Transit dependence and choice riders in the NHTS 2009:
Improving our understanding of transit markets

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Background

- Transit users from all socio-demographics (Polzin & Chu, 2005)
- Choice and dependent transit riders (Bullard et al., 2004; Krizek & El-Geneidy, 2007)
  - Car no car

- "Dependent by choice" (Sanchez and Brenman, 2007)

- Importance:
  - Marketing of public transit
  - Multimodal transportation (Krygsman, 2004)
  - Benefits of active lifestyle (TRB-IOM, 2005)
  - Social Justice (Bullard et al., 2004; Lucas, 2004)

(APTA, 2003; Sanchez and Brenman, 2007)

Objectives

- Create a typology of transit markets
- Describe differences in:
  - Socio-demographics
  - Transportation issues
  - Transit, walking an bicycling trips
  - Transit service characteristics

Transit service characteristics

Access Wait time Travel time Speed

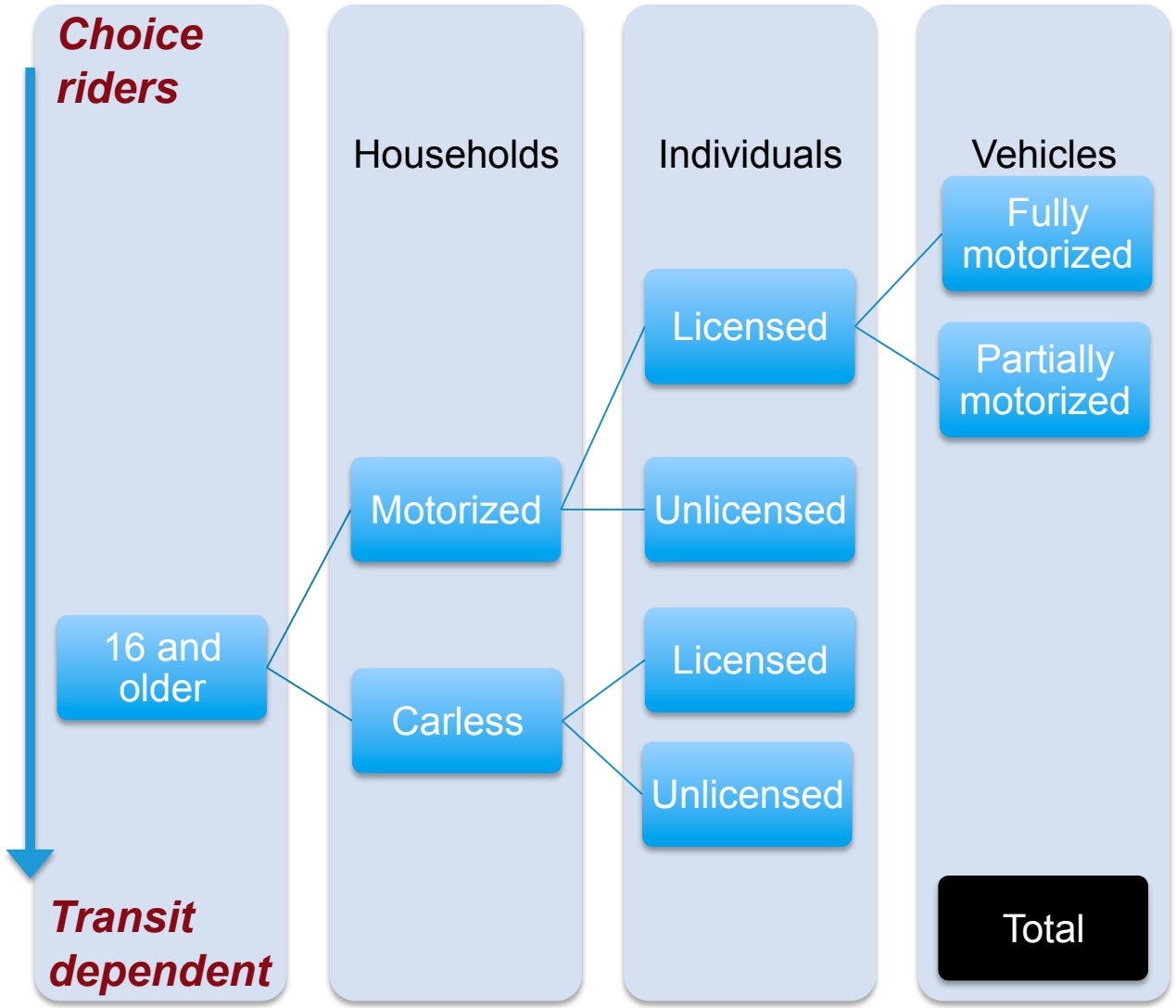
- Are there differences in indicators of transit service quality across transit markets?

Methods: NHTS 2009

- Cross-sectional,
  - Individual level and trip file, age 16-92
- Outcomes
  - Used transit in past month, # of trips
  - Walk, bicycle trip # in past week
  - Transit service: Access, wait time, speed, travel time
- Independent
  - Car availability-based typology of transit markets
  - Socio-demographics, built environment, NY-NJ

Logit, negative binomial, OLS. ➔ Estimated marginal means

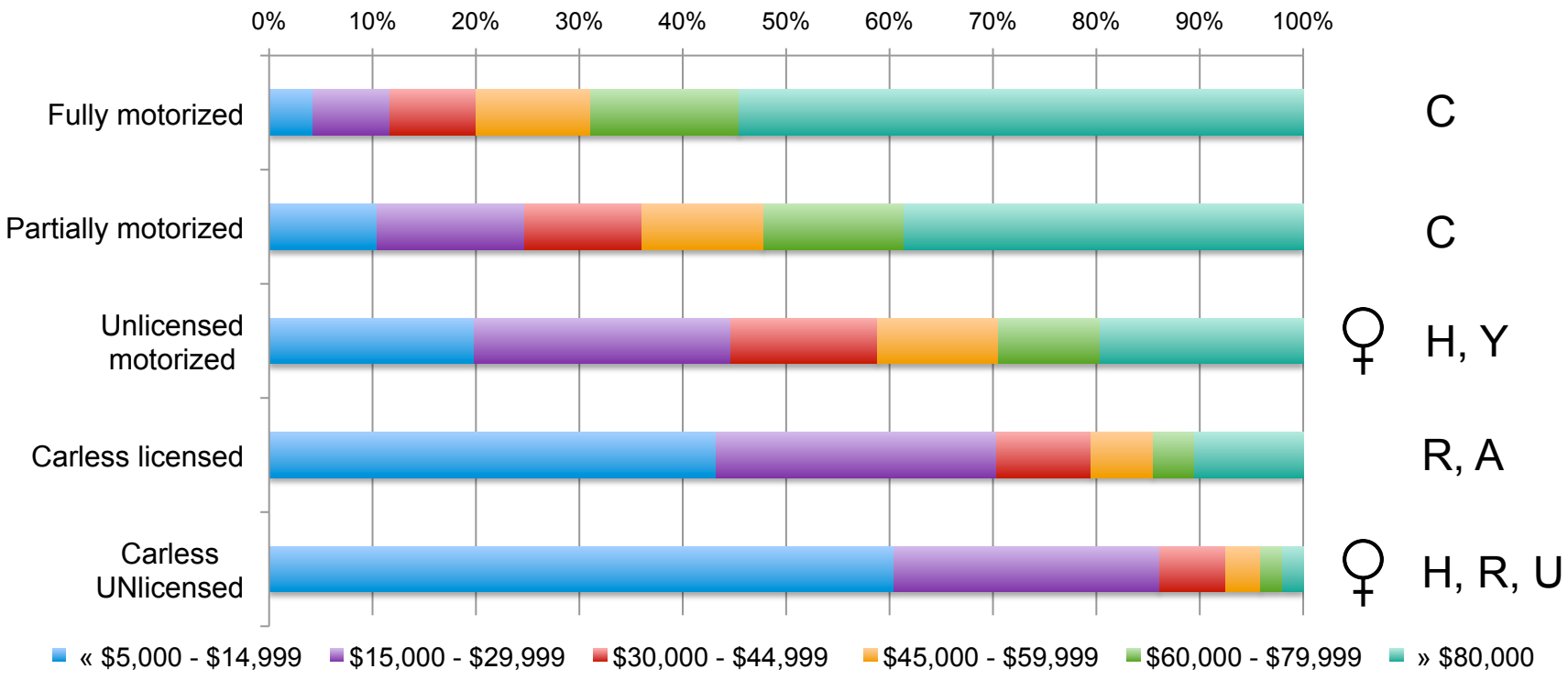
Typology of car availability



% of survey	% used transit	Total # of transit users
74.9%	12.9%	17,240
13.6%	21.5 %	4,161
8.1 %	19.7%	2,166
1%	69 %	1,814
2.4%	41.9 %	1,890
100%		27,271

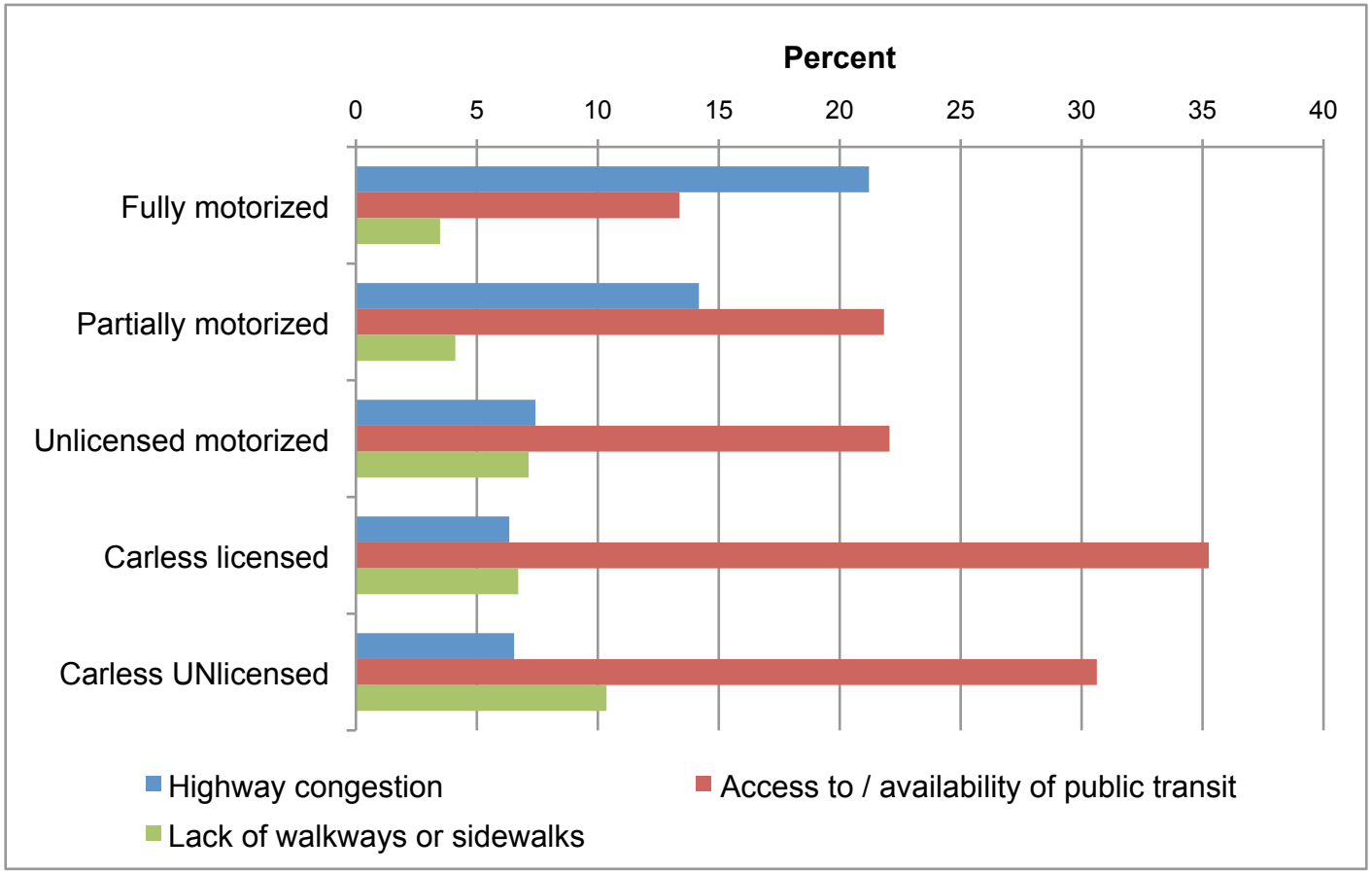
Socio-demographic characteristics

- Income



C = Children; Y = Younger; H = Hispanic; R = Renter; A = Lives alone; U = Unemployed

Most important issue



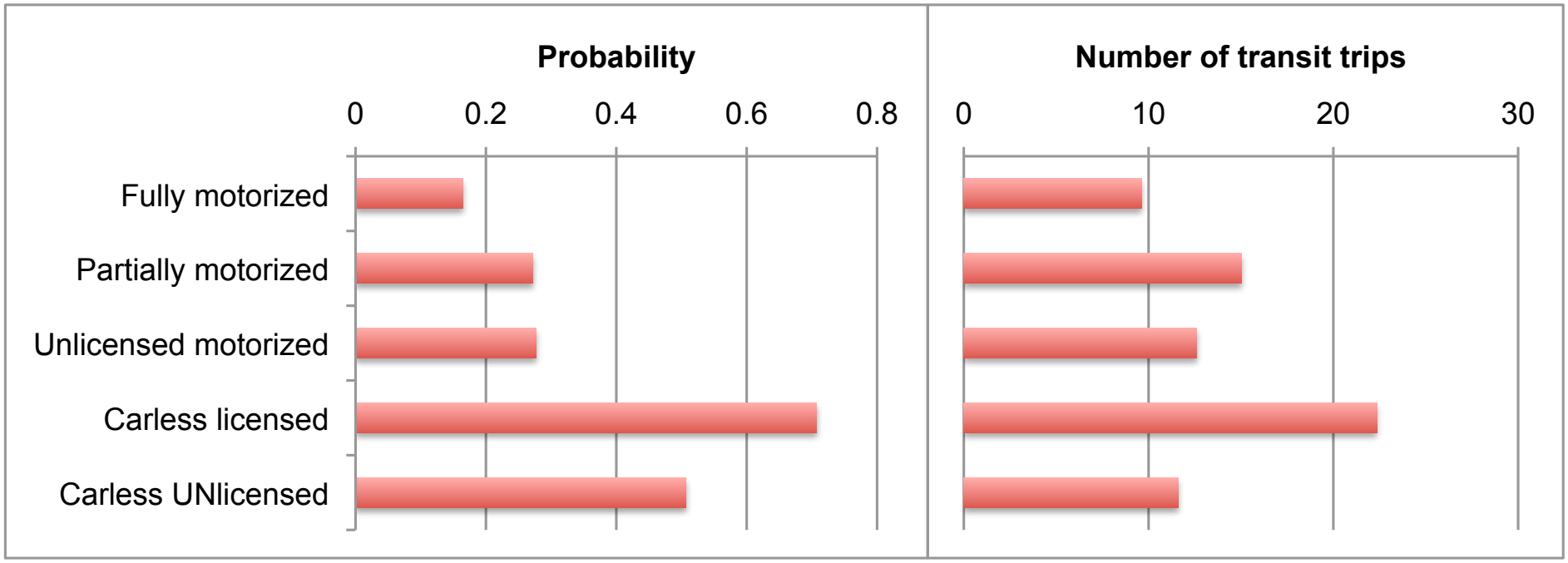
Travel

For monthly transit user (weighted)

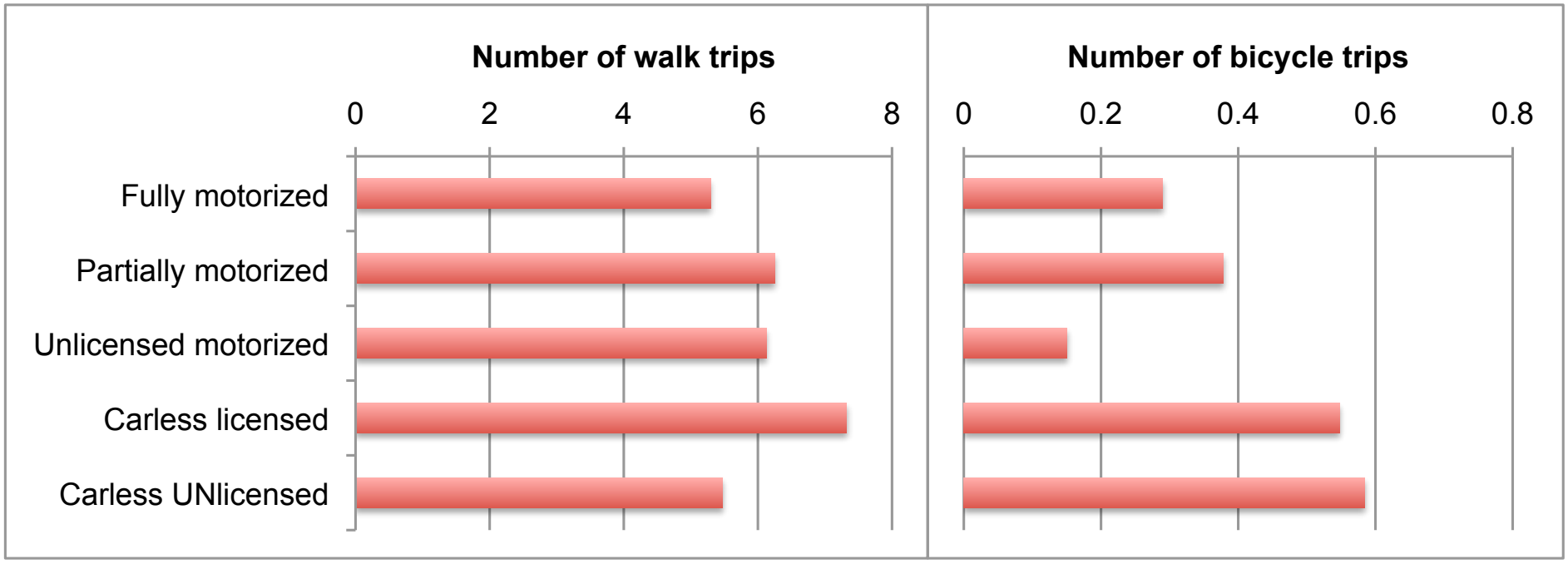
	Used transit in past month	Transit trips in past month	Walk trips in past week	Bicycle trips in past week
Car Availability				
Fully motorized [Ref.]				
Partially motorized	0.5088***	0.3861***	0.1176***	0.3548***
Unlicensed motorized	0.6190***	0.2010***	-0.0039	-0.1237**
Carless licensed	2.5463***	0.7360***	0.2321***	0.5104***
Carless UNlicensed	1.7642***	0.0844***	-0.0384**	0.6224***
Age	-0.0153***	-0.0017***	-0.0029***	-0.0176***
Women	-0.0854***	-0.0476***	-0.1175***	-0.9232***
« $5,000 - $14,999 [Ref.]				
$15,000 - $29,999	-0.2929***	0.0941***	-0.0125	0.0839
$30,000 - $44,999	-0.3024***	0.1435***	0.0733***	-0.0424
$45,000 - $59,999	-0.2388***	-0.0252**	-0.0083	0.0979*
$60,000 - $79,999	-0.0689*	-0.0039	0.0321**	0.1122*
» $80,000	0.3309***	-0.1234***	0.0730***	0.1748***
Worker	-0.2469***	-0.2891***	-0.005	-0.2559***
MSA Does not have rail	-0.7324***	0.2273***	0.0601***	0.1299***
Renter	0.2804***	-0.0299***	0.0590***	-0.1151***
Tract Resid. Density	0.0001***	0.0000***	0.0000***	-0.0000***
NY NJ LI CMSA	0.3746***	0.0117	-0.1610**	-0.4145*
Tract empl. Density	0.0000***	-0.0000***	0.0000***	0.0000***
Constant	-0.1839*	2.1986***	1.7008***	1.1030***
Observations	159238	25550	25353	25522
-2ll Chi square value	18000.00	48000.00	6593.02	4082.69
p-value	0.000	0.000	0.000	0.000
Pseudo R square	0.128	0.085	0.027	0.071

* p<0.05, ** p<0.01, *** p<0.001 missing race4 ethnicity;

Transit use and transit trips

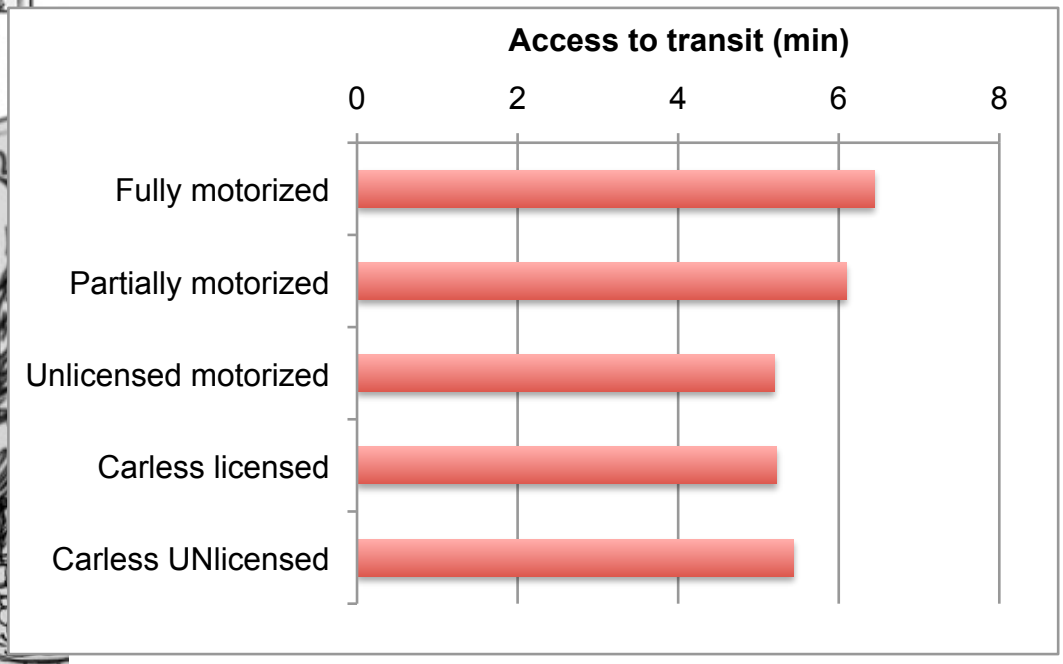


Walk and bicycle trips



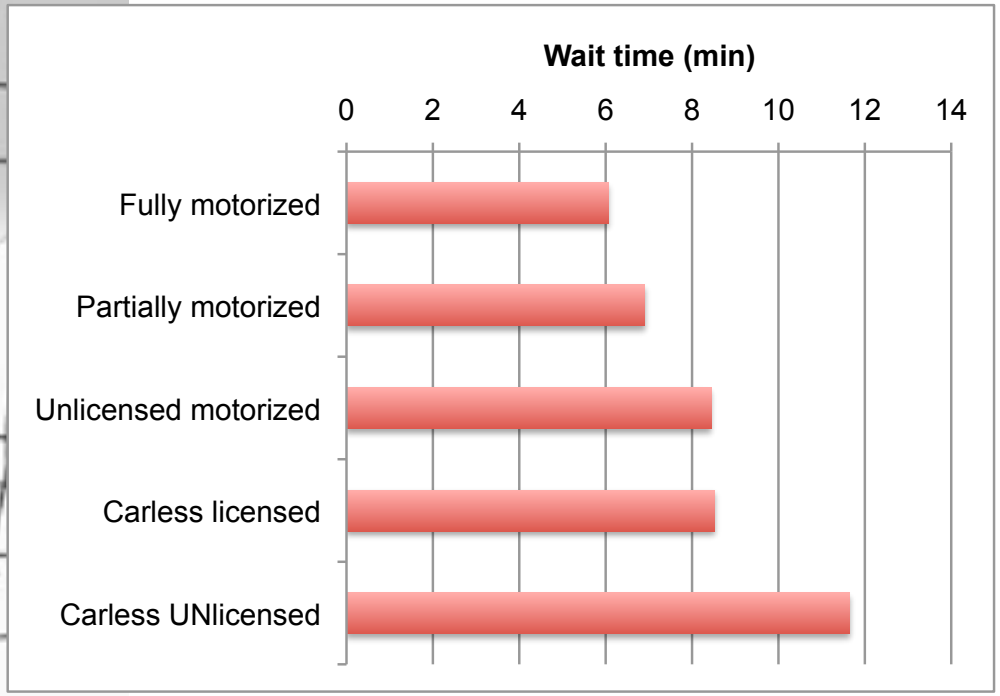
Access time


METRO

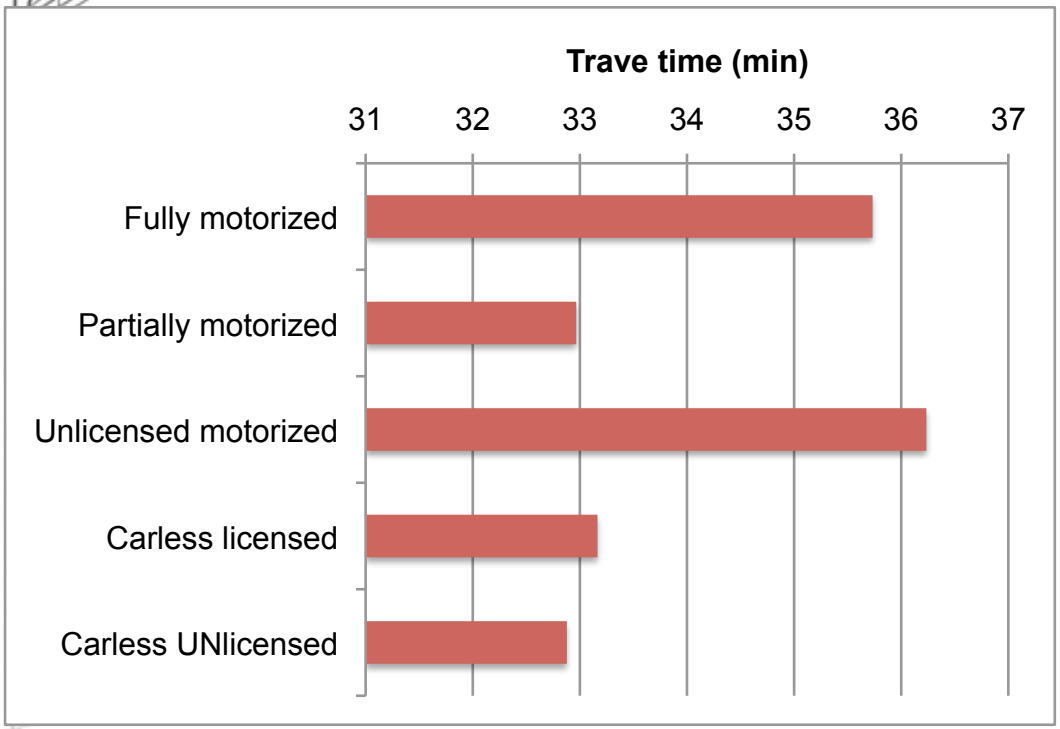

Access to transit (min)
0
2
4
6
8
Fully motorized
Partially motorized
Unlicensed motorized
Carless licensed
Carless UNlicensed

Wait Time

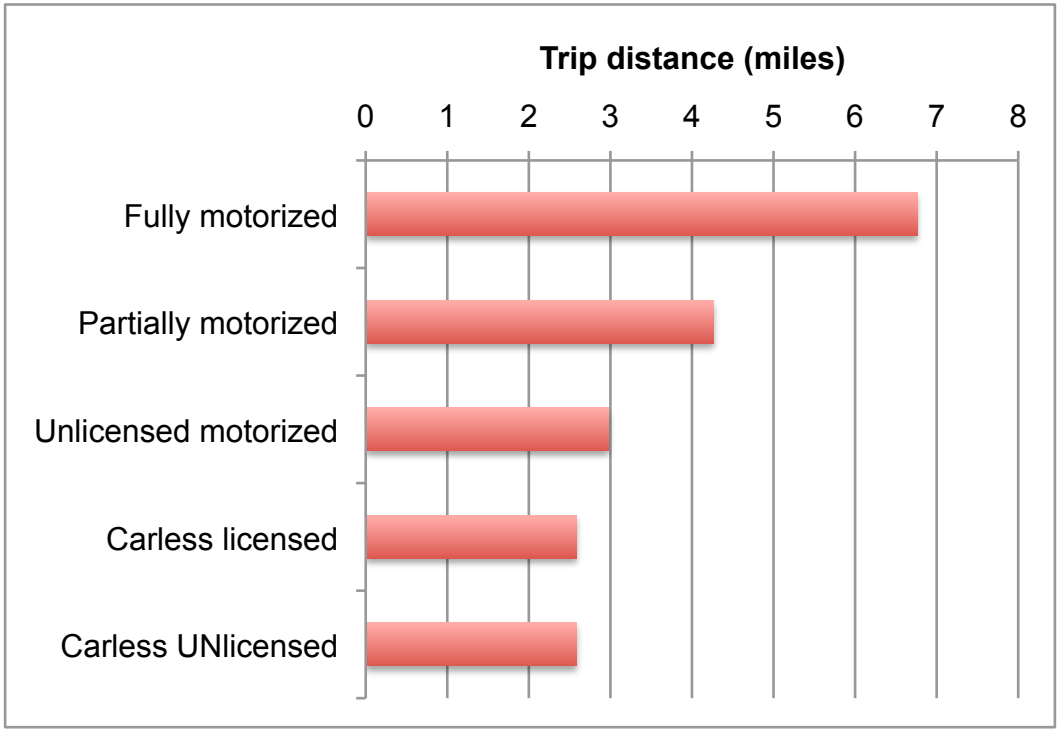

BRR!
13
ÇA FAIT VINGT MINUTES QU'IL AURAIT DÛ PASSER!..


Wait time (min)
0
2
4
6
8
10
12
14
Fully motorized
Partially motorized
Unlicensed motorized
Carless licensed
Carless UNlicensed

Travel time

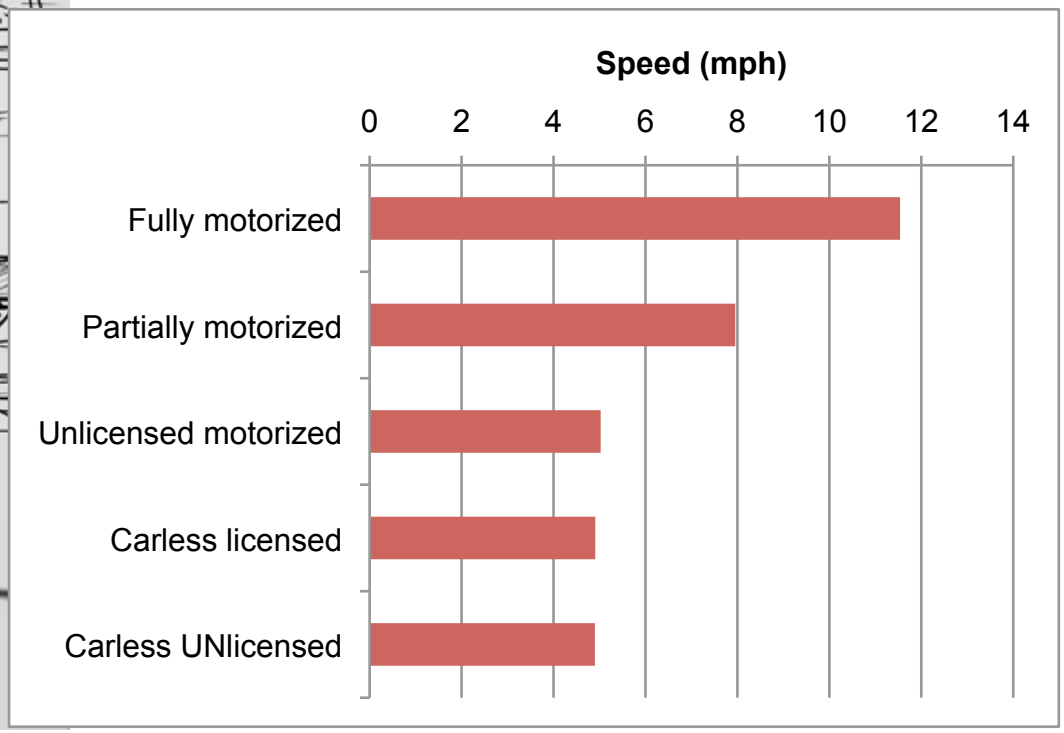

Trave time (min)
31
32
33
34
35
36
37
Fully motorized
Partially motorized
Unlicensed motorized
Carless licensed
Carless UNlicensed

Travel Distance



Speed


BUS


Speed (mph)
0
2
4
6
8
10
12
14
Fully motorized
Partially motorized
Unlicensed motorized
Carless licensed
Carless UNlicensed

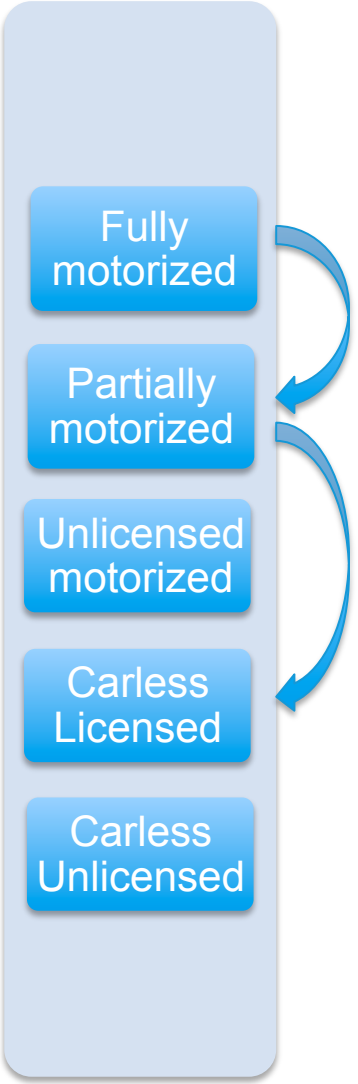
Discussion

- Gradient across income in car availability
- Women more likely to be carless
- Carless licensed riders use transit and walk more than others
- Service quality lower for transit dependence

- New survey items on attitudes to identify “dependent by choice” groups of users
- Changes between 2001-2009?

Conclusion

- Large variations among transit users
  - Socio-demographic
  - Car availability
  - Travel patterns
  - Important transportation issue
  - Service quality
- Transit dependence and multimodal travel But TOD often unaffordable
- Reducing car ownership ➔



Wait time