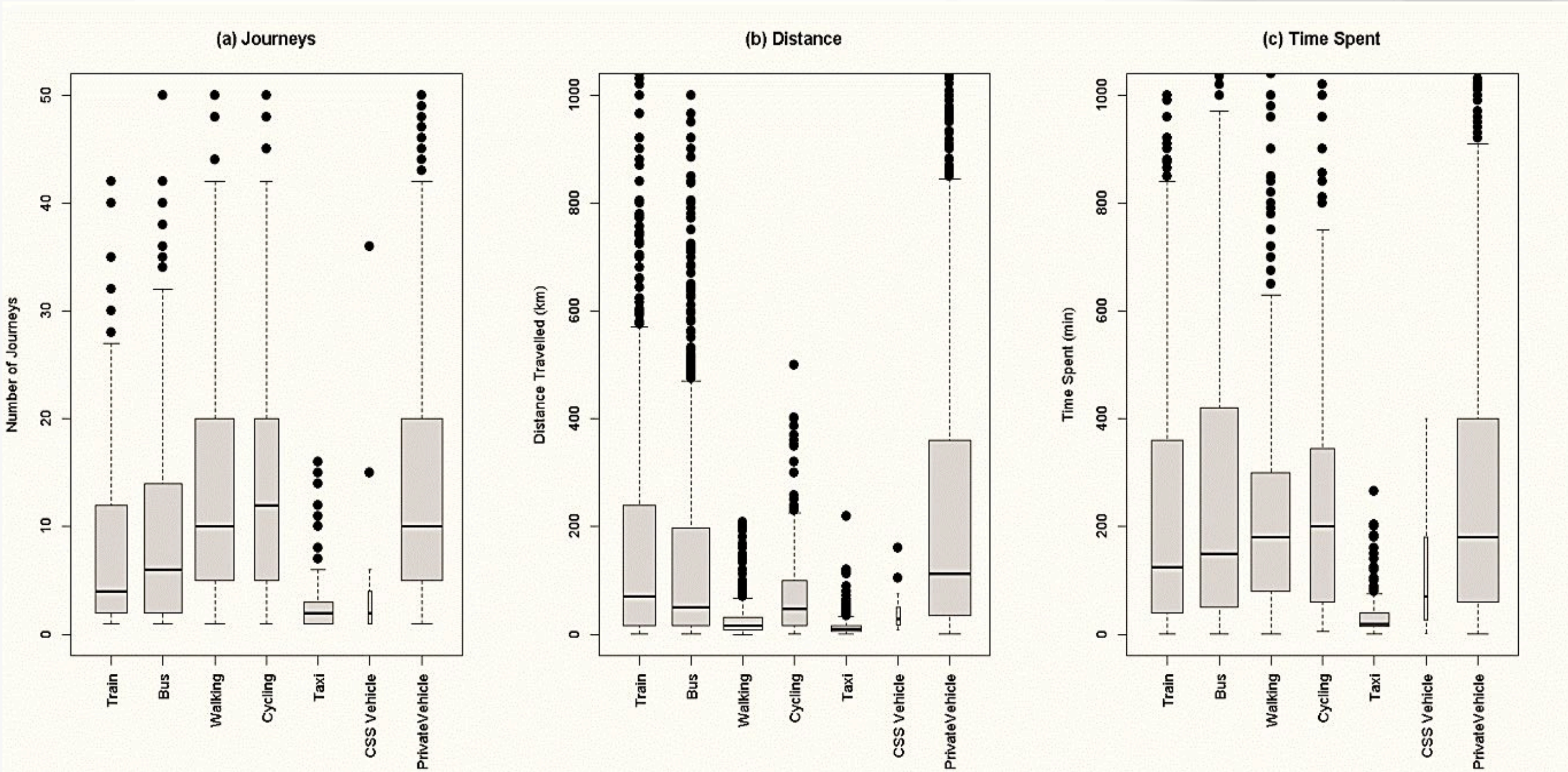
Key Dataset:

- Travel Diary
- National Car Fleet
- Tax & market value
- Car-sharing pricing
- Emission

Activity Diary

Per Fortnight, summary of (a) Number of Journeys Undertaken, (b) Distance Travelled and (c) Time Spent by Mode of Transport

	Not Dublin		Dublin		Total
	No Car	Owns Car	No Car	Owns Car	
Age Brackets					
Under 18	36	1	80	3	120
18 - 23	198	39	614	89	940
24 - 50	160	277	486	461	1384
51-65	13	41	26	70	150
65+	1	3	4	5	13
NS	8	11	5	8	32
Principal Status					
Working for payment or profit	118	266	374	474	1232
Student or pupil	245	55	755	117	1172
Other	53	51	86	45	235



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Stage 2: Travel Cost Calculation

The Annual Travel Cost

$$\text{Annual Cost} = \delta_{opp} + \delta_{dep} + \delta_{ann} + (\delta_{exp} * 26) + \beta_{ann} + (\beta_{exp} * 26) + (\theta_{oth} * 26)$$

Where δ_{opp}, δ_{dep} are the calculated opportunity and deprecation costs respectively, δ_{ann} and δ_{exp} are the directly reported annual and fortnightly costs of private vehicle travel; β_{ann} and β_{exp} are the directly reported annual and fortnightly costs of travel on public transport and θ_{oth} are the directly reported fortnightly costs of taxi travel, GoCar travel and a pro-rata figure for GoCar monthly membership.

In car costs insurance, road tax and maintenance are considered.

In public transport, commuter and short-trip tickets are considered.

For full details please see,
Rabbitt, Niamh, and Bidisha Ghosh. "Economic and environmental impacts of organised Car Sharing Services: A case study of Ireland." *Research in Transportation Economics* 57 (2016): 3-12.

Individual's Transport Cost

This table combines all four datasets to calculate travel costs.

		Not Dublin		Dublin		Total
	Symbol	No Car	Owns Car	No Car	Owns Car	
N		416	372	1215	636	2639
Opportunity Costs of Car Ownership	d_{opp}	€-	€360.31	€-	€306.20	€124.58
Depreciation Costs of Car Ownership	d_{dep}	€-	€1,390.81	€-	€1,212.46	€488.26
Annual Contributions towards all PV	d_{ann}	€184.50	€1,262.95	€134.20	€1,115.86	€537.82
Fortnightly Costs for Travel in PV	d_{exp}*26	€498.44	€2,324.08	€293.46	€1,555.14	€916.08
Annual Train and Bus Tickets Cost	b_{ann}	€353.53	€289.48	€286.62	€162.20	€267.59
Fortnightly costs for travel in buses and trains	b_{exp}*26	€823.40	€259.29	€434.09	€275.28	€432.55
Annual Taxi Spend	q_{oth}	€243.84	€142.81	€248.26	€259.19	€235.33
Total Travel Cost		€2,103.72	€6,029.74	€1,396.63	€4,886.33	€3,002.21
Carbon Dioxide Emissions	(kg/yr)	1192.1	3365.2	794.1	1023.8	1274.6

Stage 2: Travel Style Categories

Travel style categories were used to simulate travel behavior change scenarios.

These are based on dominant modes of travel:

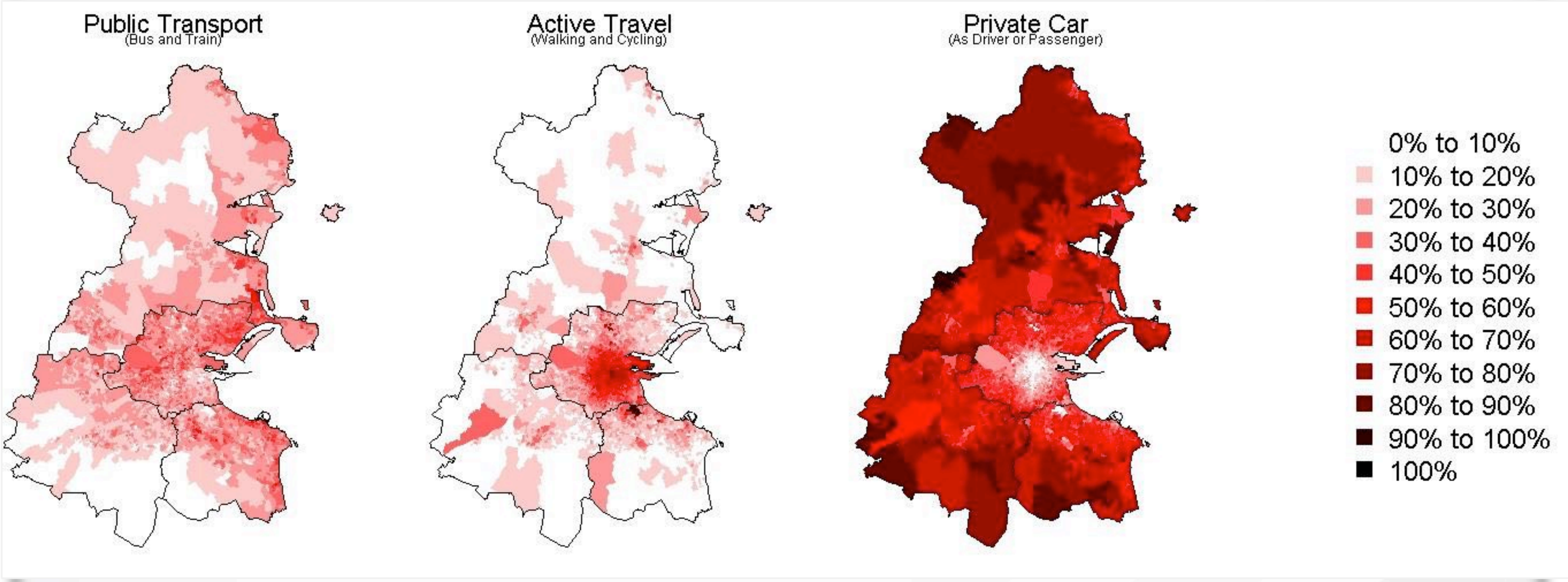
1) ***Active Traveller* (AT)** who took most trips by walking or cycling

2) ***Public Transport Traveller* (PT)** where the respondent mostly used bus/tram/train

3) ***Car Traveller (CT)*** where most trips were made on private car as either driver or passenger

- LU members have AT, PT or CT style and do not own cars
- Low Usage Car Owners (LUCO) members are car owners with AT or PT style
- Radical Changers (RC) are car owners with CT style

Adults Travelling to Work or College



Stage 2: Behavioural Change

1. Best case scenario: All types join CSS. Both existing car and non-car owners, make 10% of their reported journey distance travelled in a private car in a CS car with the remainder by alternative modes.
2. Most likely scenario: It is assumed that car-owners with a car travel style do not join CSS. Car owners with an active or public transport travel style join a CSS and follow scenario 1. Non-car owners with an active or public transport style are modelled as replacing all of their current car trips with CS trips subject to a minimum of 130 km/year
3. Worst case scenario: All members replace their current levels of car travel with travel in CS vehicles.

Individual Financial and Environmental Impacts of joining a Car Sharing Service

		Dublin						Ireland					
		Active traveller		Car traveller		Public transport traveller		Active traveller		Car traveller		Public transport traveller	
		Non-car owner	Car owner	Non-car owner	Car owner	Car owner	Non-car owner	Non-car owner	Car owner	Non-car owner	Car owner	Car owner	Non-car owner
Annual average travel costs in Euros													
Reported		€1108	€3750	€2570	€5559	€1784	€5256	€1190	€3827	€2687	€5944	€1974	€5652
Best Case Scenario (BCS)		€1055	€965	€3786	€3261	€1822	€2115	€1082	€979	€3802	€3708	€2001	€2170
Most Probable Scenario (MPS)		€1286	€965	€2570	€5559	€1964	€2115	€1343	€979	€2687	€5944	€2123	€2170
Worst Case Scenario (WCS)		€1744	€3111	€6827	€8827	€2305	€3633	€1903	€3205	€7596	€11,471	€2639	€3984
Annual average travel related CO_2 emission in kg													
Reported		283.2	496.5	1006.4	1457.8	448.9	731.3	483.2	541.6	1197.2	2202.4	614.3	986.3
Conventional cars	Best Case Scenario (BCS)	240.6	179.9	669.2	598.0	428.0	585.6	427.6	199.3	792.0	888.6	591.4	850.6
	Most Probable Scenario (MPS)	293.4	179.9	1006.4	1457.8	458.4	585.6	493.1	199.3	1197.2	2202.4	623.6	850.6
	Worst Case Scenario (WCS)	394.4	689.4	1560.2	1943.7	448.9	731.3	605.8	723.4	1794.3	2677.8	702.3	1161.7
Electric cars	Best Case Scenario (BCS)	148.5	92.2	462.5	380.0	223.9	363.3	297.1	109.8	531.7	590.0	322.3	472.0
	Most Probable Scenario (MPS)	283.0	92.2	1006.4	1457.8	448.6	363.3	483.0	109.8	1197.2	2202.4	614.0	472.0
	Worst Case Scenario (WCS)	179.8	91.4	172.2	98.1	351.6	367.2	360.6	102.2	221.8	139.3	503.4	617.9

- *An average value of 147.3g/km was obtained from the weighted average of all car details provided by respondents*

Stage 3: Collective Impact

3 member types

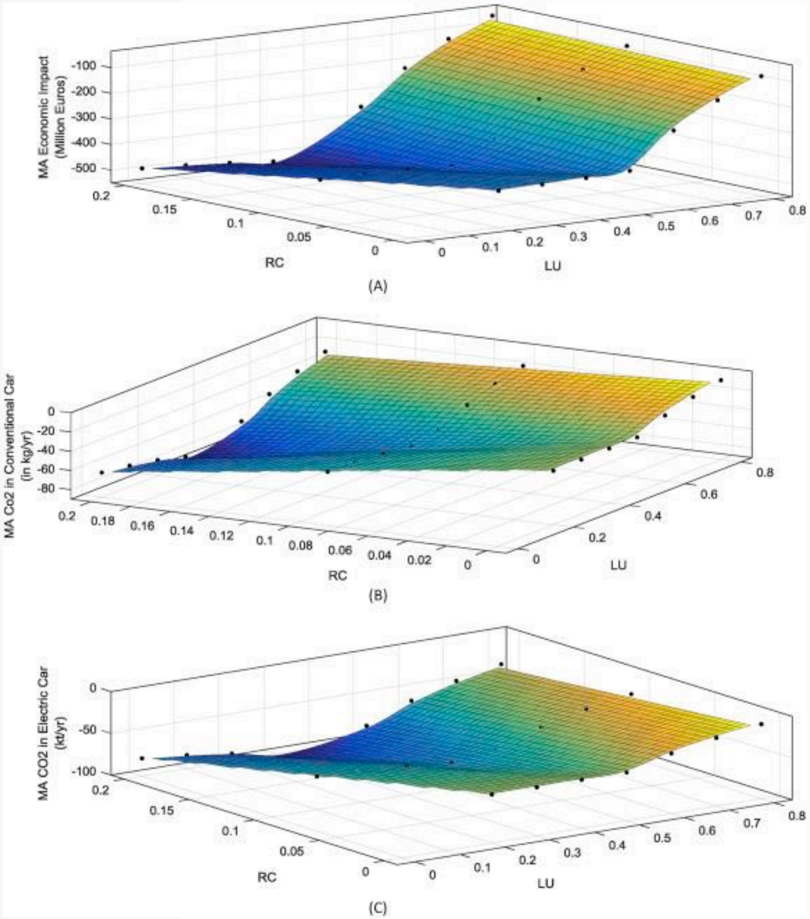
- Likely Users (LU) are the key members (60% - 90%) without car-ownership
- Low Usage Car Owners (LUCO) and those making a Radical Change (RC) are 10% - 40%
- LUCO correspond to the AT and PT who own a car and sells their car after joining
- Radical Change (RC) are CT and who own a car and who radically change their travel behaviour on joining CSS.

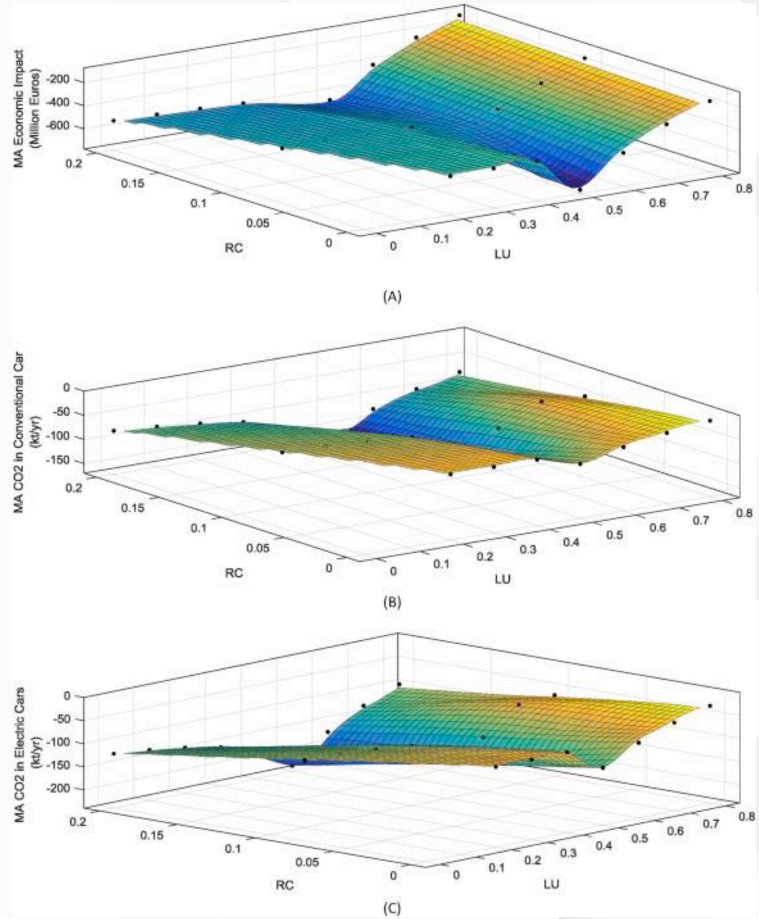
Overall Financial and Environmental Impacts of joining a Car Sharing Service

Estimation of collective economic and environmental impacts of car sharing rollout in Dublin & Ireland.

		Dublin				Ireland			
		Immediate			*Ideal*	*Immediate*			*Ideal*
% Members per category	LU	80%	70%	55%	10%	80%	70%	55%	10%
	LUCO	20%	25%	30%	70%	20%	25%	30%	70%
	RC	0%	5%	15%	20%	0%	5%	15%	20%
Projected number of Members	Early Adopters	4676	5344	6801	5344	5373	6140	7815	6140
	Middle Adopters	174,883	199,866	254,375	199,866	306,632	350,437	446,010	350,437
	Late Adopters	416,137	475,586	605,291	475,586	849,112	970,413	1,235,072	970,413
	Maximum Limit	450,151	514,459	654,766	514,459	1,206,189	1,378,502	1,754,457	1,378,502
CO_2 saved in Conventional Car CSS (kt/yr)	Early Adopters	0.20	0.52	1.34	1.83	0.23	0.74	2.07	2.31
	Middle Adopters	7.34	19.60	50.25	68.41	12.86	42.27	118.37	86.35
	Late Adopters	17.47	46.63	119.58	162.78	35.61	117.04	327.79	205.47
	Maximum Limit	18.89	50.44	129.35	176.08	50.58	166.26	465.63	222.27
CO_2 saved in Electric Car CSS (kt/yr)	Early Adopters	0.28	0.68	1.68	2.24	0.51	1.22	3.00	4.01
	Middle Adopters	10.54	25.48	62.81	83.79	28.97	69.62	171.02	228.68
	Late Adopters	25.09	60.64	149.46	199.38	80.22	192.78	473.57	633.26
	Maximum Limit	27.14	65.60	161.68	215.68	113.96	273.84	672.72	899.56
Cost Saved by Members (Million Euros)	Early Adopters	€2.16	€3.95	€7.75	€13.35	€2.83	€4.96	€9.45	€16.22
	Middle Adopters	€80.78	€147.74	€289.77	€499.39	€161.27	€283.32	€539.40	€925.57
	Late Adopters	€192.22	€351.55	€689.52	€1188.31	€446.58	€784.56	€1493.67	€2563.04
	Maximum Limit	€207.93	€380.28	€745.88	€1285.44	€634.38	€1114.49	€2121.81	€3640.88

Overall Financial and Environmental Impacts of joining a Car Sharing Service





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Conclusions

- The introduction of CSS would also provide significant CO_2 savings at all rollout stages. The more car owners join CSS, the bigger the environmental benefit will be.
- The environmental benefits of CSS can be best realised through provision of electric cars as CS vehicles.
- Large group of people exist in urban areas who can join CSS without any major policy support.
- Car ownership is very expensive and individuals without car dependence can gain from joining CSS.

Limitations

- Due to lack of available information, the study did not include the investment required for infrastructure development, operation and maintenance of CSS in Ireland, hence the cost savings are calculated on the basis of customer savings and not in terms of profits that could be obtained by CSS operators such as government or third parties.

RiDER

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

7. URBAN TRANSPORT, SOCIAL EXCLUSION AND INNOVATION: EXPERIENCES AND STORIES FROM LATIN AMERICA (DANIEL OVIEDO)

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

Urban transport, social exclusion and innovation: experiences and stories from Latin America

Dr Daniel Oviedo
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13 May 2019

FOSTERING INCLUSION AND PARTICIPATION OF MIGRANTS: THE ROLE OF THE SHARING ECONOMY
Regulating and Deregulating Sharing Mobility in Europe (RIDER)
Università degli Studi di Palermo

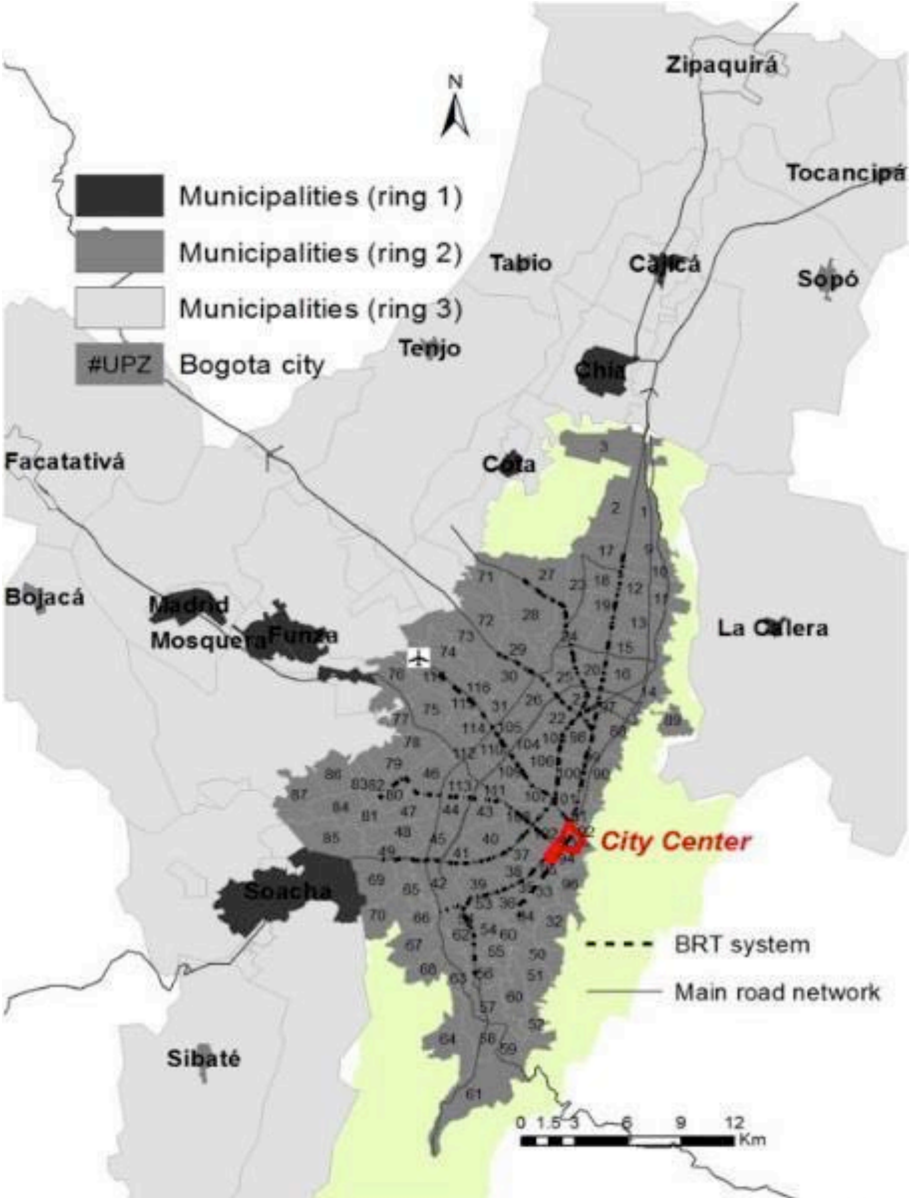

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

11.2. *By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons*

…notably by expanding public transport…

The Bartlett Development Planning Unit

Source: Oviedo (2016)



Source: Guzman, Oviedo and Bocarejo (2016)

Bogotá, the capital of Colombia, has become a paradigmatic case in the study of urban development in the Global South.

This can be attributed to:

- significant examples of efficient urban management by some previous local administrations (Dávila, 2009 and Dávila et al., 2006),
- and to innovations in urban infrastructure and services that are regarded internationally as best-practices, such as local Bus Rapid Transit (BRT): Transmilenio (Gilbert, 2008 and Hidalgo and Sandoval, 2004).

Source: Oviedo (2016)

Source: Semana (2014)

Source: El Tiempo (2014)


TransMilenio

Accessibility

- Understood as "the ease of reaching desired destinations given a number of available opportunities and intrinsic impedance to the resources used to travel from the origin to the destination" (Bocarejo and Oviedo 2012:143)
- Recognising that these opportunities and impedance are in a reciprocal relationships with **the social position of transport users**, and the **spatial structure of and distribution of activities** in cities

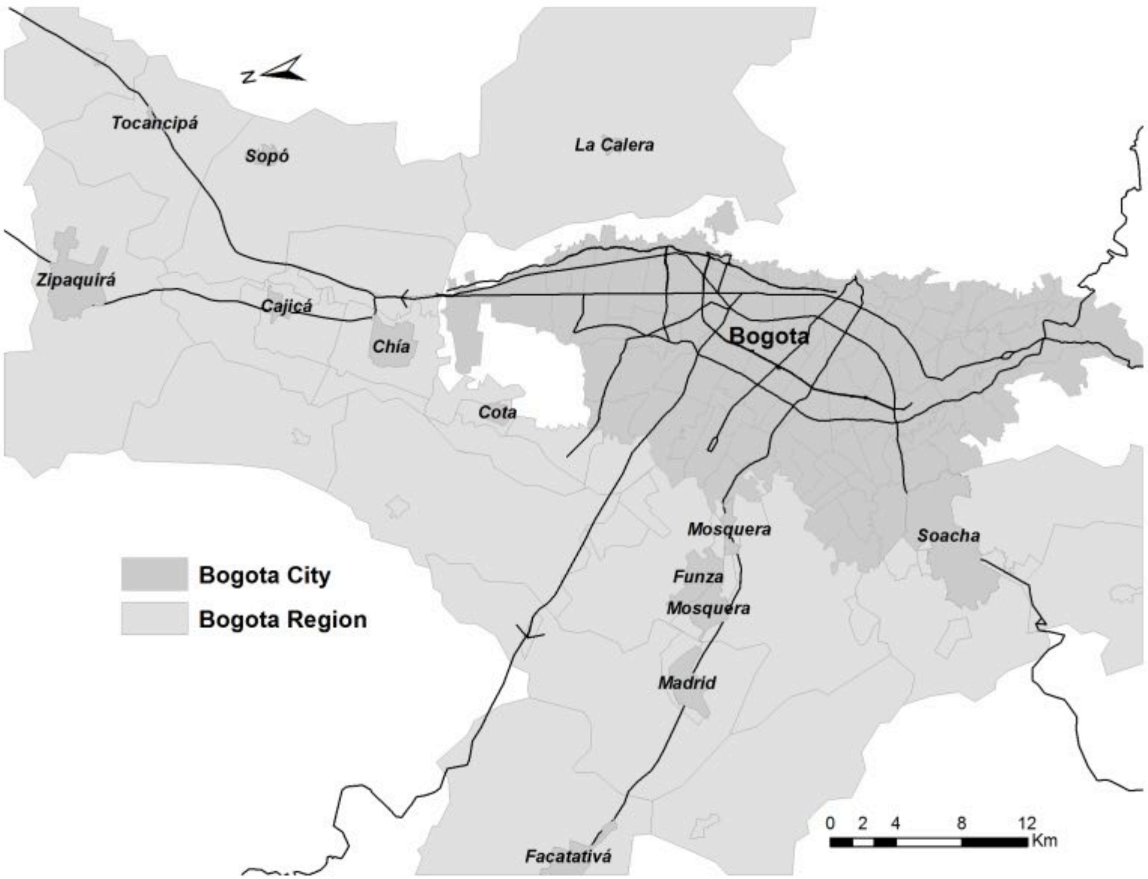
Mobility

- "the freedom and right of all citizens to move in public space with safety and security – and without censure and social control" (Levy, 2013b:26)

➢ In this sense, both terms are "… implicated in the production of power and relations of domination" (Cresswell, 2010:20).

Case Study of Bogotá – Applying accessibility metrics

Bogota city and 12 contiguous municipalities:
- 7.35 million people in Bogota city
- 1.22 million of inhabitants in these municipalities (in 2011)



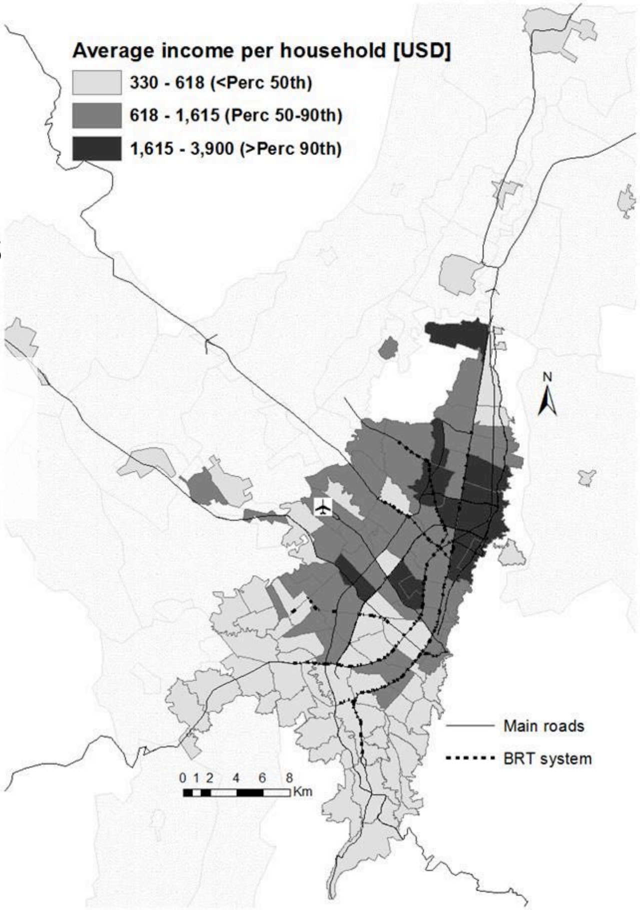
Does the city offer the same opportunities (access to work/study) to its citizens equitably? Let's see…

Work and Education Trips – Income groups and average travel time by zone

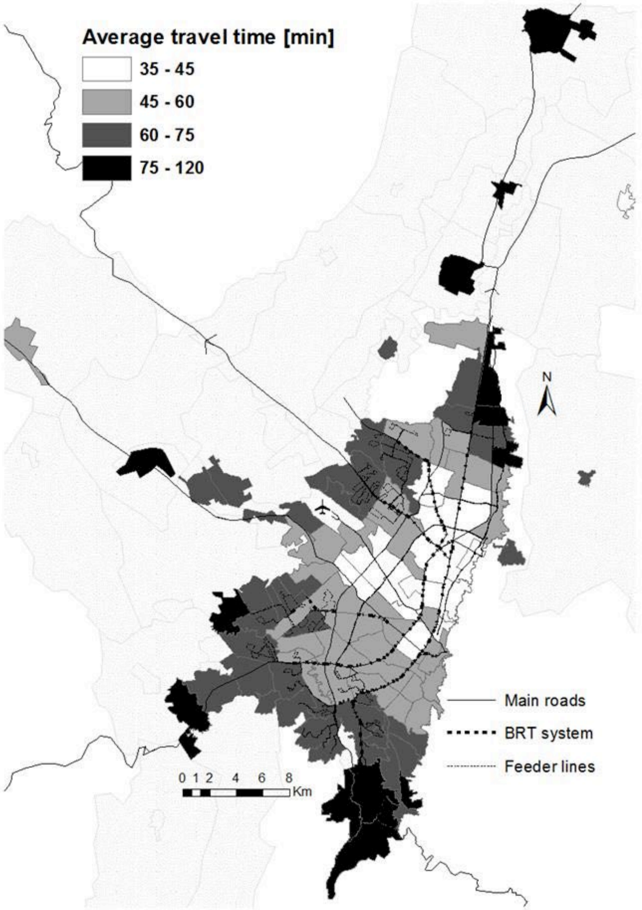
Average income by zone [USD/month]:
- Low income households < 618
- Medium income households 618-1,615
- High income households ≥1,615

Population by income group:
- Low income group = 56%
- Medium income group = 38%
- High income group = 6%

Average travel time by income group:
- The average travel time for low-income group is 77 min
- For the high-income is 40 min



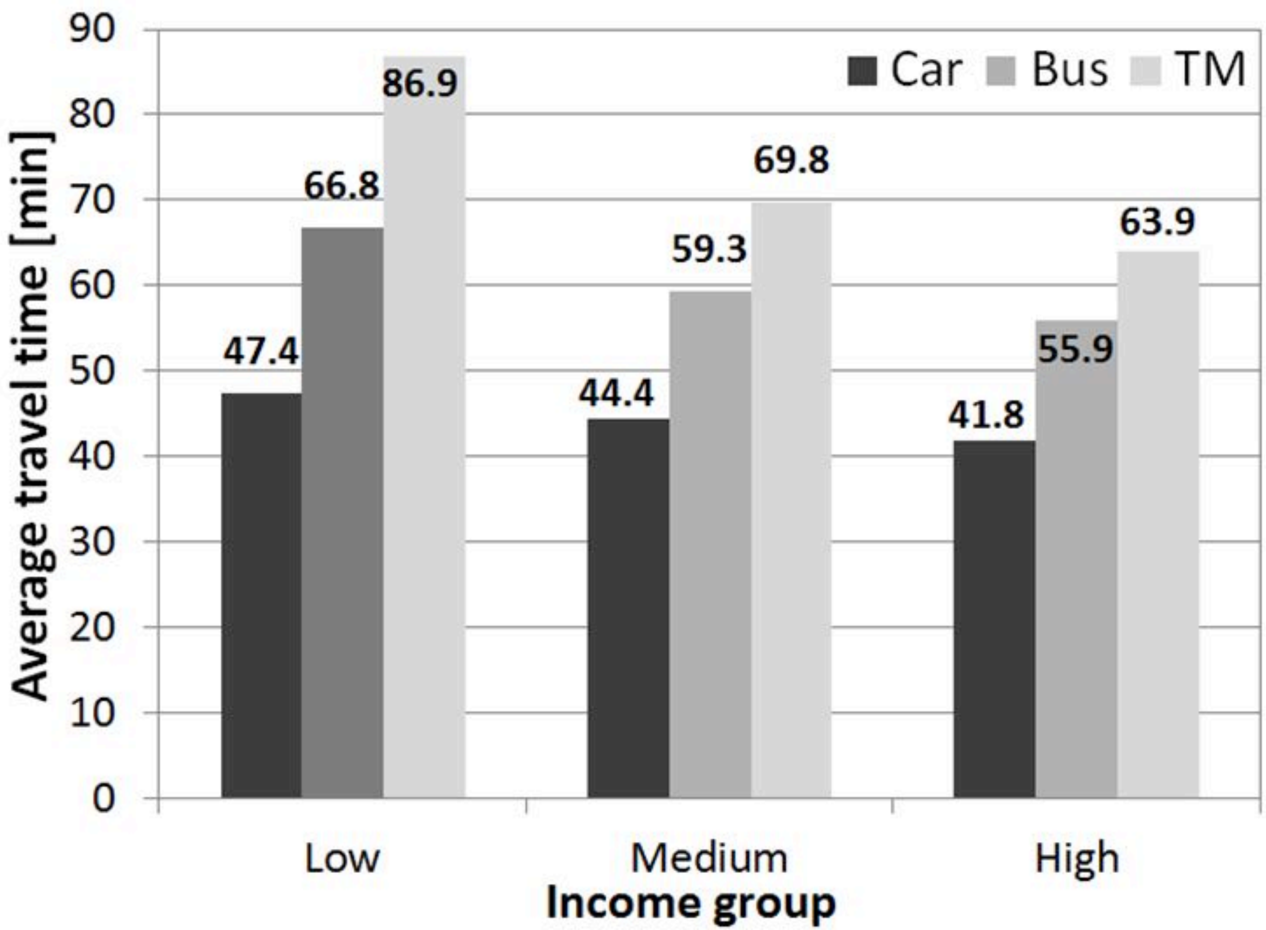
Income level



Average travel time (motorized)

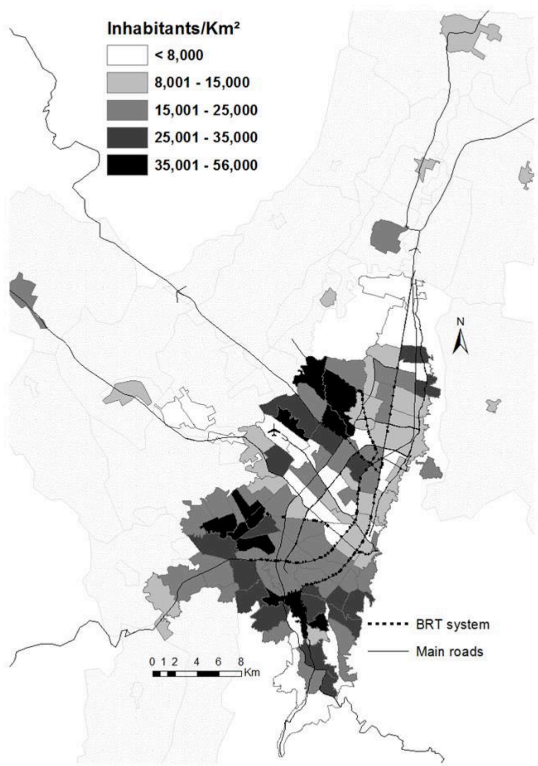
Mandatory Trips

Average travel time to work/study by income group and transport mode

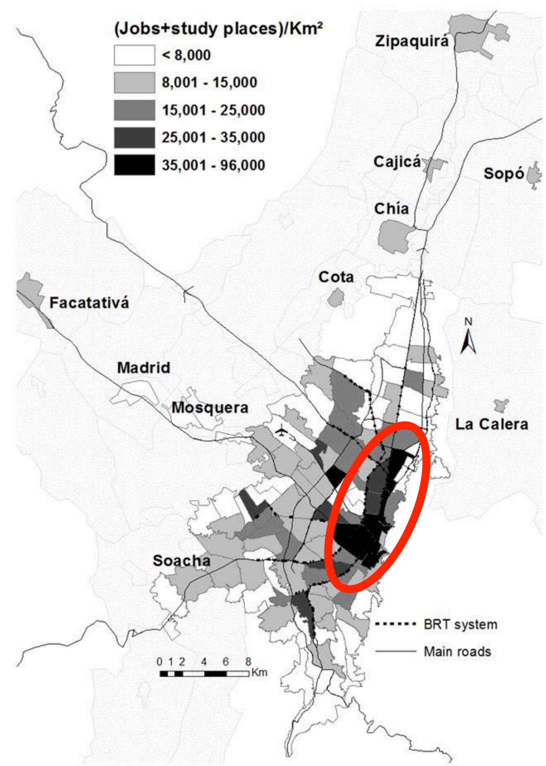


Mandatory Trips – Location of population, jobs and study places

- Bogota is one of the densest cities in the world and is the densest in Latin America with **22,000 inh/km²**
- **Average population density by income group [inh/km²]:**
    - Low income ≈ 23,100
    - Medium income ≈ 12,700
    - High income ≈ 7,500
- There is a dominance of a large central core, along major road corridors and especially the north part of city center (the richest zones).
- Just over **one-third** of the city's employment occurs in zones occupying only 10% of its urban area.



Population density

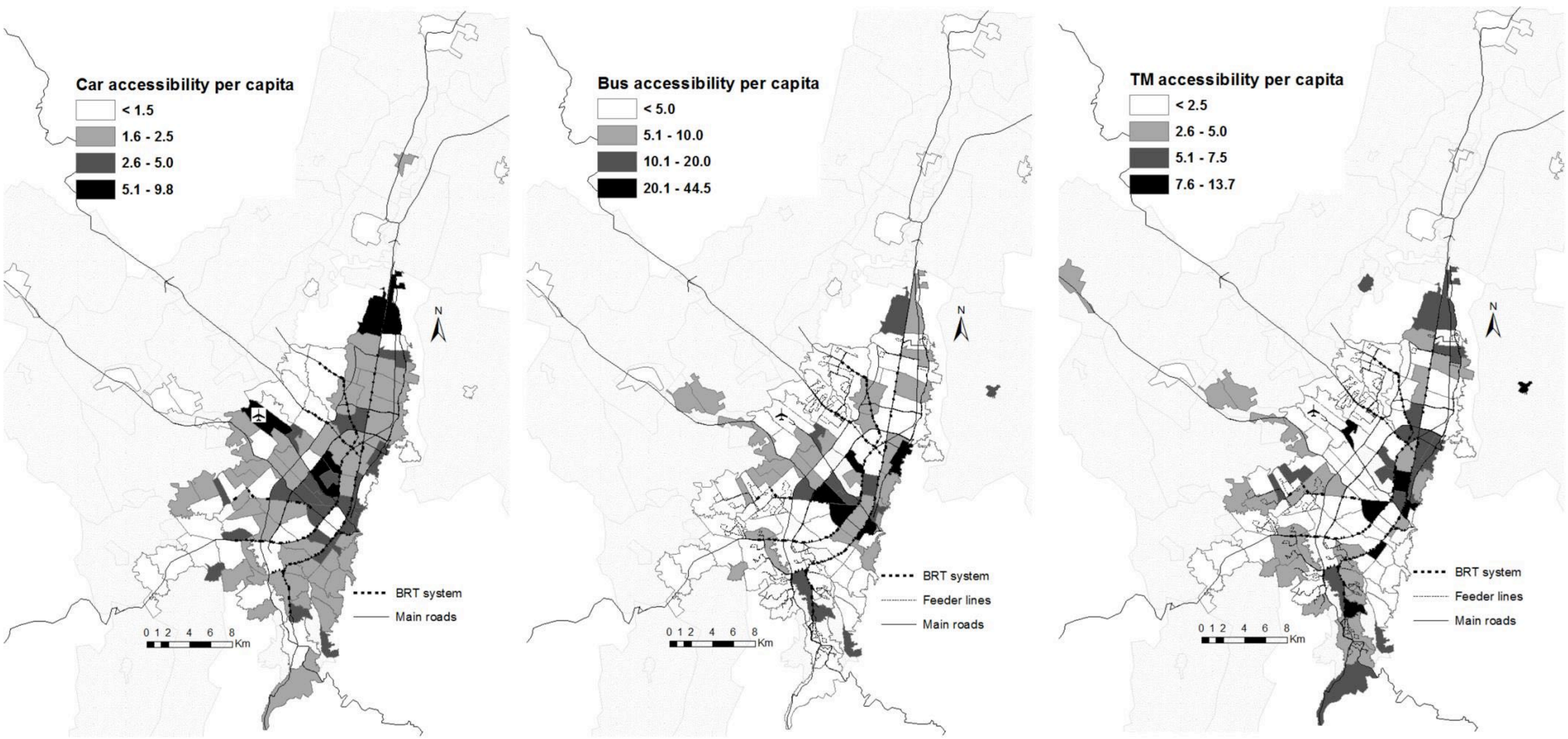


Density of jobs and study places

Mandatory Trips – Location of population, jobs and study places

$$A_i^m = \sum_j O_j \exp(-\beta_i^m \cdot C_{ij}^m) \qquad C_{ij}^m = t_{ij}^m + {c_{ij}^m}/{VOT}$$

Fares
Operation costs
Travel times
β parameters

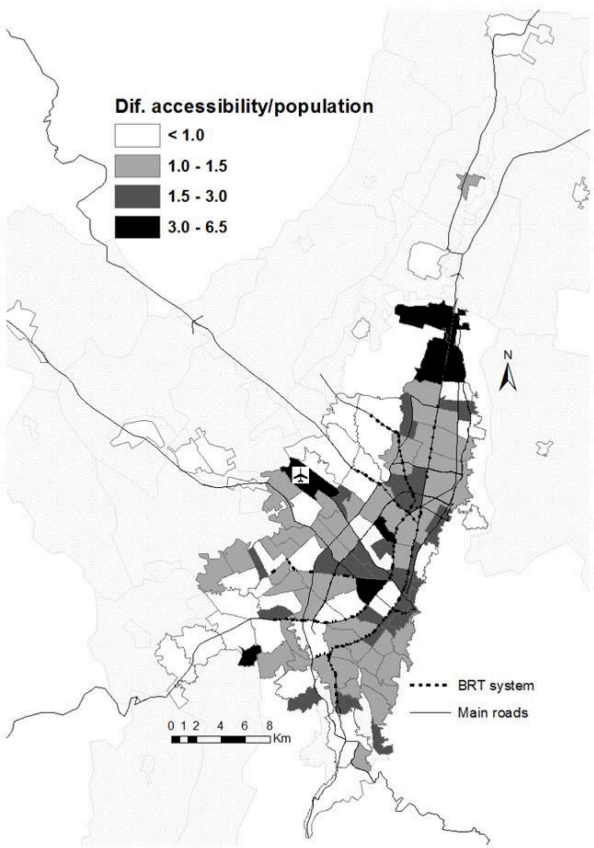


By car *By regular buses* *By Transmilenio (BRT)*

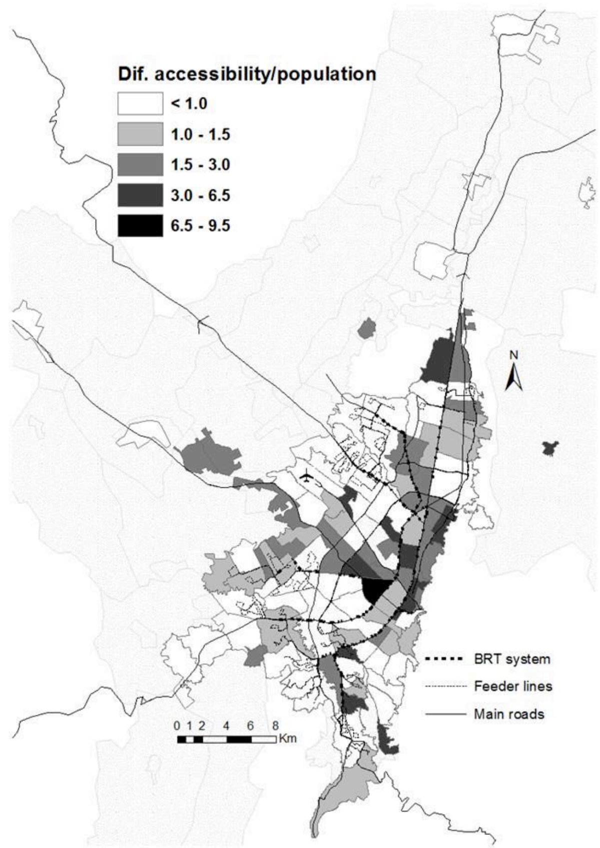
Mandatory Trips

Accessibility and population differences according to the transport mode

Differences between proportion of accessibility and the proportion of population in each zone: this indicator identifies zones which have greater accessibility than residents and vice versa. Those zones in which this indicator is less than 1 reflect an imbalance between population and accessibility, i.e. there are more residents than accessibility

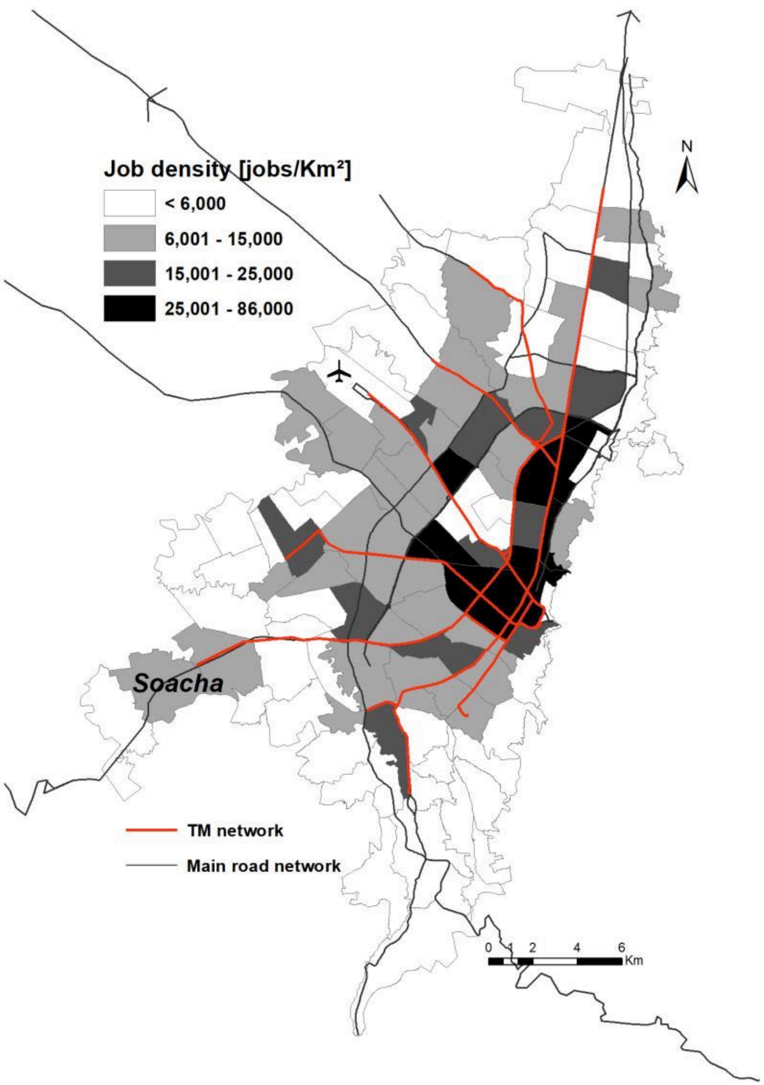


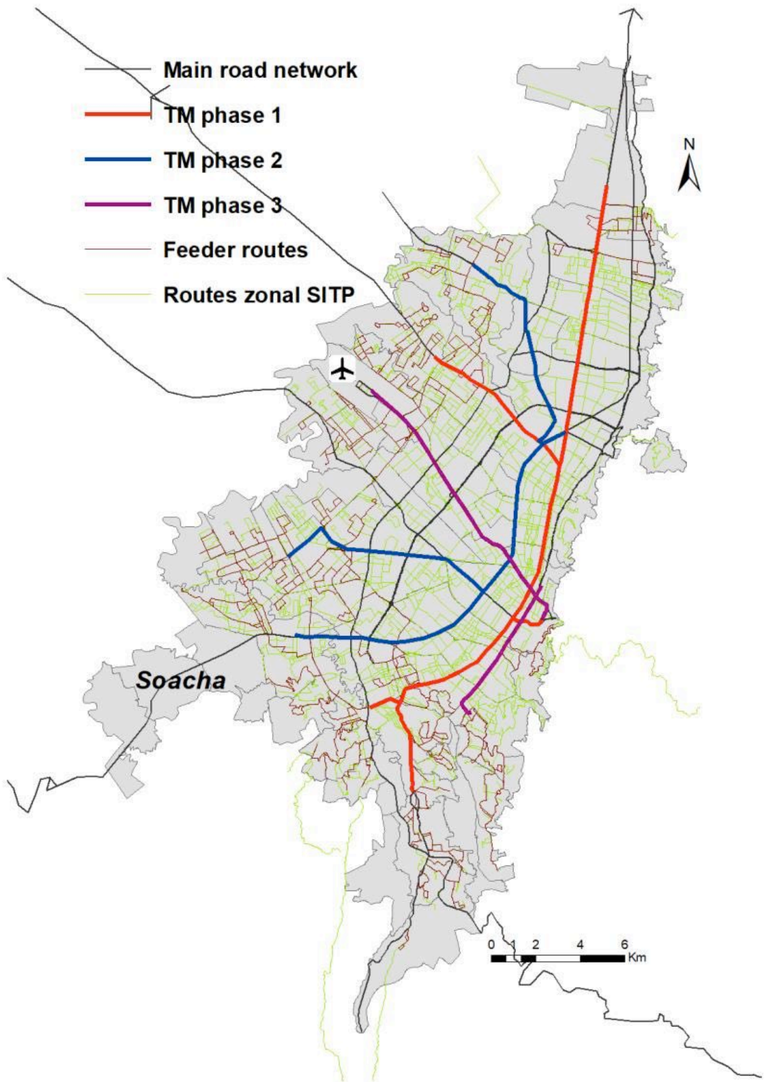
By car



By public transport

The 'formal' structure of Bogotá

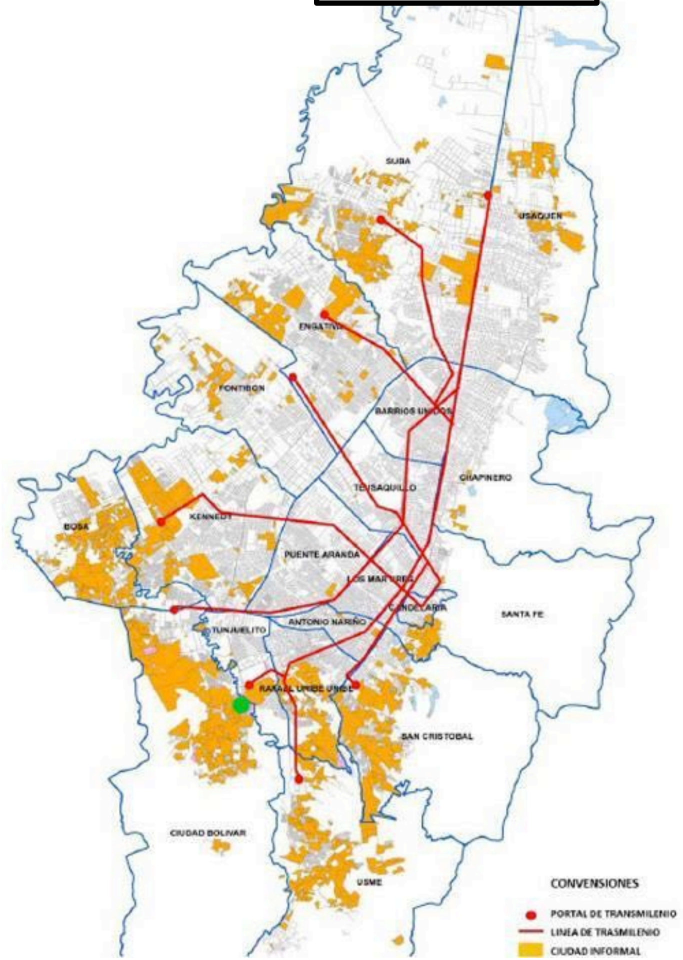




The formal-informal urban continuum in Bogotá

?

The informal city



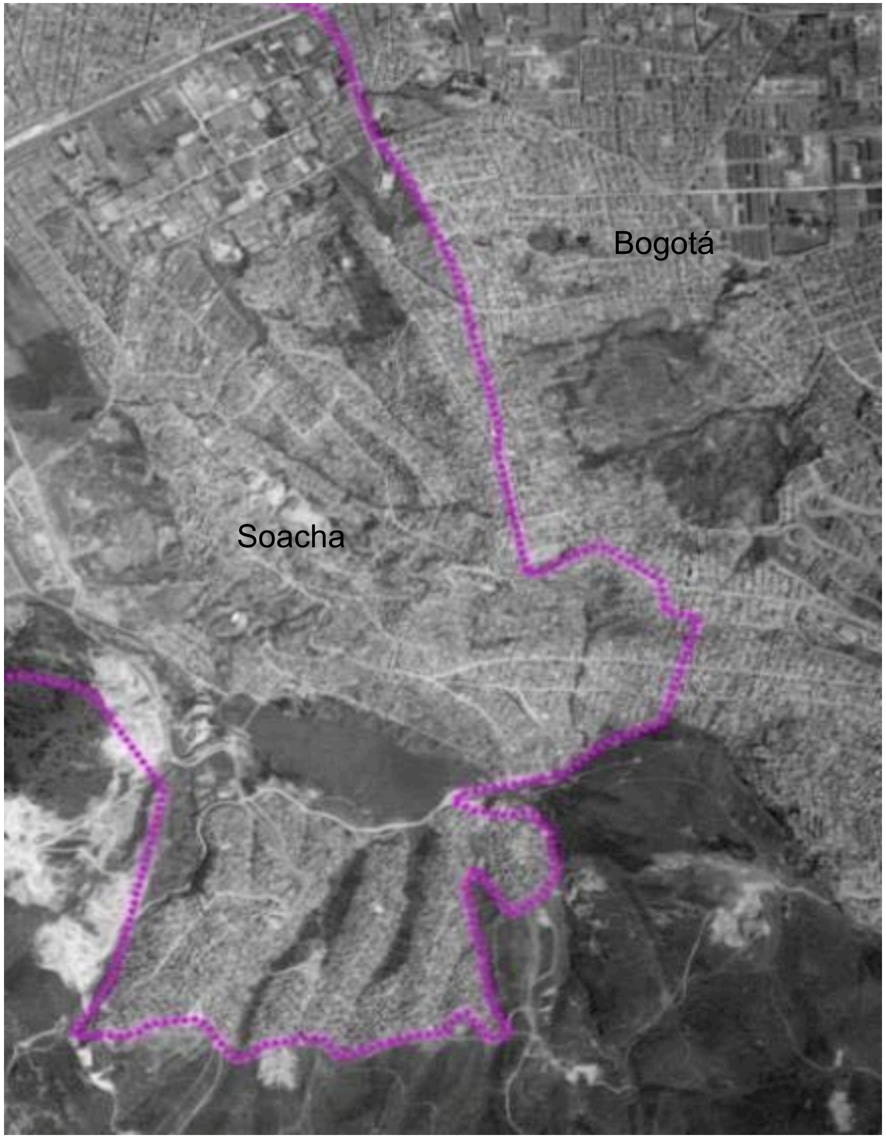
The poor in the periphery (of the periphery)

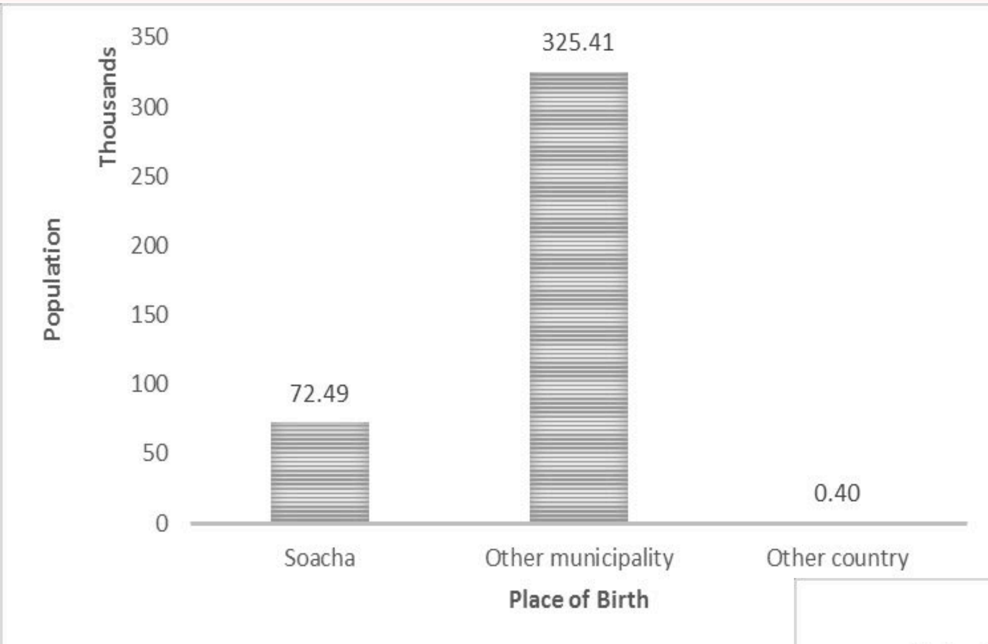
Soacha has become the main destination of low-income in-migrants in recent years despite conditions of poor governance and limited investment capacity in the municipality.

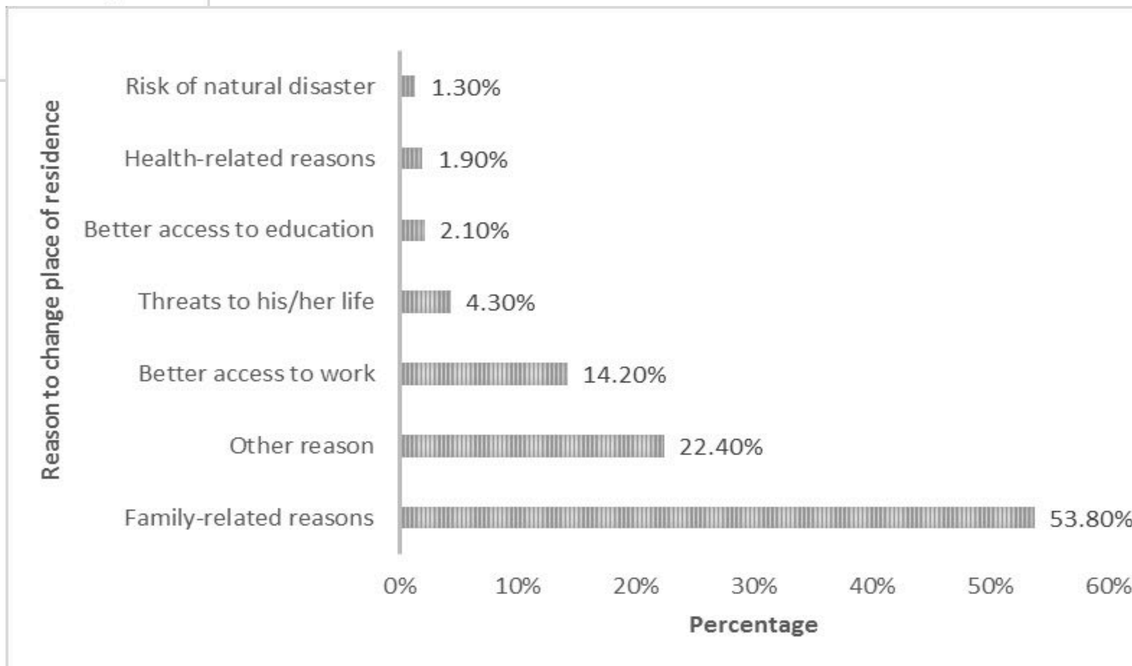
Limited supply of affordable land and housing for low-income groups led to exponential rise of informal housing in Soacha.

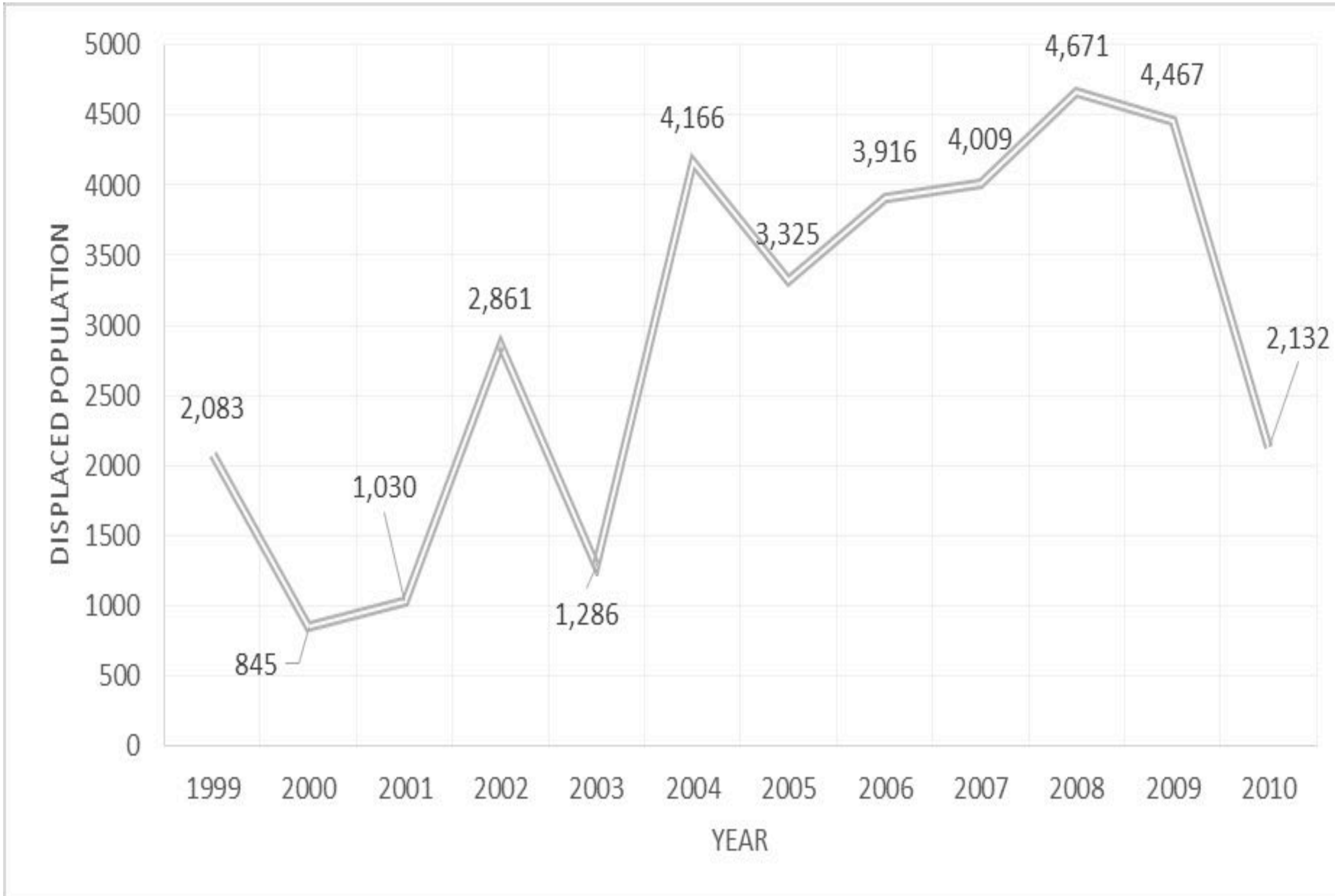
These settlements, compounded by acute social tensions and limited income-earning opportunities, present a severe challenge to poorly endowed and institutionally weak local government to provide adequate utility and transport networks.

Source: Oviedo (2016)


Bogotá
Soacha


Population
Thousands
350
300
250
200
150
100
50
0
325.41
72.49
0.40
Soacha
Other municipality
Other country
Place of Birth


Reason to change place of residence
Risk of natural disaster
1.30%
Health-related reasons
1.90%
Better access to education
2.10%
Threats to his/her life
4.30%
Better access to work
14.20%
Other reason
22.40%
Family-related reasons
53.80%
0%
10%
20%
30%
40%
50%
60%
Percentage


5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
DISPLACED POPULATION
2,083
845
1,030
2,861
1,286
4,166
3,325
3,916
4,009
4,671
4,467
2,132
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
YEAR

Source: Davila et al (2013)

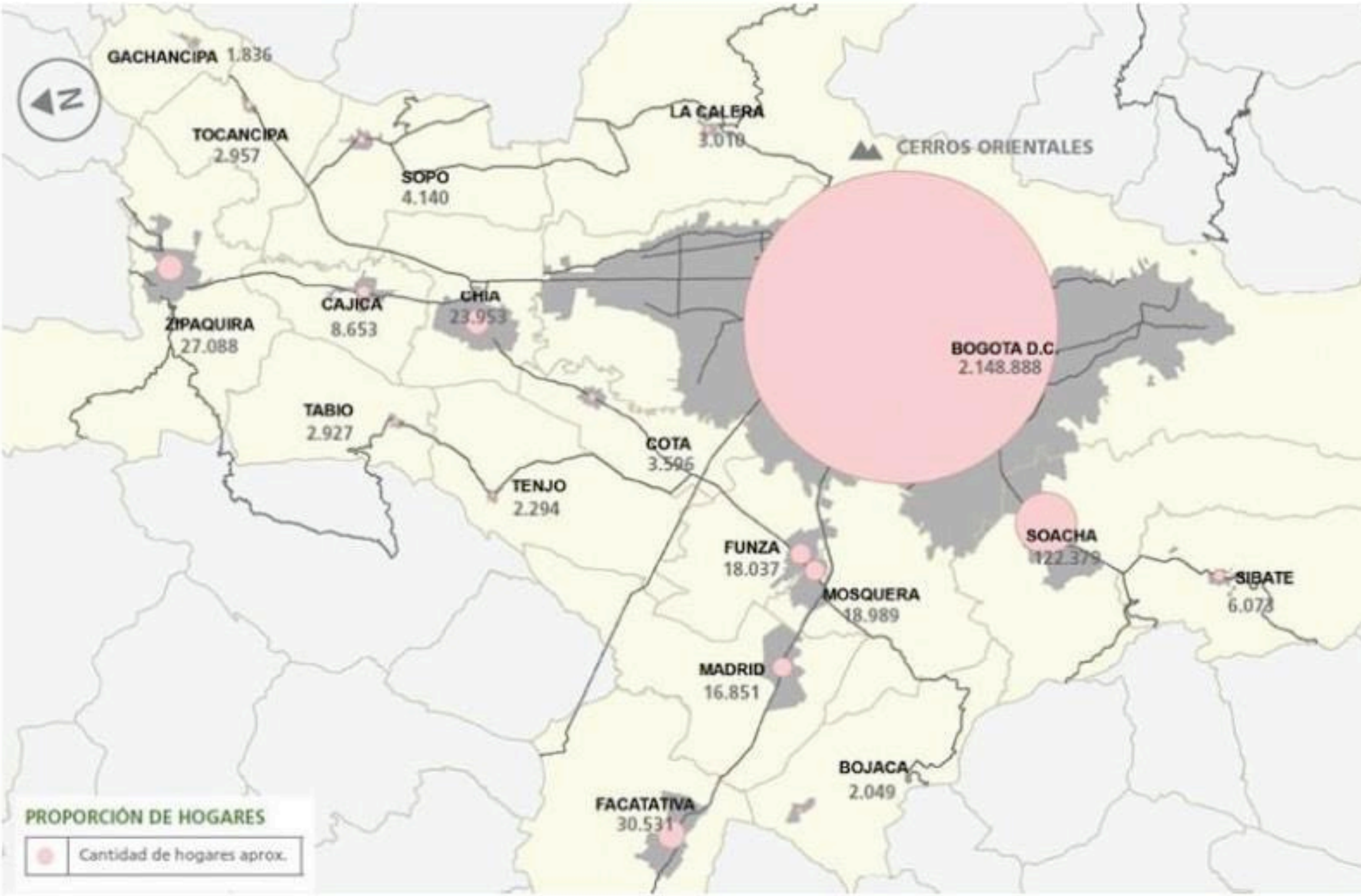
Source: Davila et al (2013)

Source: Davila et al (2013)

Source: Davila et al (2013)

UCL

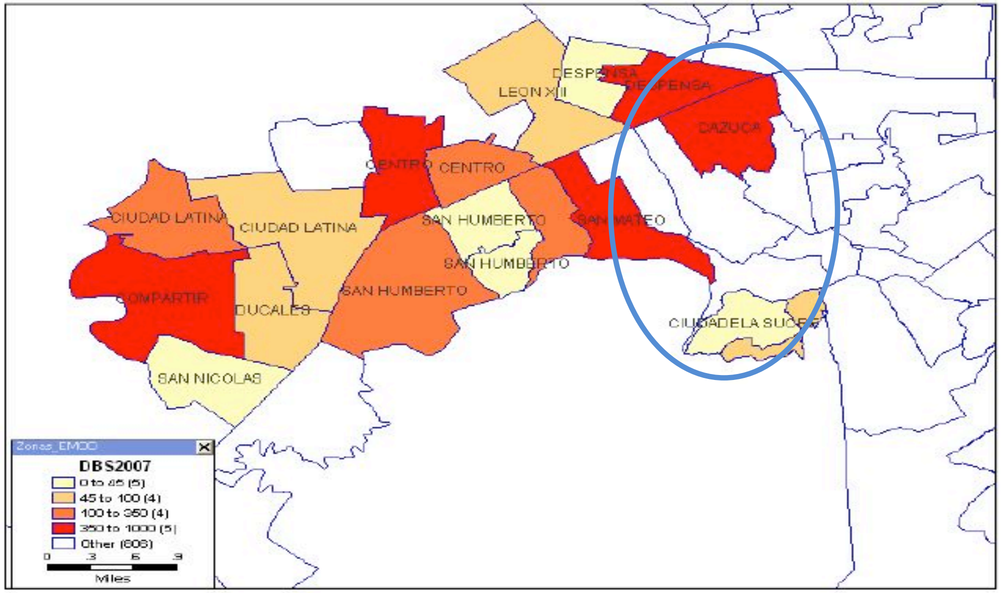
2012

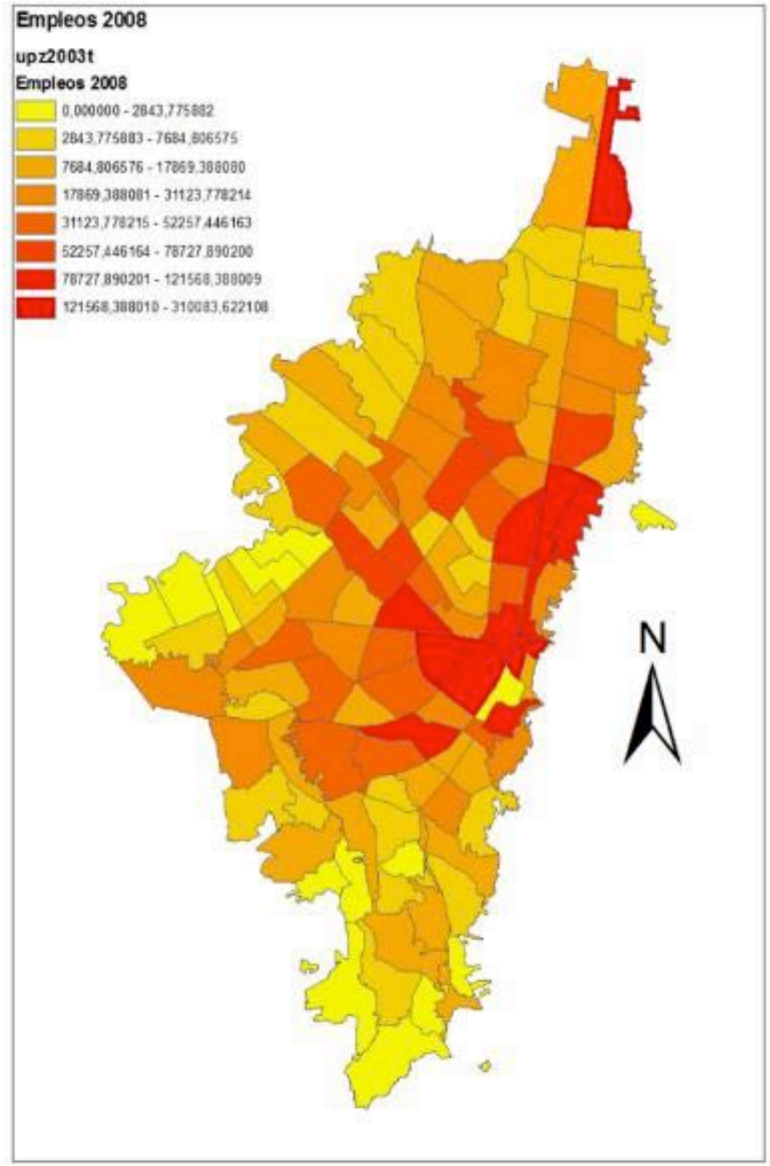


Source: Bogotá Transport Survey (2011)

A ‘different city’(?)

Lack of power and attractiveness





Source: Transmilenio (2010) and Bocarejo & Oviedo (2012)

Governance in the border

EL ESPECTADOR

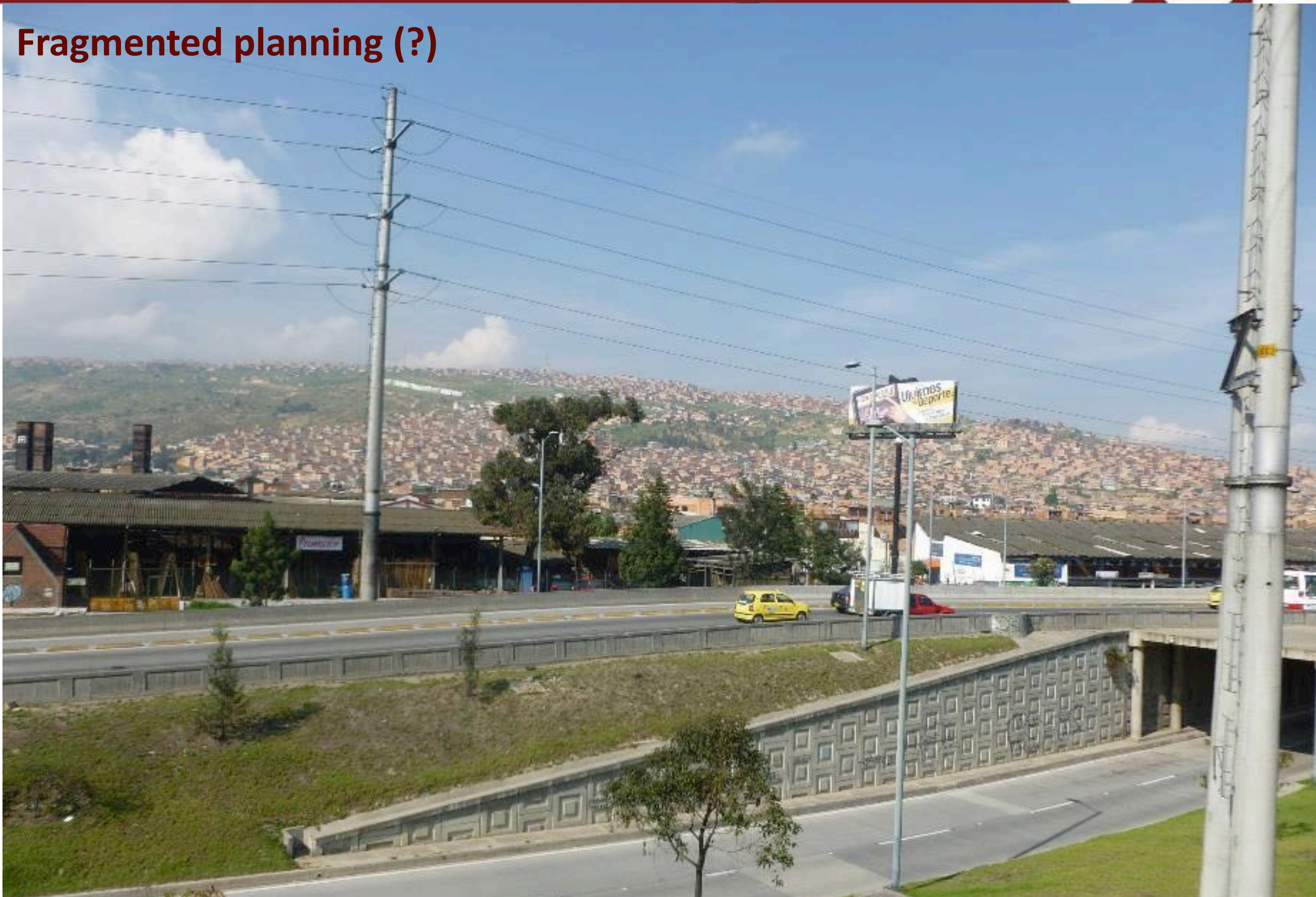
JUDICIAL 12 NOV 2010 - 6:11 PM

Asegurado alcalde de Soacha, José

Fiscalía lo investiga, entre otras circunstancias, por celebración indebida de contratos.

Governance in the border

Fragmented planning (?)



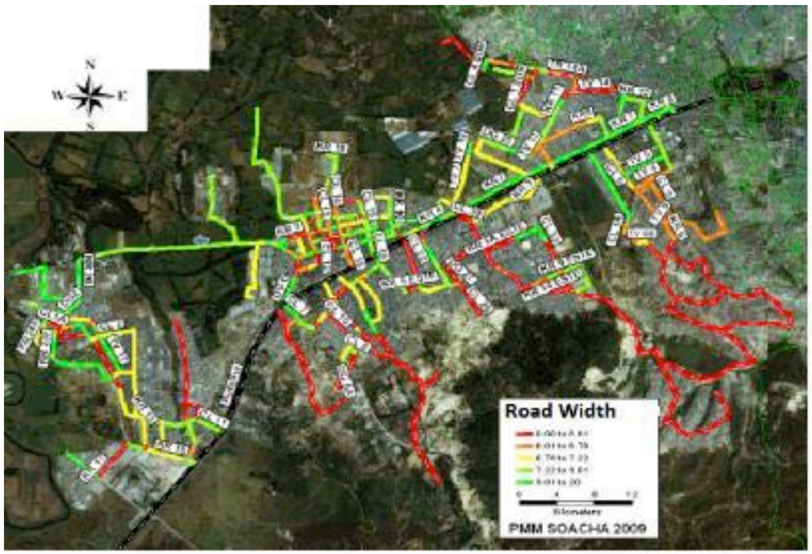
Fragmented planning (?)

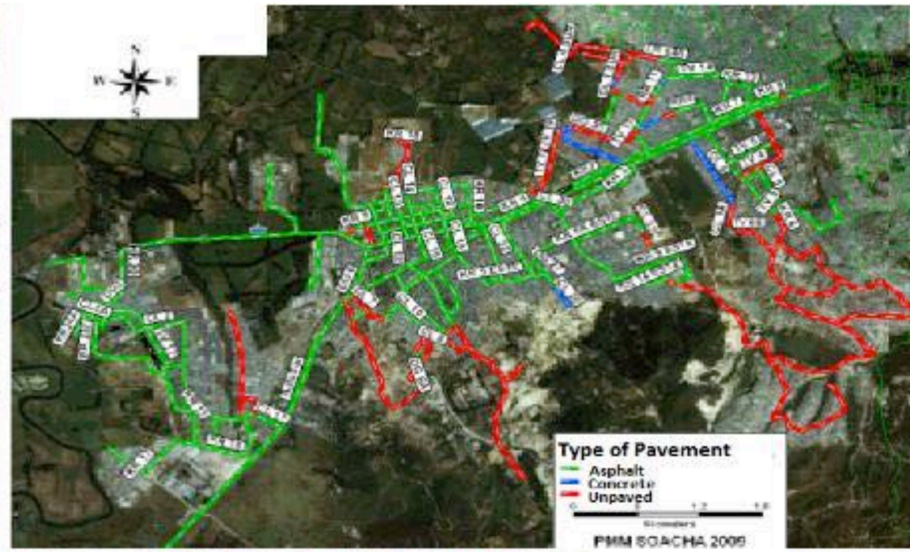
Fragmented planning (?)

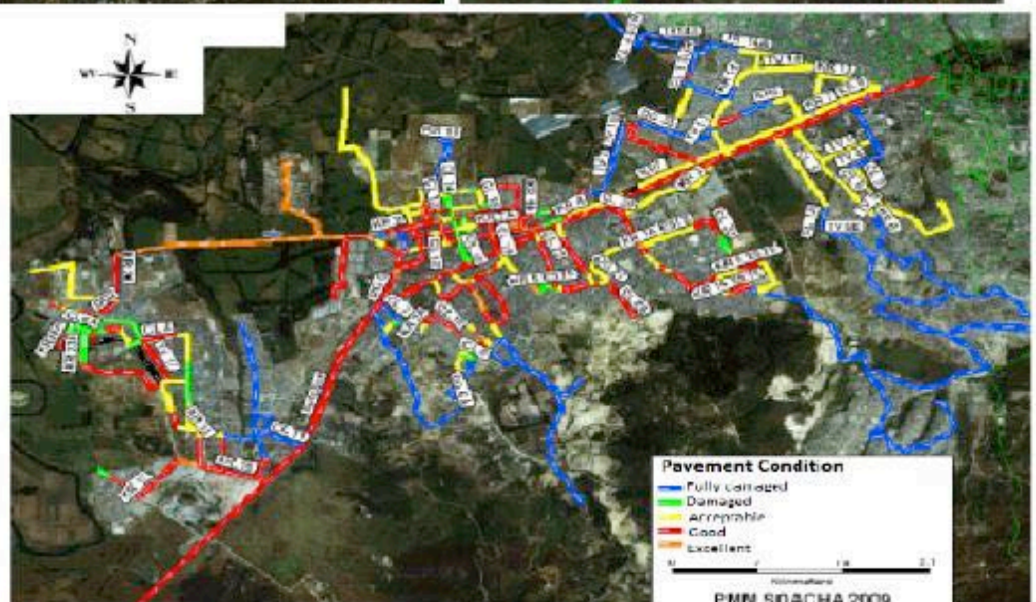
	Percentage of respondents* stating location of facilities			
Type of facility/opportunity	Bogotá	Soacha	Altos de Cazucá	Other municipality
Medical Care	29.6%	51.9%	18.5%	0.0%
Local Shop	13.6%	39.5%	46.9%	0.0%
Food store	46.9%	33.3%	18.5%	1.2%
Primary school	16.0%	34.6%	49.4%	0.0%
Secondary School	24.7%	35.8%	39.5%	0.0%
Higher education	51.9%	28.4%	4.9%	14.8%
Police station	17.3%	58.0%	24.7%	0.0%
Church	3.7%	28.4%	65.4%	2.5%
Family/friends	34.6%	27.2%	30.9%	7.4%
Sports/leisure	19.8%	67.9%	8.6%	3.7%

* Include local leaders and residents

Fragmented connectivity

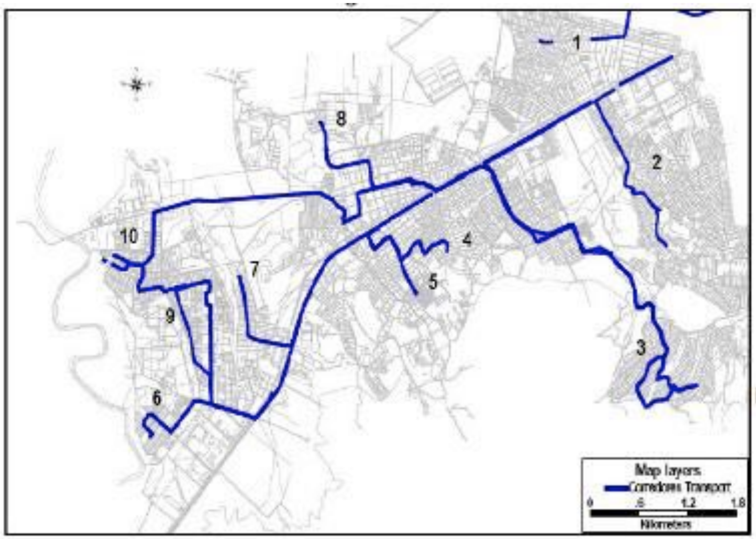




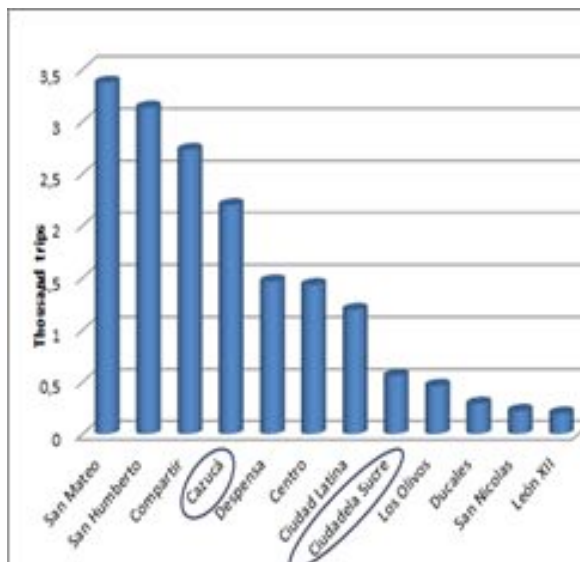


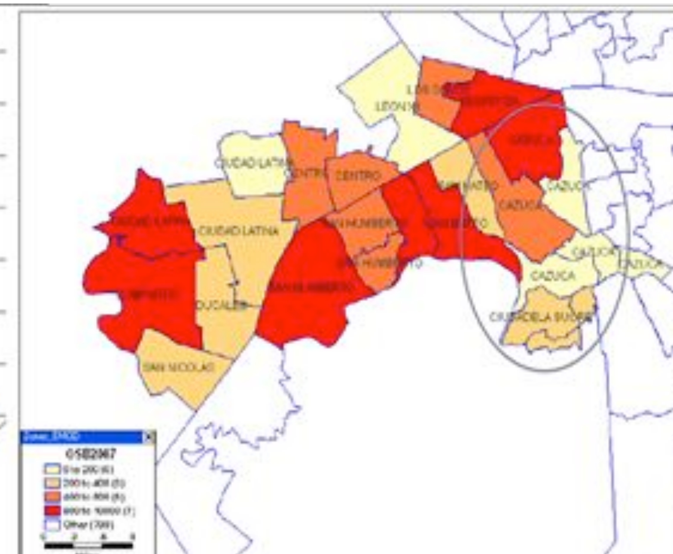
Soacha (2009)

Fragmented connectivity



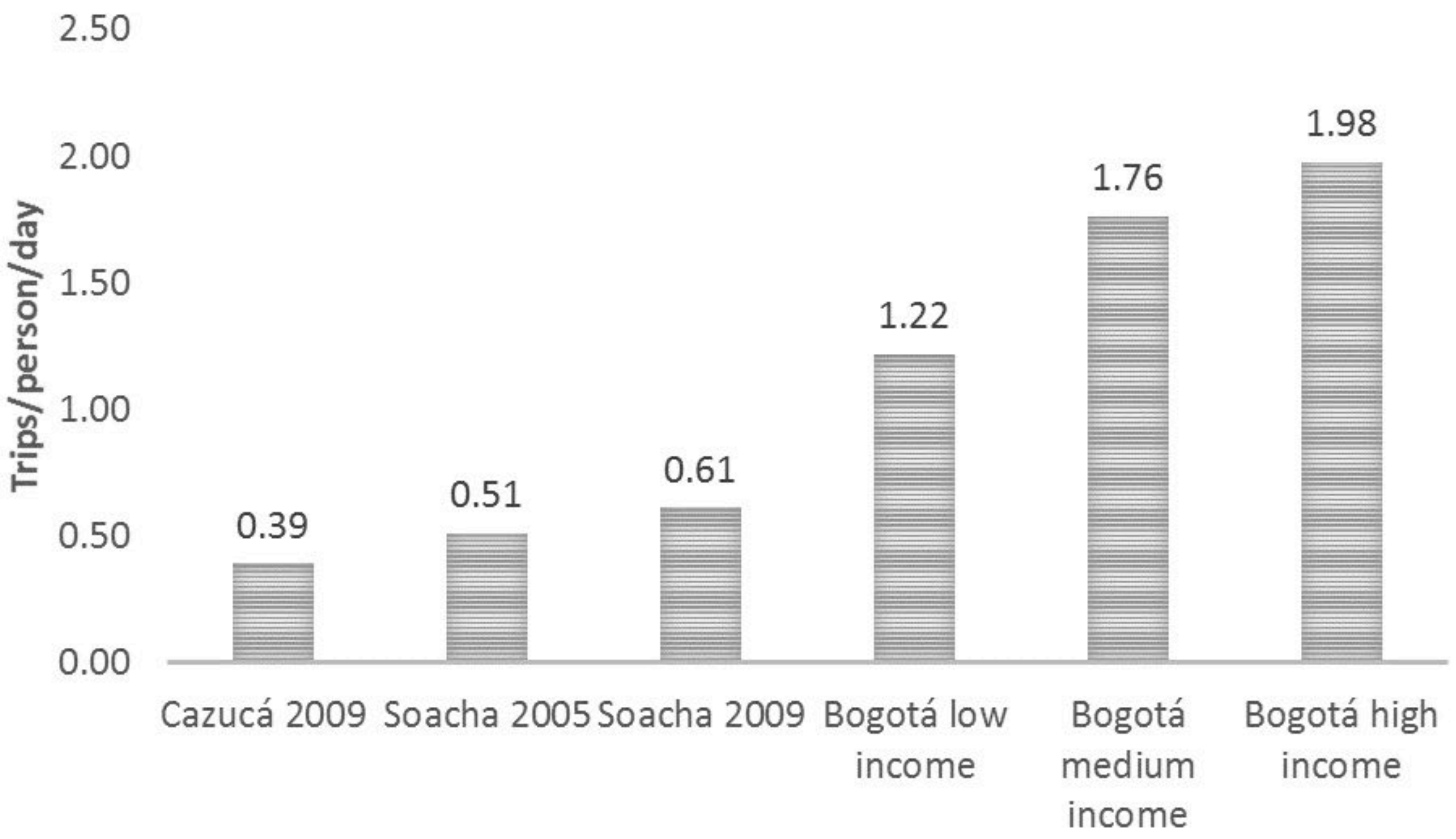
Main Public Transport Routes	
1	León XIII
2	Cazucá
3	Ciudadela Sucre
4	San Humberto
5	San Carlos
6	San Nicolàs
7	Ducales
8	Danubio
9	Compartir
10	Ciudad Latina





Source: Transmilenio (2010) and Bocarejo & Oviedo (2012)

Fragmented connectivity



Source: Oviedo (2016)

Fragmented connectivity

Travel costs per trip	Comunas 3 and 5		Comuna 4 (Cazucá)		Comunas 2 and 6 (Soacha historical centre)		Comuna 1	
In-vehicle time	74	min	106	min	81	min	92	min
Walking time (to a motorised mode)	6	min	13	min	5	min	7	min
Travel cost	2,700	COP	3,125	COP	2,800	COP	3,080	COP
Travel distance	17	km	21	km	20	km	24	km

[1] *1 US$ = 1,869 COP*

Source: Oviedo (2016)

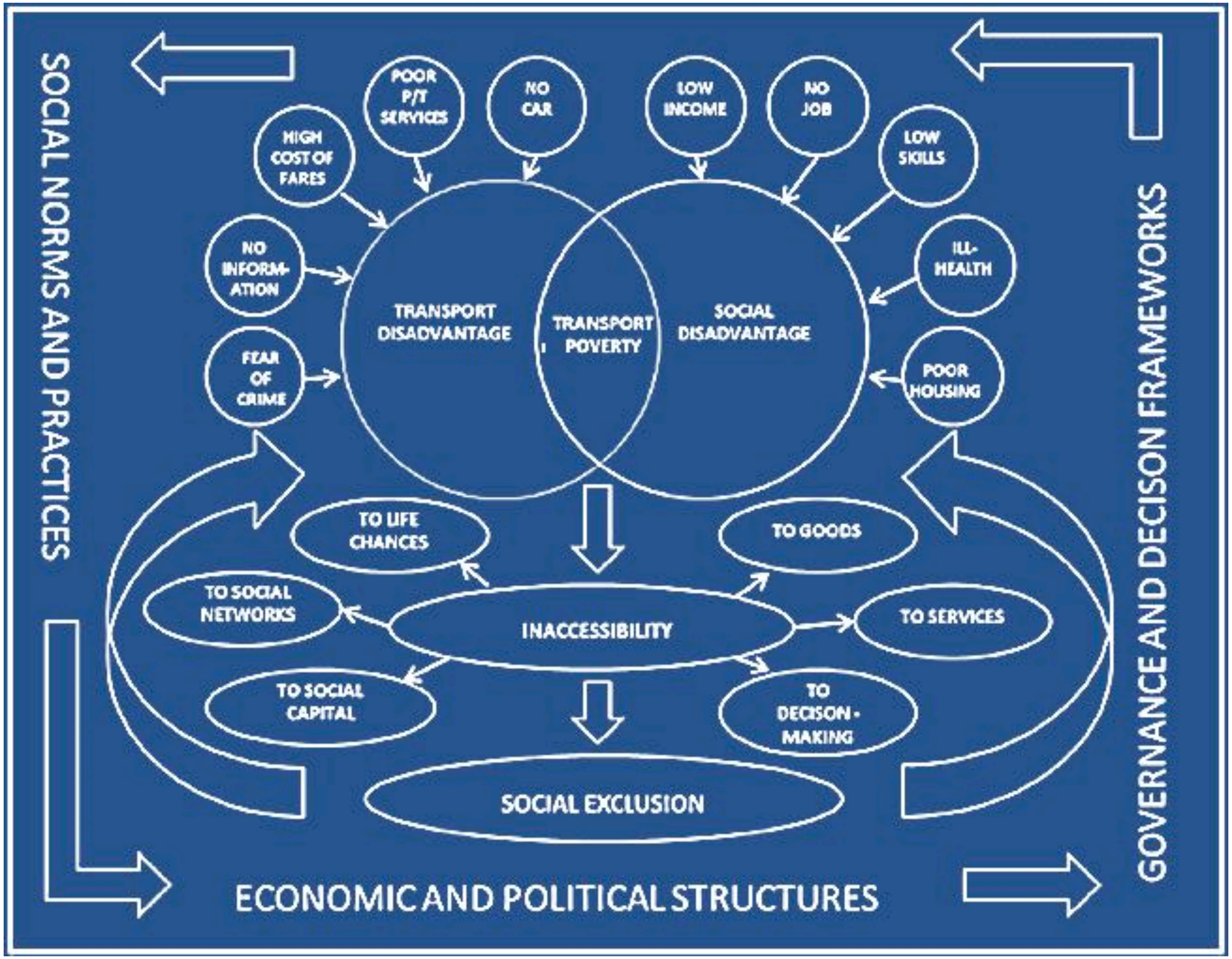
Fragmented connectivity

Fragmented connectivity

Fragmented connectivity (?)

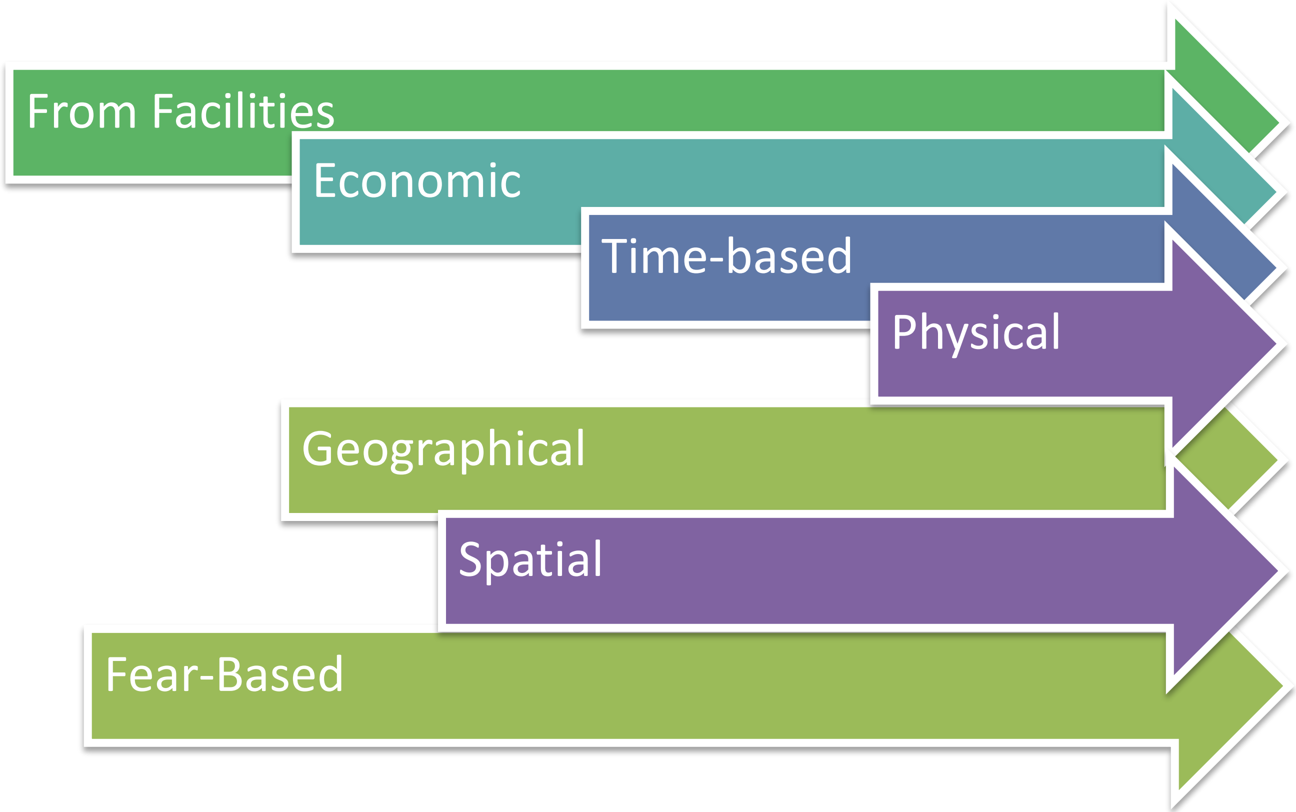
Fragmented connectivity (?)

Social Exclusion



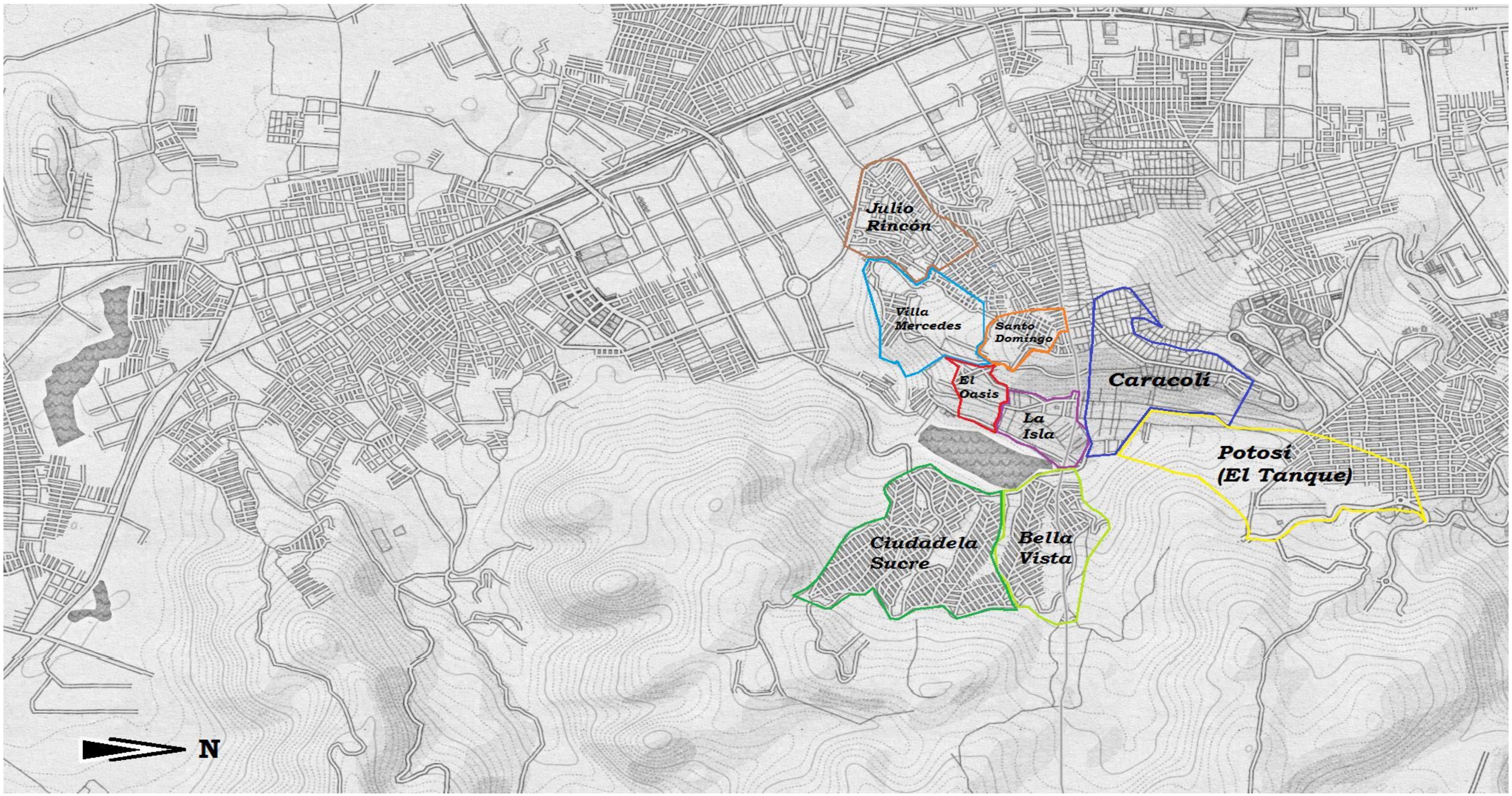
(Source: Lucas, 2012)

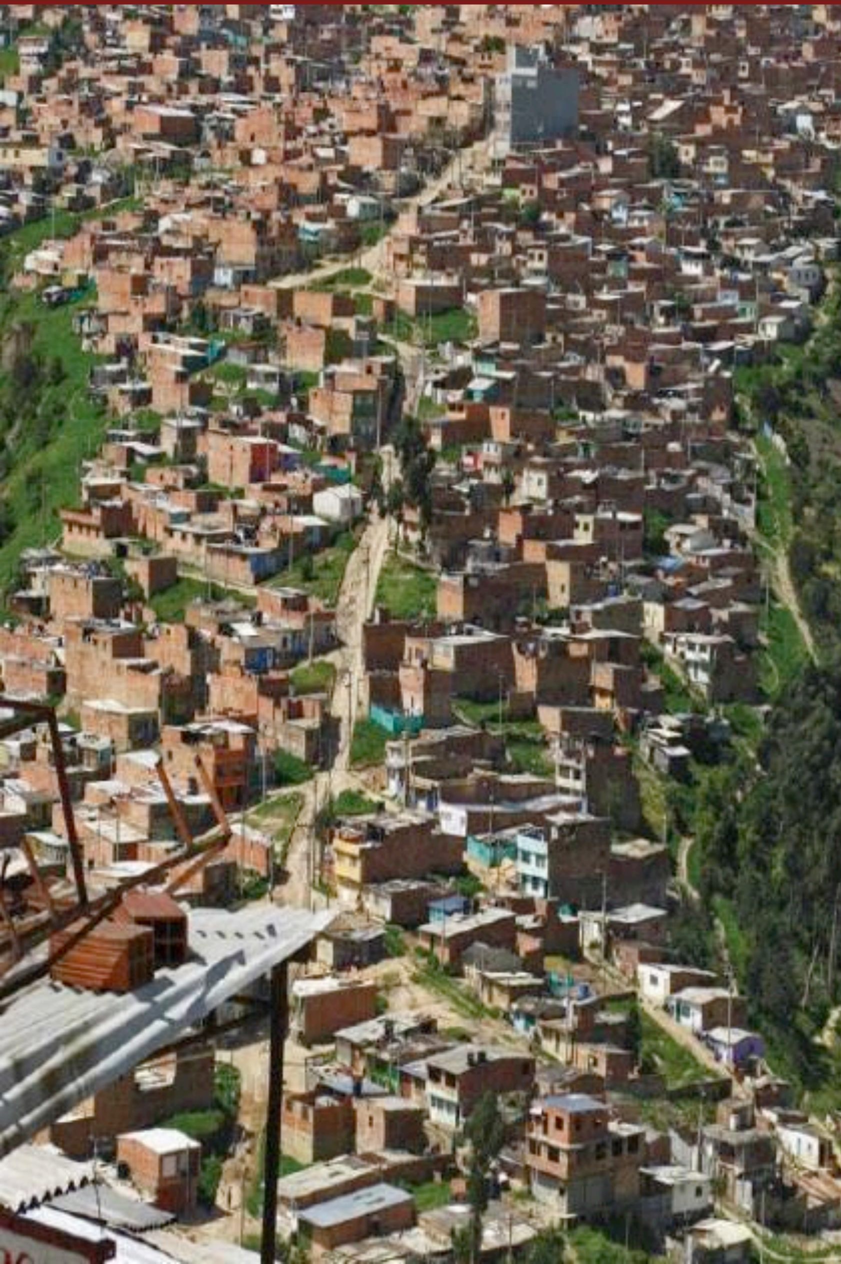
Dimensions of (Transport-related) Social Exclusion



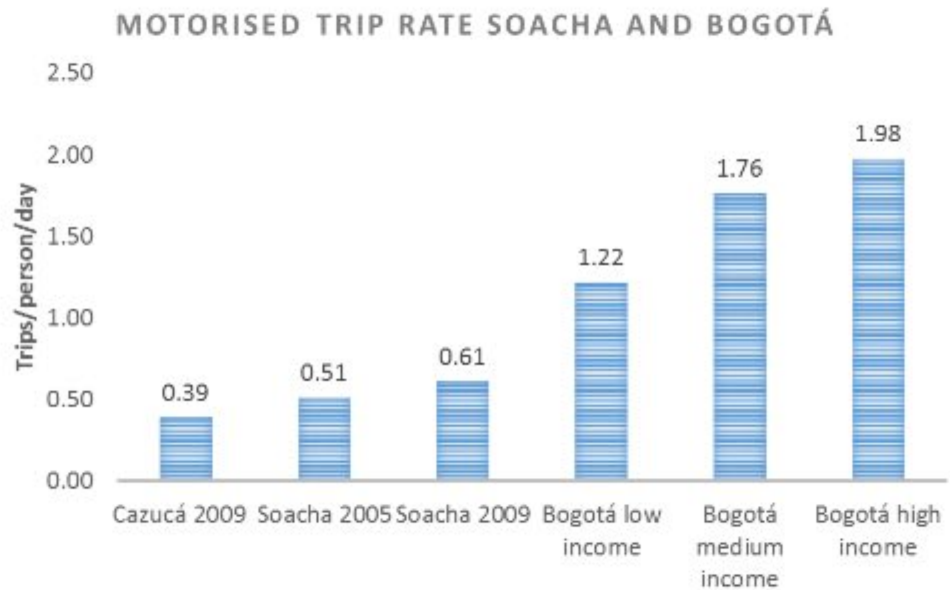
(Source: Church et al., 2000)

Exploring the dimensions of social exclusion in Soacha

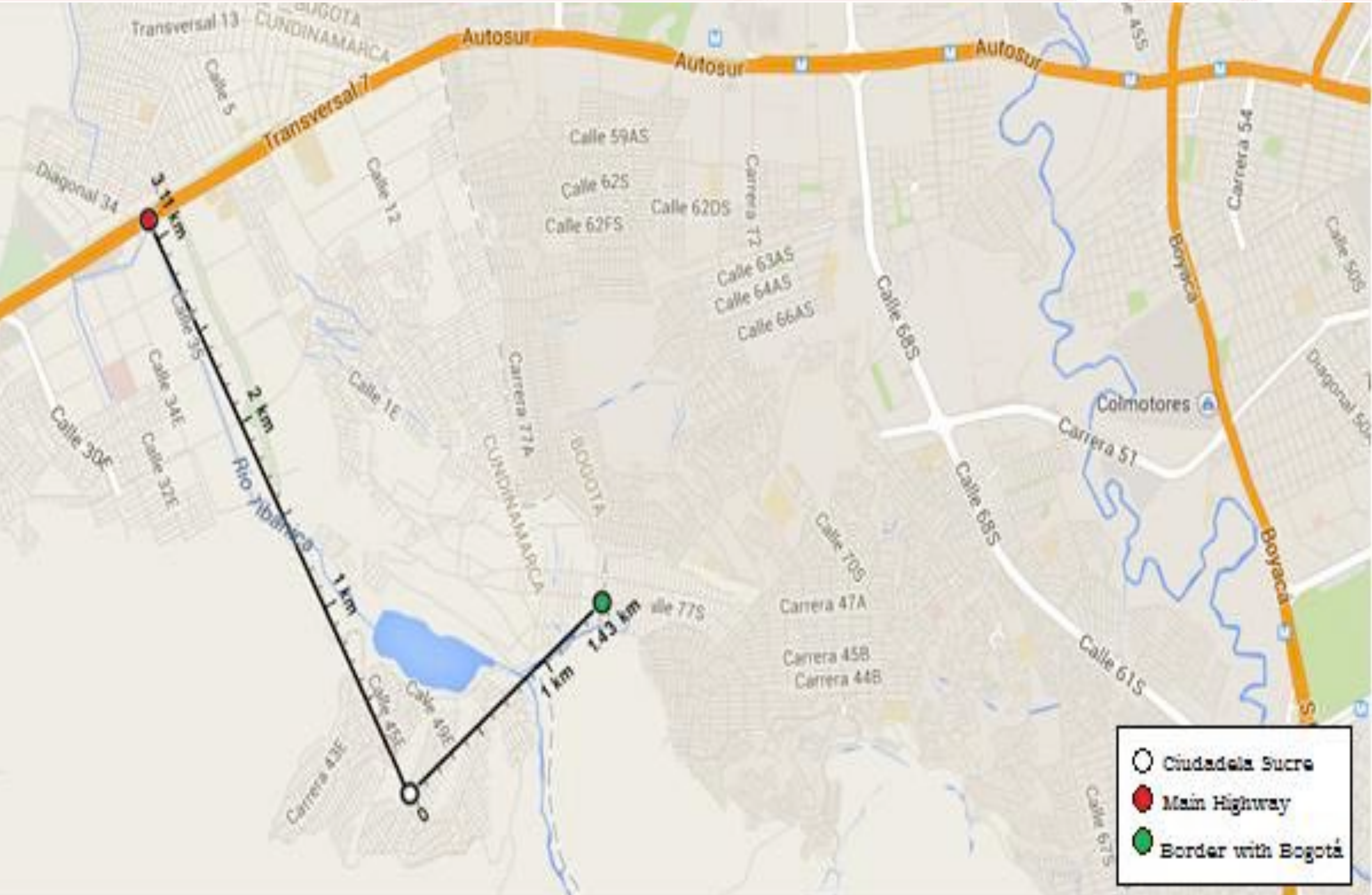




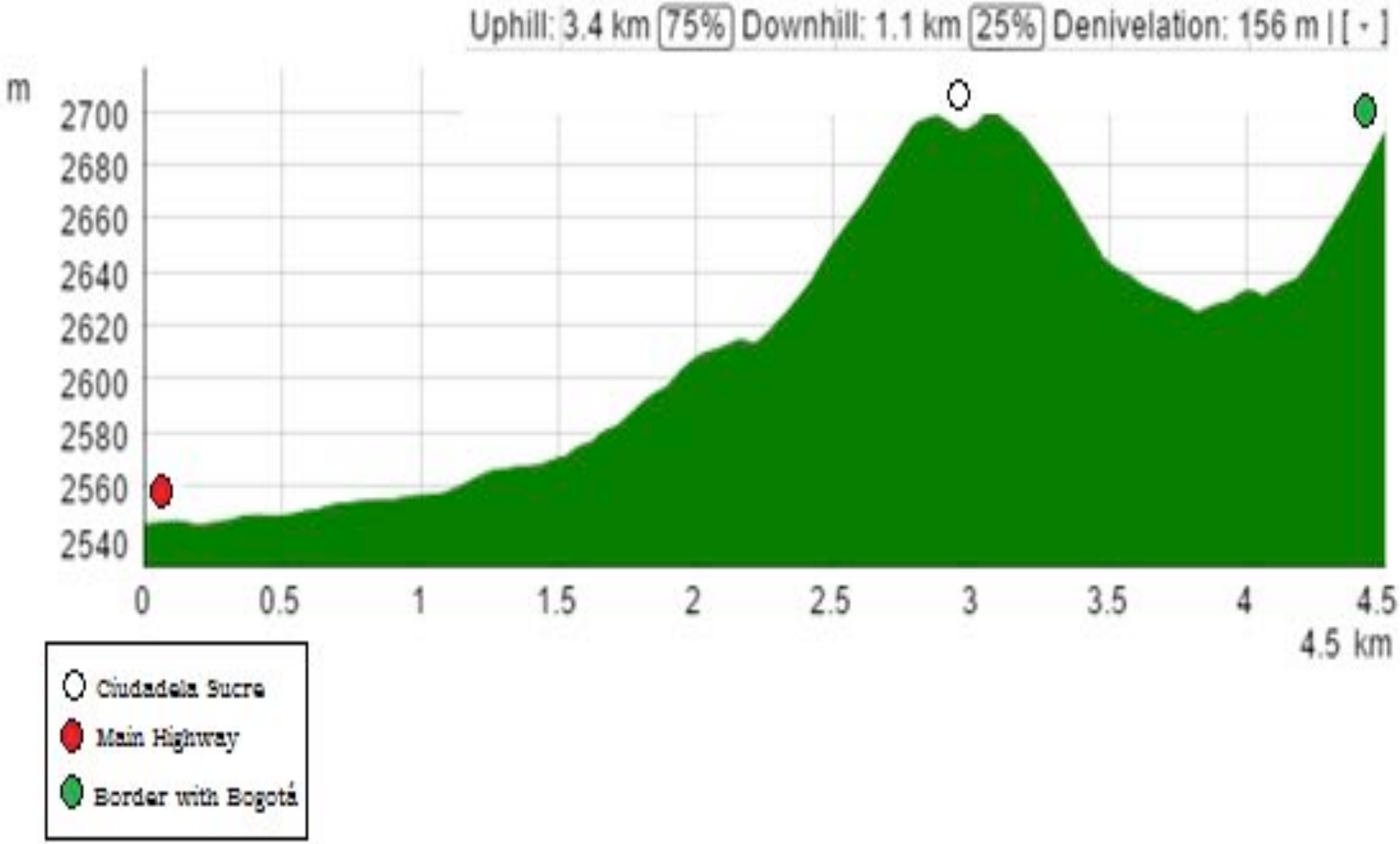
Overall travel from Altos de Cazuca require high monetary and temporal costs of travel limit access to facilities or jobs



Source: Oviedo (2015)

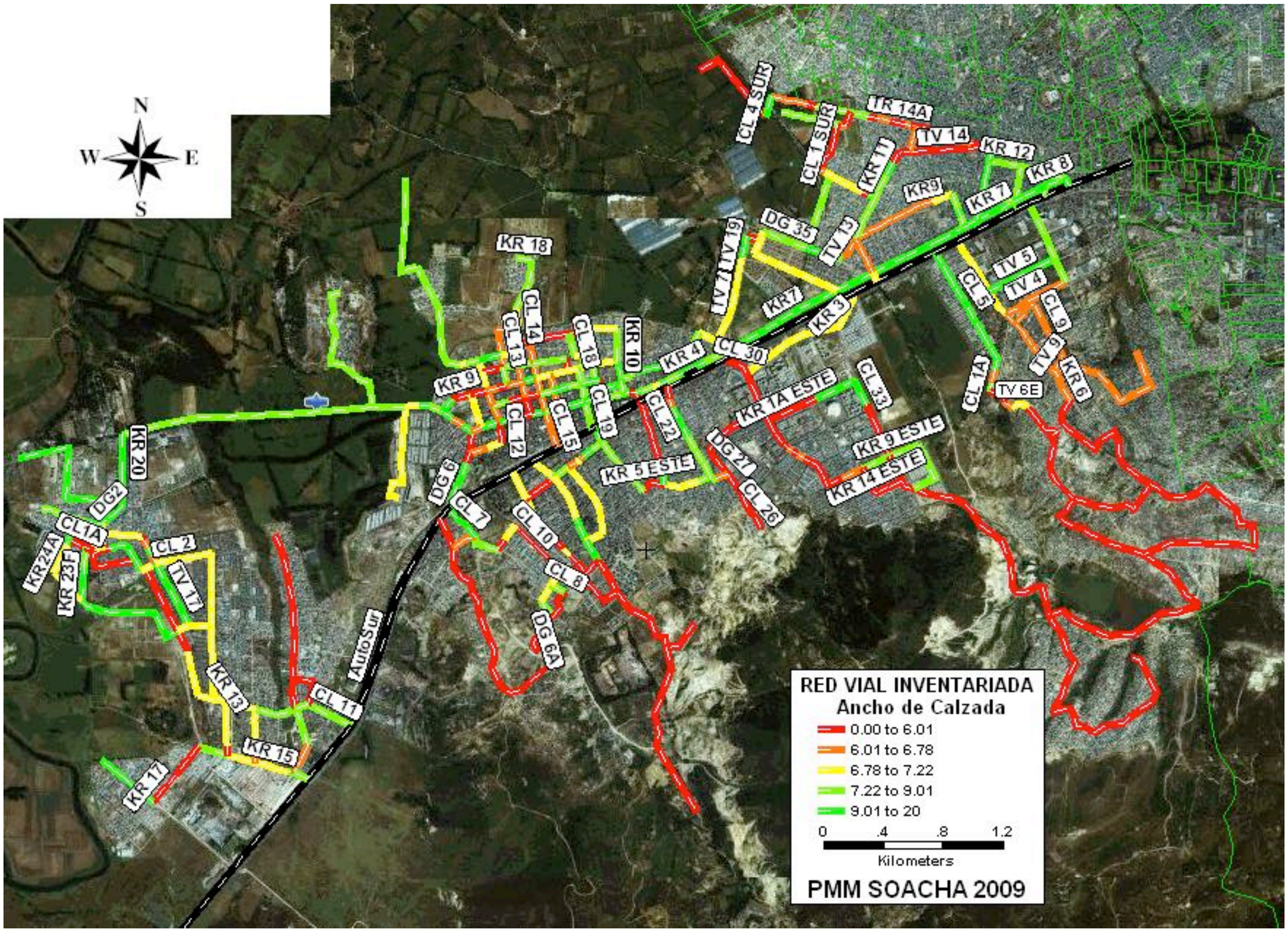


Ciudadela Sucre
Main Highway
Border with Bogotá
3.11 km
2 km
1 km
1.43 km
1 km
0
Autosur
Transversal 7
Transversal 13
Diagonal 34
Calle 59AS
Calle 62S
Calle 62DS
Calle 62FS
Calle 63AS
Calle 64AS
Calle 66AS
Calle 68S
Calle 70S
Calle 61S
Carrera 47A
Carrera 45B
Carrera 44B
Carrera 77A
Carrera 51
Carrera 54
Carrera 43E
Calle 1E
Calle 12
Calle 5
Calle 3S
Calle 34E
Calle 32E
Calle 30E
Calle 45E
Calle 49E
Calle 50S
Calle 67S
Río Tunjuelito
Boyacá
Colmotores
BOGOTÁ
CUNDINAMARCA



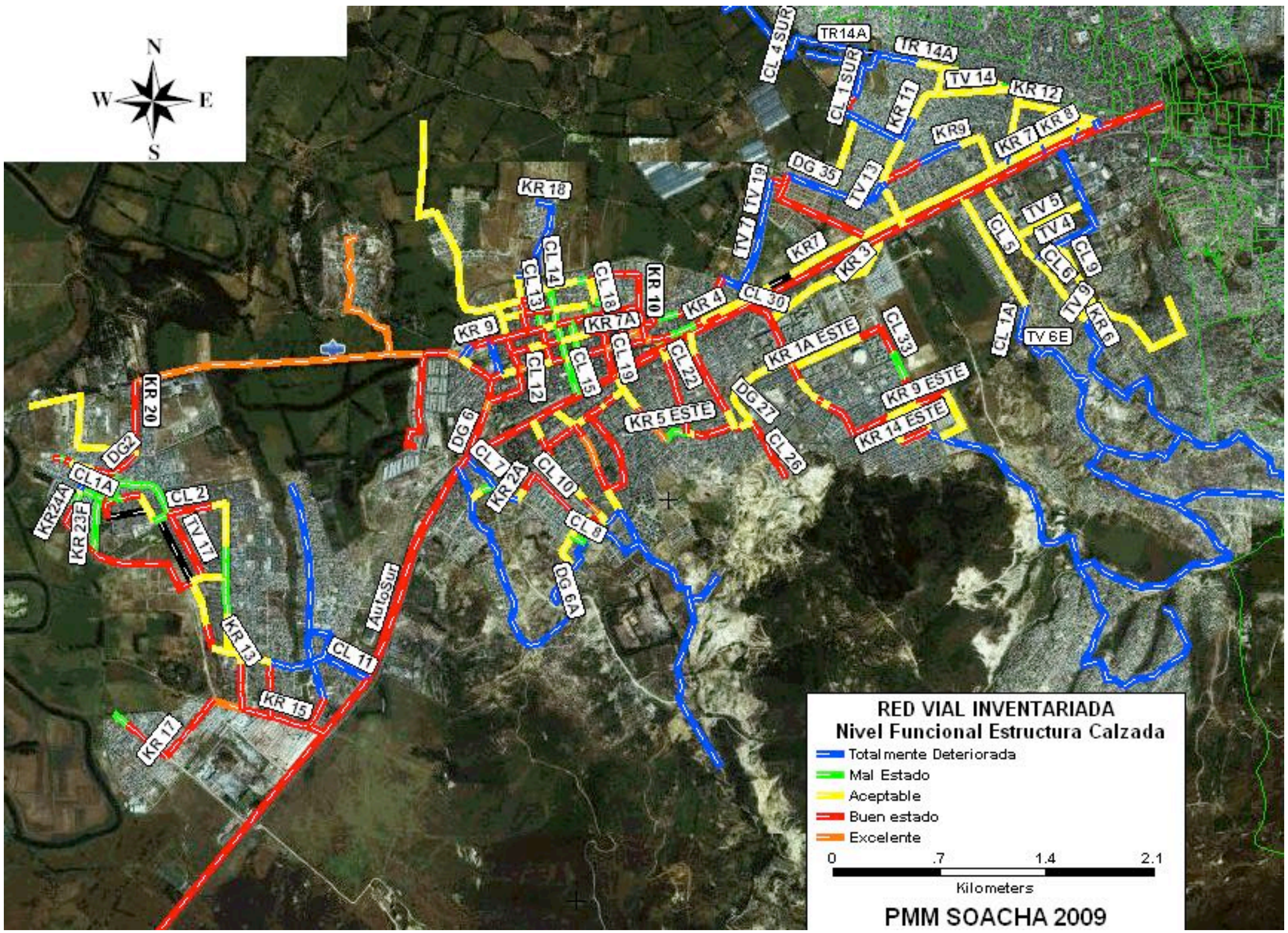
Source: Oviedo (2015)

Poor Infrastructure in informal settlements



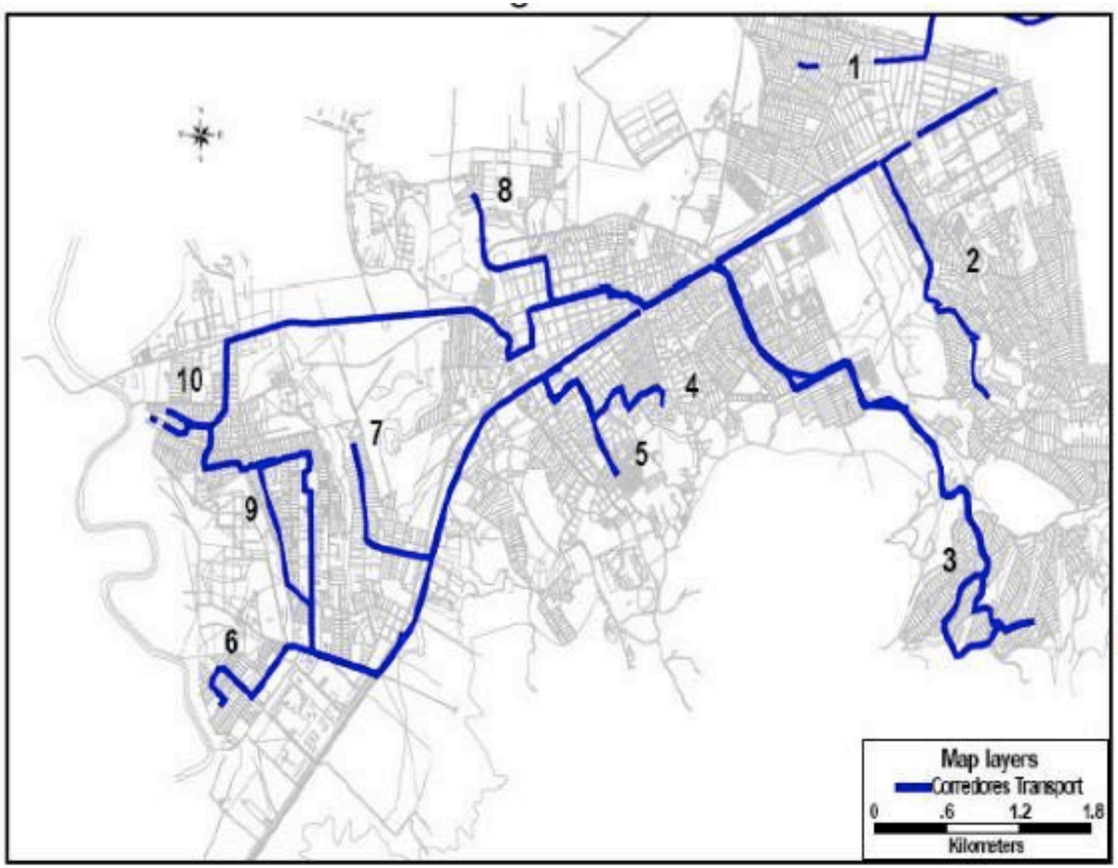
Source: Oviedo (2015)

Poor Infrastructure in informal settlements



Source: Oviedo (2015)

Limited (formal) Services



Main Public Transport Routes	
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5	San Carlos
6	San Nicolàs
7	Ducales
8	Danubio
9	Compartir
10	Ciudad Latina

Source: Oviedo (2015)

Limited (formal) Services

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

'Although transport takes too long, we cannot stop working' (Man, age 48, Villa Mercedes)

'Is what we knew we would have to accept when we decided to move here' (Magolia, age 53, La Isla)

'Is better than not being able to go anywhere' (Andrés, 24, Caracolí).

Source: Oviedo (2015)

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

Interviewees make trade-offs within their households for maximising limited income, but transport becomes unavoidable because work is unavoidable.

Although household priorities are focused on reducing travel expenditure as much as possible, priority is given to maintain any available source of income.

Dominant forms of mobility in the area are walking and public transport, both formal and informal.

Source: Oviedo (2015)

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

Source: Oviedo (2015)

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

Informal transactions in all available systems allow for higher affordability in the usage of transport alternatives.

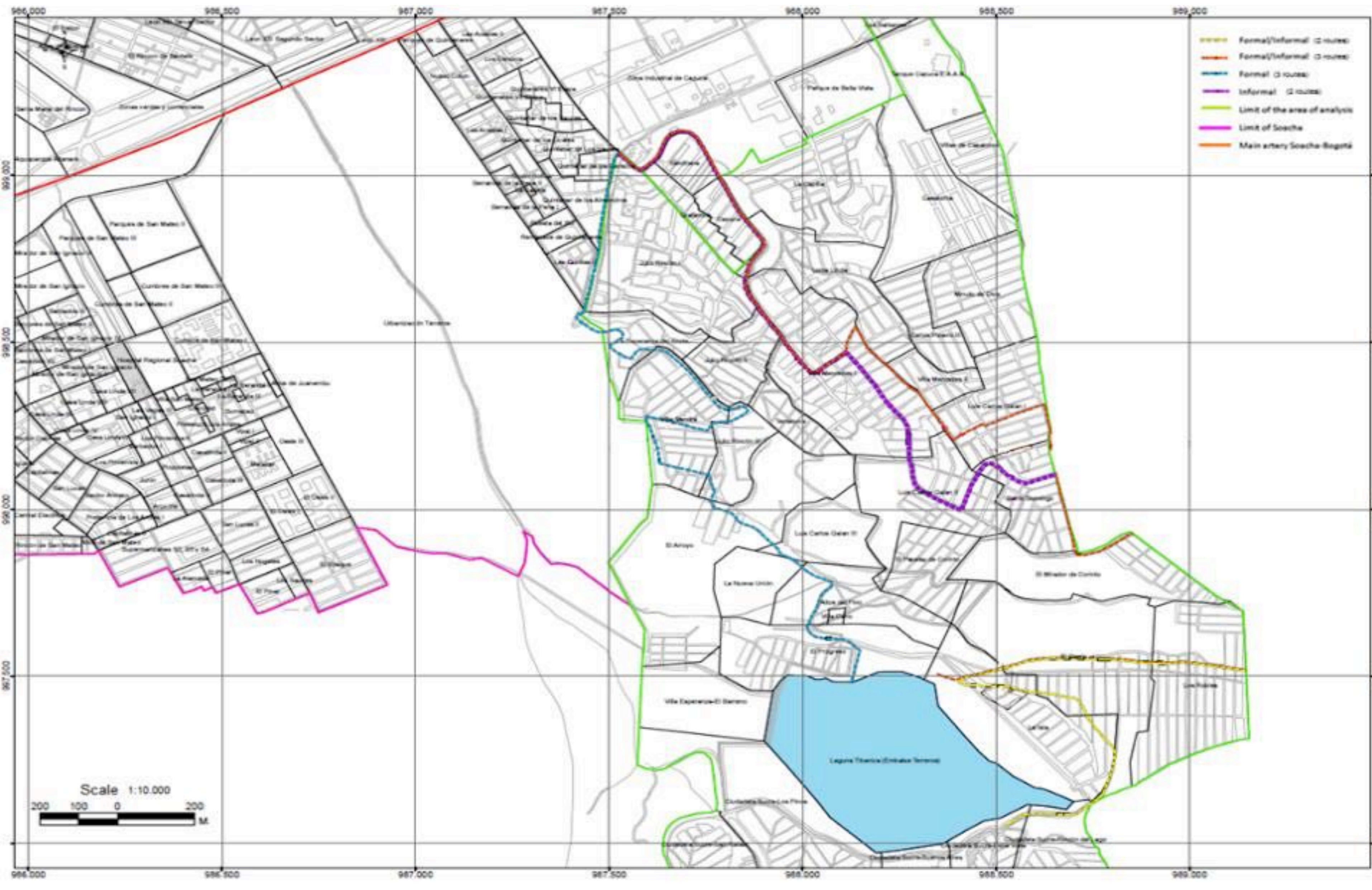
People bargain the price in both *carritos* and formal transport, particularly if they are travelling in groups.

The informal approach can represent a reduction between 30 and 40% of the official fare for each mode.

People combine differently their use of motorised modes and walking depending on the purpose and frequency of the trips maximising:

- Speed for obligations like going to work and study;
- Comfort for transporting packages and medical care;
- Affordability for trips without fixed times for arrival, like local amenities and recreation.

Source: Oviedo (2015)


Formal/Informal
Formal/Informal
Formal
Informal
Limit of the area of analysis
Limit of Soacha
Main artery Soacha-Bogotá
Scale 1:10.000
200 100 0 200
M

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

Time, energy, comfort and even security are traded-off for the fare costs *'(...) depending on how you feel your pocket'* (Edwin, Age 21, Potosí); and the existence of alternative ways to access motorised transport when needed becomes an essential asset that *'(...) allows to spend less and helps with the economy without having to risk ourselves or stay all day in the neighbourhood'* (Cecilia, Age 35, Ciudad Mariscal Sucre)

Source: Oviedo (2015)

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

People with physical limitations is practically forced to immobility.

6 respondents over 55 years and a wheelchair user

The elderly prefer to use carritos, as they 'help when you travel with packages' (Aidé, Age 61, La Isla), 'are more patient and wait while you get in and out of the vehicle' (Gerardo, Age 64, Caracolí), and 'are cheaper and sometimes let me ride for less' (Adiela, Age 58, Ciudad Mariscal Sucre).

Vehicles are old and dangerous, and that it is a risk to ride them. However, they are largely willing to overlook these risks as they perceive it is their only affordable chance to move.

'it is not the best transport, but what would we do without them?'

José Mosquera (Age 62, Local leader Potosí)

Source: Oviedo (2015)

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

Presence of criminal activities and groups in the neighbourhoods limit considerably the availability of public spaces for circulation.

Governance of transport and public spaces involves local leaders and community organisations as well as criminal groups that represent either a real or perceived threat to mobility.

Identified routes are defined by informal providers and local leaders trying to reduce competition but also marking differences in power and influence of different leaders.

This generates disconnection between neighbourhoods that reduces considerably internal motorised mobility and weakens cohesion between communities.

Source: Oviedo (2015)

How is mobility perceived and exercised? – The role of (formal and informal) transport in accessing the city

Strategies for using the space under risk of crime

- Seek wider and better-illuminated roads in their walking routes despite requiring higher travel times.
- People leaving in the early mornings organise in groups for walking where they can take the bus or the carrito, and those arriving late in the evening tend to wait at the start of local routes for neighbours returning to home to travel together.
- At less-secure hours the use of informal services is preferred over regular buses.
- Groups of community watch in some of the neighbourhoods were also identified.

All these strategies involve trade-offs between time, money and even sleep and quality of life for added perceptions of security

Source: Oviedo (2015)

Informality in transport – the brighter side

Modularity

- Adaptability of different mechanisms to the challenges of terrain and social tensions
- Complementarity of services in-between informal routes and with formal services
- Provision of small-scale informal operators providing para-transit services are available in 5 of the 7 neighbourhoods studied.

Flexible social capital

- Flexibility of pricing schemes that allows users to access the service at lower fares
- Highly personalized relationships between service-providers and clients.
- Scheme of operation and economy rooted on local structures and community life
- Means of livelihoods and flexible source of employment for youngsters and unemployed residents

Innovation

- Change in the set of rules for accessing public transport.
- Respond better to the preferences and priorities of the people in low-income areas than a set of alternatives comprising only formal alternatives.
- Unwritten social norms and codes of behaviour among competitors themselves

Informality in transport – the not-so-bright side

Dependency

- Services are largely dependent on infrastructure of a mínimum standard
- Development of infrastructure requires support: financial, logistic and organisational
- Ability to grow in scale is limited by both (lack of) enforcement and regulation and legitimacy within the communities
- Dependency from the informal economy to maintain operation schemes

Vulnerability and associated risks

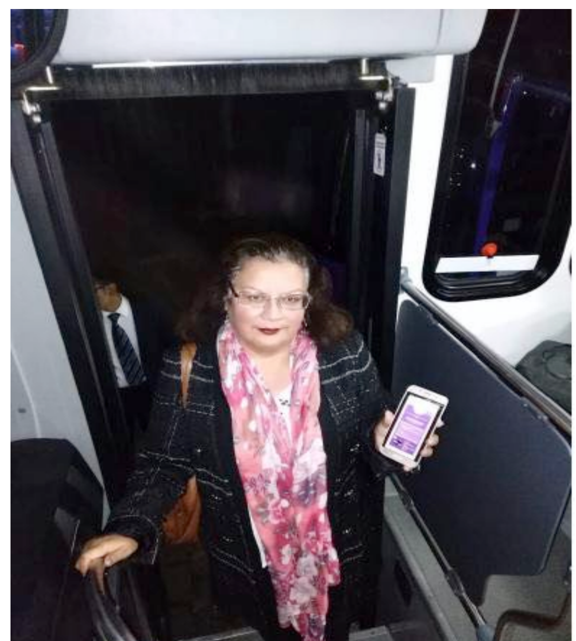
- It is more susceptible to the influence of interest groups and (micro) power relations
- It poses a larger threat in relation to security, health and safety
- It lacks structures for support that can respond to, and mitigate the effect of, contingencies and externalities

Quality

- Use of low-cost schemes and technology compromises service quality
- It is still a business and lack of regulation allows to compromise service features
- No mechanism for involvement of users in developing, monitoring or controlling the system

An example of shared-economy innovation for public transport in Mexico

JETY



Jety's promise

We deliver a safe, comfortable, reliable and affordable transportation alternative...

A good trip. Always.

EFFICIENT | SAFE | RELIABLE | COMFORTABLE | AFFORDABLE

Buen viaje. Siempre.

Source: Flores, 2018

Jety’s promise – within the local context’s conditions

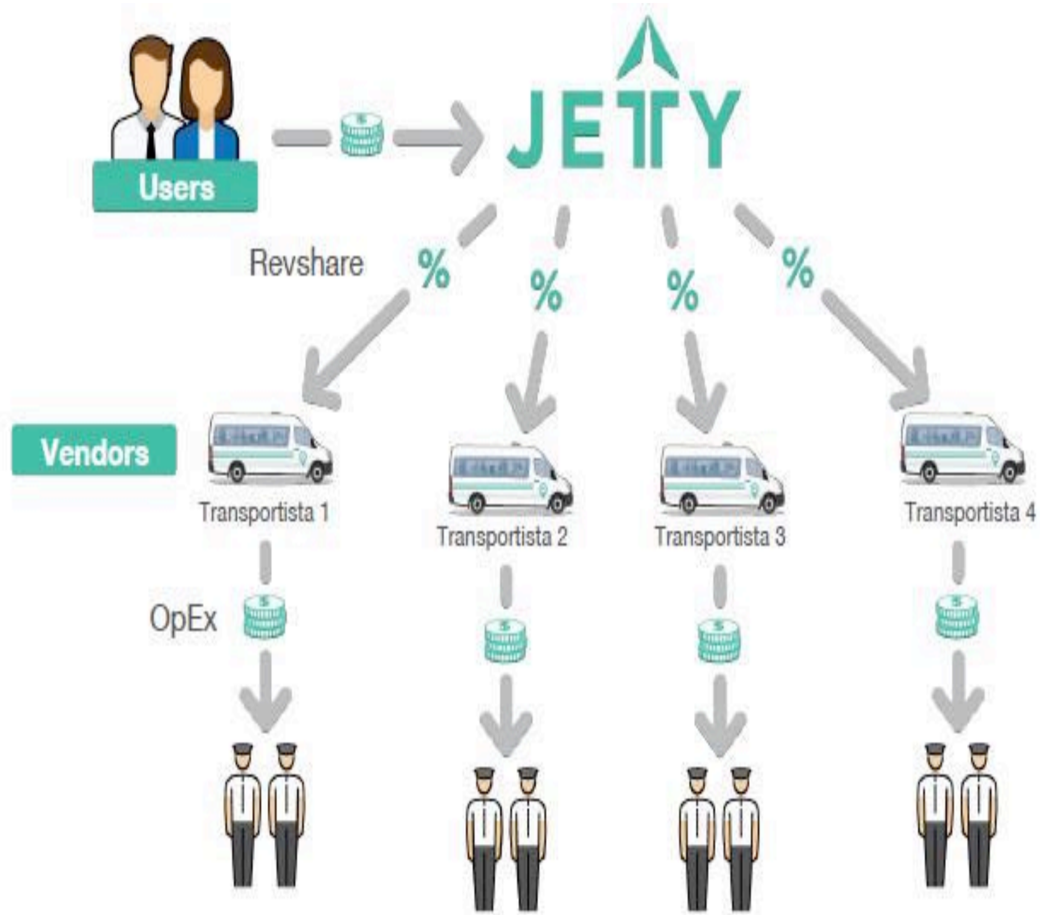
... in a city where most public transit is dangerous, uncomfortable, unaccountable and unsubsidized.

- Average occupancy of private vehicles in Mexico City is 1.5 passengers.
- Vehicular congestion is consistently ranked among the worst in the world.
- 35 million workday trips:
  - 7.2 million trips/day on private vehicles.
  - 1.4 million trips/day on taxis and 156.4 thousand on ridesourcing platforms.
  - 4.5 million trips/day on subway
  - 1 million trips/day on BRT
  - 11.5 million trips/day on collective transport

Source: Flores, 2018

How did it come about?

- Creating a minimally viable app -> Technological partner
- Obtaining a permit to operate -> Ride-sourcing permit
- Recruiting transport operators to supply rides -> Small
- transport operator bet on the model.



Defining the relationship with the public sector

- Same permit as Uber – Operating within loopholes in regulation
- Established as a technology company – needing partnerships with existing operators to provide transport services
- Responding to spatial and operational gaps in the market – Observed tendency to serve as feeder
- Operating at a Metropolitan and urban level under State-level regulation
- Little interaction with public transport authorities beyond processes for obtaining permits

Source: Flores, 2018

Defining the relationship with the public sector

Reglamento de la Ley de Movilidad, *published September 17, 2017*

Article 59: *"Private chauffeured passenger transport services is hereby prohibited, when generated through two or more requests and serviced with the same vehicular unit offering the same trip to different persons, in the same path, journey or route."*


2 CIUDAD REFORMA Domingo 17 de Septiembre del 2017

Prohibe Reglamento de Movilidad compartir auto con otros usuarios

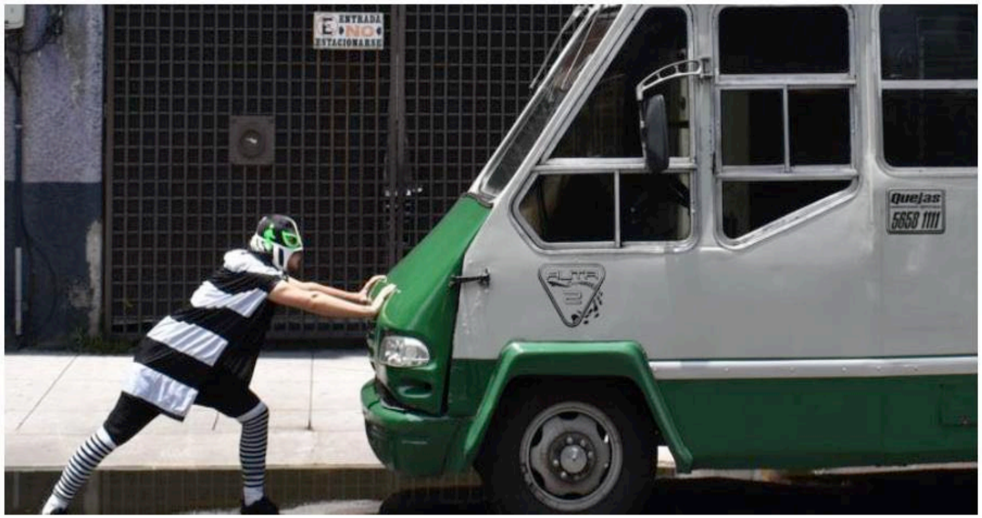
Limita la nueva norma las apps de transporte

Dicen empresarios que disposiciones atentan contra Carta Magna local

Combaten accidentes vehiculares por alcohol

Source: Flores, 2018

Defining the relationship with the public sector



Source: Change.org

- Involvement of NGO and advocacy sectors in petitioning to change regulations
- In August, 2017, Peatónito, a masked, sustainable mobility activist, uploaded a petition on Change.org, demanding the reversal of the rule against app-enabled shared rides - 13 330 people signed. Jety tapped into general discontent with collective transport operators
- Jety sued the government of Mexico city in its ruling – Legal instance as an arena for re-opening dialogues at the national level

"we are sick of the terrible service offered by colectivos and micros in the Mexico City Valley. The problems of insecurity and sexual harassment have reached our limit… help us tell authorities we are tired of the terrible state of public transit and of blockades to innovative alternatives like vanpooling", (Peatónito, 2017).

Source: Flores, 2018

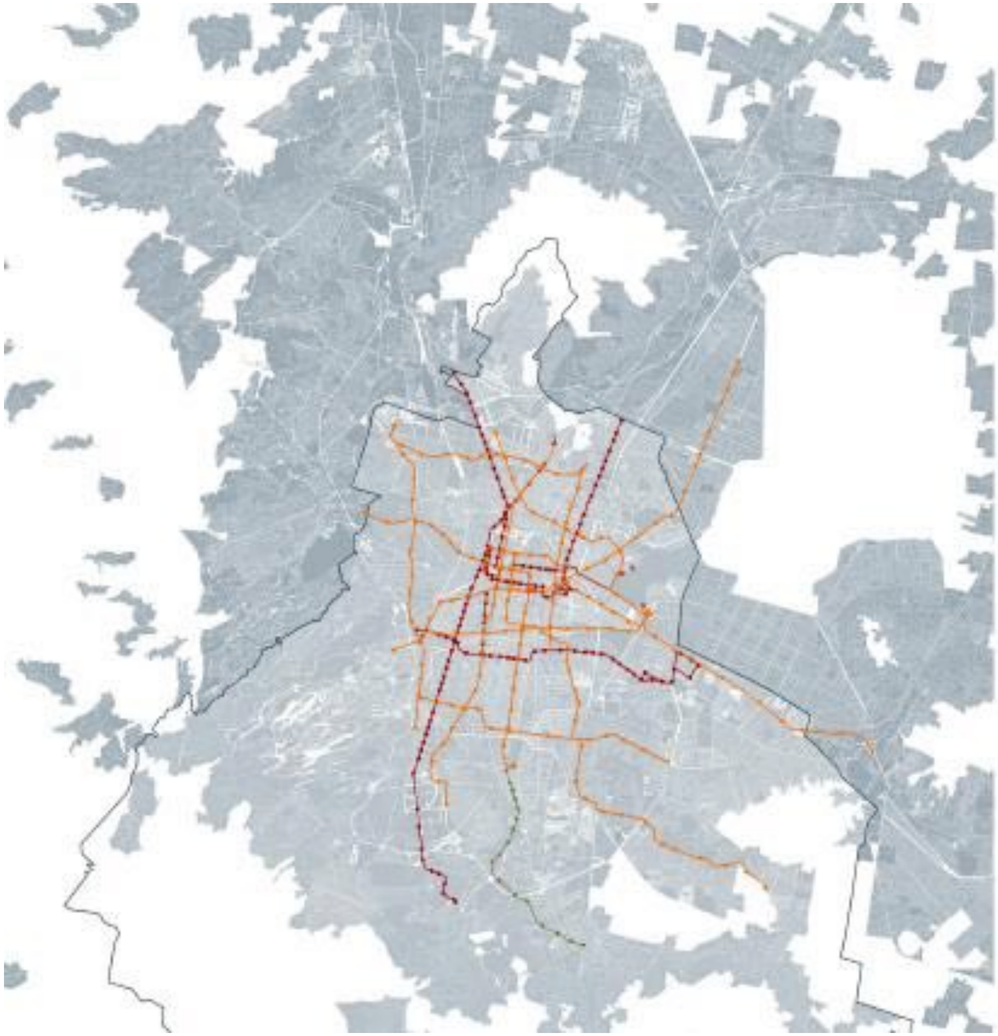
Defining the relationship with users and operators

- User trade-offs: willingness to pay for
  - Comfort.
  - Safety.
  - Security with their time and money.
  - Preference for reliability
  - Trade-off of time for a guaranteed seat in the service
  - Many services in direct competition with Metrobus (BRT) but feeding Metro

- Operators' willingness to:
  - Having more control of their operation and revenues
  - Regaining a market they had already lost.

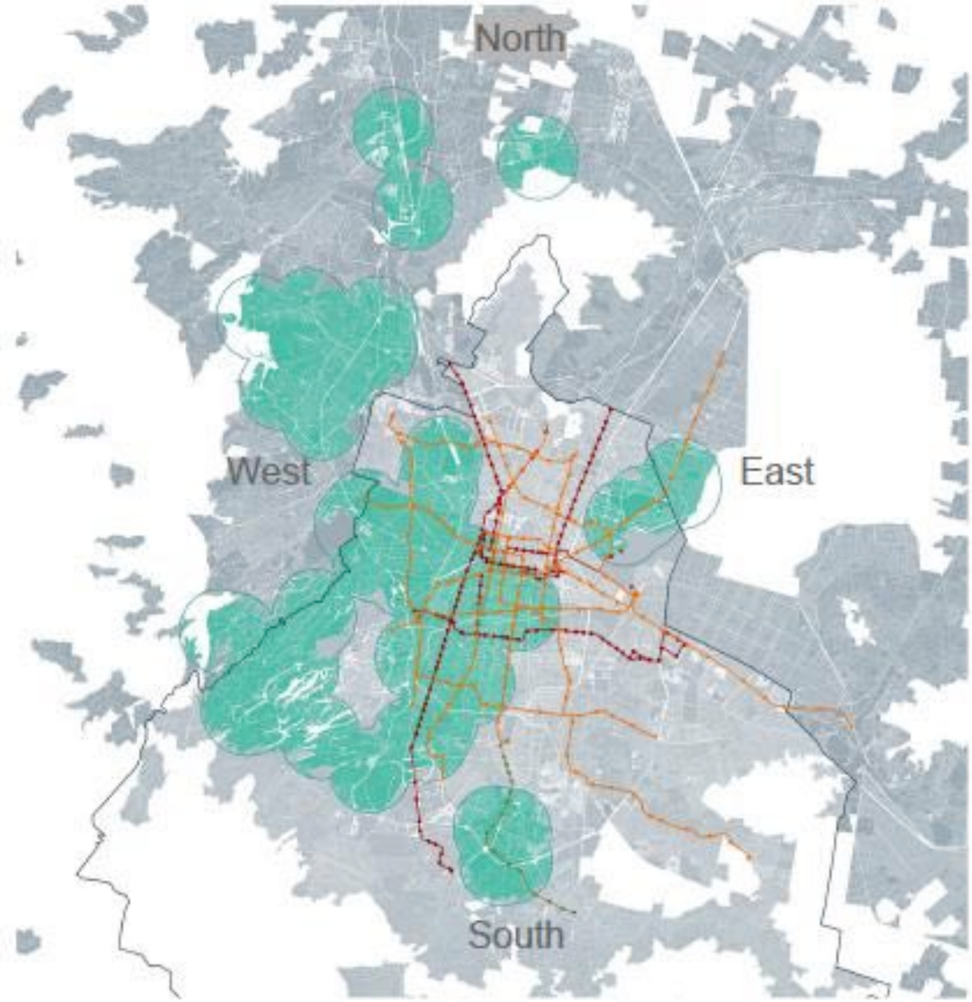
Source: Flores, 2018

Defining the relationship with users and operators



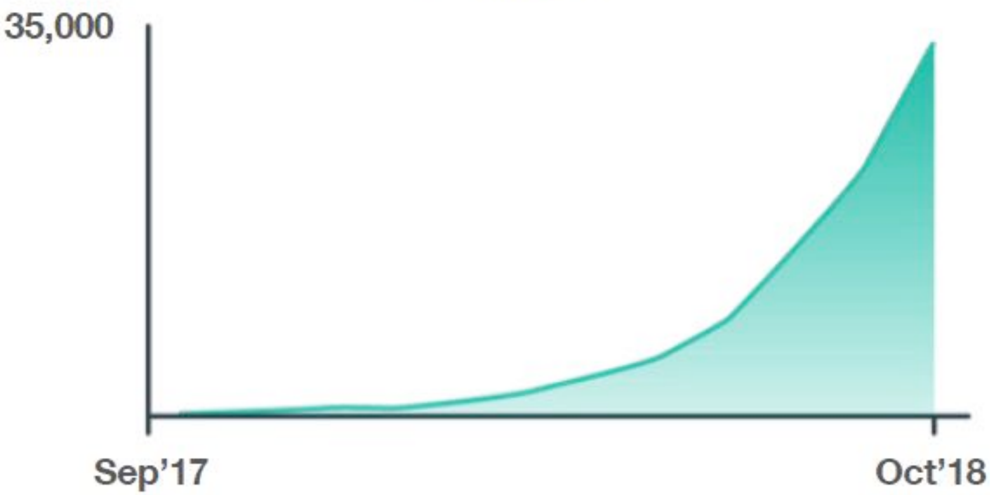
Source: Flores, 2018

Defining the relationship with users and operators



Source: Flores, 2018

Defining the relationship with users and operators



- 300,000 seats sold in 15 months
- 20% of users have already used the service more than 20 times.
- 80% of users continue using the service 15 weeks after first trying it.
- Average customer rating 4.96/5.00
- Mainly middle-income and middle-high income users
- 49% claim that they would have traveled by private car, taxi or ride-sourcing services if Jetty wasn´t available.

Excellent as always. On time and without inconveniences. Thank you Jetty. ”
Eunice García

Great option, affordable and safe. Really improves my commute. I recommend it! ”
Natalia Martínez Rodríguez

A very professional driver. Excellent trip: comfortable and fast. Thank you. ”
Andrea Díaz

Source: Flores, 2018

Defining the relationship with users and operators

Transportistas del Edomex bloquean a unidades del servicio privado Jetty en Lomas Verdes

Por casi dos horas, transportistas concesionados bloquearon el paso a una camioneta del servicio de Jetty en Lomas Verdes y amenazaron a su conductor.

Source: Flores, 2018

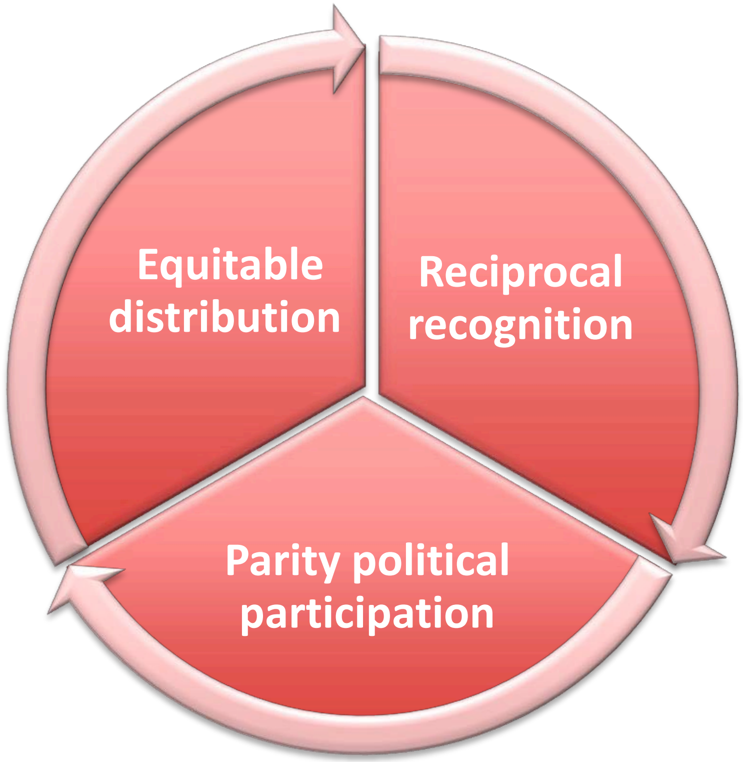
- Operators had been trying to develop their own taxi app for months, at great expense and with poor results for some collective transport associations.
- First partner operator was kicked out of its collective transport federation
- Collective transport associations in the area were raising funds to “police” their territory against “pirate” services like Jetty.
- Progressive take-up by mid-sized collective operators, usually newer in the business
- Friction with both collective and collective taxi operators

CONCLUSION: DEFINING TRANSPORT JUSTICE

Based on 3 dimensions of social justice

(Levy, 2015 building on Young, 1990,1998; Fraser, 1996, 1998 a & b; Allen & Frediani, 2013)

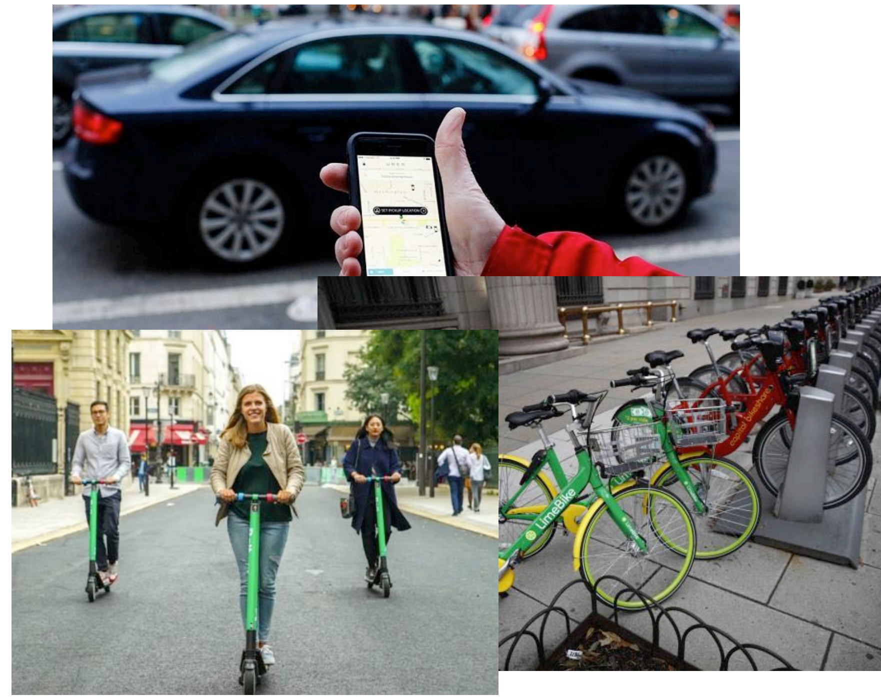
A transport system that ensure equitable access and mobility for all citizens in a sustainable manner



A transport system and urban citizenry that recognises different social identities and the environment in the way it plans, manages and operates

A transport system that actively engages all citizens in deliberations and decisions about the current and future city and its transport system

Open questions



Idea of modernity in the early 2000s

Idea of modernity in 2019 (?)

RiDER

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART I. OVERVIEW OF SHARING MOBILITY PRACTICES IN THE CITIES

8. THE ROLE FOR CAR SHARING IN MEDIUM TO SMALL-SIZED TOWNS AND IN LESS-DENSELY POPULATED RURAL AREAS (LUCIA ROTARIS)

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

UNIVERSITÀ DEGLI STUDI DI TRIESTE

DEAMS

RiDER Regulating and deregulating sharing mobility in Europe

"Sharing mobility and environment: outlining benefits and drawbacks"

Palermo, 21 oct 2019

THE ROLE FOR CAR SHARING IN MEDIUM TO SMALL-SIZED TOWNS AND IN LESS-DENSELY POPULATED RURAL AREAS

Rotaris Lucia

DEAMS, University of Trieste, lucia.rotaris@deams.units.it

- Research question
  - Is there a potential demand for car sharing (CS) in less-densely populated areas?
  - What are the most promising business models in less-densely populated areas?
- Analysis of the potential demand of CS in FVG
  - The surveys
  - Results
- Evidence on the supply of CS
  - In Europe
  - In Italy
- Conclusions

Literature review

- Increasing literature on CS
  - description of CS growth
  - administrative and logistical issues of running a CS service
  - characteristics of CS users and uses (travel purpose)
  - impacts of CS on car ownership, distance travelled, parking demand, environmental impact,
  - …but very few on less densely populated areas

Most recent literature on CS demand

- Meelen et al. (2019)
  - determinants CS use in small and large towns (The Netherlands)
    - B2C: small household size, environmental awareness, income (+), education (+), age, motorization rate (-), municipal information policies (+)
    - P2P: environmental awareness, income (+), education (+), age (-), motorization rate (-), distance to supermarkets and schools (-), municipal information policies (+)

The potential demand of CS in the Friuli-Venezia Giulia

1.215.000 inhabitants, inh./km² 154 (Lombardy inh./km² 422; Lazio inh./km² 341)

Friuli-Venezia Giulia

- Regional capital: Trieste
  - 200.000 inh., 17% of the region
- Other provincial capitals:
  - Udine: 100.000 inh., 8% of the region
  - Pordenone: 50.000 inh., 4%
  - Gorizia: 34.000 inh., 2.8%
- Almost 70% of the population live in rural areas or small towns or villages having < 25.000 inh.

Research strategy

Socio-demographic characteristics

- Gender, age, occupational status, household size, car ownership,…

Mobility needs

- Number of trips per week, by trip purpose, distance travelled, n. accompanying people

Generalized Transport Costs GTC by mode

- Monetary components
- Value of travel time
- Non monetary components

Transport Mode Choice:

Lowest GTC

Surveys

- I survey:
  - 50 people
  - monetary components of the GTC for each transport mode
- II survey:
  - 213 people
  - monetary and non monetary components of the GTC for each transport mode
- III survey:
  - 1276 people
  - willingness to use CS if available

Results I and II survey
- by transport mode -

	unit	lower, upper, mode
Private car		
Purchase cost (S1)	€	1000, 22000, 6100
N° of years before the market value goes to zero (S1)	n°	1, 10, 5
Road tax (S1)	€	80, 360, 181
Insurance cost (S1)	€	250, 800, 515
Monetary value of the risk of uninsured theft or damage (S2)	€	0, 2500, 747
Ordinary and extraordinary maintenance cost (S1)	€	100, 1000, 322
WTP for avoiding the nuisance of maintaining and refuelling your car (S2)	€	0, 718, 202
Opportunity cost of the private garage (S1)	€	0, 1200, 213
Weekly parking costs (S1)	€	0, 10, 2
Time spent in looking for a parking place (S1)	min.	0, 15, 3
Monetary value of the pleasure of owning a car (S2)	€	0, 7240, 1663
WTA to give up the private car (S2)	€	0, 5000, 2267

Danielis, R., Rotaris, L. (2017) "The market potential for carsharing services in small to medium-size towns" INTERNATIONAL JOURNAL OF TRANSPORT ECONOMICS XLIV (1): 73-98.

..results I and II survey

- by transport mode -

	unit	lower, upper, mode
Motorcycle		
Purchase cost (S1)	€	525, 1500, 1181
N° of years before the market value goes to zero (S1)	n°	2, 5, 4
Road tax (S1)	€	10, 35, 20
Insurance cost (S1)	€	56, 270, 174
Monetary value of the risk of uninsured theft or damage (S2)	€	0, 100, 56
Ordinary and extraordinary maintenance cost (S1)	€	50, 150, 95
WTP for avoiding the nuisance of maintaining and refuelling the motorcycle (S2)	€	0, 126, 30
Monetary value of the pleasure of owning a motorcycle (S2)	€	18, 1390, 558
WTA to give up the motorcycle (S2)	€	400, 700, 550

Danielis, R., Rotaris, L. (2017) "The market potential for carsharing services in small to medium-size towns" INTERNATIONAL JOURNAL OF TRANSPORT ECONOMICS XLIV (1): 73-98.

..results I and II survey
- by transport mode -

	unit	lower, upper, mode
Bicycle		
Purchase cost (S1)	€	10, 50, 37
N° of years before the market value goes to zero (S1)	n°	0, 2, 1
Monetary value of the pleasure of owning a bicycle (S2)	€	0, 129, 13
Monetary value of the nuisance of cycling (S2)	€	0, 0, 0
Walking		
Monetary value of the pleasure of walking (S2)	€	9, 492, 195
Monetary value of the nuisance of walking (S2)	€	0, 0, 0
Carsharing		
Membership fee (S1)	€	20, 100, 50
Minutes needed to reach a CS car (S1)	n°	5, 10, 8
WTP for avoiding the nuisance of having to book a CS car (S2)	€	18, 122, 61
WTP for avoiding the risk of not finding a CS car available when you need it (S2)	€	28, 356, 110
Monetary value of the satisfaction of being a CS user (S2)	€	0, 356, 113

Danielis, R., Rotaris, L. (2017) "The market potential for carsharing services in small to medium-size towns" INTERNATIONAL JOURNAL OF TRANSPORT ECONOMICS XLIV (1): 73-98.

III survey: the sample

- 1276 people
  - 694 women; 582 men
- Age:
  - 49% 18 – 25; 43% 25 - 65 anni; 8% over 65.
- Province of residence:
  - GO 36%; TS 35%; UD 12%; PN 8%; 9% other regions.
- Town size:
  - 33% TS; 33% <20k inhabitants; 25 % 20k – 50k (included GO), 5% PN; 3% UD
- Income:
  - 27% <€2k, 49% €2k - €4k, 14% >€4k, 10% missing.

Rotaris, L., Danielis, R. (2018). The role for carsharing in medium to small-sized towns and in less-densely populated rural areas. TRANSPORTATION RESEARCH PART A: POLICY AND PRACTICE, 115: 49-62

… III survey

- Data collection: stated willingness to use CS

"Would you use a CS service if available?"

  - rating scale from 1 (undoubtedly no) to 5 (certainly yes)

Rotaris, L., Danielis, R. (2018). The role for carsharing in medium to small-sized towns and in less-densely populated rural areas. TRANSPORTATION RESEARCH PART A: POLICY AND PRACTICE, 115: 49-62

Stated willingness to use CS

- No (1-2): 66%   Maybe (3): 18%   Yes (4-5): 16%

Ordered logit of Stated Willingness to use CS (rating scale 1-5)	Coeff.	Std.Err.	t-ratio	P-value
ONE	-1.16	0.29	-3.94	0.00
Age: 1 "18-25"; 2 "25-65"; 3 ">65" (ordinal)	-0.74	0.11	-6.46	0.00
Retired (dummy)	-1.43	0.42	-3.39	0.00
Unemployed (dummy)	2.14	0.55	3.87	0.00
Town size: 20k-50k inhabitants (dummy)	-1.17	0.15	-8.03	0.00
Environmental awareness (ordinal, 1 to 5)	0.45	0.06	7.95	0.00
CS knowledge (ordinal , 1 to 5)	0.45	0.05	9.65	0.00
N. commuting trips: 0 "0"; 1 "1-10"; 2 "11-20"; 3 ">20"(ordinal)	0.35	0.09	3.89	0.00
N. non-commuting trips "11-20"(dummy)	0.23	0.13	1.76	0.08
McFadden Pseudo Rho^2	.11			
N. Obs.	1207			

Stated willingness to use CS

Ordered logit	No 1	2	3	4	Yes 5
Age: 1 "18-25"; 2 "25-65"; 3 ">65" (ordinal)	0.16	-0.16	-0.08	-0.05	-0.03
Retired (dummy)	0.34	-0.11	-0.13	-0.10	-0.04
Unemployed (dummy)	-0.27	-0.21	0.06	0.18	0.25
Town size: 20k-50k inhabitants (dummy)	0.27	-0.27	-0.22	-0.06	-0.04
Environmental awareness (ordinal, 1 to 5)	-0.10	0.00	0.05	0.03	0.02
CS knowledge (ordinal , 1 to 5)	-0.10	0.00	0.05	0.03	0.02
N. commuting trips: 0 "0"; 1 "1-10"; 2 "11-20"; 3 ">20"(ordinal)	-0.08	0.00	0.04	0.02	0.02
n. non-commuting trips "11-20"(dummy)	-0.05	0.00	0.02	0.02	0.01

- Willingness of using CS according to
  - Socio-demographic characteristics:
    - age (-), retired (-), unemployed (+), medium-sized town (-), environmental awareness (+), CS knowledge(+)
  - Mobility needs
    - n. commuting trips (+); n. of non-commuting trips (+)

…III survey

- Data collection: stated change of the mobility pattern

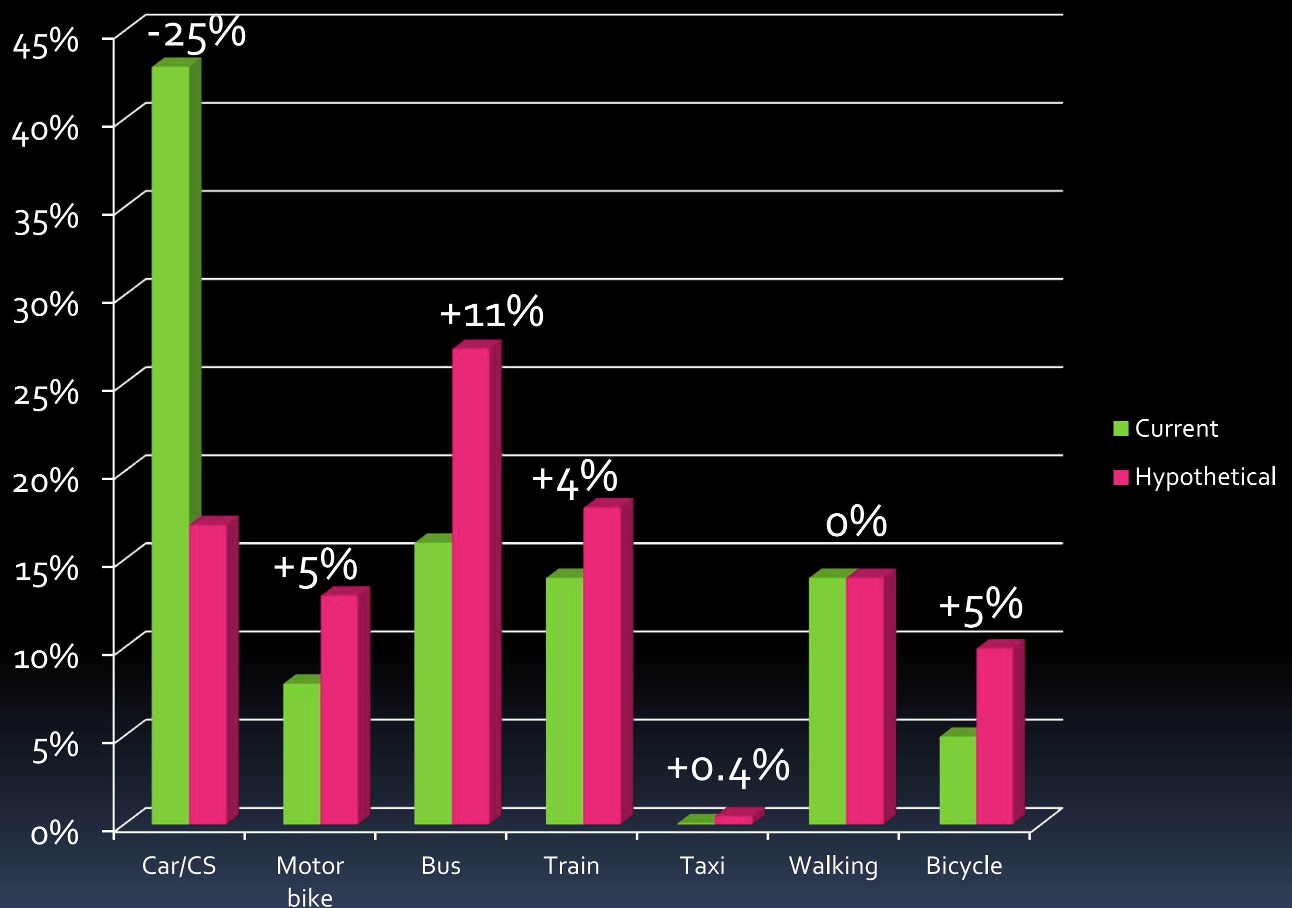
"Assume that you don't have a car but a CS is available, how would you change your mobility pattern of commuting and non-commuting trips?"

Rotaris, L., Danielis, R. (2018). The role for carsharing in medium to small-sized towns and in less-densely populated rural areas. TRANSPORTATION RESEARCH PART A: POLICY AND PRACTICE, 115: 49-62

	N° of round trip journeys	Average distance per journey
	Current *COMMUTING* trips per week	
Car*		
Motor bike		
Bus		
Train		
Taxi *		
Walking		
Bicycle		
	Hypothetical *COMMUTING* trips per week	
Carsharing*		
Motor bike		
Bus		
Train		
Taxi *		
Walking		
Bicycle		

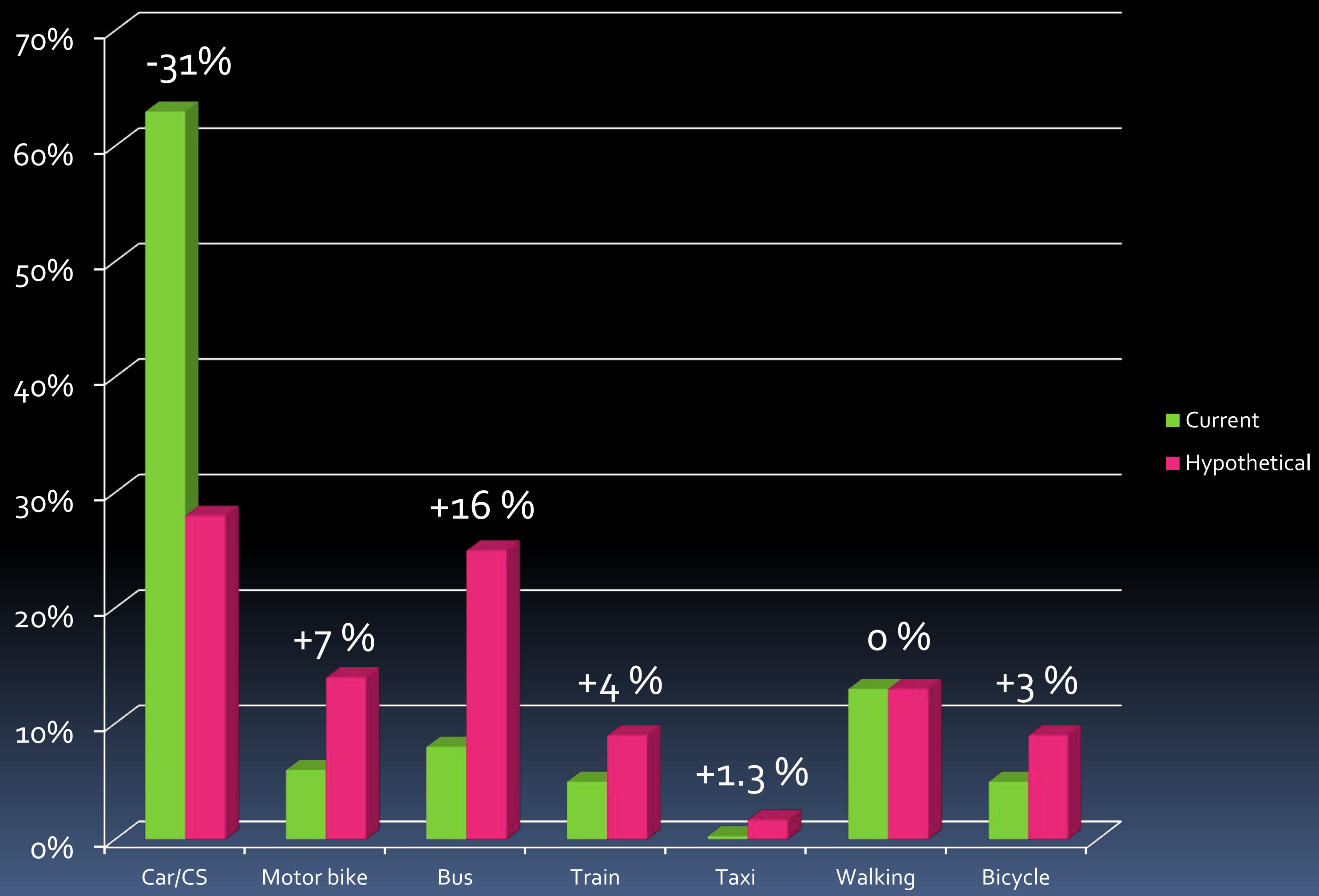
	N° of round trip journeys	Average distance per journey
	Current *NON-COMMUTING* trips per week	
Car*		
Motor bike		
Bus		
Train		
Taxi *		
Walking		
Bicycle		
	Hypothetical *NON-COMMUTING* trips per week	
Carsharing*		
Motor bike		
Bus		
Train		
Taxi *		
Walking		
Bicycle		

Potential change commuting



Rotaris, L., Danielis, R. (2018). The role for carsharing in medium to small-sized towns and in less-densely populated rural areas. TRANSPORTATION RESEARCH PART A: POLICY AND PRACTICE, 115: 49-62

Potential change non-commuting



Rotaris, L., Danielis, R. (2018). The role for carsharing in medium to small-sized towns and in less-densely populated rural areas. TRANSPORTATION RESEARCH PART A: POLICY AND PRACTICE, 115: 49-62

Estimated prob. of using CS

- Estimation of the annual generalized costs of the commuting and non-commuting trips at the individual level given:
  - the current mobility pattern
  - the stated mobility pattern if private car were not available while CS were available
  - the value of the monetary and non-monetary components of the generalized costs (*I and II survey*)
- 10,000 simulation runs for each individual
- Comparison of the total mobility cost of scenario B (no CS) and A (CS)

$$\text{Probability of using CS by person n} = \frac{\sum_{i=1}^{10000} x_i^n}{10000} \quad for \begin{cases} x_i^n = 1 \;\; if \;\; GC^A \leq \;\; GC^B \\ x_i^n = 0 \;\; if \;\; GC^A > \;\; GC^B \end{cases}$$

Probability of using CS

	Number of people	%
No CS trips in the stated mobility pattern	645	52
Probability less than 25%	307	24
Probability between 25% and 50%	250	20
Probability between 50% and 75%	51	4
Probability between 75% and 100%	23	2
Total	1276	100

Probability of using a CS in FVG

- From the sample to the population on the basis of town size and age (>18 years old)

	Number of people	%
No staed CS trips	621,428	59.9
Probability less than 25%	198,742	19.2
Probability between 25% and 50%	171,979	16.6
Probability between 50% and 75%	36,709	3.5
Probability between 75% and 100%	8,311	0.8
Total	1,037,168	100

Summary of the determinants

	Willing to use CS (rating)	Mobility pattern commuting	Mobility pattern non-commuting	Probability CS use
Age	Neg.		Neg.	Neg.
Status	Retired (-) Unemployed (+)	Students (+)	Students (+) Employed (+)	
N. Children		Pos.		Pos.
N. Driver license		Pos.		
N. Car/driver license				Pos.
Town size	Not Medium (20k-50k)	Not Medium (20k-50k)	Large	Large
CS Knowledge	Pos.	Pos.	Pos.	Pos.
Environmental awareness	Pos.		Pos.	Pos.
N. Trips	Pos.	10-20	Pos.	
Distance		>25km		

Is there a potential demand for car sharing (CS) in less-densely populated areas?

- Significant potential demand for CS in FVG: 4.3 % of the population
- Demand is affected by:
  - socio-economic factors and mobility needs:
    - Age; Status; n. driver license or cars; n. children
    - Town size
    - CS Knowledge; Environmental awareness;
    - Type and number of trips; distance travelled
  - characteristics of the CS supply:
    - fees; free floating/point-to-point/return; operating zone; N. and type of vehicles
  - transport policies:
    - Parking; Limited Traffic Zone; Dedicated lanes; Fee payed by the operator to the Municipality
  - availability of complementary transport services (public transport)
    - Positive network externalities
  - number and spatial distribution of residential, commercial, productive and tertiary activities

CS in Europe

Car fleet

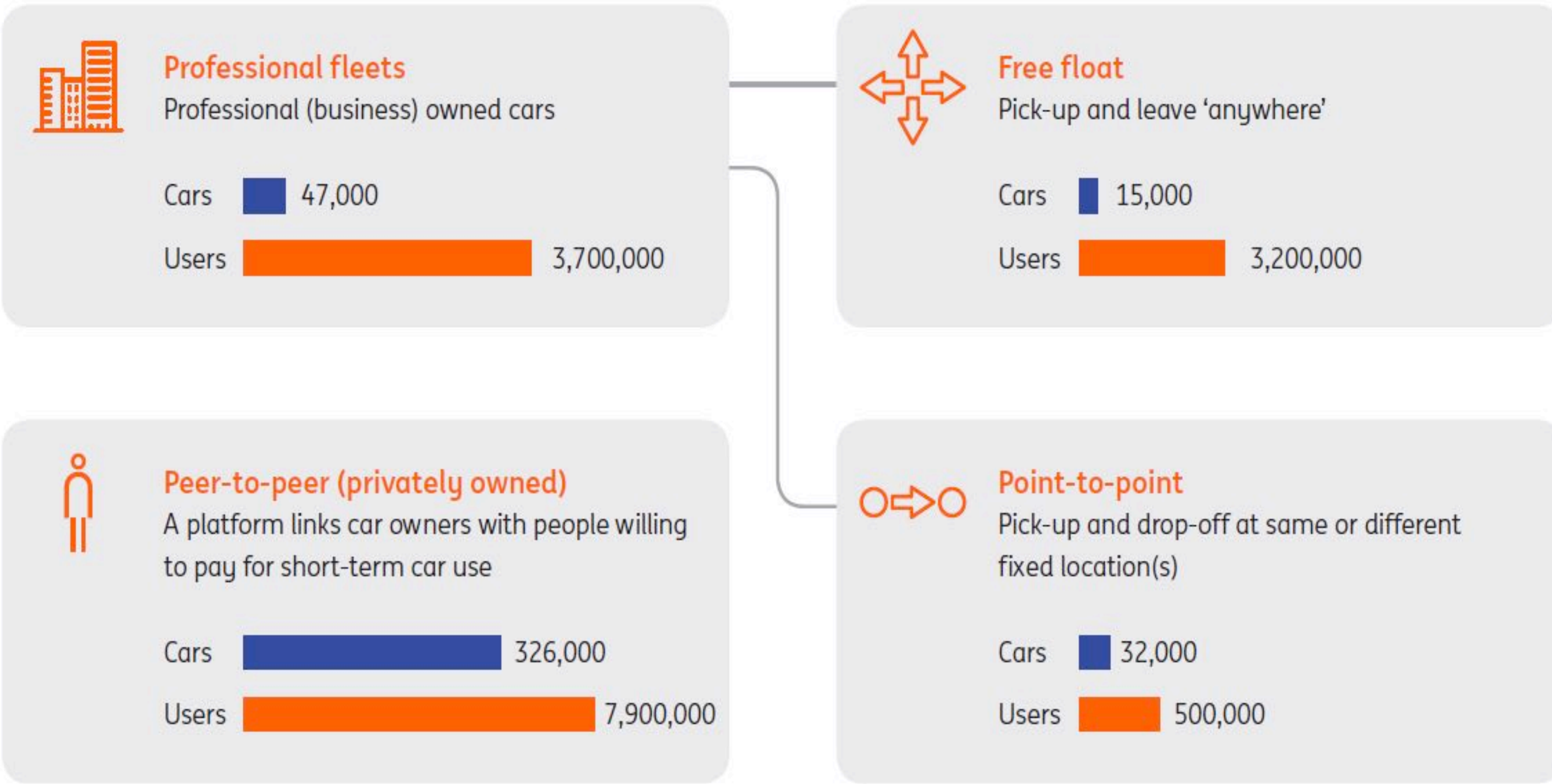
Shared car fleet in Europe has almost tripled in past 2 years

Number of users

Number of users almost doubled from 2016 to 2018

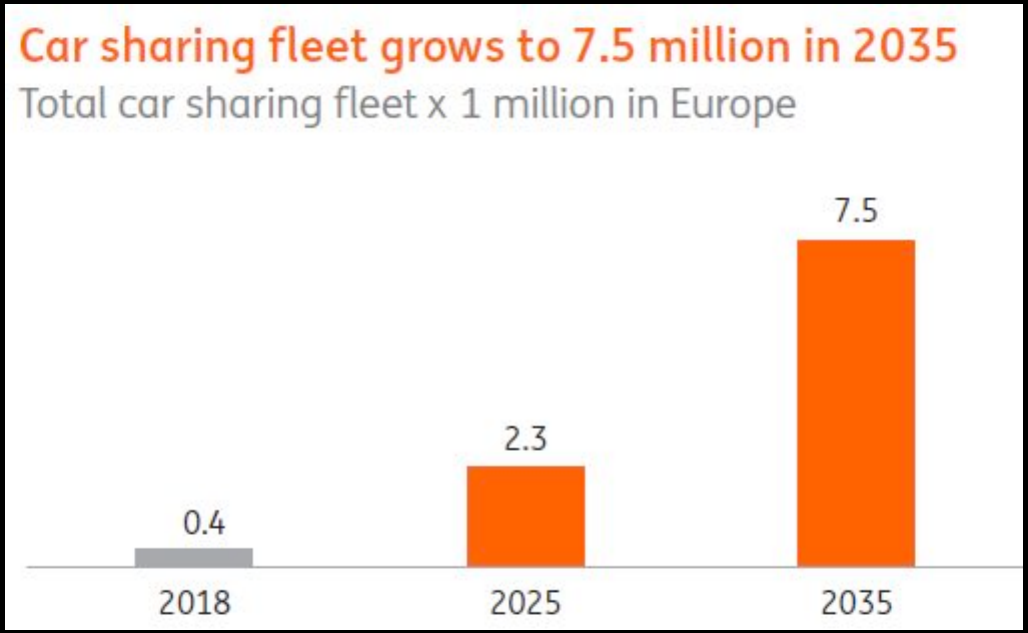
Source: Car sharing unlocked, ING Economics Department • October 2018
(https://think.ing.com/uploads/reports/ING_-_Car_sharing_unlocked.pdf)

CS in Europe 2018



Source: Car sharing unlocked, ING Economics Department • October 2018
(https://think.ing.com/uploads/reports/ING_-_Car_sharing_unlocked.pdf)

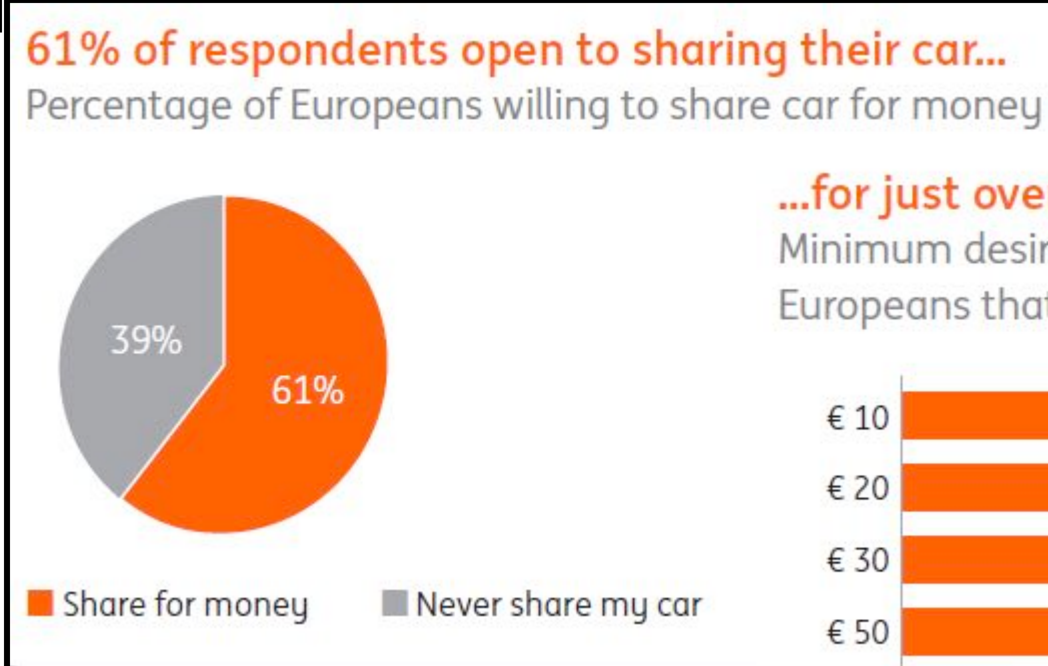
CS in Europe forecast

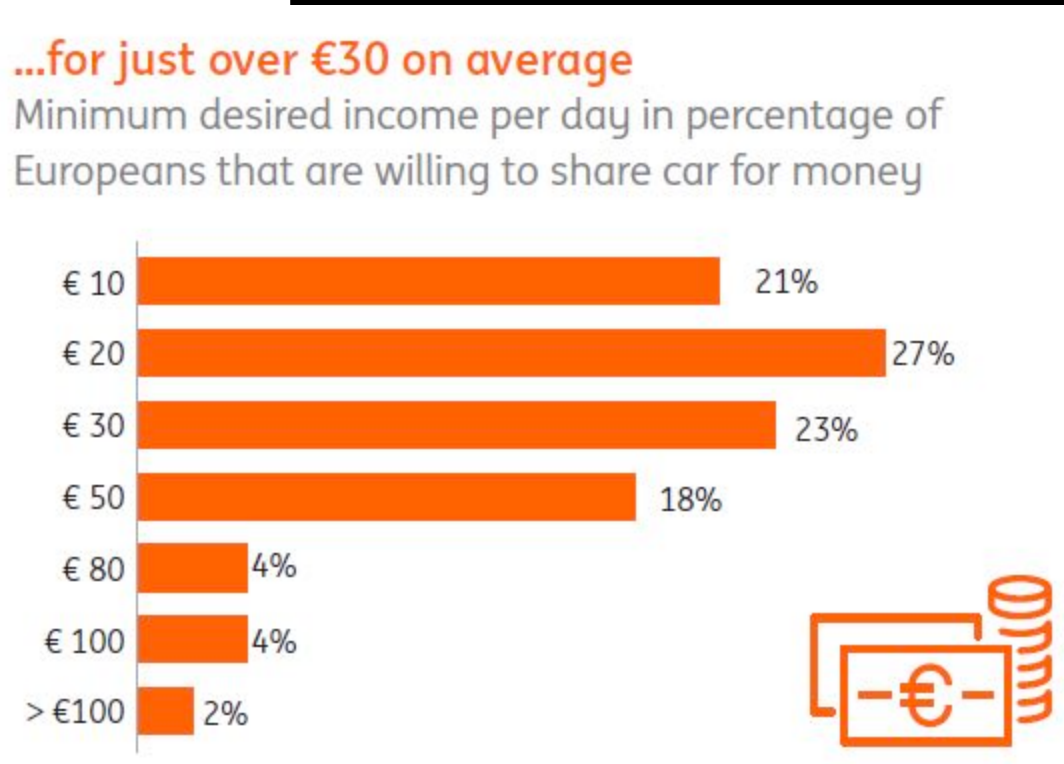


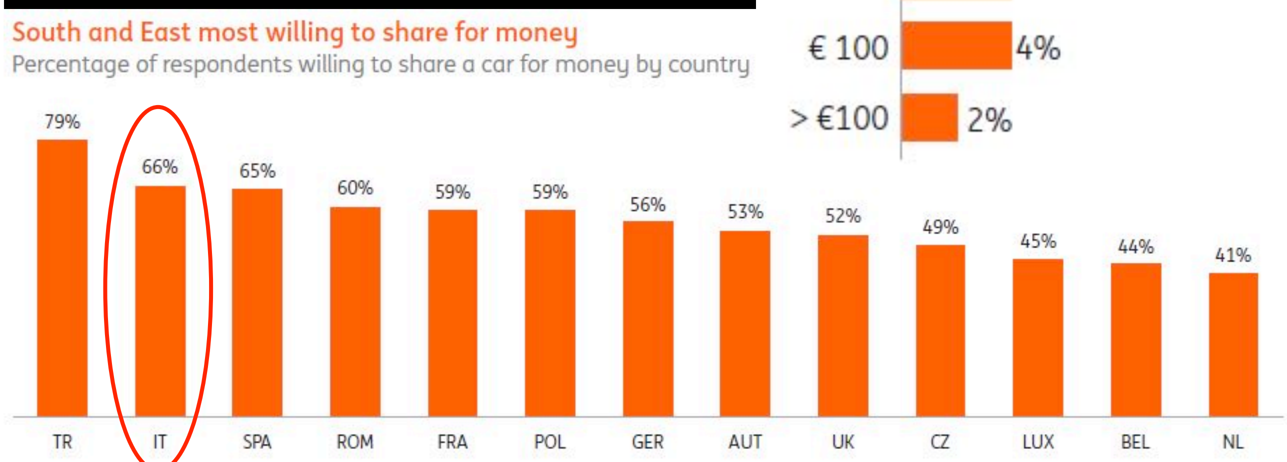
- 7% of Europeans with a driver's license state that they use CS
- 23.5% would consider using CS within 2019
- Higher willingness to use CS for:
  - people who do not own a car
  - people who use public transport as main transport mode
  - young people
  - people living in large cities
  - people living in countries with relatively lower incomes

Source: Car sharing unlocked, ING Economics Department • October 2018

P2P CS in Europe



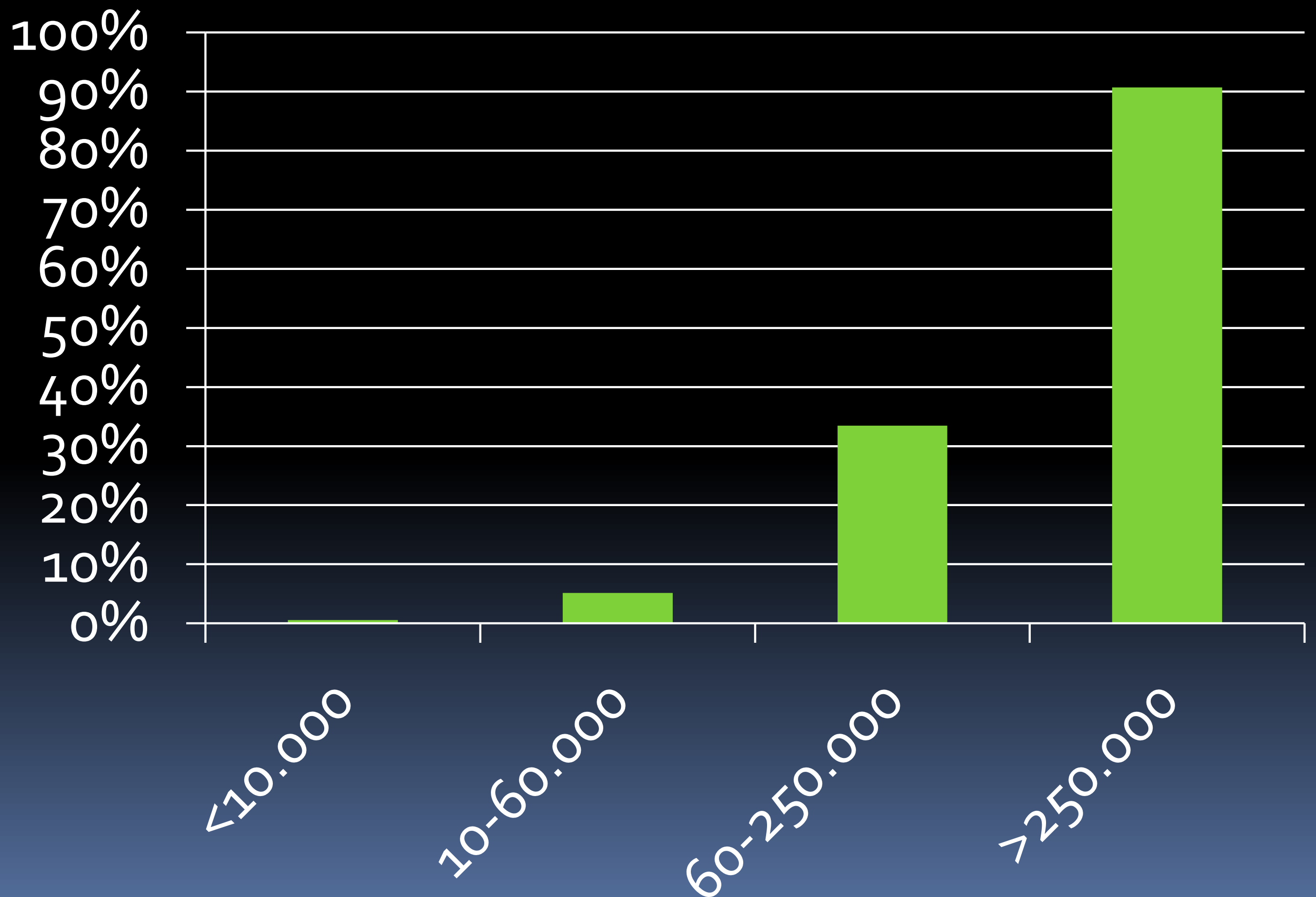




Source: Car sharing unlocked, ING Economics Department • October 2018

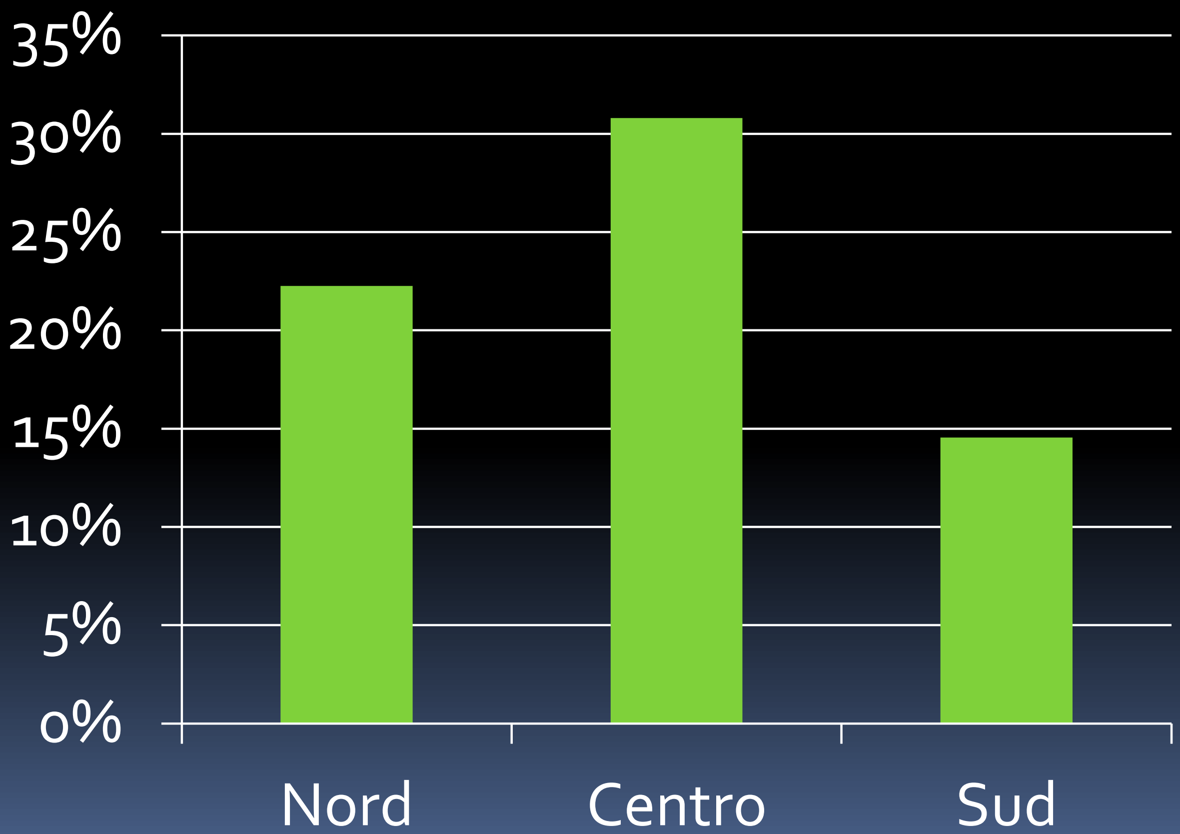
CS in Italy

- % people living in places where CS is offered by municipality size



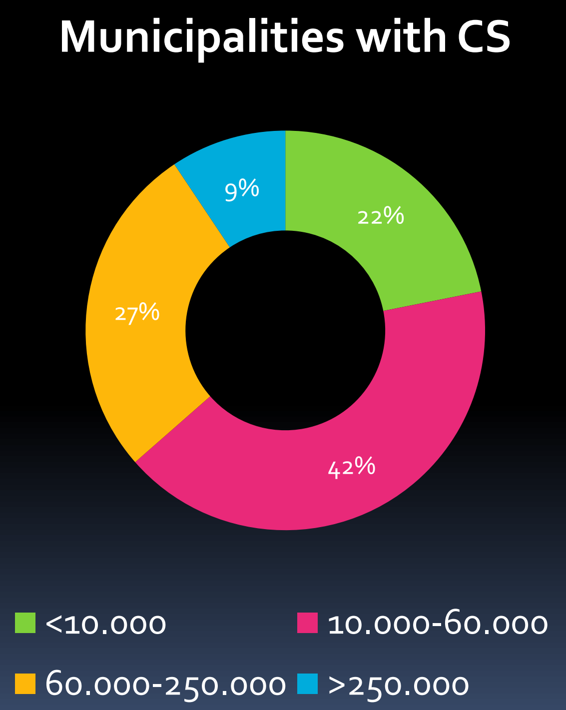
CS in Italy

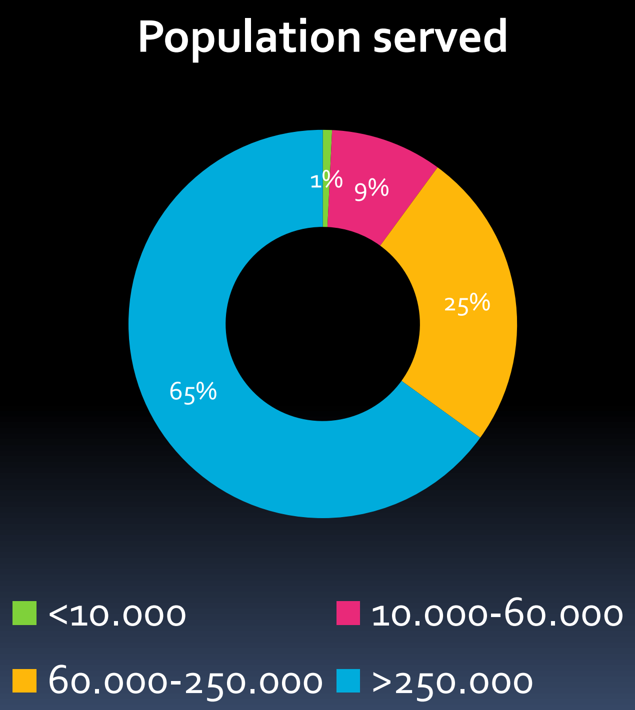
- % people living in places where CS is offered by geographical areas



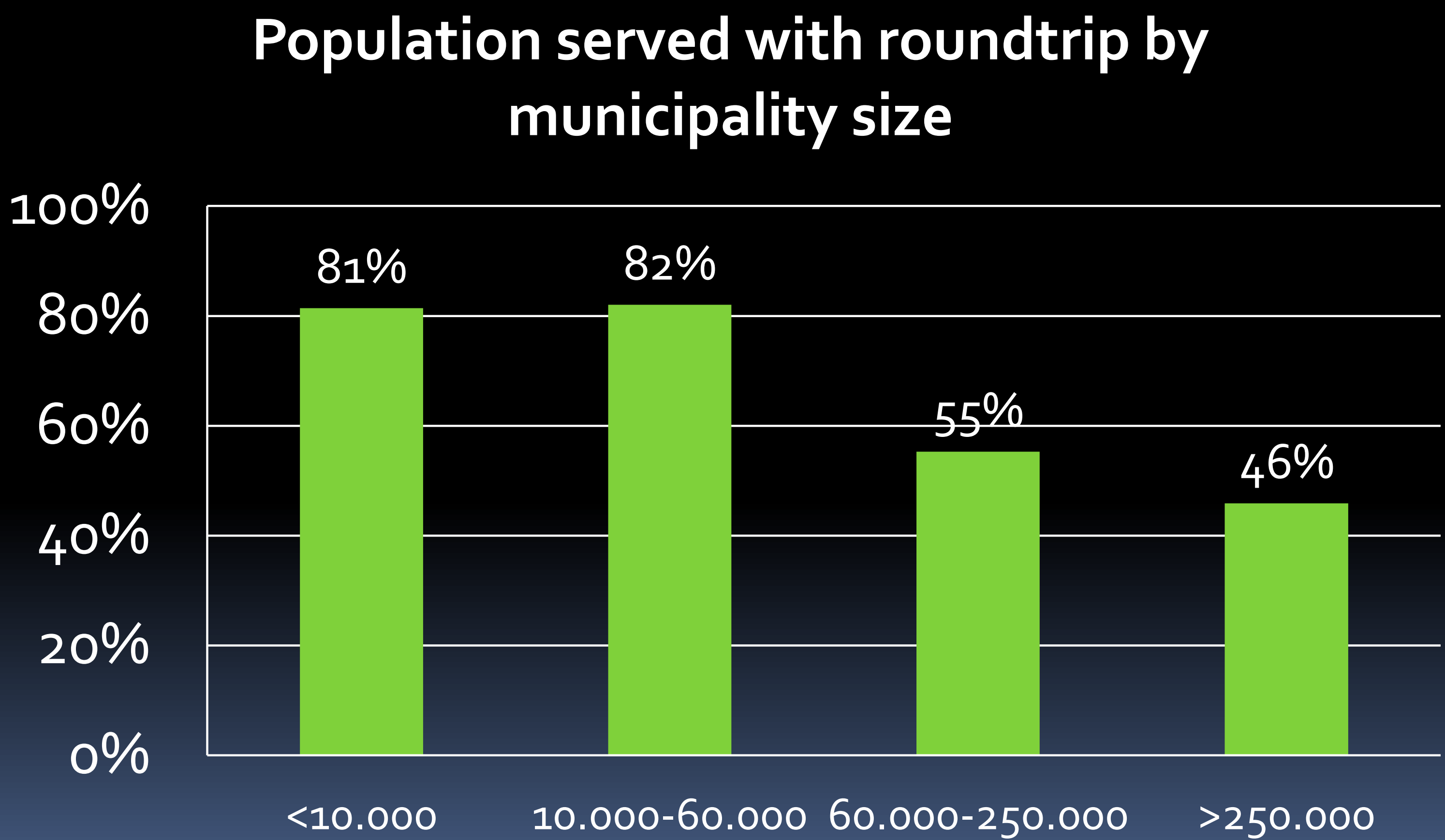
CS in Italy

- Municipalities and population served by size

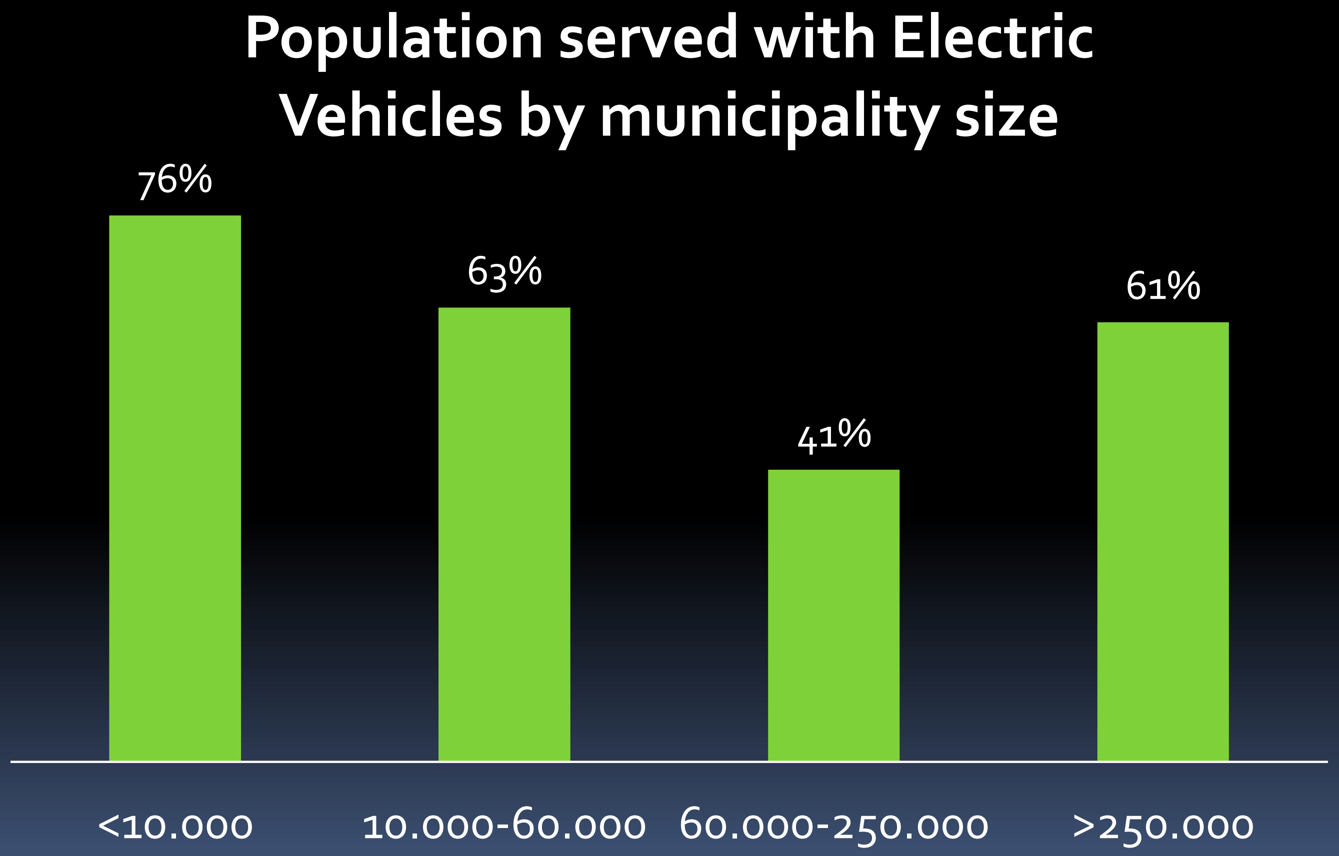




CS in Italy: roundtrip



CS in Italy: electric vehicles



CS providers in Italy

- In 2018 25 operators, largest ones:
  - car2go (Mercedes) 2.150 cars
    - Milan, Roma, Florence, Turin
  - Drivenow (joint venture BMW & Sixt car rental) 500 cars
    - Milan
      - since February 2019 car2go and Drivenow joined in Share Now, 20.000 cars, 31 large cities in Europe and North America
  - Enjoy (ENI + FCA) 2.400 cars
    - Milan, Roma, Florence, Turin, Bologna
  - Share'ngo (CS Group + Xindayang) 1.500 cars
    - Milan, Roma, Florence, Modena

CS providers in Italy

- Since 2018, 6 newcomers or restructured companies:
  - Adduma car:
    - Firenze, Sesto Fiorentino and surroundings
  - Corrente:
    - Bologna, Ferrara (2019), Casalecchio di Reno (2019)
  - Eppy:
    - Latina, Punta Ala
  - Mobile4us:
    - Brindisi, Galatina, Gallipoli, Latina, Lecce, Maglie, Nardò, Otranto, Punta Ala (Castiglio della Pescaia), Santa Maria di Leuca (Castrignano del Capo), Tricase
  - Move Ecocarsharing:
    - Sassari city and airport, Alghero, Olbia
  - Parma Carsharing:
    - Parma
  - Pista:
    - Messina
  - Eway:
    - Desenzano, Padenghe, Salò, Benaco e Peschiera

Trends

- Large providers
  - increase of the extension of the areas served
  - from roundtrip to free-floating
  - car rental for 1 or more days
  - corporate CS
- Increase of small providers, both private and public, serving small towns and rural areas
  - especially if touristic areas (Garda lake, Apulia)
- Mobility As A Service
  - Free2move
    - Milano, Roma, Firenze, Torino, Modena, Catania
  - Moovit
    - 34 towns
  - Urbi
    - Milano, Roma, Firenze, Torino, Modena, Bologna, Venezia
  - BIPforMaaS
    - Piedmont region

Trends

- P2P peer-to-peer CS
  - Auting, Bologna, since 2017
    - 5.000 users and 1.000 cars
    - 30% rent charged to the owner and 5% to the user
  - Genial Move, Milan, since November 2018
    - 20% rent charged to the owner and 10% to the user
  - Average rental daily revenue: €30
  - Tariff charged by the platform covers transaction and insurance costs
  - Already successful in large cities, undoubtful potentialities in rural areas (no investment costs nor ICT costs!)

Trends

- Micro CS
  - Neighborhoods owing and sharing few vehicles
  - Shared parking spots and charging stations
    - Cascina Merlata (Milan)
  - Iniziativa Car Sharing since May 2018 finance private car clubs

Future

- Self-driven vehicles and automated CS
  - All major car makers are developing their technology
  - Tesla, Ford, Daimler, Renault, Volkswagen , Toyota
  - needs large infrastructural investments

What are the most promising business models in less-densely populated areas?

- Large private operators in the small municipalities surrounding large towns
- Small private or public in small towns or rural areas (touristic)
- P2P also in rural areas
- Micro CS in small villages
- Importance of MAAS and network externalities

Research team and projects

- Romeo Danielis, Marco Giansoldati, Mariangela Scorrano (DEAMS, Univ Trieste)
  - Eva Valeri (now Italian Transport Regulation Authority), Andrea Russich (now Info.era)
- ECC: Un Electric Car Club per la Regione Friuli Venezia Giulia https://slideplayer.it/slide/9458878/
- MUSE: innovative electric mobility services and integrated planning of sustainable mobility (www.ita-slo.eu/en/muse)
- NOEMIX: substitution of conventional vehicles of municipalities, regional administration and public institutions with electric ones via a mobility-as-a-service scheme managed by private operators (www.noemix.eu/it)

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART II. REGULATION AND POLICY RECOMMENDATIONS

9. SHARING MOBILITY IN EUROPE (ANDRÉS BOIX PALOP)

With the support of the Erasmus+ Programme

UNIVERSITÀ DEGLI STUDI DI PALERMO

Sharing mobility in Europe

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REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

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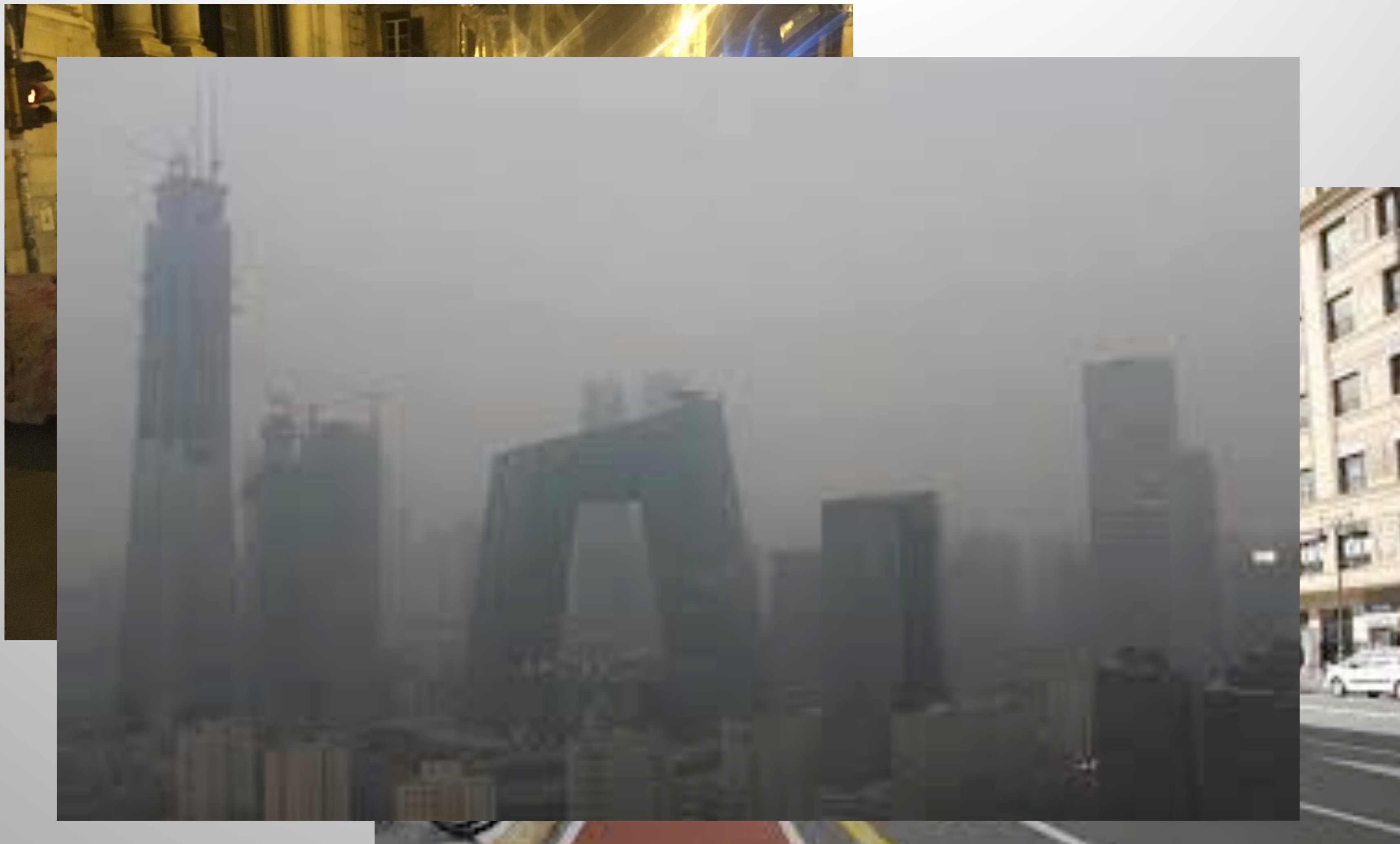
Plan

1. Framework:
   1.1. Sustainable mobility
   1.2. Digital brokers
2. Main conflicts:
   2.1. Market freedom vs. Public regulation
   2.2. Environmental concerns and problems related to the use of public space/domain
   2.3. Incumbents and Competition issues
3. Regulatory strategies:
   3.1. The old tradition of “service public”
   3.2. The new European liberal approach
4. Reshaping sharing mobility public policies

Framework (1.1)



Framework (1.1)

- Sustainable mobility
  - Efficiency & environmental issues
  - Private and public choices: public services, infrastructure planning, urban design
  - Natural monopolies in transportation markets
  - Regulation and indirect affections: taxes, incentives, nudging…
  - The special case of urban sustainable mobility
  - And…

Framework (1.2)

- Innovation and technological drive
- Main effects of digital brokerage
  - Renewed efficiency matching supply and demand
  - New actors (mainly, as a brokers)
  - New (and then infra-regulated) markets
  - Old (and maybe over-regulated) markets
- *“Sharing is caring”*

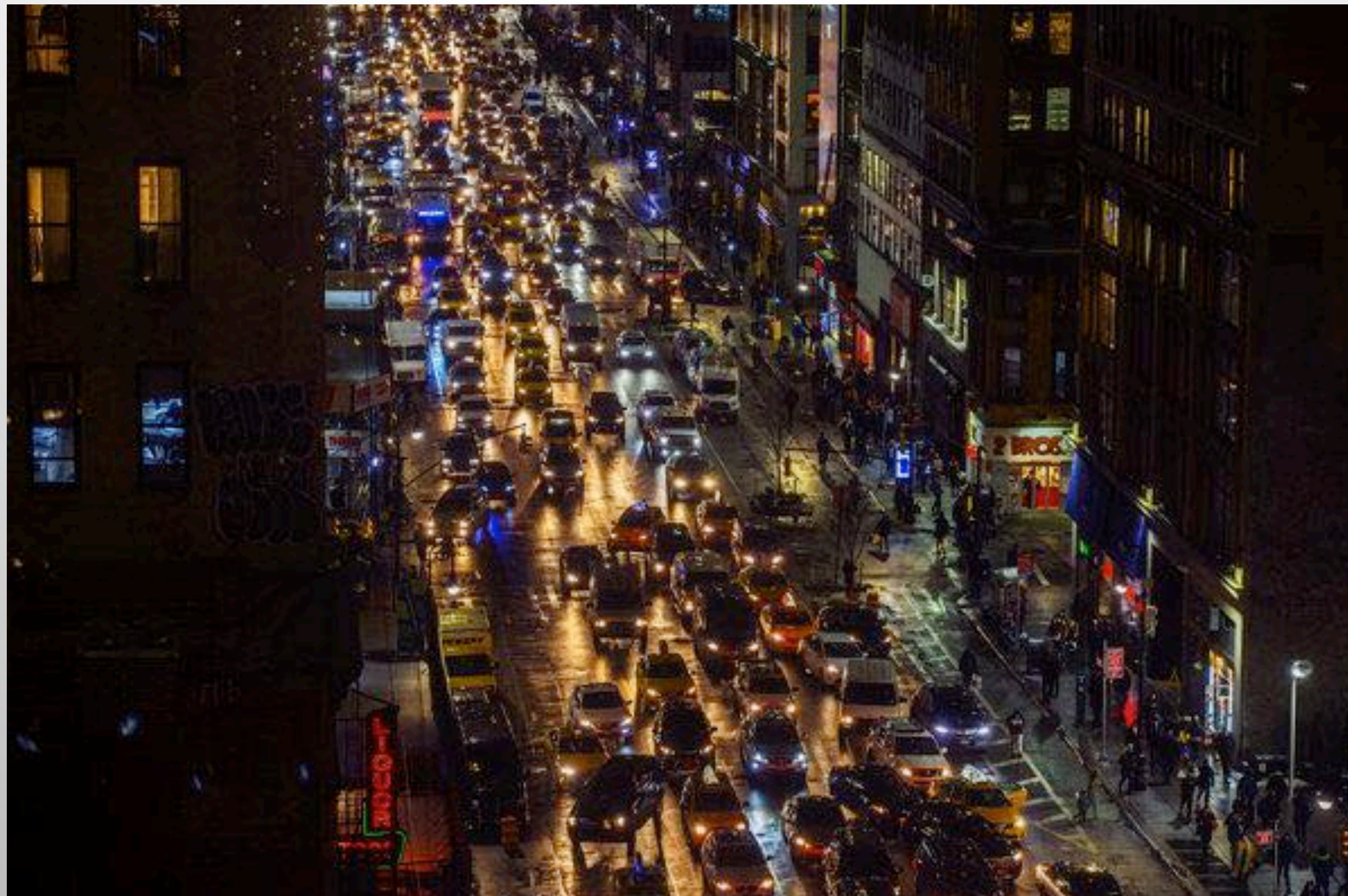
Framework (1.2)

Main conflicts (2.1)

Main conflicts (2.1)

- Market freedom vs. Public regulation
  - When an (economic) activity has to be regulated?
    - Profit vs sharing (Uber vs Blablacar)
    - Ownership (rental cars vs Uber, to rent goods or to hire a service)
    - Market effects and externalities (prohibition vs regulation)
    - Kind of services: ECJ Case C-434/15 Asociación Profesional Elite Taxi v Uber Systems Spain SL (Uber provides the service, but also requires a license because it is a transportation service)
  - Differences because of the type of transportation (car sharing, but also bikes or kick scooters or… whatsoever)
  - Fiscal policy: the problem with taxes and EU rules
  - Autonomous drivers or employees of the platform? The conflict between cab drivers (incumbents) and Uber drivers: cap restrictions / pricing rules /quality of the

Main conflicts (2.2)



Main conflicts (2.2)

- Environmental concerns and problems related to the use of public space/domain
  - Traditional/old issue
  - Local governments and urban planning
  - Externalities and side-effects (environmental, congestion… august 2017 NYC decision to put a hold on licenses)
  - Global approach to all mobility forms
    - Sustainability
    - Social efficiency
    - Equality in the uses
    - Importance of shared spaces

Main conflicts (2.3)

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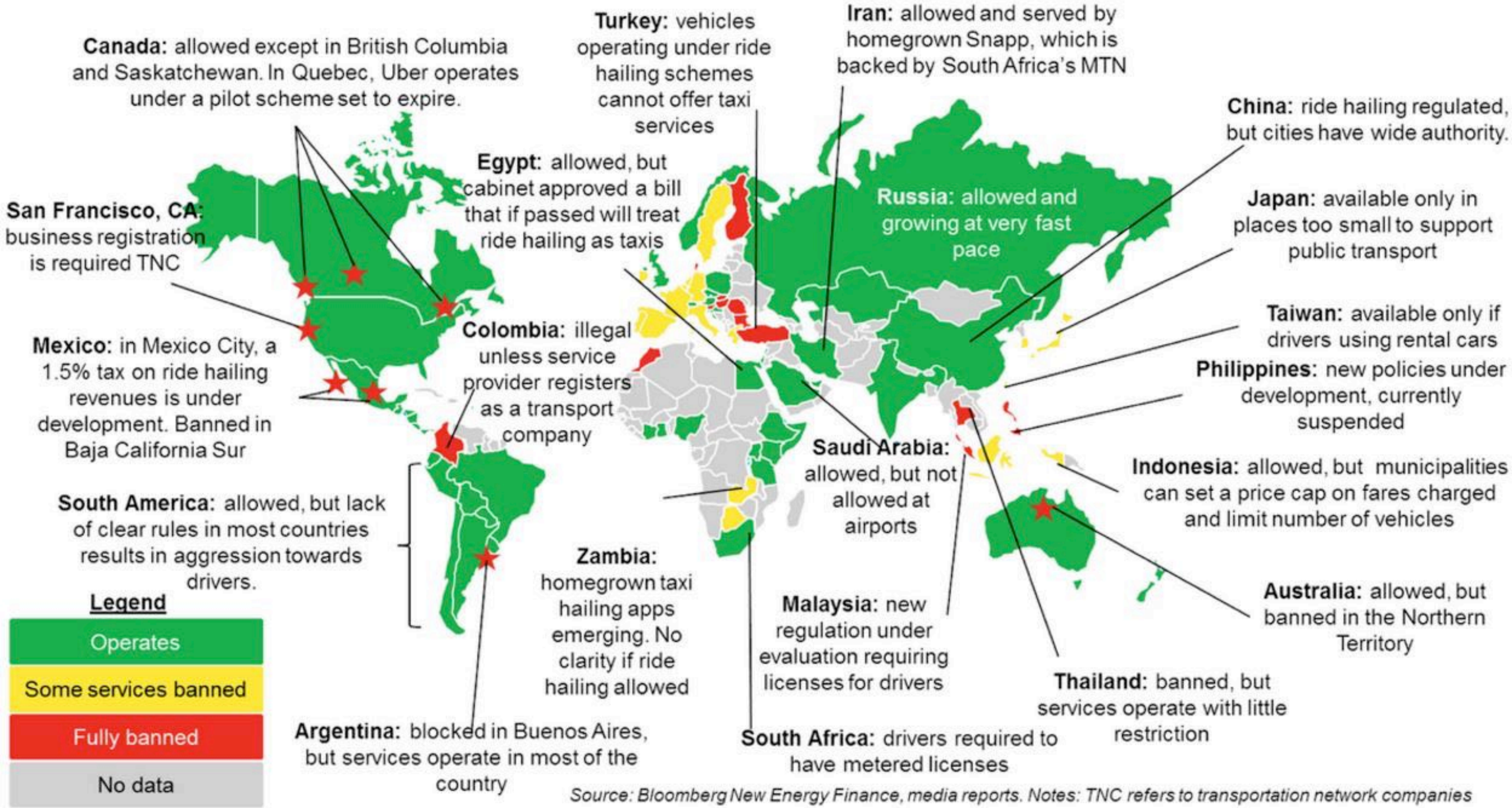
Main conflicts (2.3)

- Problems with Incumbents and other Competition issues
  - Transition rules… and transition costs
  - Innovative regulation and legal experimentalism
  - Competition issues in the new environment: change in the relevant actors and market structure transformation
    - Position of digital brokers (how should it be regulated?)
    - Monopoly / Oligopoly of the data
    - Vertical and horizontal coordination within the platforms
    - Benefits for consumers, actors and society as a whole

Regulatory Strategies Map (v.gr. Uber)



Regulatory Strategies (3.1)

- Old European tradition: “service public”
  - Directive 2006/123 on services in the internal market (transportation services excluded in art. 2.2 d)
  - Regulation EC 1370/2007 on public passenger transport services by rail or by road, allow even *publicatio* in some cases and also authorizations/licenses restricted in number on EM decisions (2003 Altmark Trans ECJ C-280/00)
  - ECJ on Uber: ECJ C-434/15 case endorses this policy
  - Uber bans/restrictions in Italy, Germany, Spain, France…
  - Regulatory reasons behind: *les lois de Rolland du service public:*
    - *Égalité/neutralité (price caps, tarification)*
    - Continuité (rules governing the activity)
    - *Mutabilité/Adaptabilité* (environmental adaptation)

Regulatory Strategies (3.2)

- New European liberal approach
  - The logic of Directive 2006/123 on services in the internal market (if transportation services were not excluded).
    - Proportionality test
    - Previously determined and explicit requirements, clear procedure
    - When limited in number, authorization should be granted throughout a competitive procedure and has to be temporarily limited
  - Also, this is the logic behind regulation in some countries
  - Liberal regulatory tradition… that encompasses the views of the European Commission about the Sharing Economy: 2016 European Agenda for the Collaborative Economy (also 2016 Study on taxi, hire car with driver and ridesharing in the UE)

Regulatory Strategies (3.3)

- A *de facto* way to liberalise those markets:
  - Hire car with driver
    - Non-limited in number
    - Limited in number
    - Operational restrictions
- Emergence of three different European regulatory ways:
  - Nord-east "tradition": no authorization needed (Poland, Netherlands, Austria, Ireland, Baltic Countries, Sweden, Hungary, Czech Republic, Slovakia, Slovenia…)
  - An alternative Europe "way": authorization with no quantitative limits (France, Denmark, Finland… and the UK)
  - The Mediterranean block: authorizations limited un number (Spain, Italy, Greece… and Germany)

4. Reshaping sharing mobility public policies

- Blurring intervention tools in a new and comprehensive way
  - Freedom principle for private activities (broad comprehension) and new forms of mobility (new technologies for urban mobility private sharing, ubiquitous rental cars, autonomous car…)
  - Importance of urban/public comprehensive planning
- Public regulation (framework and Competition)
  - Only exceptional limits to the number of actors
  - Pricing caps and other algorithmic controls (*lois de Rolland)*
  - Hard environmental and quality rules (make it expensive!)
  - Congestion policies (pricing the use of public space, tolls & taxes, nudges…)
  - Compensation to incumbents and transition costs
  - Competition: equal rules (taxes, Labour Law) and new controls for the platforms (vertical, horizontal, data)

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REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

LEARNING MATERIALS

PART II. REGULATION AND POLICY RECOMMENDATIONS

10. REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE (GUIDO SMORTO)

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UNIVERSITÀ DEGLI STUDI DI PALERMO

REGULATING AND DEREGULATING SHARING MOBILITY IN EUROPE

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RIDER

SHARING ECONOMY

DEFINING THE SHARING ECONOMY

For the purposes of this Communication, the term "collaborative economy" (*) refers to business models where activities are facilitated by collaborative platforms that create an open marketplace for the temporary usage of goods or services often provided by private individuals.

A European agenda for the collaborative economy
{SWD(2016) 184 final}

- sharing economy (US)
- collaborative economy (European Union)
- peer-to-peer economy (p2p)
- gig economy (labour)
- on-demand economy (services)
- collaborative consumption
- crowd-based capitalism
- platform economy
- ………

FEBRUARY 9, 2015

TIME

STRANGERS CRASHED MY CAR, ATE MY FOOD AND WORE MY PANTS.

TALES FROM THE SHARING ECONOMY

BY JOEL STEIN

time.com

SHARING MOBILITY

EU TRANSPORT POLICY
THE STATE OF THE ART

- ROME TREATY BUT … MS RELUCTANCE
- EU PARLIAMENT BEFORE ECJ (1985)
- WHITE PAPER (1985) "COMPLETING THE INTERNAL MARKET"
- WHITE PAPER (2011) "ROADMAP TO A SINGLE EUROPEAN TRANSPORT AREA"
- NO EU COMMON TRANSPORT POLICY

- DEMAND: TEMPORARY ACCESS TO MOBILITY SERVICES ("ON DEMAND")
- SUPPLY: DIGITAL PLATFORMS AND APPS FOR SHARING VEHICLES AND RIDES ("APP-BASED")
- FREE OR FOR A FEE
- "PEER-TO-PEER" OR PROFESSIONAL

EU TRANSPORT LAW AFTER THE UBER CASE

- APPS THAT CONNECT CUSTOMERS WITH **NON-PROFESSIONAL DRIVERS** (e.g. UberPOP): **ILLEGAL**
- APP THAT CONNECT CUSTOMERS WITH **PROFESSIONAL DRIVERS** (eg UberX, UberBlack): **LEGAL IF** COMPLY WITH LOCAL (TAXY/PHV) REGULATION
- "GENUINE" RIDE-SHARING, CAR SHARING, CARPOOLING EXEMPTED (eg BlaBlaCar)


mobike
VS
ofo
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enjoy


guido
CAR SHARING

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PRACTICAL GUIDE

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