SUBURBS, GEN Y, AND ALL THAT JAZZ

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April 2014

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Sound Familiar?

Era of abundant fuel has ended for good

Romance with car ending

Middle-class returns to city, avoids cars

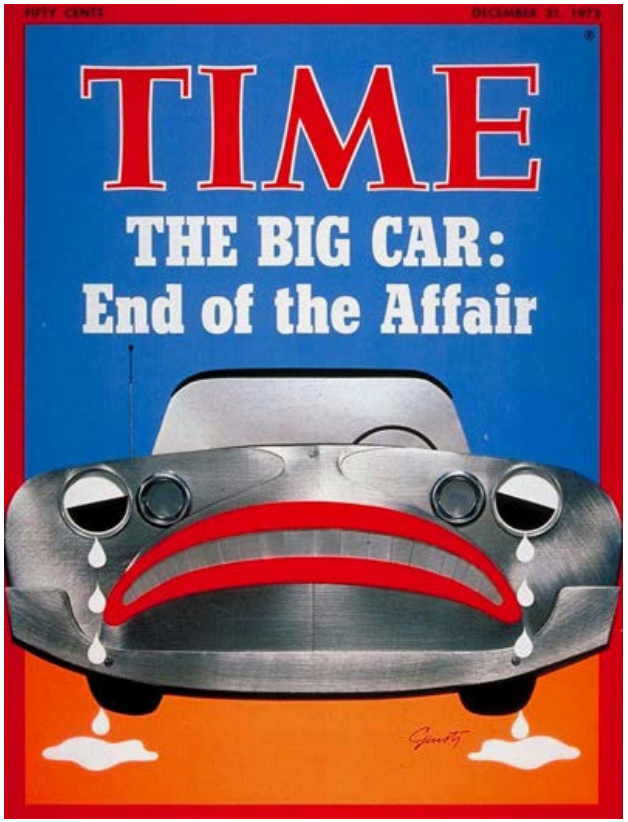
Public Transportation Revival

One occupant-per-car must end

Predictions: 1973

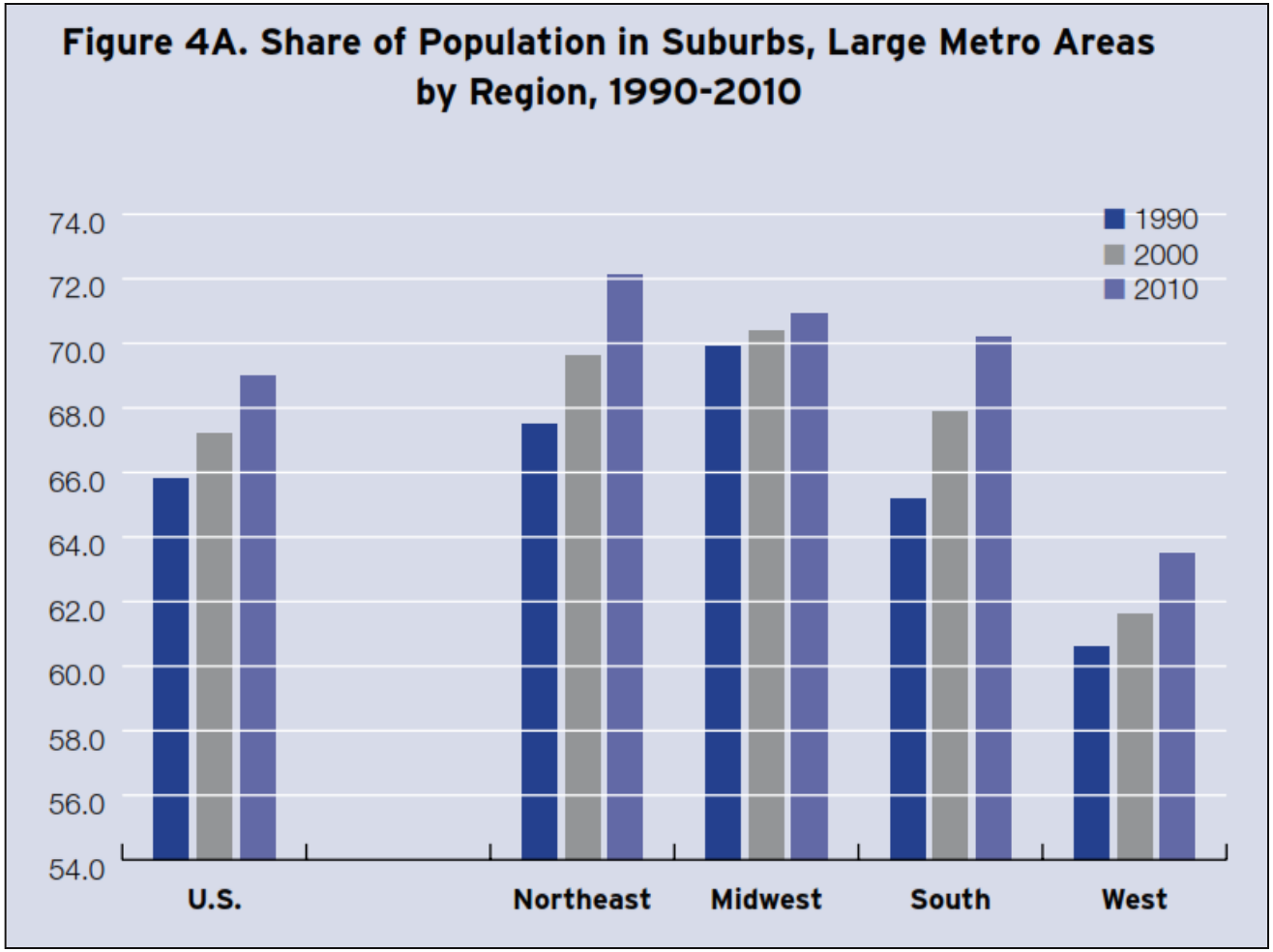
The Painful Change to Thinking Small, Time Magazine, Dec 31, 1973

- *There have been multiplying signs that the long American romance with the big car may finally be ending.*
- *More likely, the heavy car will linger as a limited-purpose, special-use auto, but not again become the basic American vehicle*
- *Economists generally are agreed that the era of readily abundant fuel has ended for good.*
- *Public transportation will experience a revival*
- *Car pooling will have to increase…the one-occupant-per-car habit is simply too expensive to be continued.*
- *Socially, there could be a movement of middle-class whites back to the city, where they can get away from auto dependence.*



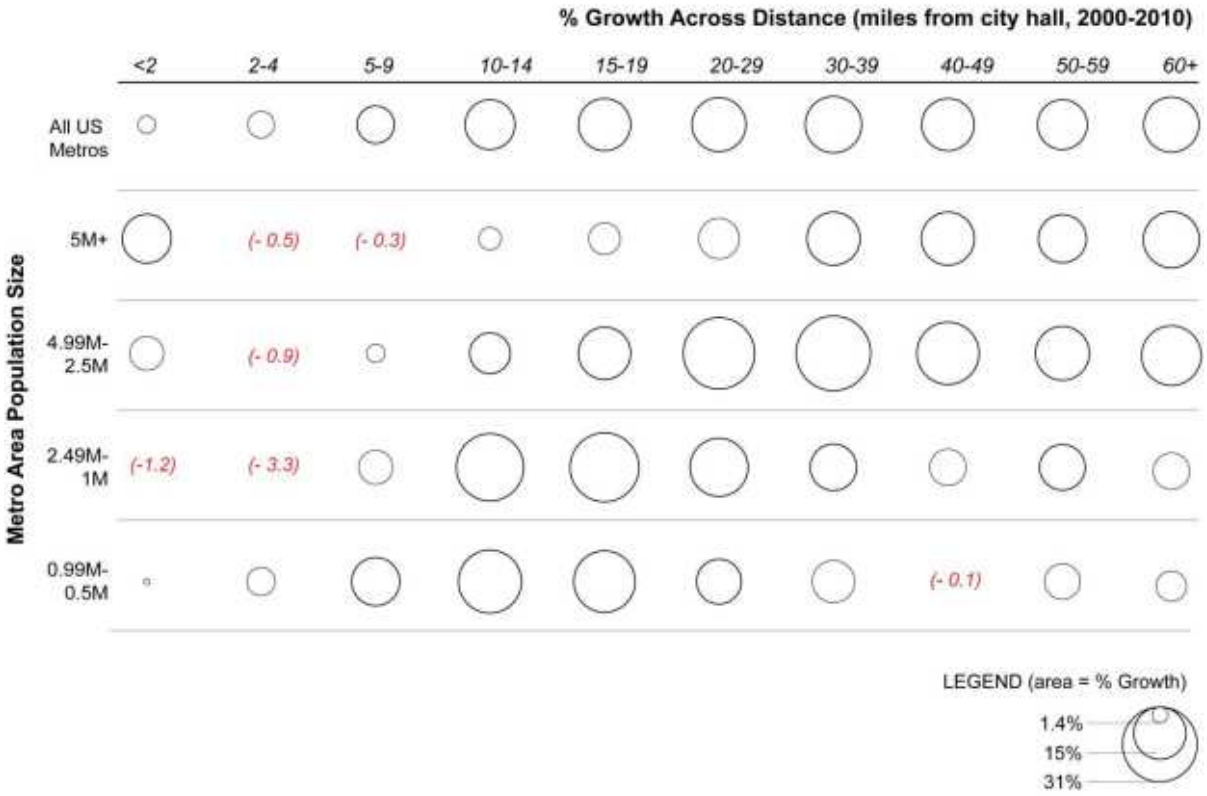
What have we learned since then? Is it enough?

Suburbs are growing in every US Region



US Suburbs share of population grows the last 20 yrs, in every region. [Source: W. Frey, Brookings Inst., 2012]

Growth by Metro Size



"Where Americans Live: A Geographic and Environmental Tally", A. Berger, C Brown, C. Kousky, K. Laberteaux, R. Zeckhauser, *Harvard Journal of Real Estate*, May 2013.

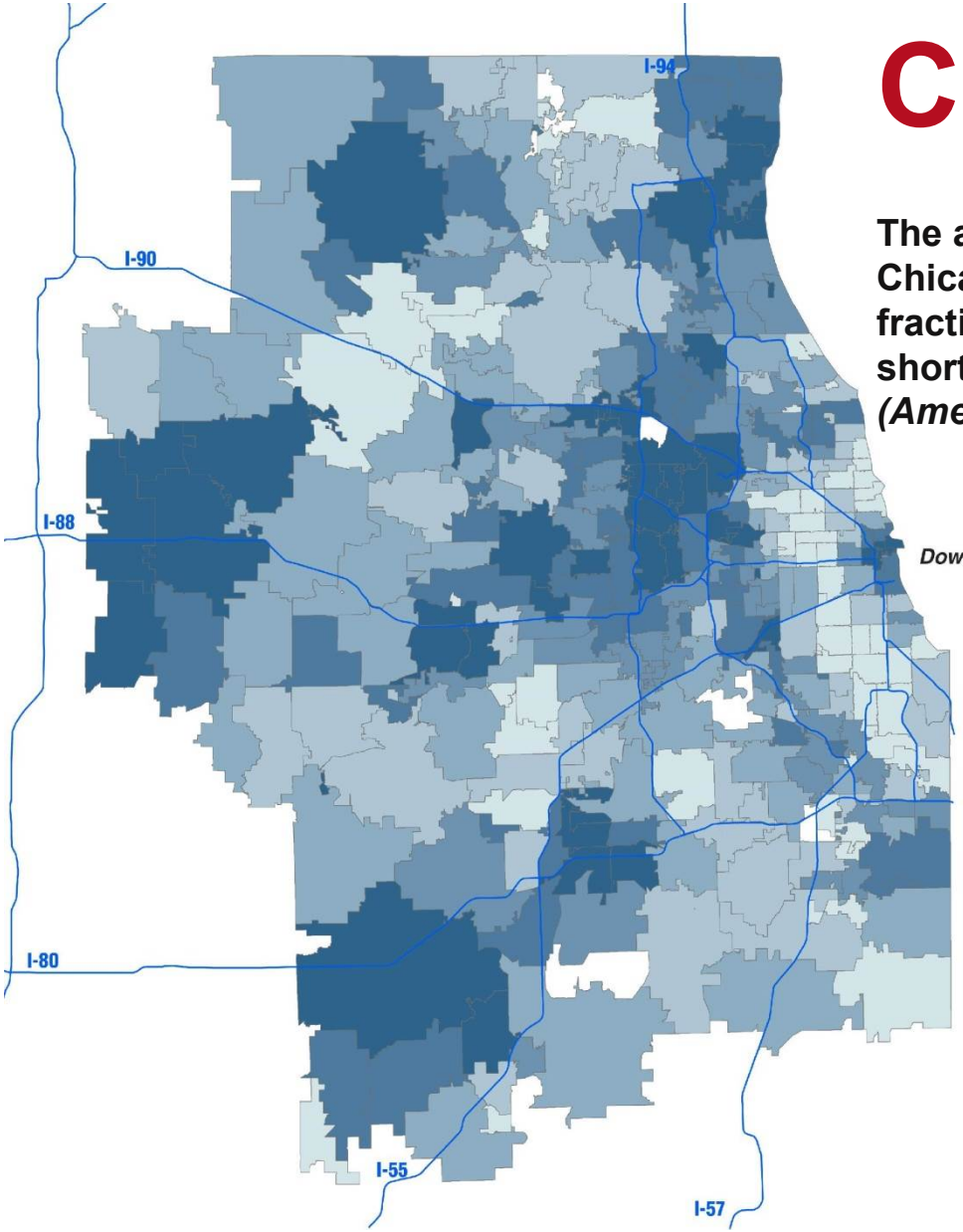
	CHICAGO	ATLANTA	DENVER	
Population 2010	9,461,105	5,268,860	2,543,482	
City Population 2010	2,695,598	420,003	600,158	
% Growth Metro Area, 2000-2010	4.0%	24%	17%	
% Growth City, 2000-2010	-6.9%	1.0%	8.2%	
Urbanized Land Area sq. mi., 2010	2,443	2,645	668	
New Urbanized Area (Areas > 1,000 pers/sq. mi 2040, 2030, 2035)	189	275	190	*Derived
% Commuting by Transit ACS, 2008/2009	11.5%	3.7%	4.6%	
% VMT - Highway 2010	42%	43%	44%	*Derived
% VMT - Arterials/Streets 2010	58%	57%	56%	*Derived
% Jobs w/in 3 mi. of CBD 2010	20%	10%	22%	
% Jobs 10-35 mi. of CBD 2010	67%	65%	37%	
% Jobs Accessible by Transit < 90 min.	24%	22%	47%	
Projected Jobs Added CBD	143,000	39,800	164,000	*Derived
Projected Jobs Added Suburban Areas	1,190,000	788,000	728,000	*Derived

Visualizing Why-Determinants of Housing Location Choice

- Our paper concluded that important factors for housing location are
  - housing price,
  - school quality, and
  - commute time
- We mapped these for Metropolitan Statistical Area of Chicago

Commute Time

The average one-way commute time for Metro Chicago is 30 minutes. This graph shows the fraction of commuters in each zip code that have a shorter-than-average (<30 min) commute. ***(American Community Survey, 5-yr Avg., 2007-2001)***



CHICAGO MSA - Commute Time

(Zip Code 5-digit, ACS 5-Yr Estimates, 2007-2011)

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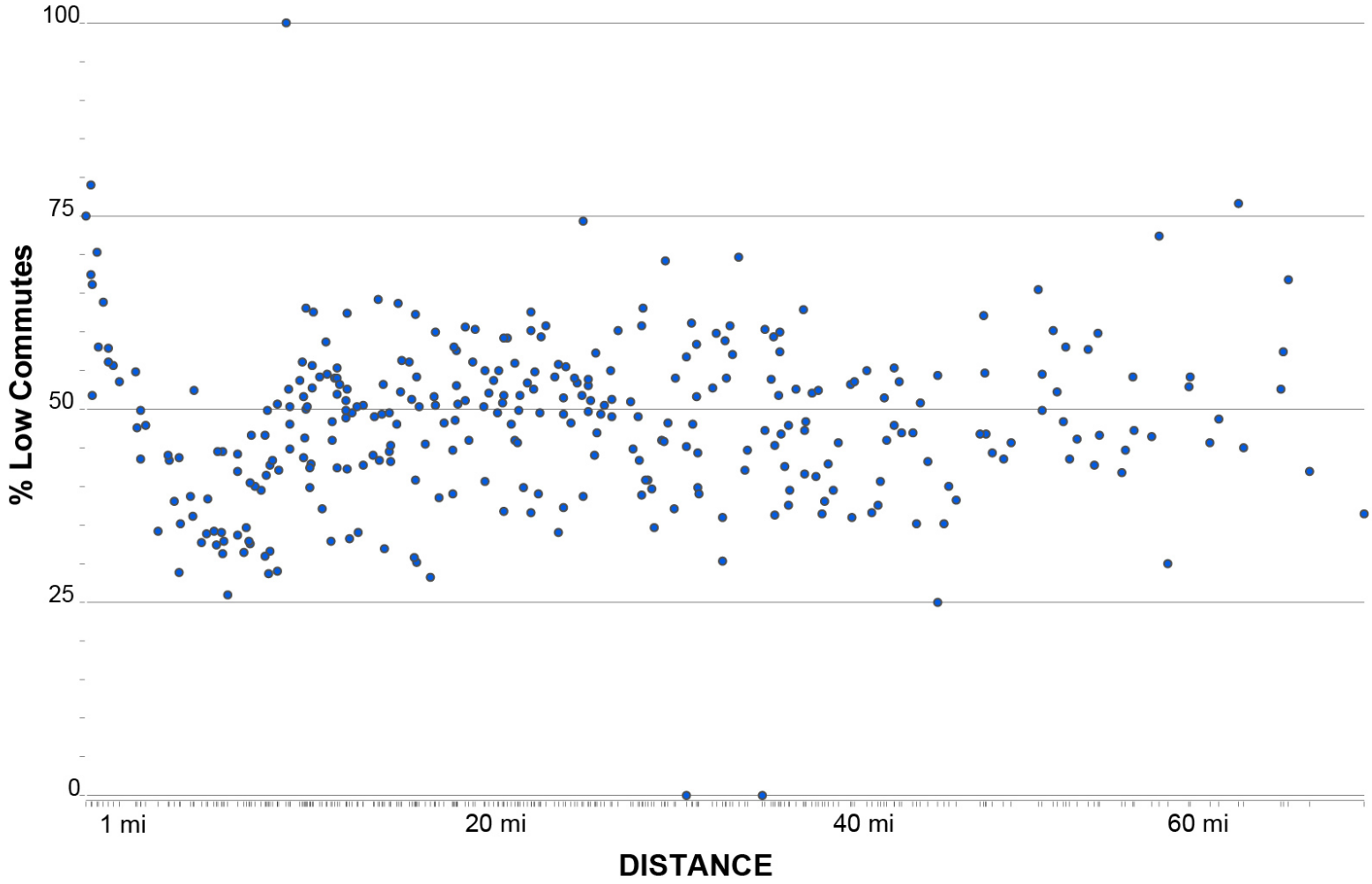
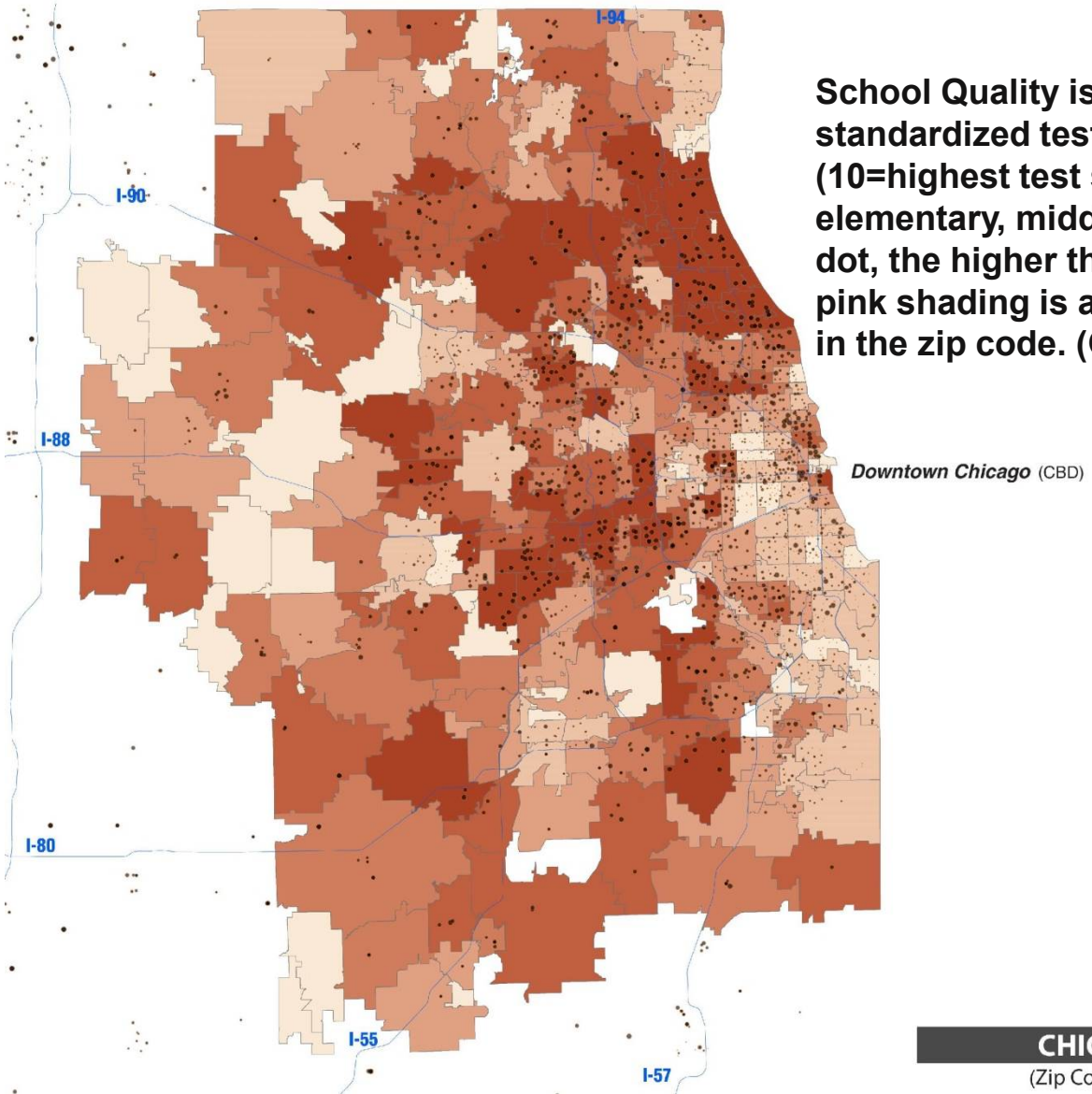
Do Suburbs require longer commutes?



Percentage of Low Commutes (<30 min. one-way). The average percentage of low commutes (48%) represents a strong clustering value for Chicago metro area. Percentages rarely go outside of 25-75% low commutes.

School Quality

School Quality is measured from a state-wide standardized test, with scores scaled from 0-10 (10=highest test score). Each dot indicates an elementary, middle, or high school. The larger the dot, the higher the test score for the school. The pink shading is an average of school test scores in the zip code. (Great Schools Rating, 2013)



CHICAGO MSA - School Rating

(Zip Code 5-digit, Great Schools Ratings, 2013)

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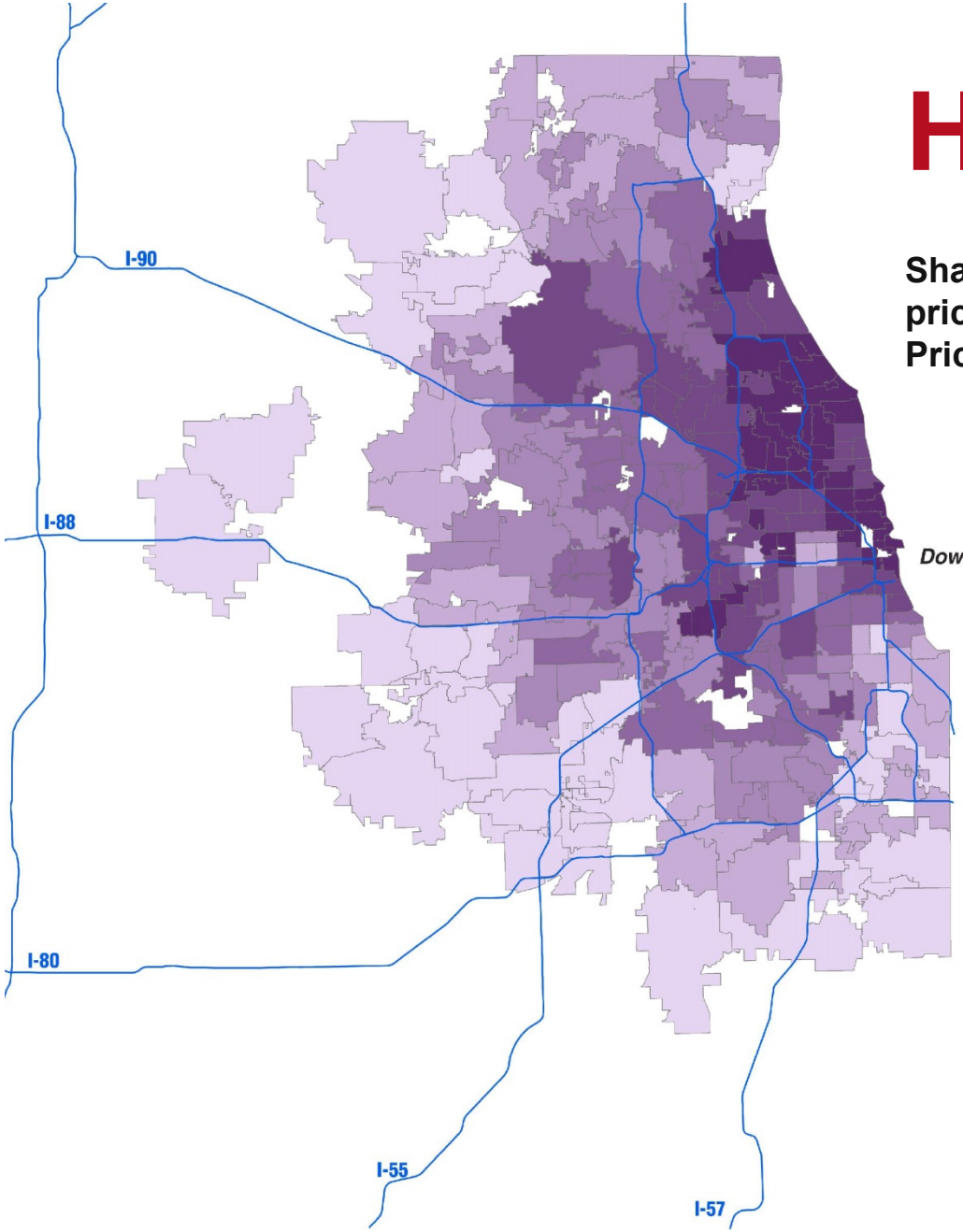
Housing Price

Shading for each zip code represents the average price of a square-foot of residential space. (Zillow Price Data, 10-yr. Median, 2003-2013)



CHICAGO MSA - Housing Price

(Zip Code 5-digit, Median Price per sq. ft, Zillow, 2003- 2013)

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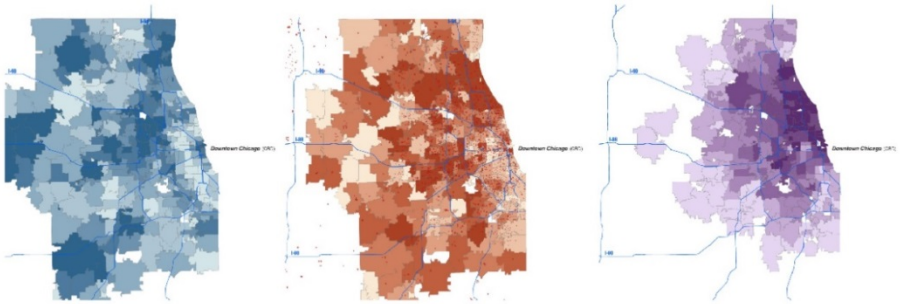
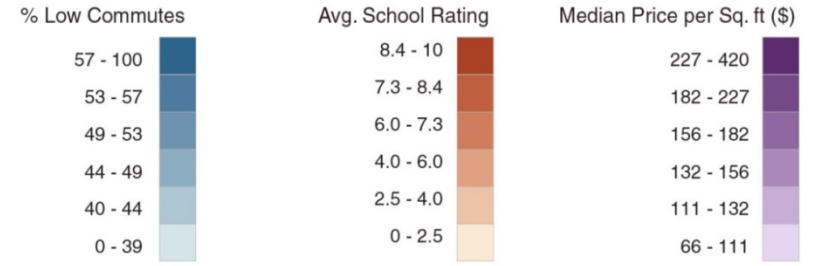
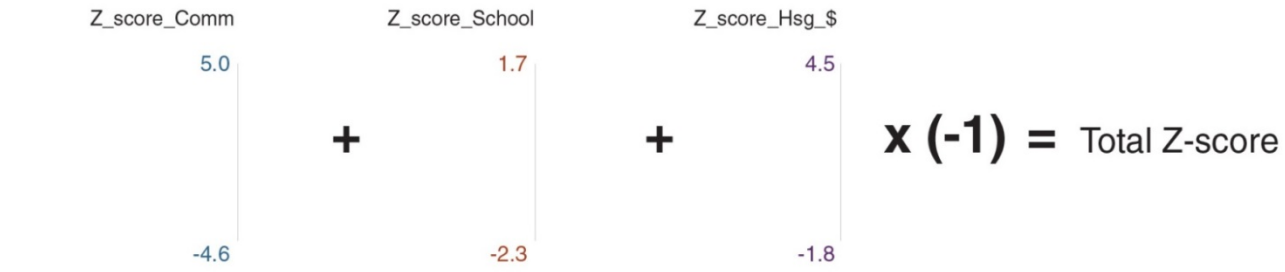
Commutes, Schools, Cost





$$\textit{Z-score} = \frac{\text{(Value) - (Average Value)}}{\text{(Standard Dev. of Values)}}$$



ACS 5-YR Estimates, 2007-2011

Great Schools, 2012
(Non-profit, ind. evaluation)

Zillow Sales Data, 2003-2013

CHICAGO MSA - Z -scoring

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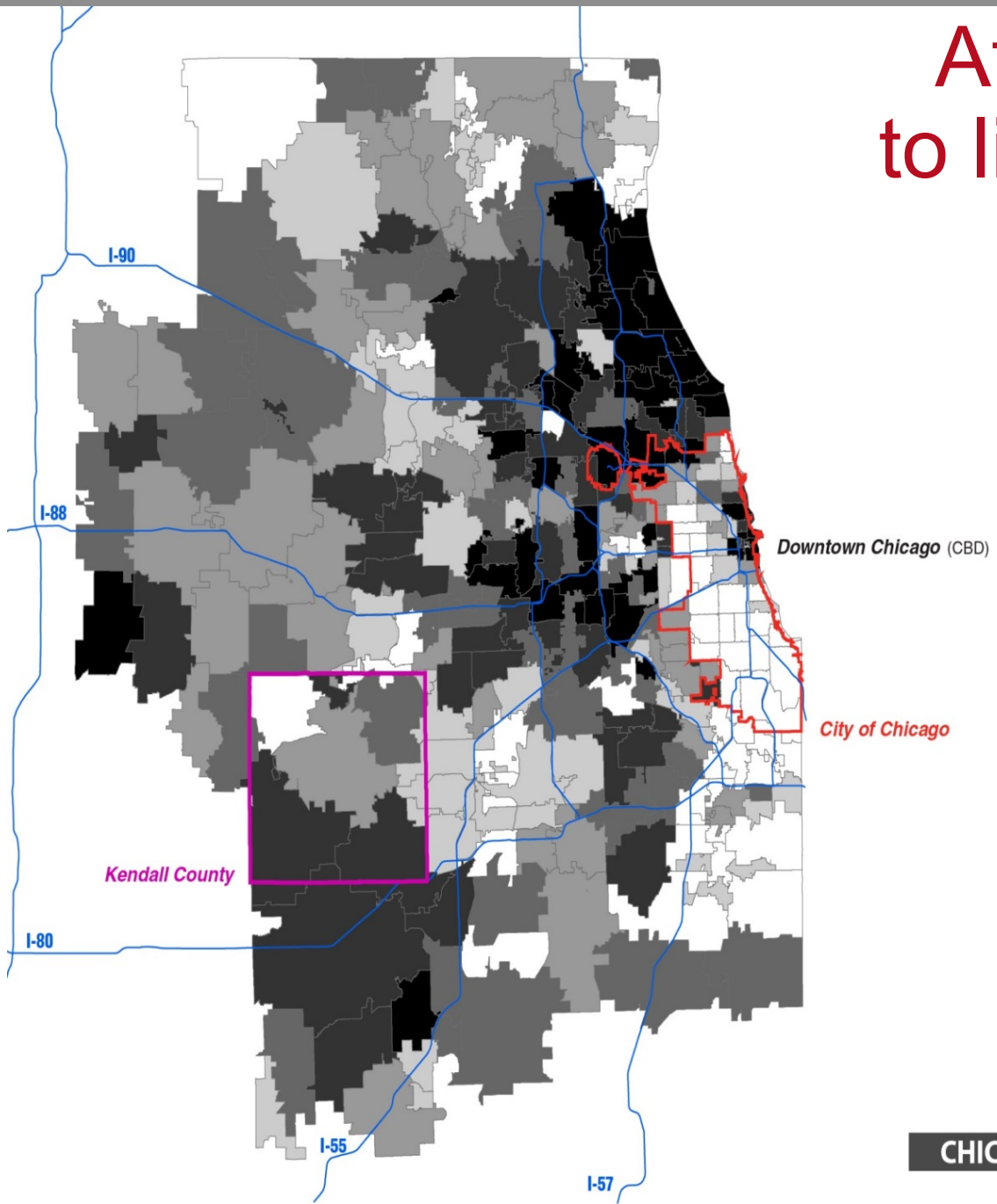
Attractive places to live for Chicago home shopper



Darker means more attractive to shoppers.

Z-score Combined
(Indexed to max value)

1.5 - 0.6
0.6 - 0.3
0.3 - 0.0
0.0 - (0.2)
(0.2) - (0.6)
(0.6) - (1.4)

CHICAGO MSA - Z -Scores

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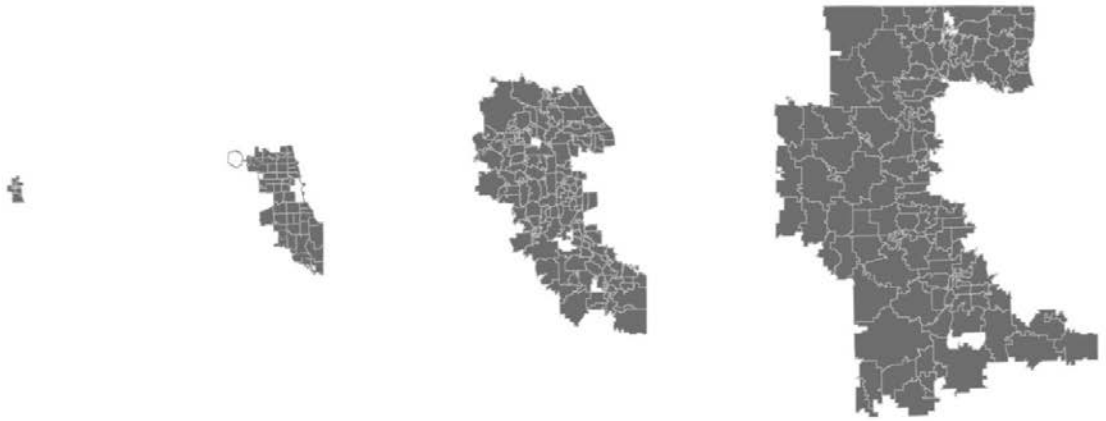


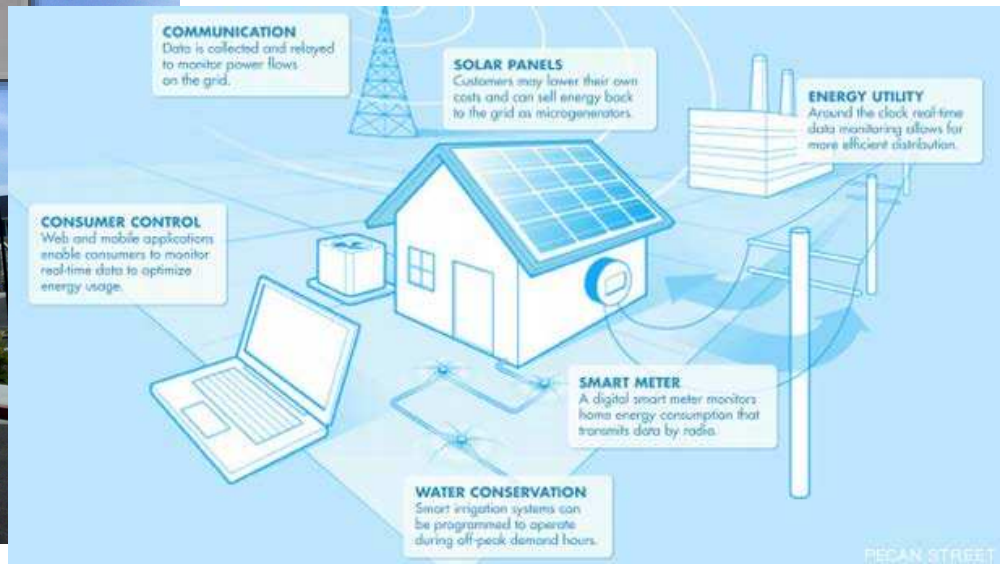
	CBD	City of Chicago	Inner Suburbs	Outer Suburbs
Population ACS, 2011	209,430	2,714,711	3,100,224	2,716,532
Avg. Density (Zip Code) ACS, 2011	16,300	14,800	4,320	1,460
% Low Commutes ACS, 2007-2011	65%	44%	50%	48%
Avg. School Rating Great Schools, 2012	6.3	3.8	6.4	6.4
Med. Price per Sq. ft ($) Zillow, 2003-2013	$273	$197	$183	$128
			<10-mi from City Line	>10 mi from City Line

CHICAGO MSA - Urban Area Stats

CAN WE MAKE SUBURBS MORE SUSTAINABLE?

SHOULD WE?

Example: Pecan Street (Austin, TX)



Example: West Village (Davis, CA)

Example: Low-carbon Society Project (Toyota City, JP)

All 67 homes have:

- PV Solar Panels
- Plug-in Vehicle
- Home Energy Management
- House battery

Soon

- Carsharing
- Multi-modal navigation

Show Video

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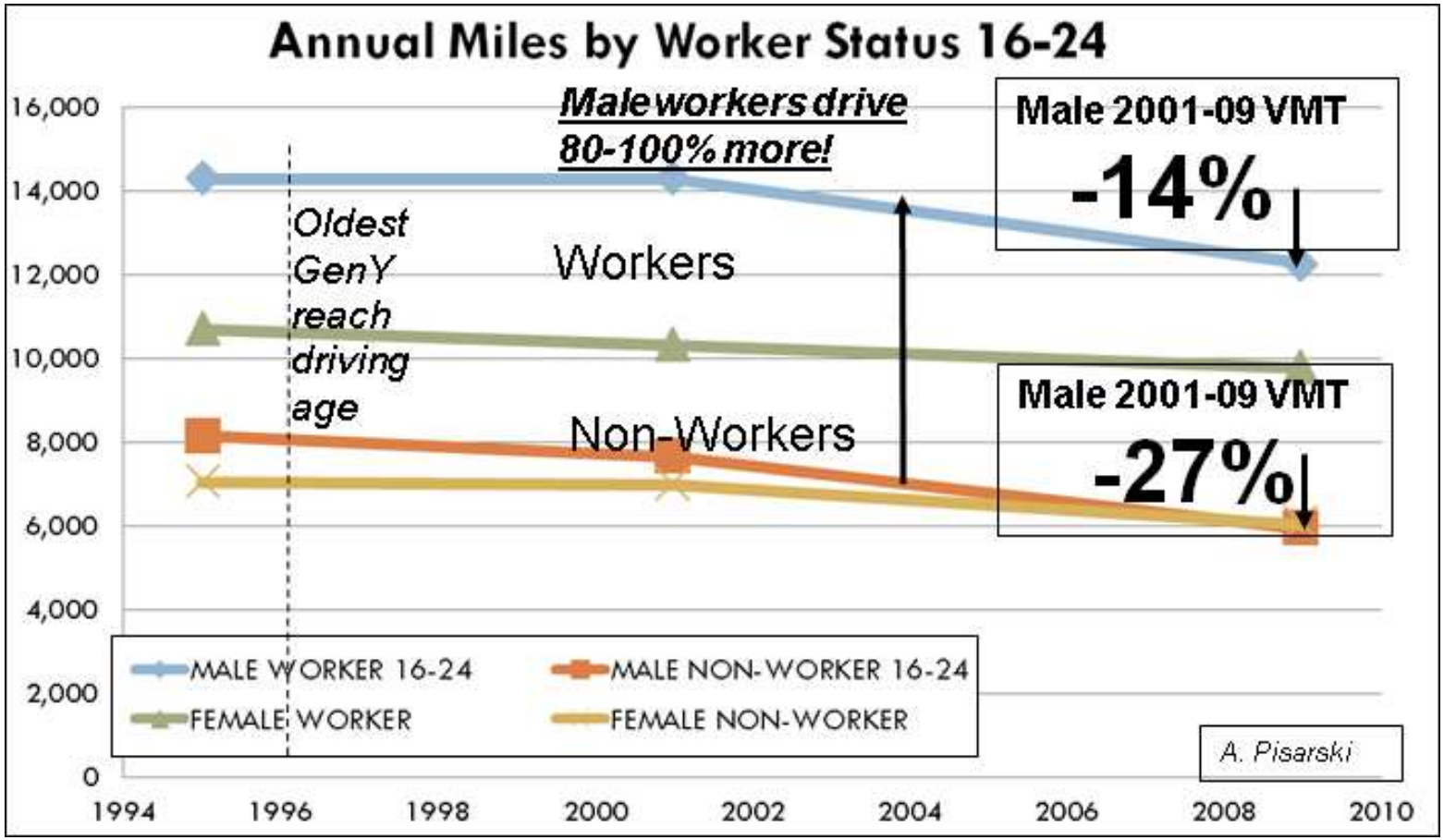
What about GenY?

GenY drives much less



Will GenY culture change car-dependent environment in US?

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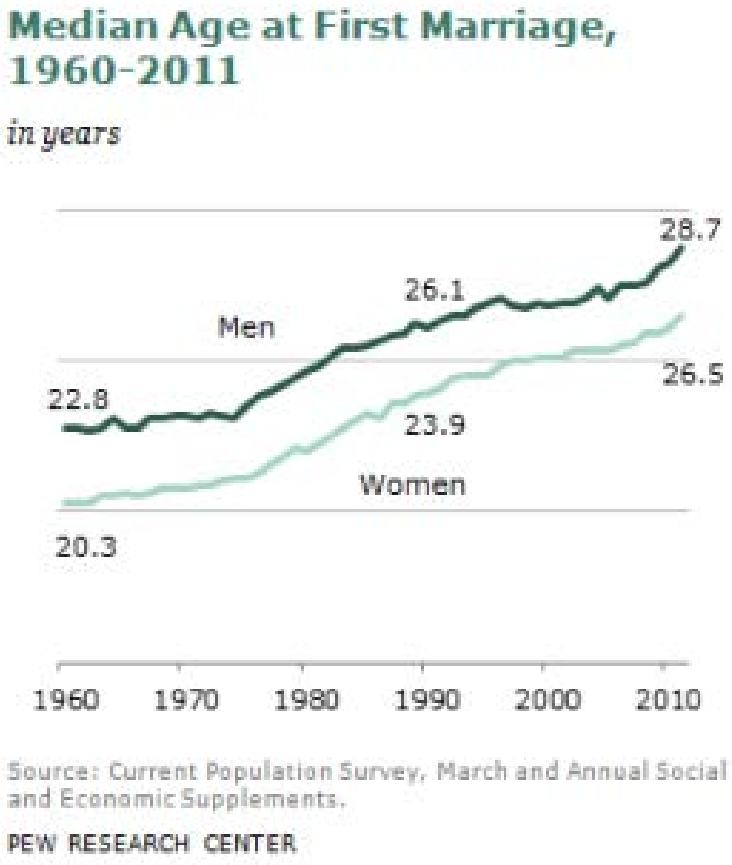
Gen Y: Life-cycle effect is delayed



A new care-free 20s demographic creating noticeable consumer shifts, exaggerated due to economic crisis

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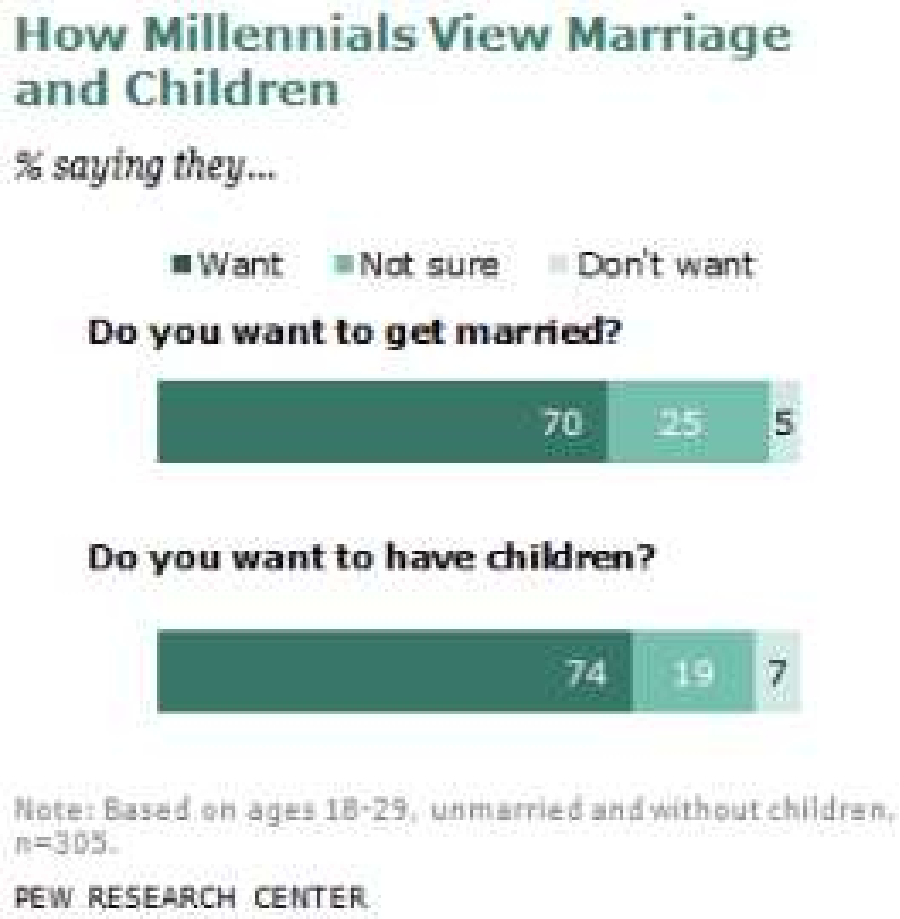
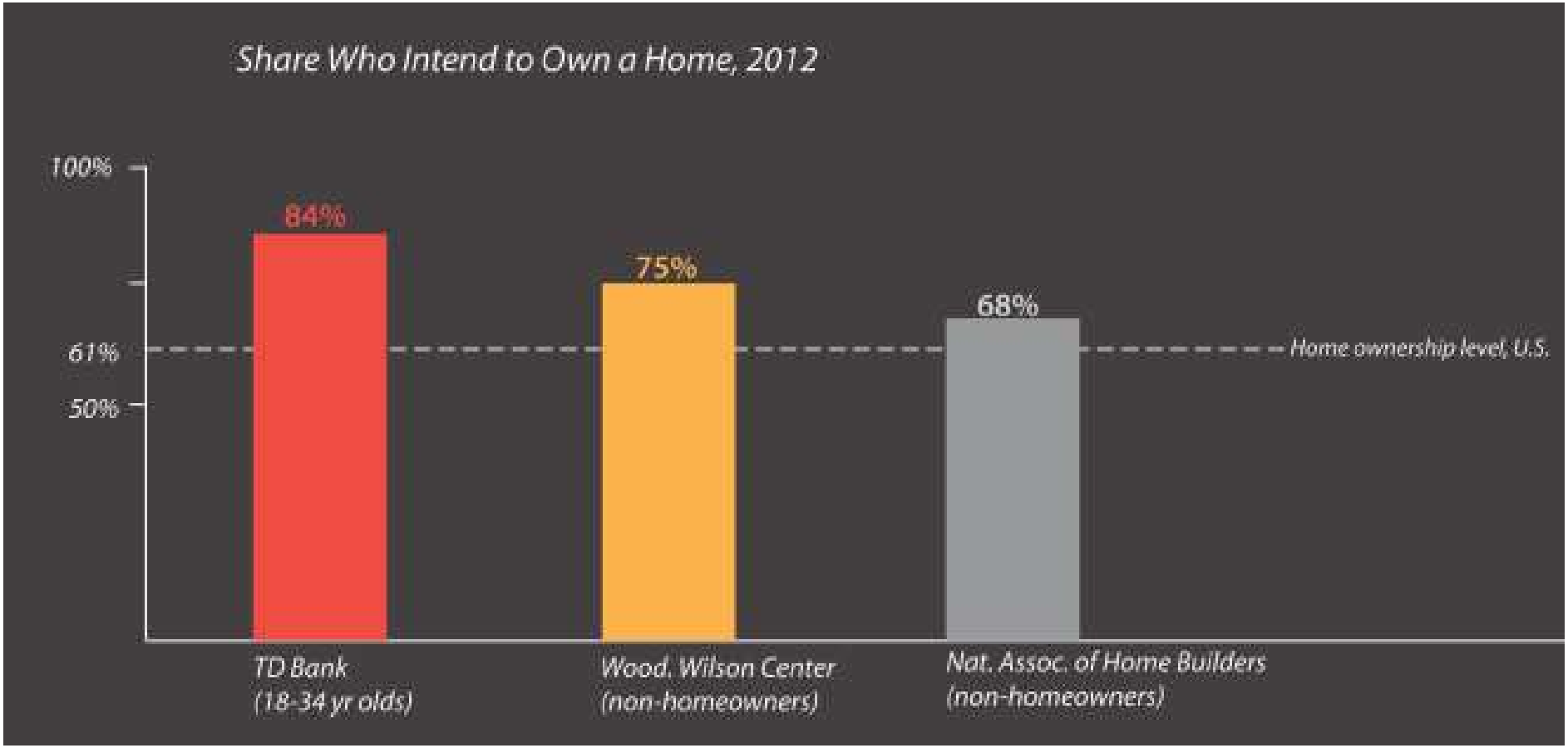
Gen Y: Still want a Family



Gen Y: marriage and family is important, plan to get married and have children.

Will Gen Y resist economic incentives to suburbs when they start families?

Gen Y: Still want Homes



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BACKUP

Cost drives adoption rates

- Which would you buy (in 2004)?
  - 2004 Corolla $13.5k 34 MPG
  - 2004 Prius $20.5k 46 MPG
- At time, criticism from both sides, i.e. industry observers (bad value trade-off) and environmentalists (not green enough).
- But, over 2M Prii sold, saved millions of tons CO_2

Prices are minimum MSRP, MPG is EPA Combined. 2004 Prius had 3.4 cu-ft more cargo room than 2004 Corolla

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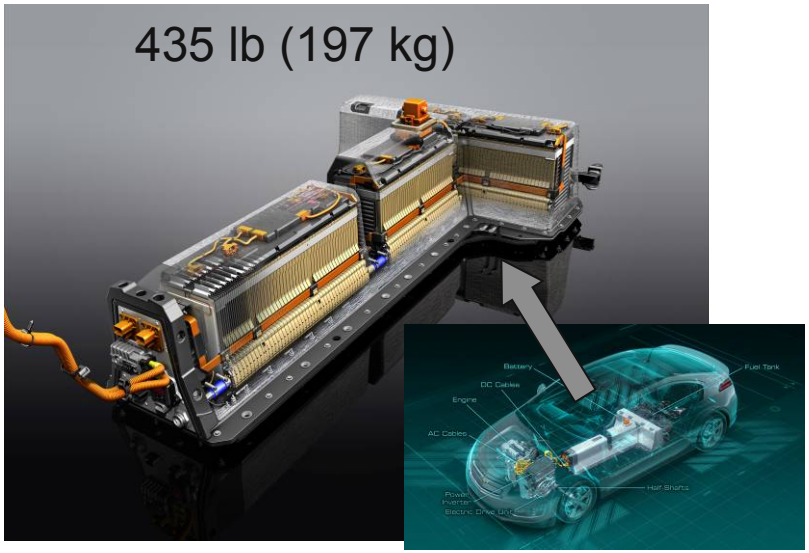
Batteries Have a Long Way to Go

Chevy Volt Battery



≈ 37 mi ≈

10-12 hr charge (L1)

3-4 hr charge (L2)

$3.50

6 lb (2.7 kg)

Compared to the same range of gas, the battery is

75 times heavier

1000 times more expensive

Assumes prices of $3.50/gal of gas and at least $250/kWh for the battery

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CMAP POPULATION

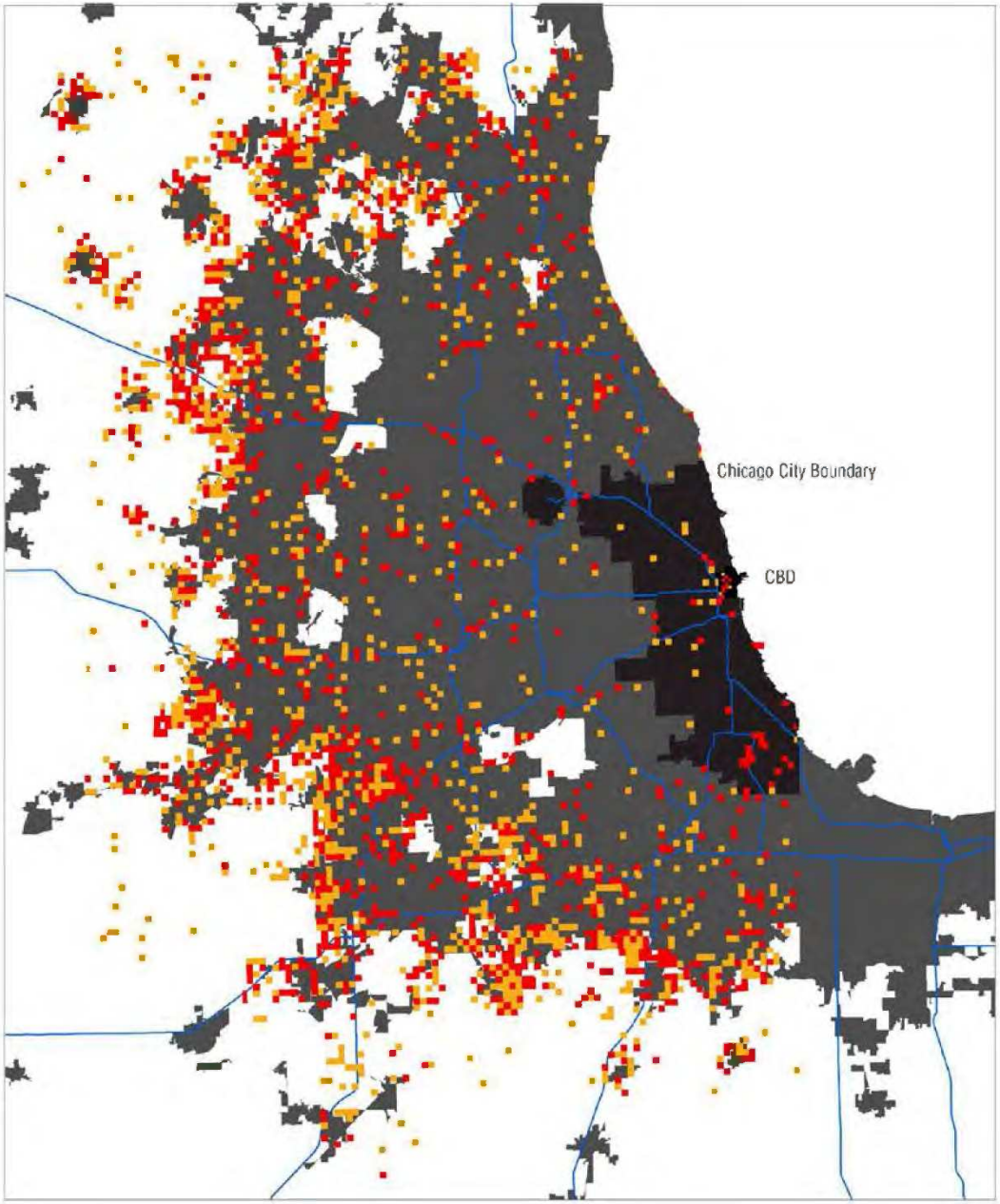
Percentage Change, 2010-2040

CITY of CHICAGO
2010 Urbanized Area

Interstate

Population Growth
(Mean pop. change by 2040 = 265%)

243 - 436%
436% +



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CMAP Projections 2010-2040