

An aerial photograph of a multi-lane highway. The top half of the image shows a severe traffic jam with dozens of cars packed closely together. A yellow semi-transparent banner is overlaid on this section. The bottom half of the image shows a large group of people walking across the road, which appears to be closed to traffic. A few cars are visible in the lower half, including a dark sedan in the foreground. The overall scene suggests a major event or protest.

# **Moving up and getting by: Automobility and access to opportunity 1968-Today**

Michael J. Smart, Rutgers University  
UCLA Lake Arrowhead Symposium, October 2019

# How might transportation relate to economic mobility?

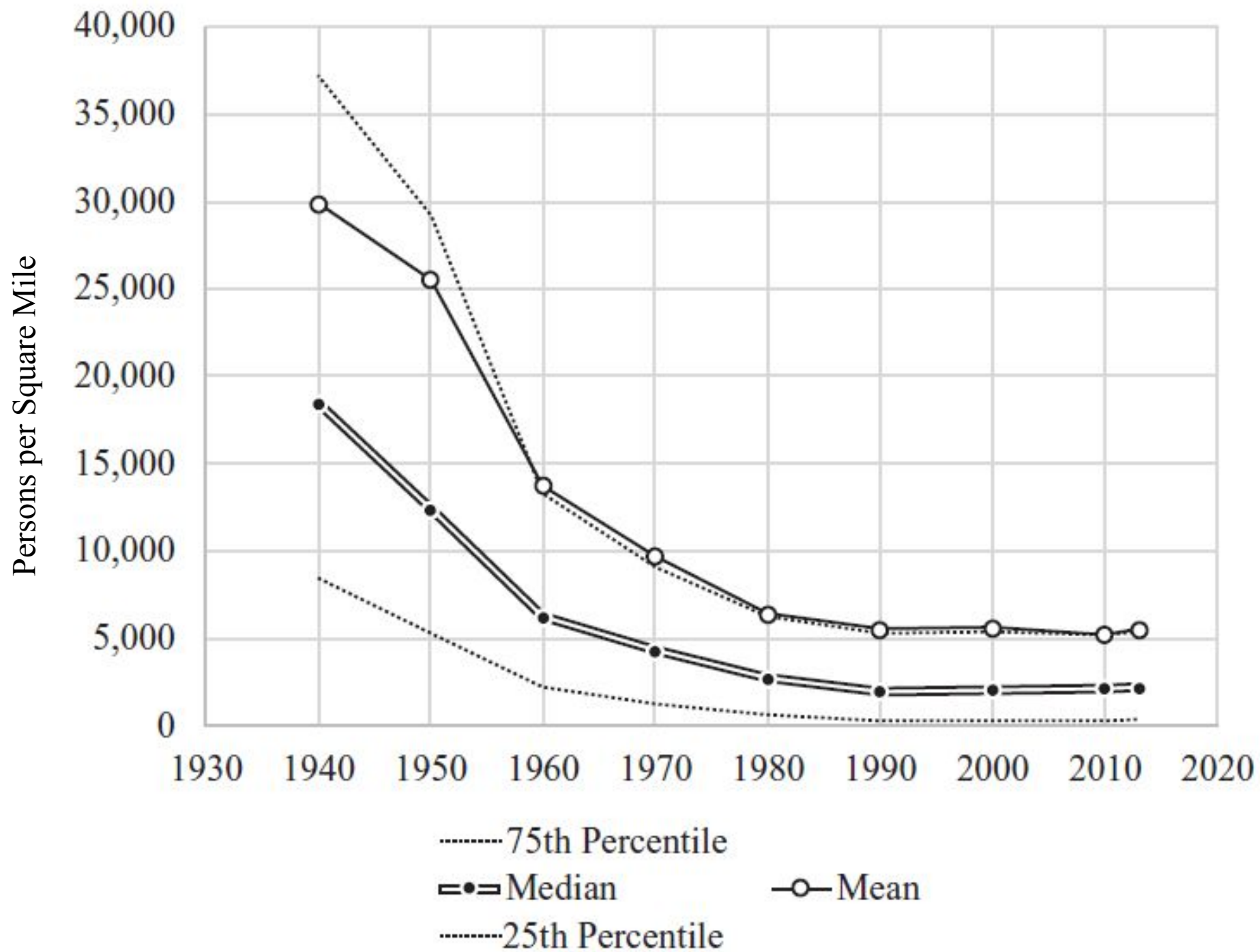
- Ability to find a job
- Ability to keep a job and get a raise
- Ability to change jobs
- Ability to attend classes
- Ability to quickly accomplish non-work activities (childcare, shopping)
- Ability to get necessary medical attention



# Society's Reorganization Around the Car

- US rapidly reorganized around the car starting in the 1920s
  - Land use
  - The labor market
- Most regions have a walkable neighborhood or two, but the broader region still requires a car





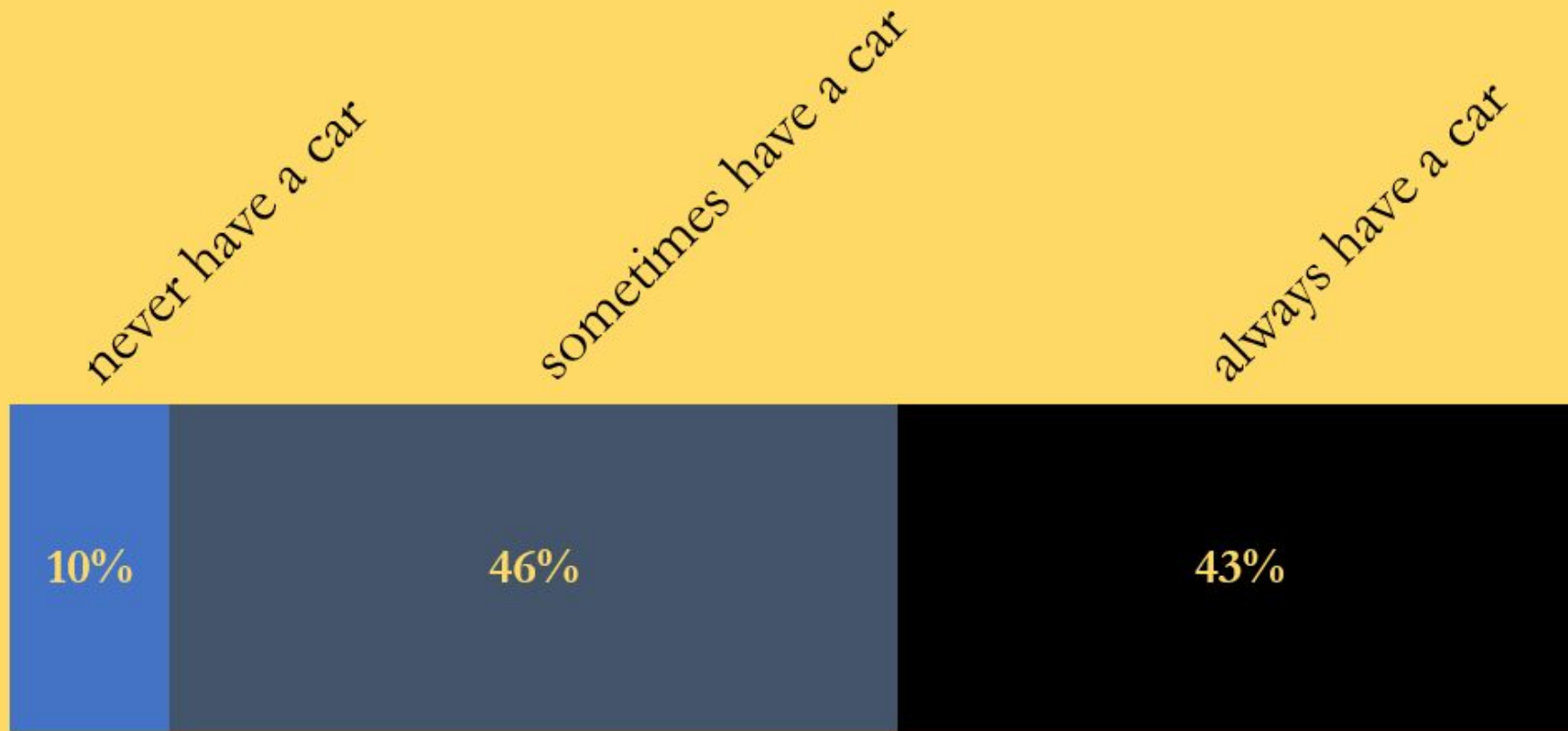
# Cars and poverty

- Carlessness and poverty are increasingly linked
- Yet poor families increasingly have cars
- Poor families often suffer to *get* a car
- Poor families cycle into and out of car ownership frequently



# Car ownership histories of families in poverty

*PSID, 12 years of data, 1999-2011*



# Desperate for a car

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- Most poor Americans without a car will get one within two years
- Many will lose it in the following two years
- Our ongoing research about episodes of carlessness reveals narratives of desperation





After losing access to a car...

***74%*** worked fewer hours or stopped working

***81%*** went to the doctor less often

***82%*** of parents took their kids fewer places



An aerial photograph of a complex multi-level highway interchange. The image shows numerous concrete overpasses, ramps, and lanes of traffic. The roads are filled with cars, and the surrounding area includes some greenery and residential buildings. A yellow rectangular box is overlaid in the center of the image, containing text.

***Quantifying the  
“car effect.”***



# *How* does transportation lead to economic gains?



Get a job



Keep a job



Moving up the ladder

**+ Non-economic benefits**

**- Costs to individual and society**


# HYPOTHESES



- Spatial search hypothesis
  - With increased search radius, greater chance of finding a suitable or better-paying job
- Reliability and flexibility
  - Showing up for work on time
  - High-skill workers increasingly have spatiotemporal freedom in work; low-skill workers don't
  - Increased non-traditional work hours
  - “Flexible” scheduling



## Panel Study of Income Dynamics (PSID)

- 1968 to 2017 (ongoing)
  - Follows families and their descendants over time
  - Increased from 5,000 to 9,000 families
  - Focus is on income and expenditures
  - Some questions about cars and transit, in some years
  - Confidential version (geocoded)
- 



## Does transportation influence future employment and earnings?

- Access to cars?
- Access to high-quality public transportation?





## National Transit Data

- Transit access to jobs from UMinn Accessibility Observatory
- Coverage for most of US / PSID respondents
- We use the number of jobs accessible on transit from home in 30 minutes (regional z-scores)



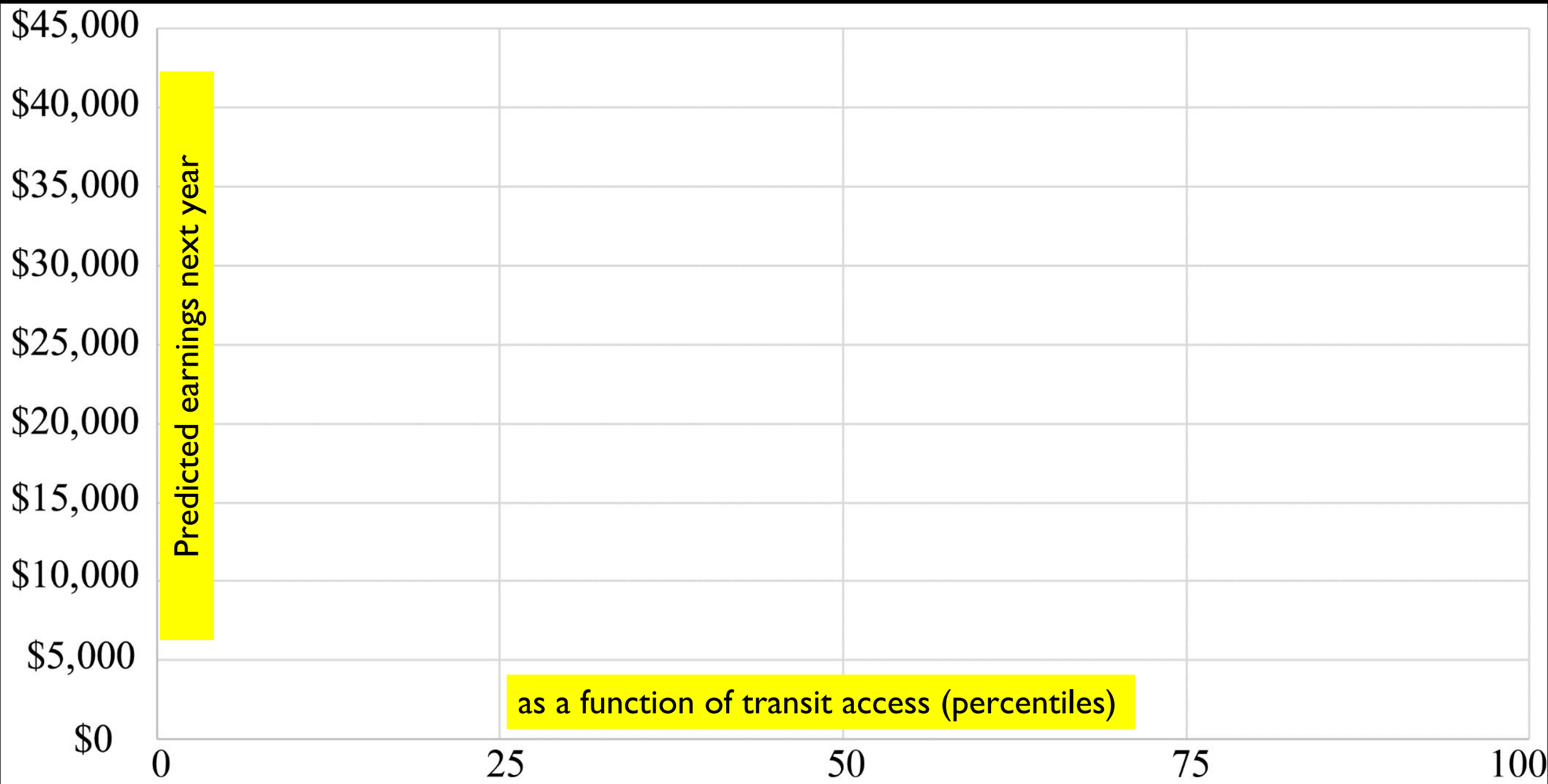
## Heckman Selection Model

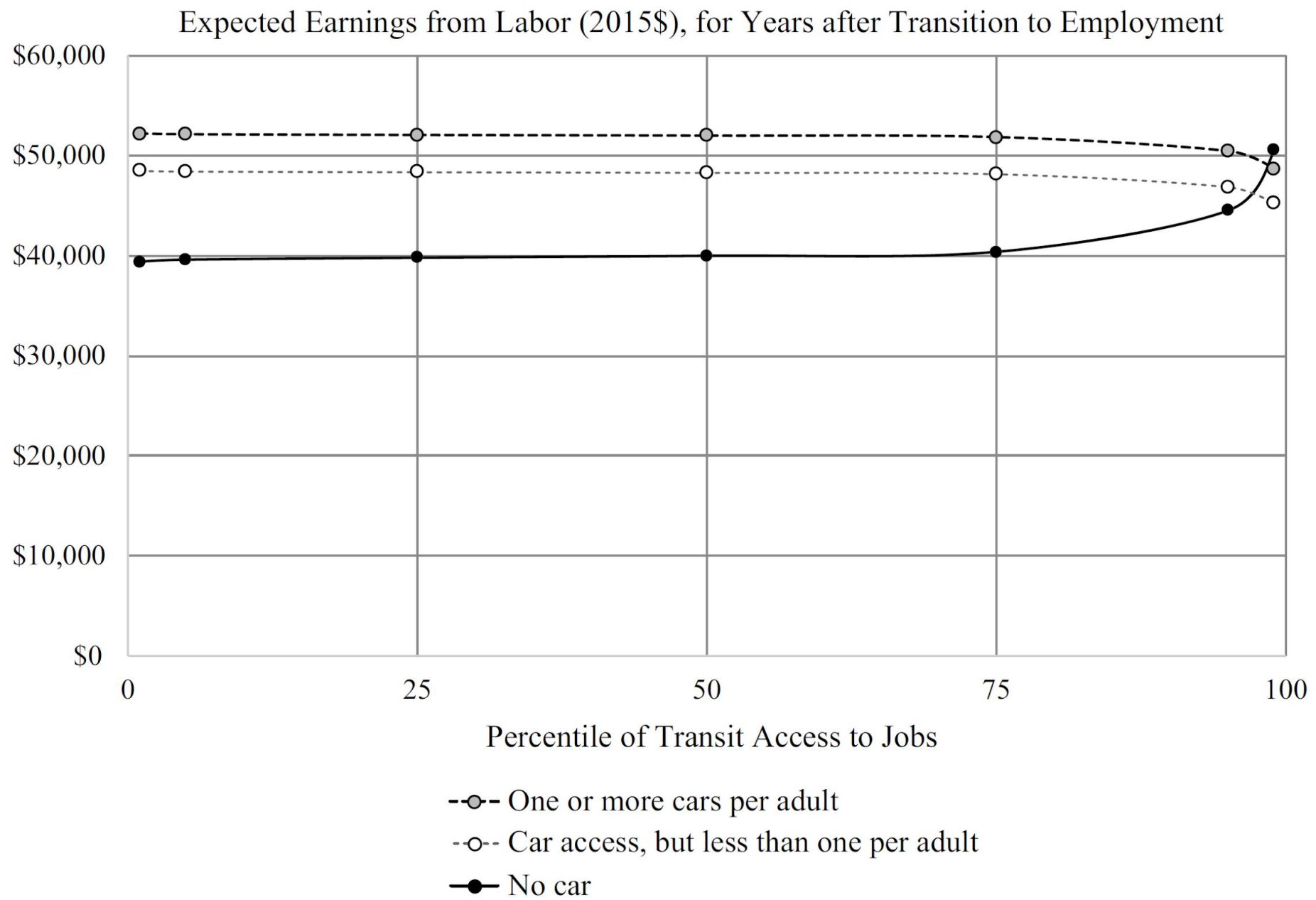
- System of two equations:
  - Probability of being employed next year
  - Conditional on employment, predicted personal earnings from labor
- Variables of interest: car ownership & tract-level transit score
- Extensive control variables
- Clustered standard errors (on person)

# MODEL RESULTS

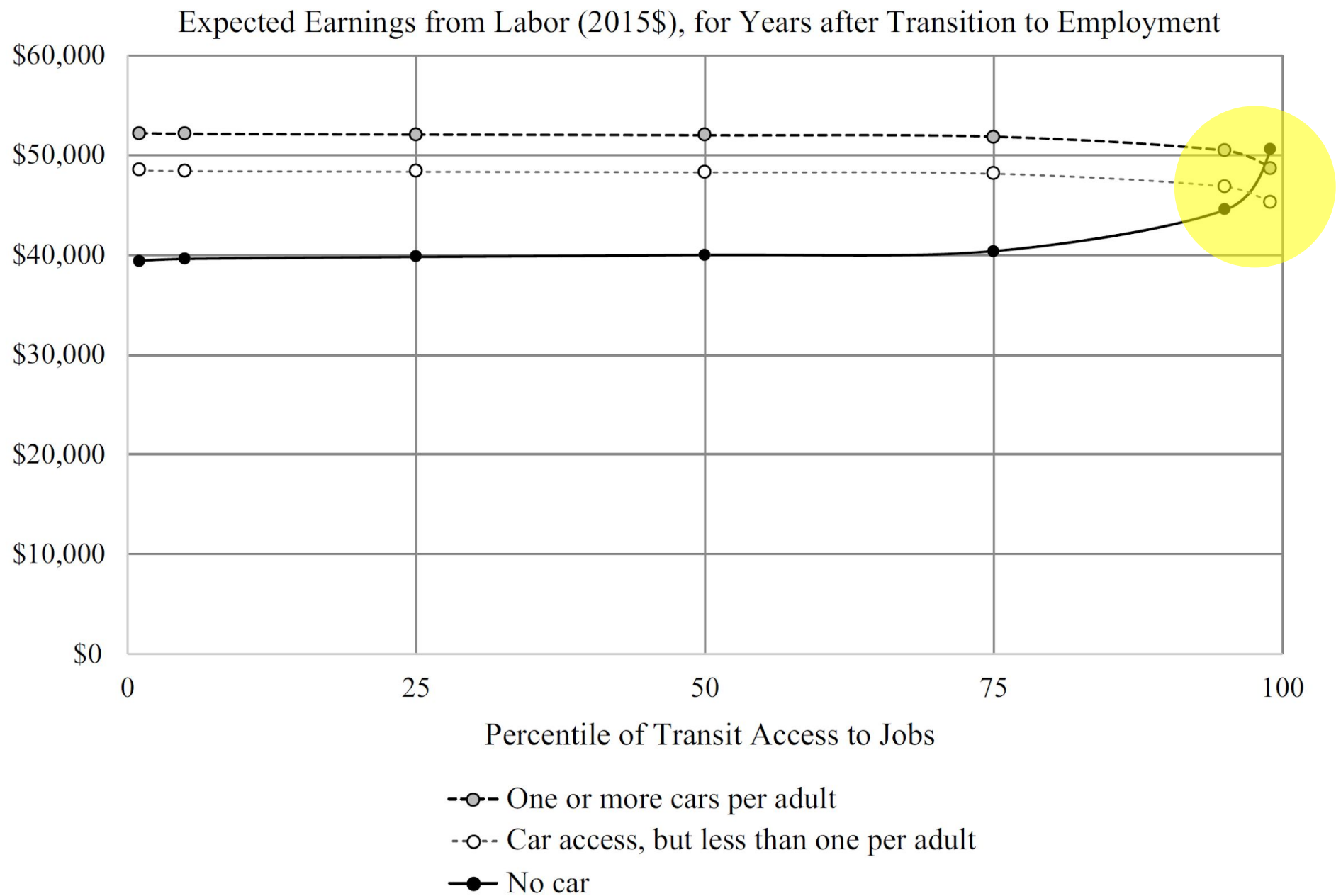
- Having a car is a strong predictor of future employment and of higher earnings (+\$10,000 annually)
- Transit story is nuanced:
  - Better transit helps the carless find better-paying jobs
  - The effect is small, except for *very* good transit service
  - For those with cars, no effect





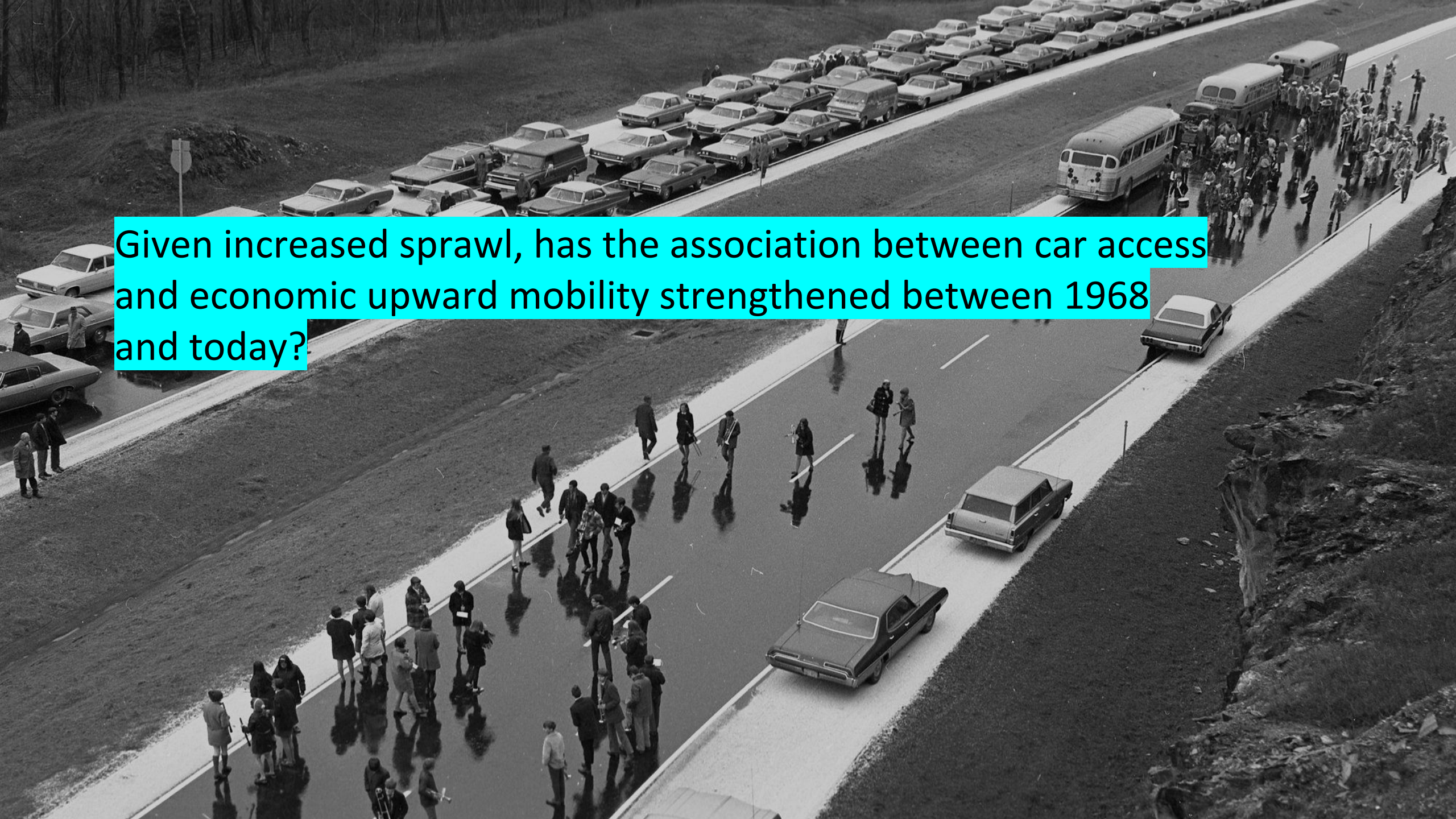


**Fig. 1** “Moving up the ladder”: expected earnings from labor subsequent to transition to employment (in 2015 dollars)



**Fig. 1** “Moving up the ladder”: expected earnings from labor subsequent to transition to employment (in 2015 dollars)





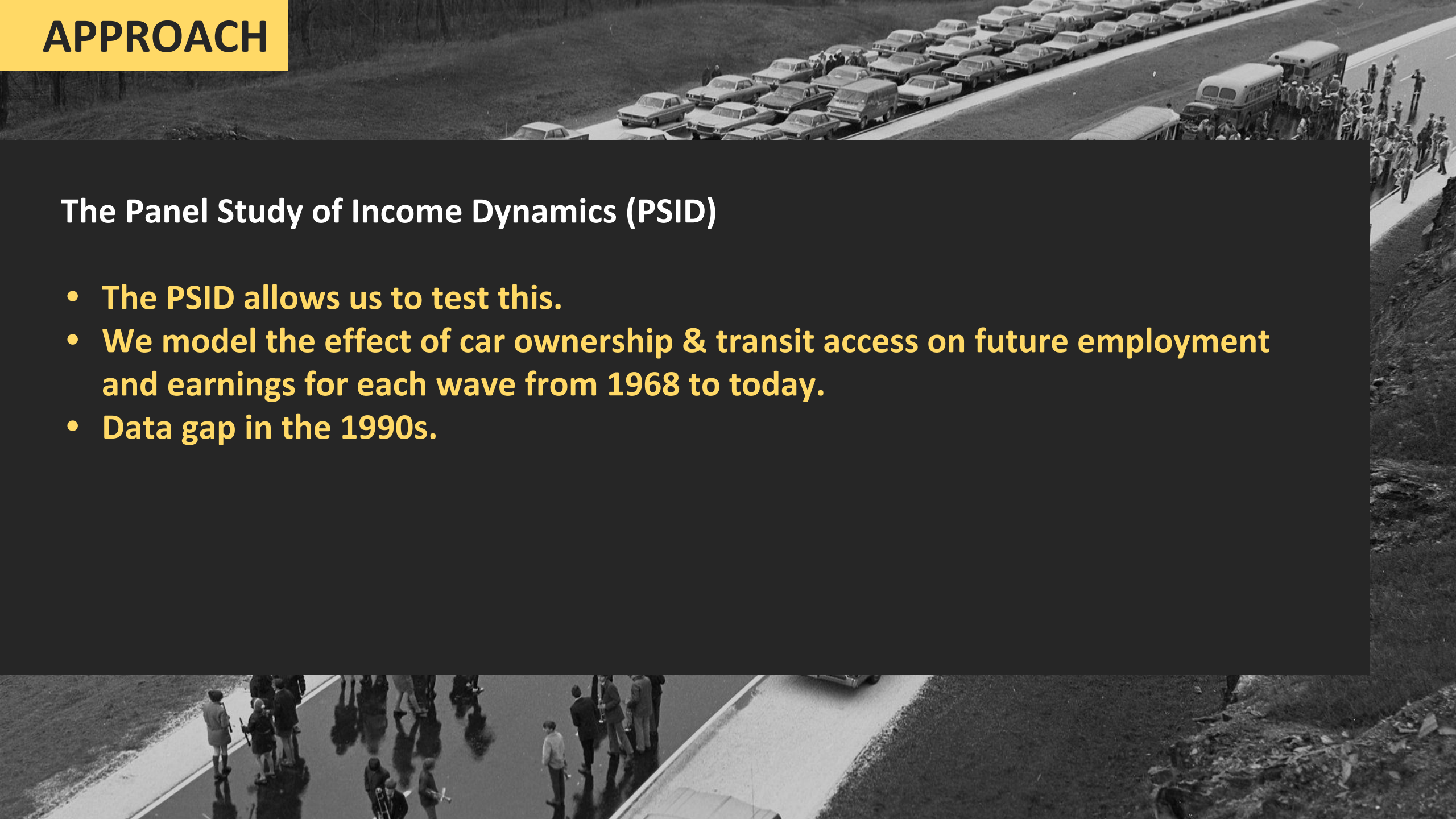
Given increased sprawl, has the association between car access and economic upward mobility strengthened between 1968 and today?



# APPROACH

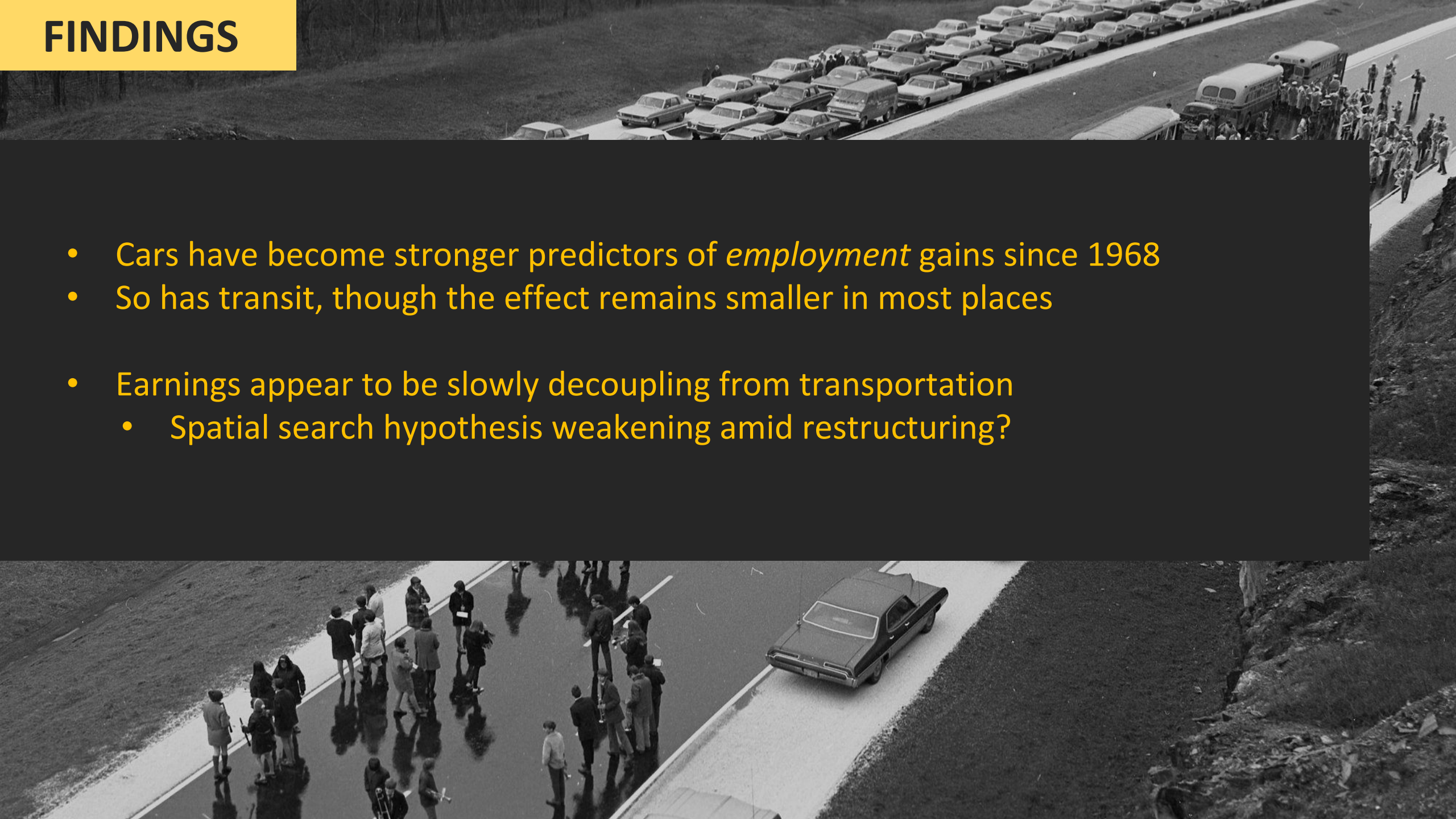
## The Panel Study of Income Dynamics (PSID)

- The PSID allows us to test this.
- We model the effect of car ownership & transit access on future employment and earnings for each wave from 1968 to today.
- Data gap in the 1990s.

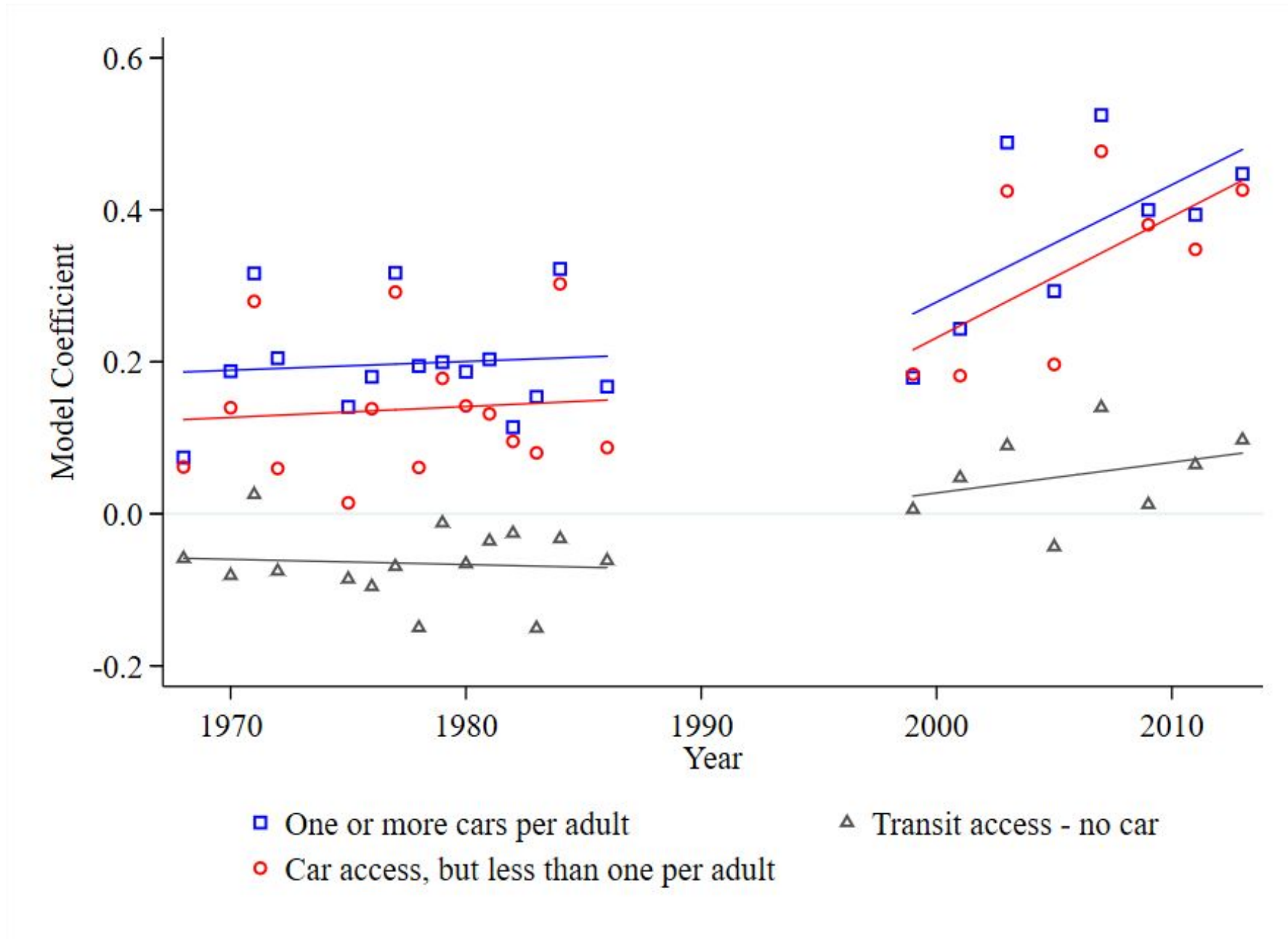


# FINDINGS

- Cars have become stronger predictors of *employment* gains since 1968
- So has transit, though the effect remains smaller in most places
- Earnings appear to be slowly decoupling from transportation
  - Spatial search hypothesis weakening amid restructuring?



# RESULTS: *LIKELIHOOD OF EMPLOYMENT NEXT WAVE*







# Implications





# DISCUSSION

- Programs to assist car access or ownership for the poor
  - “Vehicles for Change”
  - California Air Resources Board (CARB) pilot program
  - Taxi voucher pilot program during job search phase
- If a third of carless families qualified for a car, traffic would increase... 2%?
  - Emissions might go *down*? (cleaner cars?)
  - ...but transit ridership in most places would plummet... by a third? in half?
- Effect on welfare rolls?



# DISCUSSION

- In most places, the carless poor would benefit tremendously from a car
- In most places, the car-owning *non*-poor would suffer little from driving less
- We know how to decrease driving (pricing!)
- We should do both of these things at the same time, while continuing efforts to make it less punishing to be carless.







Questions?





Table 2 Heckman selection model results, PSID 1999–2015

	Full Sample		Sample in poverty	
	Employment next year (selection model)	Labor earnings next year, conditional on employment (logged)	Employment next year (selection model)	Labor earnings next year, condi- tional on employment (logged)
<i>Transportation variables (current year)</i>				
Transit access to jobs (z-score)	−0.014	−0.014	−0.013	−0.024
interacted with zero-car household	0.032	0.060**	0.019	0.051
Access to cars (base: no car)				
Car access, but less than one per adult	0.218***	0.166***	0.259***	−0.195
One or more cars per adult	0.292***	0.283***	0.214***	0.081
<i>Geographic variables (next year)</i>				
ln(population density in home tract)	0.029***	0.044***	−0.015	0.071***
Tract poverty rate	−0.318***	−0.921***	−0.277	−0.553
ln(per capita income in region)		0.530***		−0.190
<i>Individual and household variables (next year)</i>				
Years of education	0.037***	0.053***	0.018**	−0.008
Years of work experience	0.008***	−0.005***	0.013***	−0.015**
Age (base: 26–29)				
30–39	−0.111***	0.187***	−0.215***	0.308***
40–49	−0.232***	0.312***	−0.468***	0.565***
50–59	−0.554***	0.419***	−1.095***	1.210***
60–65	−1.097***	0.401***	−1.409***	1.572***
Spouse or partner is present	−0.140***	0.227***	−0.076	0.330***
...interacted with spouse's income	0.002	−0.014***	−0.004	−0.019
Race/ethnicity (base: non-Hispanic White)				
Non-Hispanic Black	−0.034	−0.016	0.213***	−0.171
Hispanic, any race	−0.102	0.162***	0.020	0.108
Other or multiple	0.001	−0.070	0.239*	−0.266
Foreign-born	−0.111***	−0.156***	0.062	−0.339*

Table 2 (continued)

	Full Sample		Sample in poverty	
	Employment next year (selection model)	Labor earnings next year, conditional on employment (logged)	Employment next year (selection model)	Labor earnings next year, conditional on employment (logged)
Female	−0.227***	−0.408***	−0.199***	−0.073
...interacted with children in family	−0.257***		−0.179***	
Family receives TANF	−0.484***		−0.221***	
Family receives nutrition assistance	0.130**		0.237*	
<i>Temporal variables (year of earnings)</i>				
Year (base: 2000)				
2002	−0.016	−0.038**	−0.045	0.037
2004	−0.032	−0.010	−0.066	0.057
2006	−0.002	0.009	−0.066	0.011
2008	0.027	−0.043**	−0.161*	−0.088
2010	−0.071***	−0.031	−0.303***	0.008
2012	−0.003	−0.065***	−0.124	−0.221
2014	−0.005	−0.035	−0.104	−0.288**
Constant	0.436***	4.178***	0.441***	11.924***
Observations (person-years)	66,806		6097	
Observations (individuals, clustered st. err.)	14,032		2819	
Rho	−0.898		−0.964	
Robust standard error	0.008		0.006	
Sigma	1.127		1.697	
Robust standard error	0.014		0.065	
LL (null)	−22,76,450		−1,30,564	
LL (convergence)	−20,39,262		−1,27,995	
Wald Chi square	1736***		130***	

Stars indicate statistical significance: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$