How Accurate are ACS Tract and Block Group Totals?
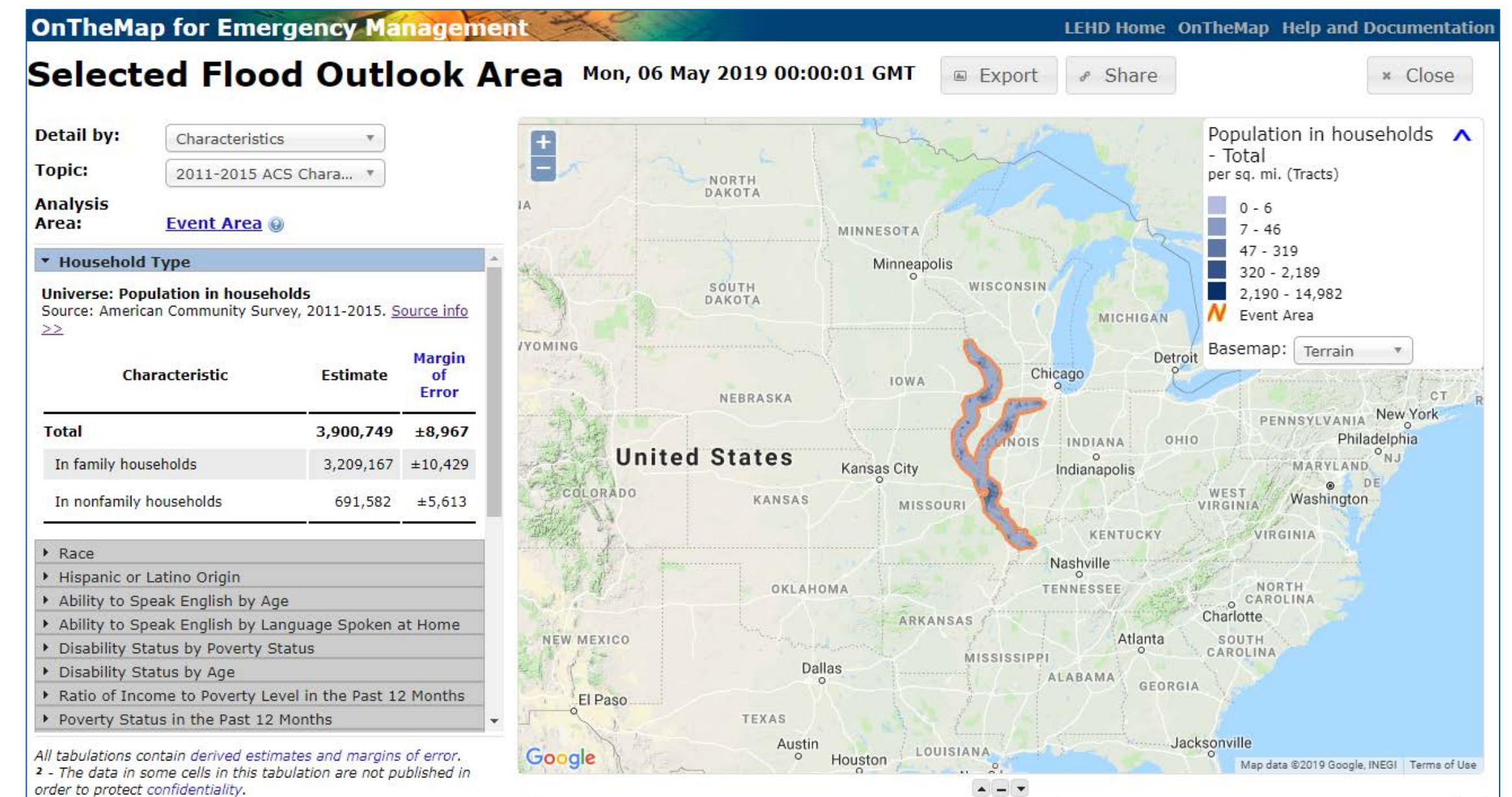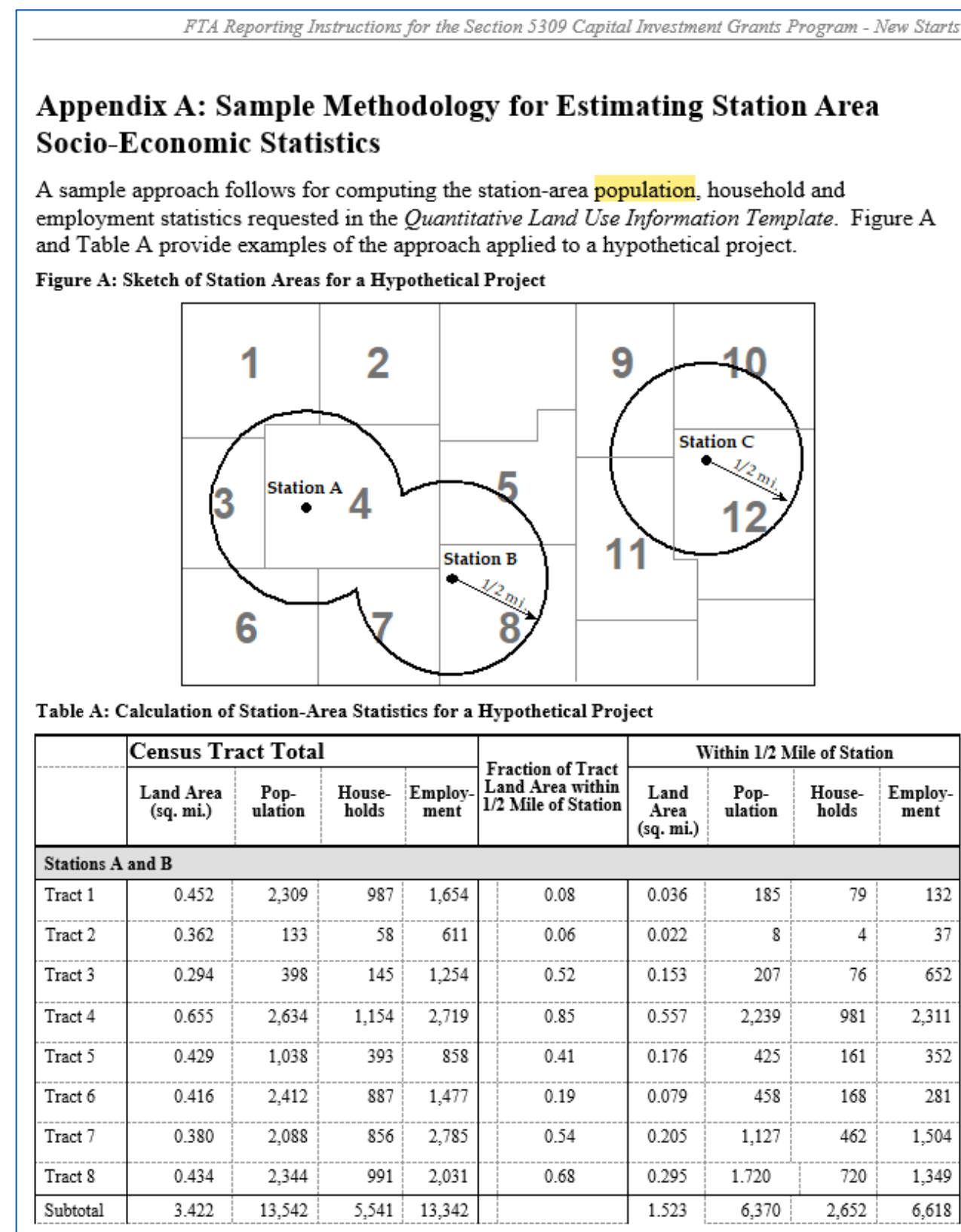
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The federal government uses ACS tract totals
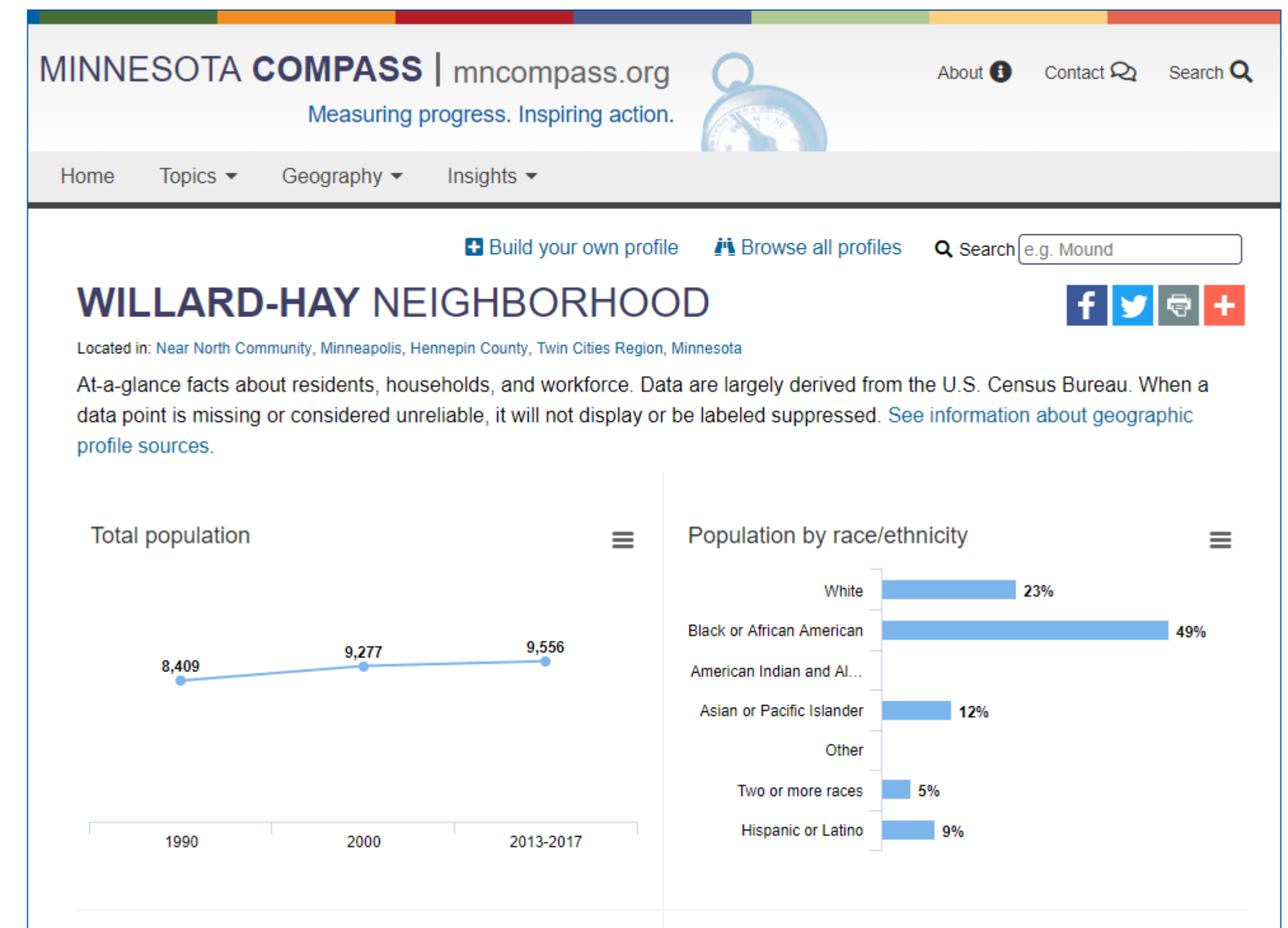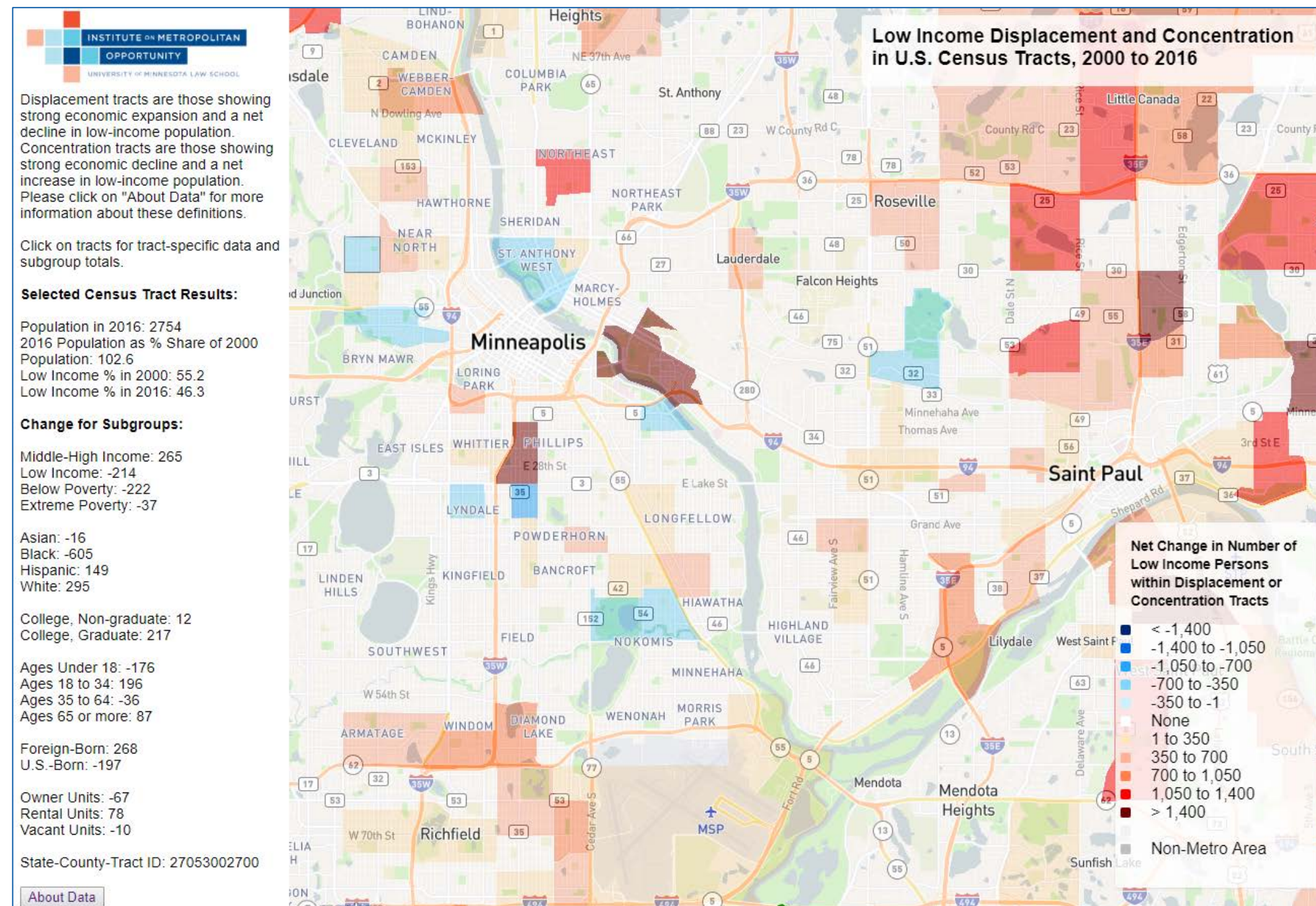
Federal Transit Administration

OnTheMap for Emergency Management

Researchers use ACS tract totals

Research on gentrification/displacement

Neighborhood profiles

Cautions about ACS totals abound

TIP: The ACS was designed to provide estimates of the **characteristics** of the population, not to provide counts of the population in different geographic areas or population subgroups. For basic counts of the U.S. population by age, sex, race, and Hispanic origin, visit the Census Bureau's *Population and Housing Unit Estimates* Web page.[2]

The strength of the American Community Survey (ACS) is in estimating characteristic distributions. If you are looking for population totals, we recommend the 2010 Census or Population Estimates Program.

It is also important to keep in mind that **all ACS data are estimates**. We collect data from a sample of the population in the United States and Puerto Rico rather than from the whole population. To help you interpret the reliability of the estimates, the Census Bureau publishes a margin of error (MOE) for every ACS estimate.

ACS tract estimates

- ACS sample cases are weighted and controlled to **county-level** housing unit and population estimates

- Additional calibration to better reflect subcounty estimates, and to reduce variance in tract-level estimates

- BUT:

> TIP: ACS data for small statistical areas (such as census tracts) have no control totals, which may lead to errors in the population and housing unit estimates. In such cases, data users are encouraged to rely more upon noncount statistics, such as percent distributions or averages.

Understanding and Using
American Community Survey Data
What All Data Users Need to Know

Issued July 2018

United States® Census Bureau
U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

We need to understand how accurate ACS small area totals are.

How?

Metropolitan Council estimates method

How many **housing units**? → How many **households**? → How many **people**?

Housing units in 2010

+

Changes to housing stock since 2010

✖

Occupancy rate

✖

Average household size

(Persons per household)
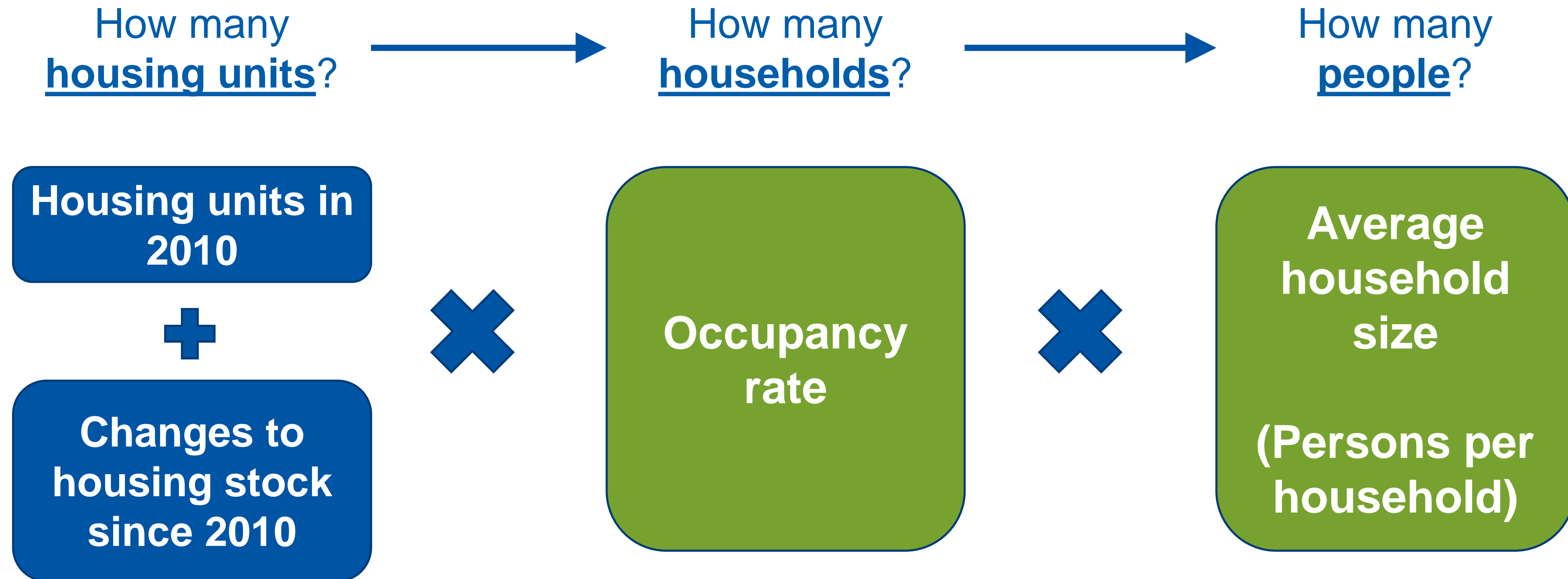
Metropolitan Council estimates calculations

For each census block:

Estimated with 2010
Census + adjustments
for new housing

Address-level data
on building permits

$$\left(\left(Hsg\ Units_{2010} + Changes_{Since 2010}\right) \times Occ\ Rate \times PPH\right) + Group\ Quarters$$

Estimated using 2010
Census + trends in
USPS vacancy data

Surveyed every year
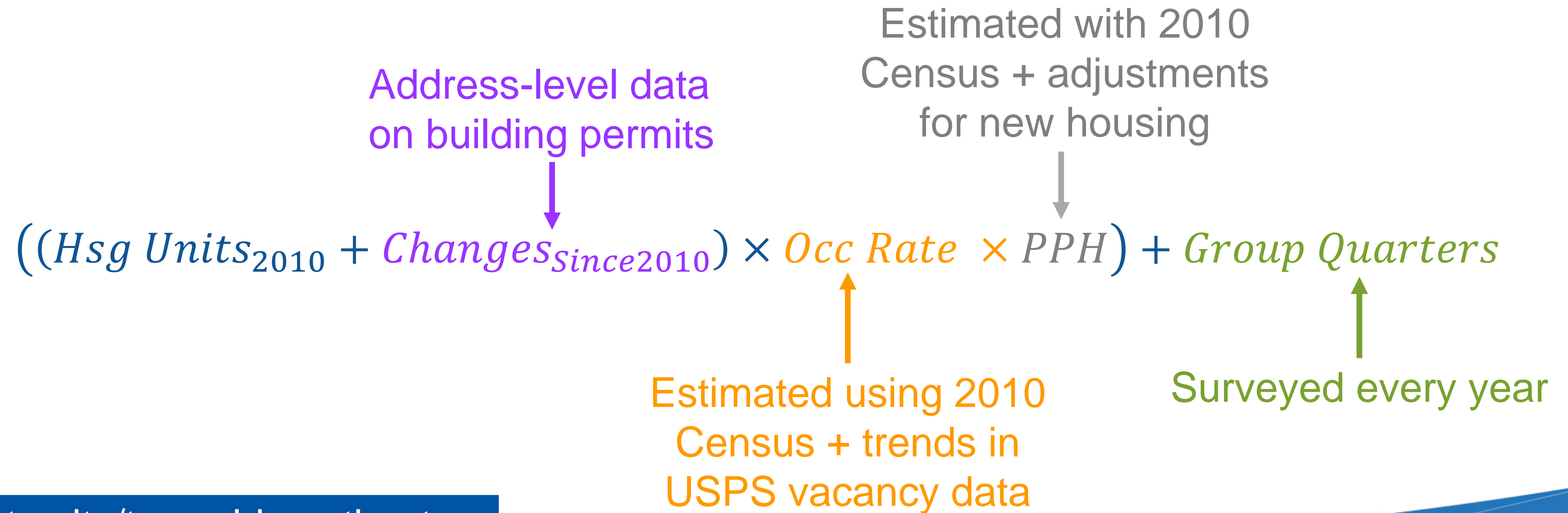
Rake to city/township estimates

These are only estimates! Humility is always appropriate.

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MC estimates pick up on development sooner

Hennepin County, Tract 1261 (with building permits since 2010)

ACS total is 18% lower

Thousands

Census or (ACS)   Met Council

2010
2011 (2007-2011)
2012 (2008-2012)
2013 (2009-2013)
2014 (2010-2014)
2015 (2011-2015)
2016 (2012-2016)
2017 (2013-2017)

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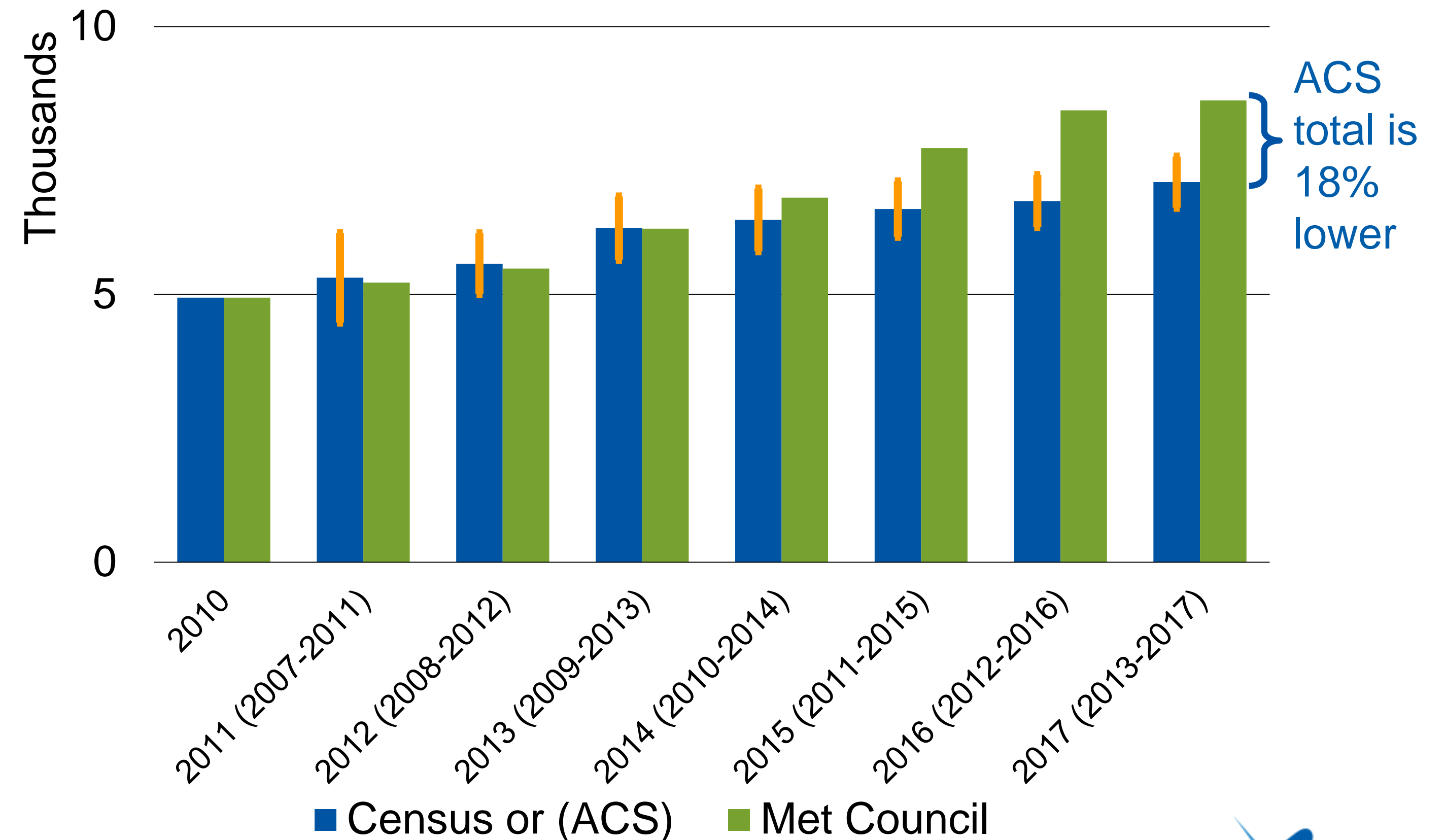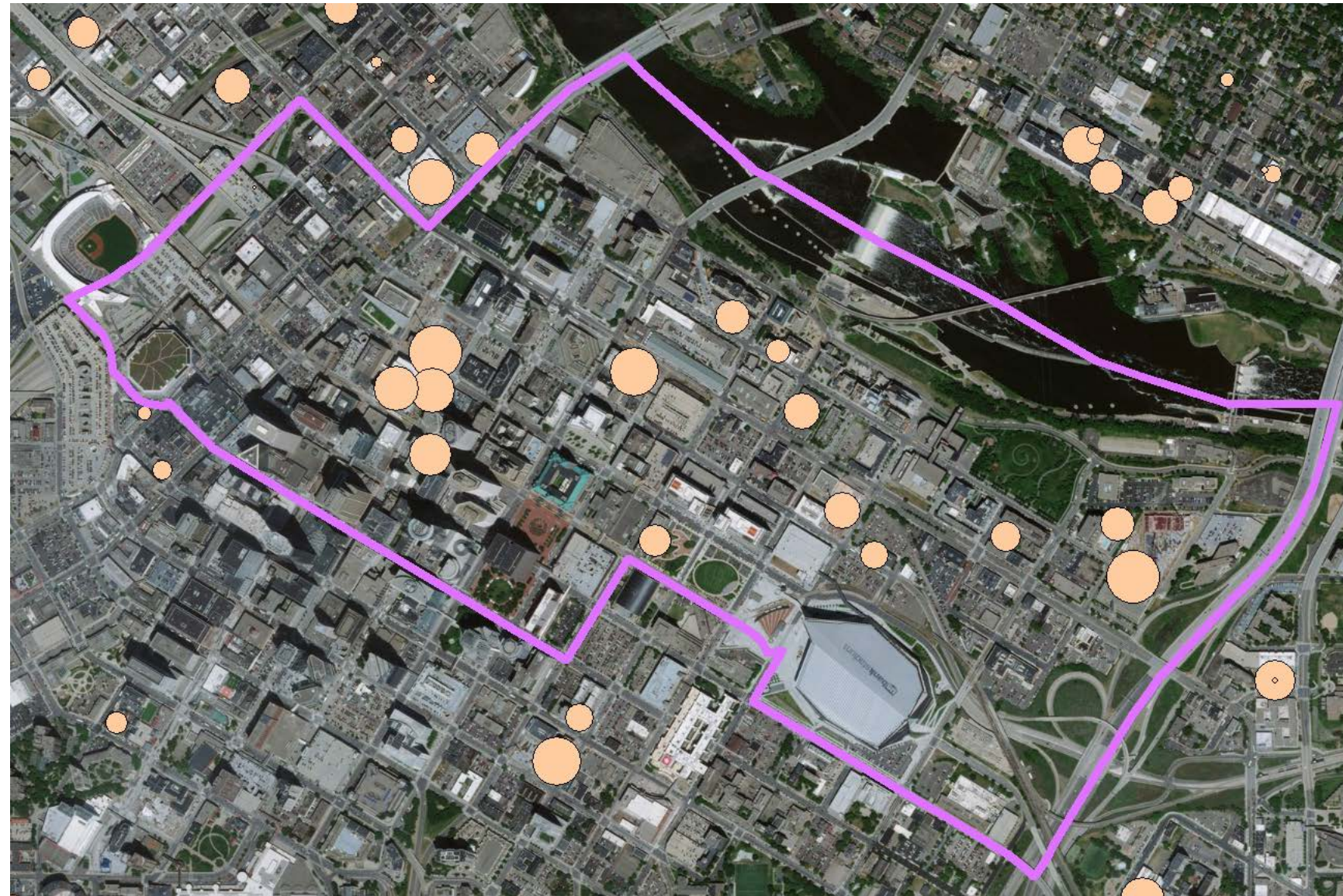
MC estimates better reflect (no) housing changes

Hennepin County, Tract 260.19
(with building permits since 2010)

ACS total is 19% higher

Thousands

8

4

0

2010
2011 (2007-2011)
2012 (2008-2012)
2013 (2009-2013)
2014 (2010-2014)
2015 (2011-2015)
2016 (2012-2016)
2017 (2013-2017)

■ Census or (ACS)   ■ Met Council

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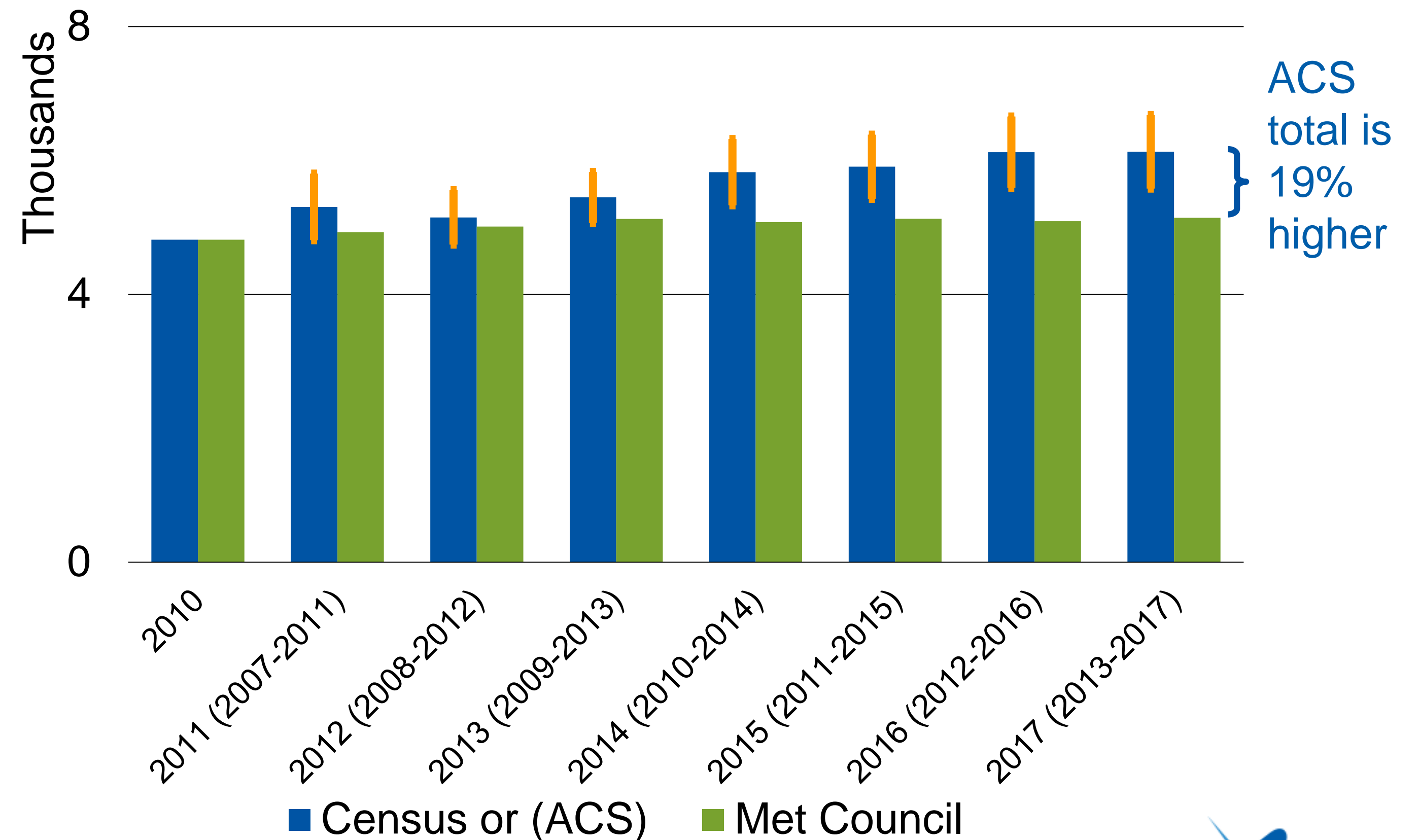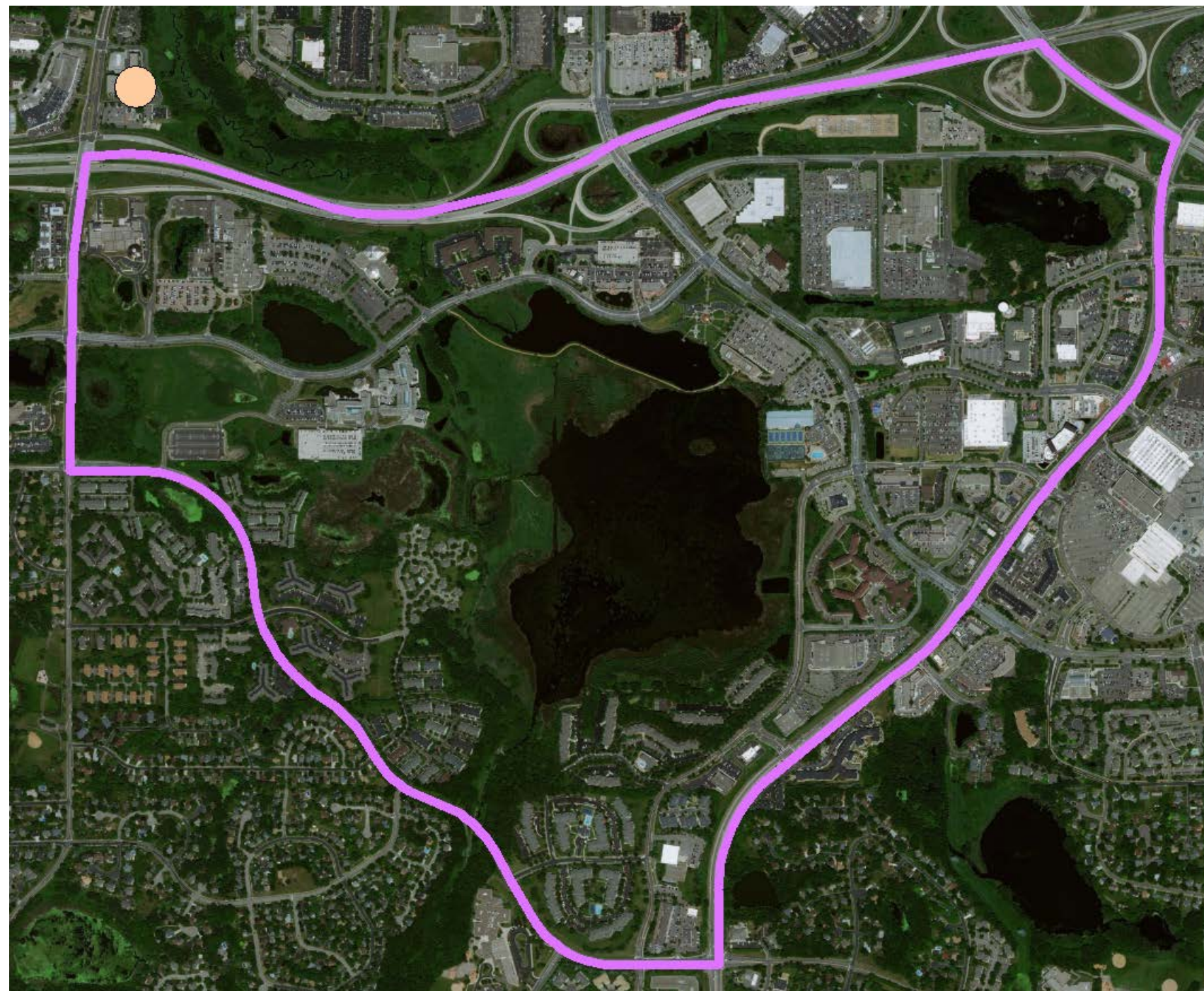
MC estimates reflect housing markets

Ramsey County, Tract 325
(with building permits since 2010)

Falling vacancy rate

ACS total is 14% lower

Thousands

6

3

0

2010
2011 (2007-2011)
2012 (2008-2012)
2013 (2009-2013)
2014 (2010-2014)
2015 (2011-2015)
2016 (2012-2016)
2017 (2013-2017)

■ Census or (ACS)   ■ Met Council

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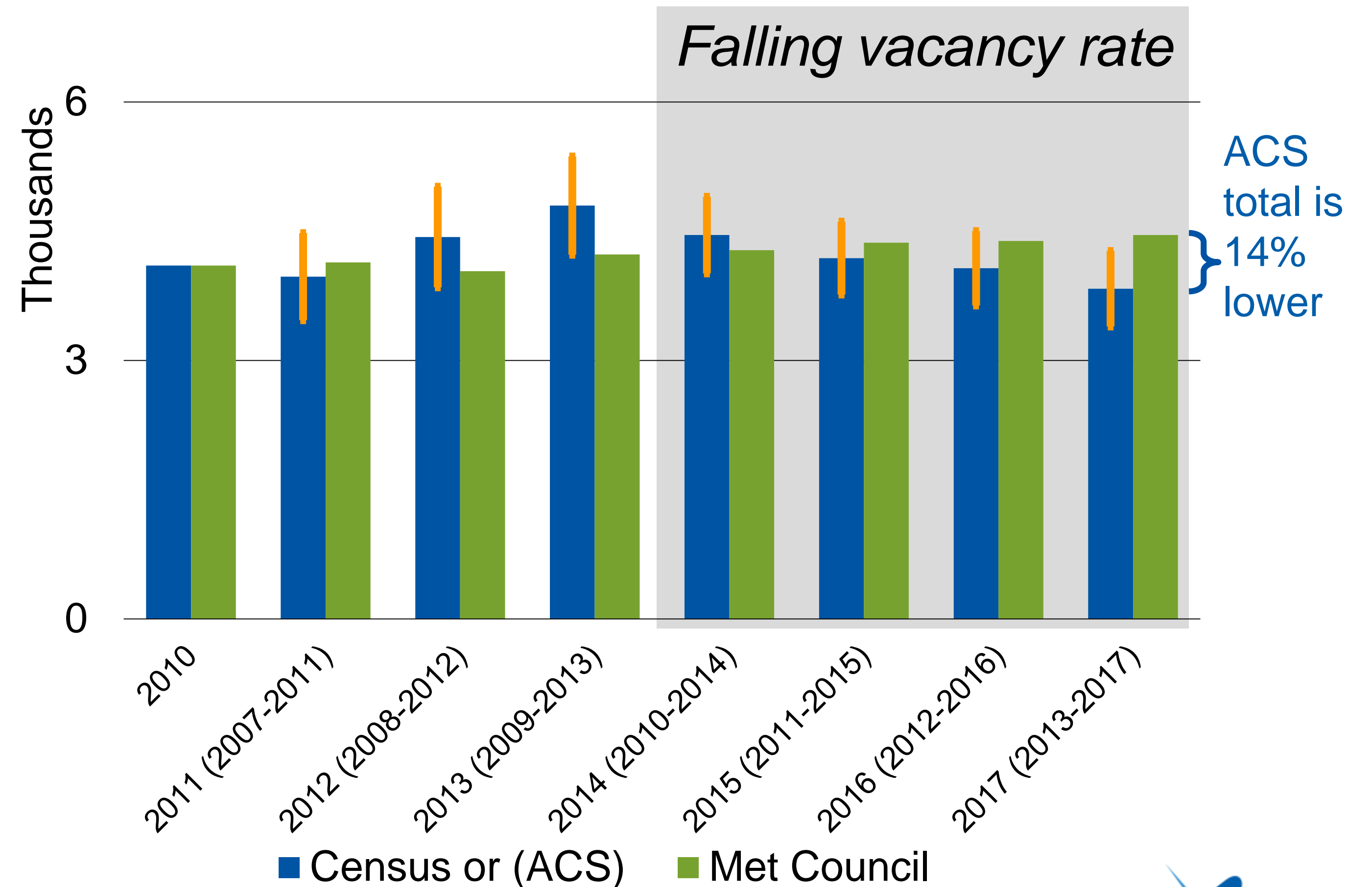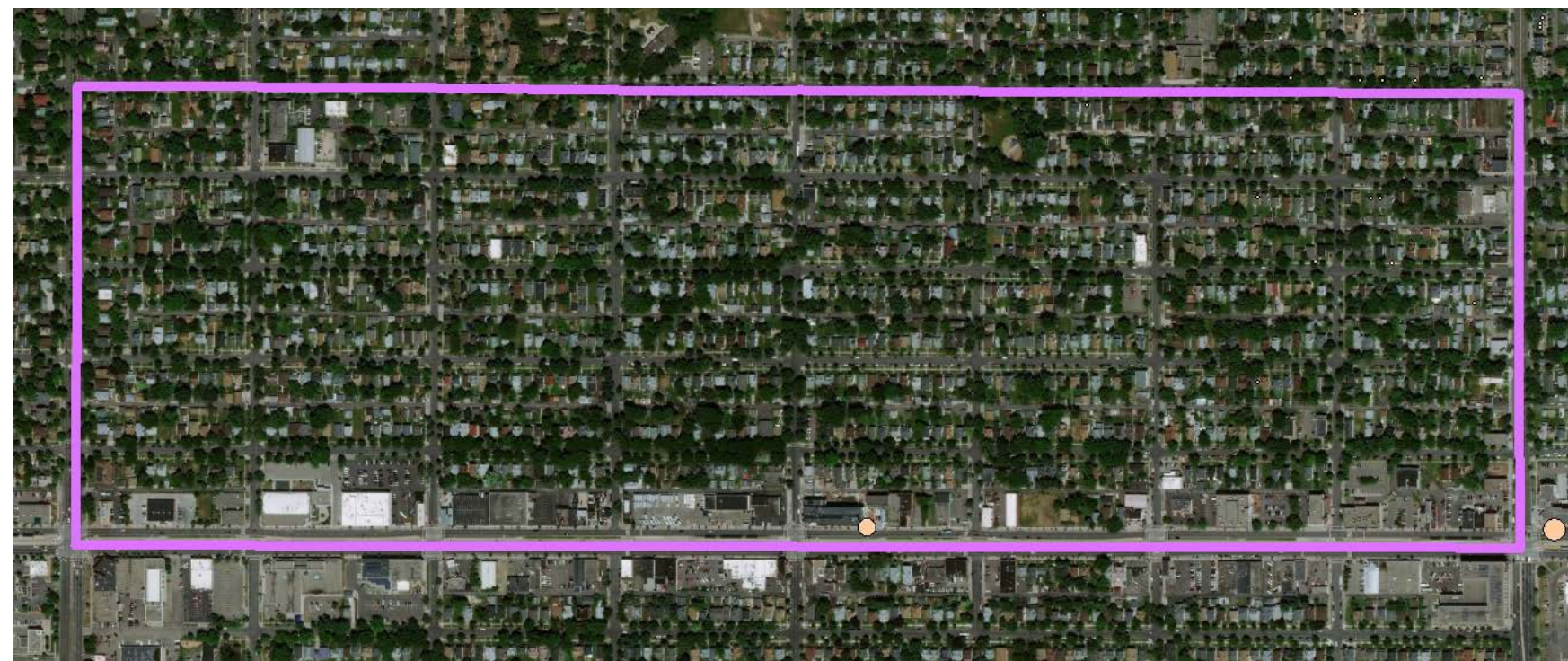
ACS 2013-2017 vs Met Council 2017 (Tracts)

ACS is HIGHER than Met Council

Range	%
+10% or more	4%
+5.0% to +9.9%	10%
+2.5% to +4.9%	10%
Within 2.5%	33%
-2.5% to -4.9%	16%
-5.0% to -9.9%	17%
-10.0% or more	10%
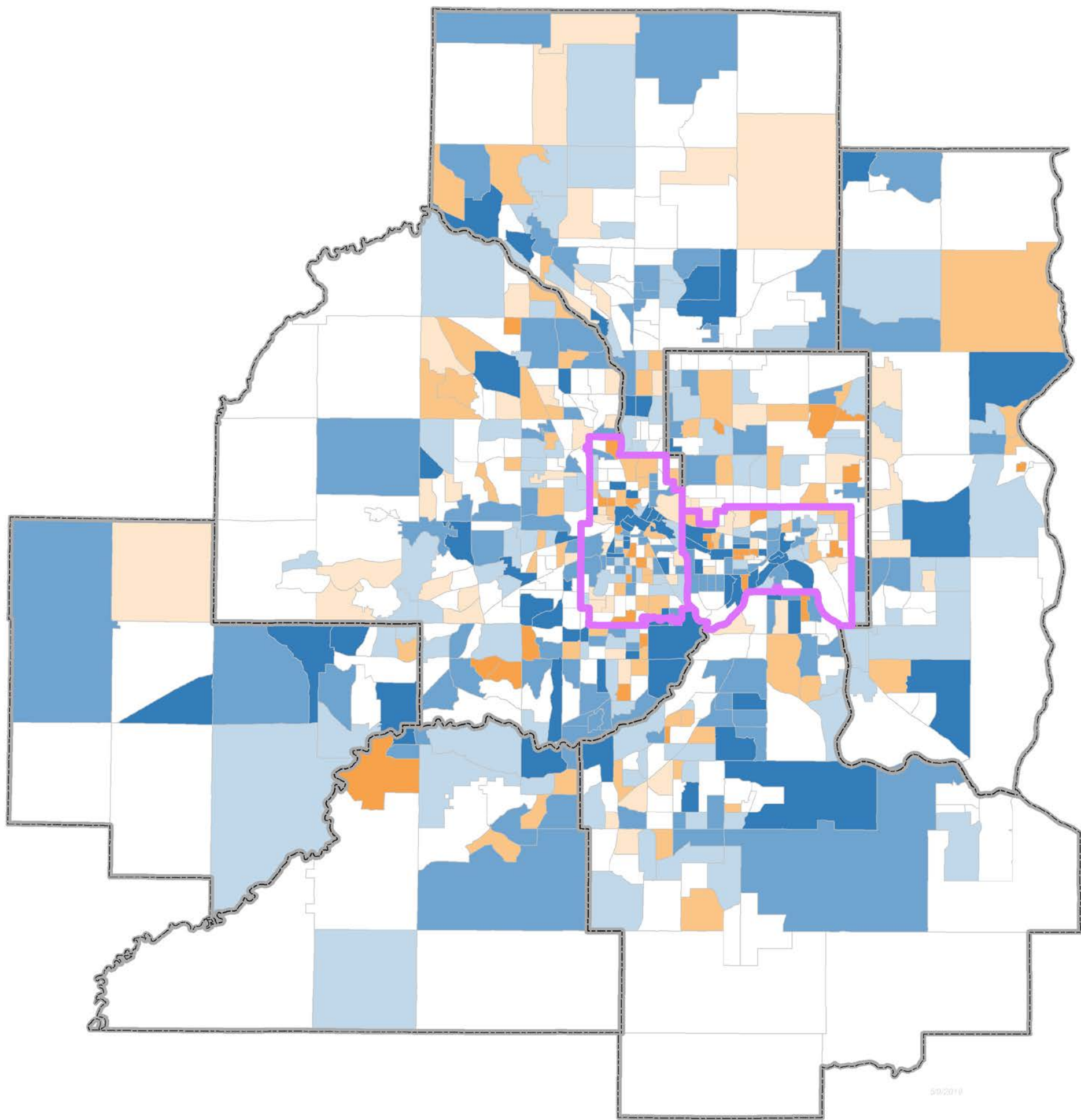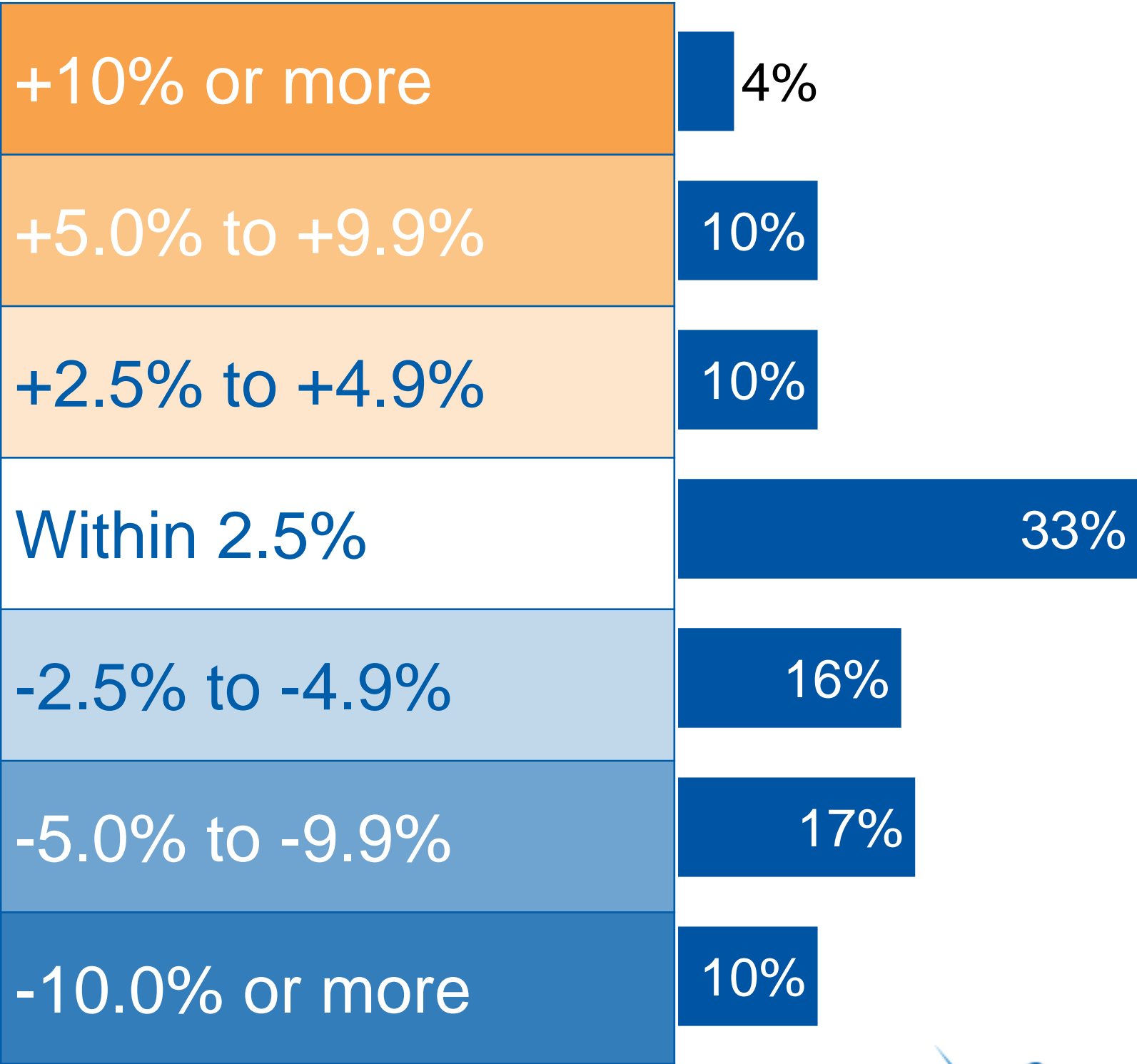
ACS is LOWER than Met Council

ACS 2013-2017 vs Met Council 2017 (block groups)

ACS is HIGHER than Met Council

+10% or more	21%
+5.0% to +9.9%	11%
+2.5% to +4.9%	7%
Within 2.5%	14%
-2.5% to -4.9%	8%
-5.0% to -9.9%	12%
-10.0% or more	27%

ACS is LOWER than Met Council

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ACS 2013-2017 vs Met Council 2017 (tracts)

	Total population	Households	Housing units	Population in households	Population in group quarters
ACS higher +10% or more	4%	1%	1%	4%	28%
+5.0% to +9.9%	10%	6%	5%	10%	2%
+2.5% to +4.9%	10%	10%	11%	9%	2%
Within 2.5%	33%	38%	47%	34%	6%
-2.5% to -4.9%	16%	18%	17%	16%	1%
-5.0% to -9.9%	17%	19%	12%	17%	5%
ACS lower -10.0% or more	10%	8%	7%	10%	56%

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Why do these discrepancies exist?

There's almost as much variation across years within tracts…

… as there is across tracts.

Met Council estimate	2011	2012	2013	2014	2015	2016	2017
ACS data	**2007-2011**	**2008-2012**	**2009-2013**	**2010-2014**	**2011-2015**	**2012-2016**	**2013-2017**
Tract 1	+3.0%	+2.8%	+1.2%	-2.1%	-3.0%	-4.0%	-7.6%
Tract 2	-6.5%	-4.4%	-1.2%	-0.3%	+1.0%	+2.8%	+2.6%
…	…	…	…	…	…	…	…
Tract 704	-3.5%	-2.8%	-3.6%	+0.5%	+2.6%	+2.1%	+0.5%

Data show the percent difference between the ACS totals and Met Council estimates (positive values = ACS totals are higher).

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Why do these discrepancies exist?

ACS tract totals tend to be **higher** where:

- Population is more racially diverse
- Children are a higher share of the population
- Household incomes are higher

ACS tract totals tend to be **lower** where:

- Lots of new development has occurred
- Commercial land uses predominate

But lots of variation in the discrepancies left unexplained…
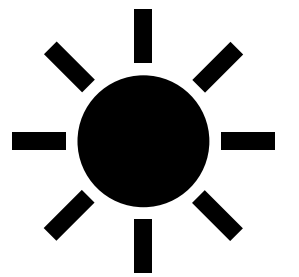
Can a model help others?

ACS tract population totals
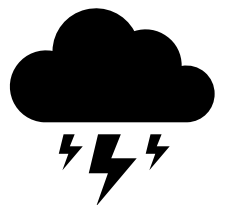
ACS tract characteristics
- Age
- Race
- Recent moves
- Units in structure
- Housing units built since 2010
- Median household income
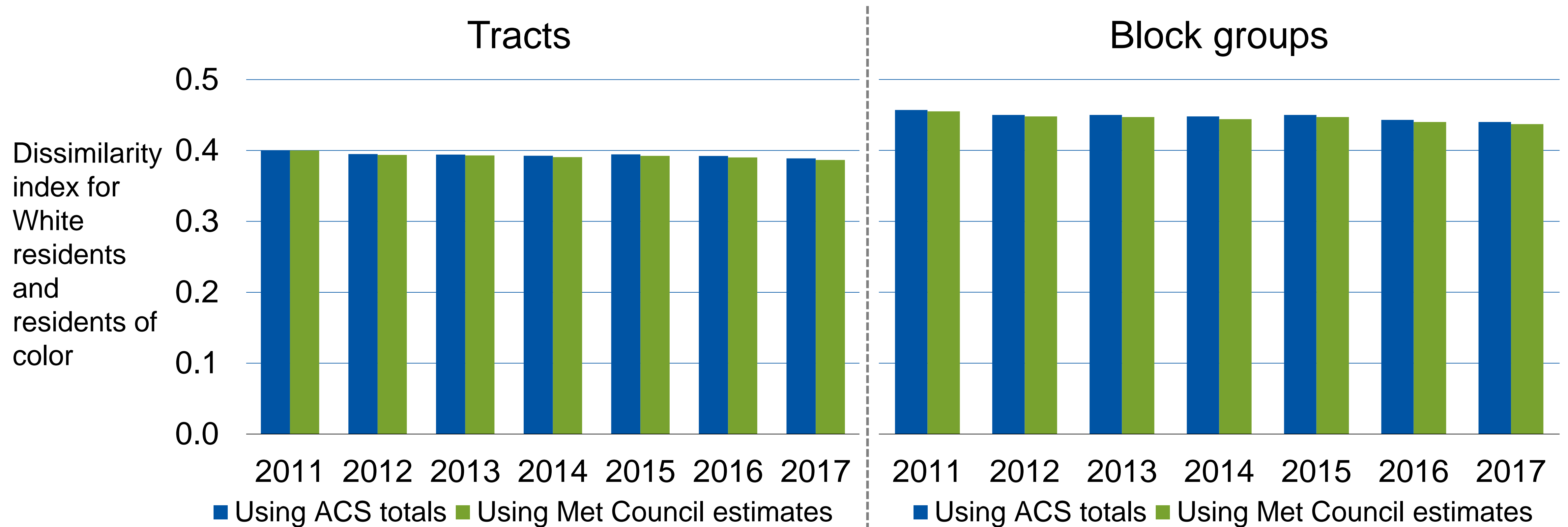
Met Council tract estimates (2012-2016)

Use model to predict 2017 Met Council estimates with 2013-2017 ACS data!

But predicted estimates still quite far from actual 2017 estimates.

Measures of segregation aren't affected much

Dissimilarity index for White residents and residents of color

Tracts

Block groups

■ Using ACS totals ■ Using Met Council estimates

Note: Racial shares are taken as given in the ACS data; the only difference is how the tracts and block groups are weighted.

Measures of segregation aren't affected much

Poverty rate in the tract of the average person in poverty

Tracts

Block groups

2011 2012 2013 2014 2015 2016 2017

■ Using ACS totals ■ Using Met Council estimates
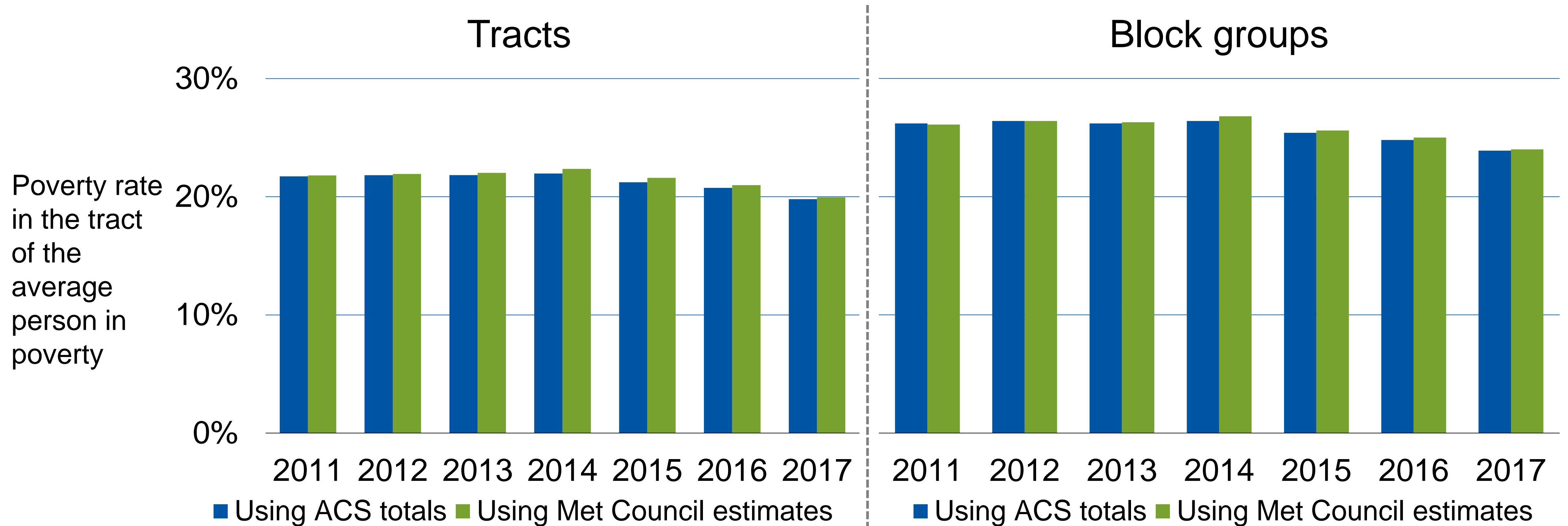
Note: This is the isolation index of residential segregation for people in poverty. Poverty rates are taken as given in the ACS data; the only difference is how the tracts and block groups are weighted.

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Summing up

Tract and block group totals will be off the mark, and it's hard to tell where.

Trying to get count data for individual small areas?

 ➢ Consider using other data sources

Trying to use the small areas to develop measures for a larger area?

 ➢ This seems okay in the Twin Cities region, at least

More information

metrocouncil.org/populationestimates
Matt.Schroeder@metc.state.mn.us

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