

The Use of GIS in Creating Redistricting Data in Ohio and How it is Used to Create Unfair Outcomes.

Presented to the

GIS USERS OF NORTHERN OHIO

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Mark Salling, Ph.D., GISP

Northern Ohio Data & Information Service – NODIS

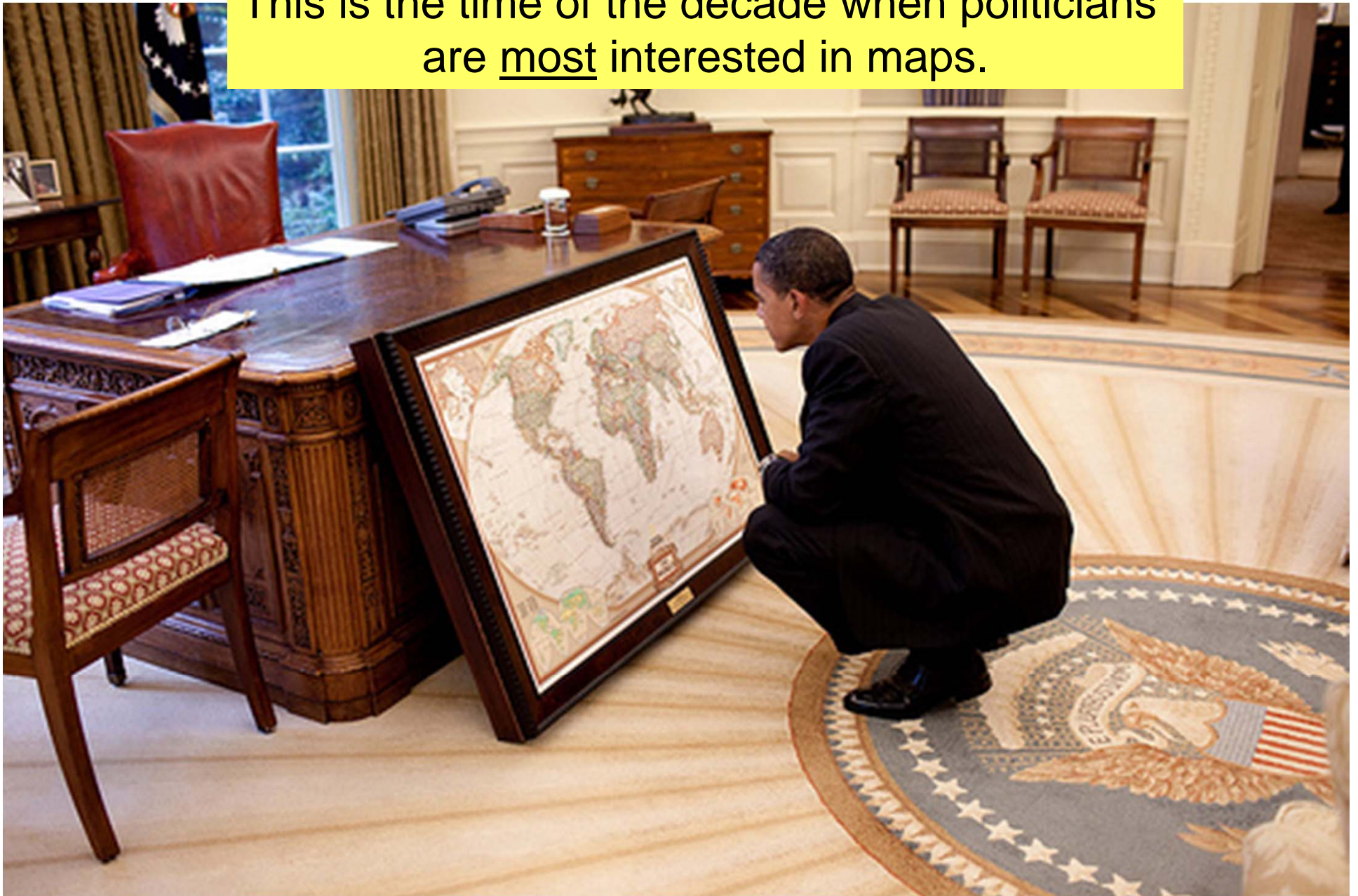
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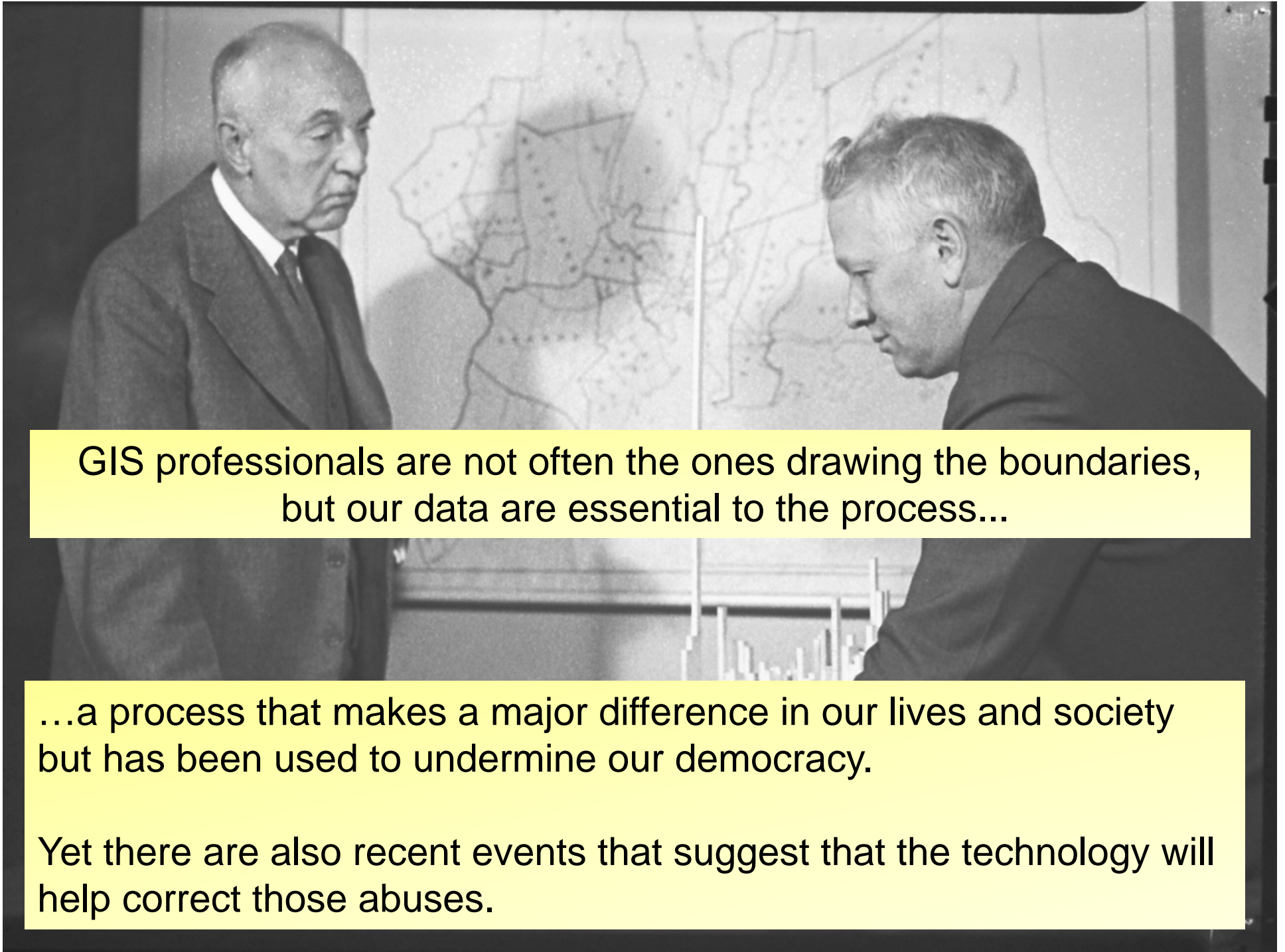
Cleveland State University

Ohio Liaison for Census Redistricting Data Program



This is the time of the decade when politicians are most interested in maps.





GIS professionals are not often the ones drawing the boundaries,
but our data are essential to the process...

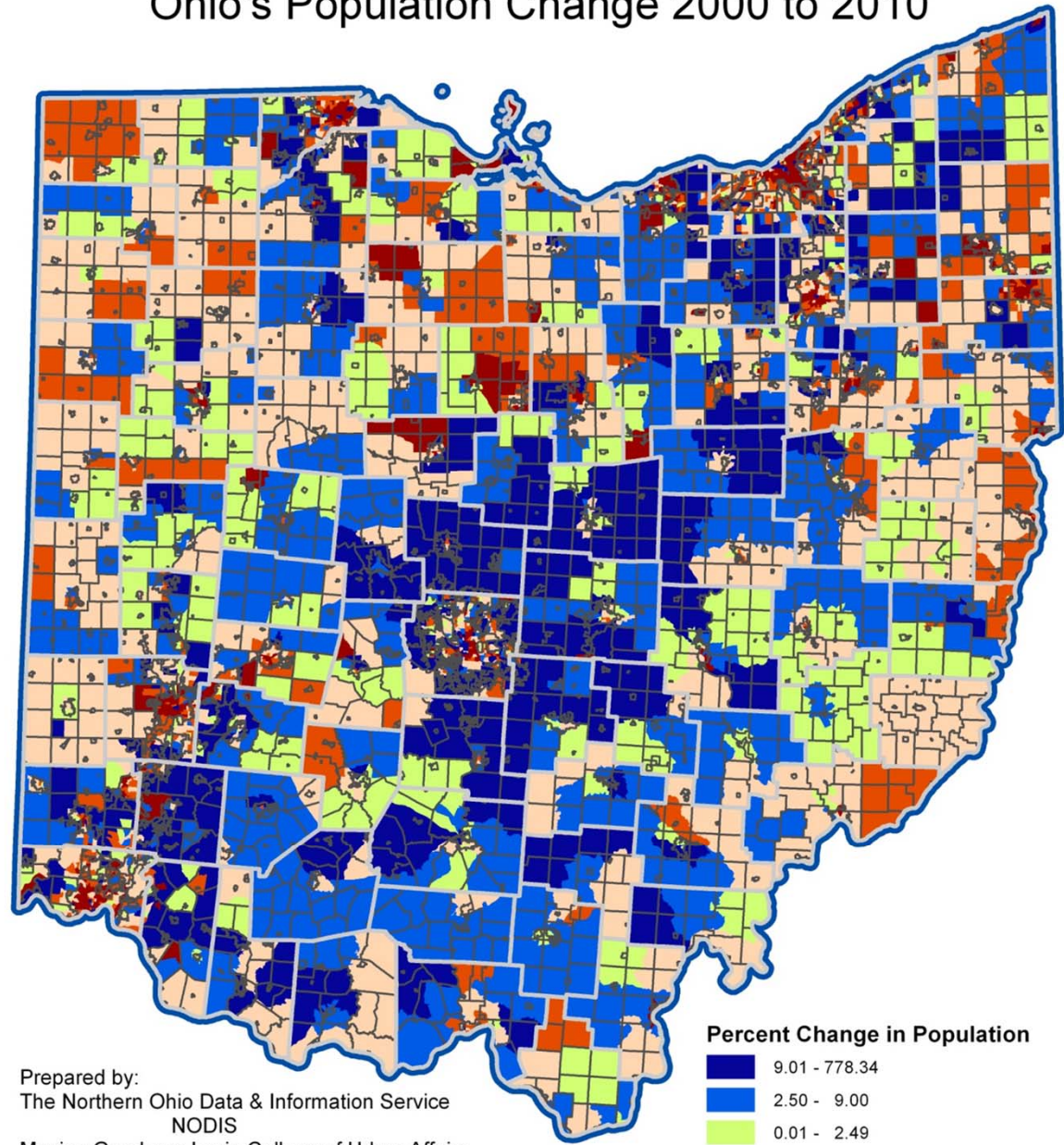
...a process that makes a major difference in our lives and society
but has been used to undermine our democracy.

Yet there are also recent events that suggest that the technology will
help correct those abuses.

Ohio's Population Change 2000 to 2010

Takes place every ten years after the Census...

to account for changes in population.



Percent Change in Population

Dark Blue	9.01 - 778.34
Blue	2.50 - 9.00
Light Green	0.01 - 2.49
Light Orange	-4.99 - 0.00
Orange	-9.99 - -5.00
Dark Red	-98.05 - -10.00

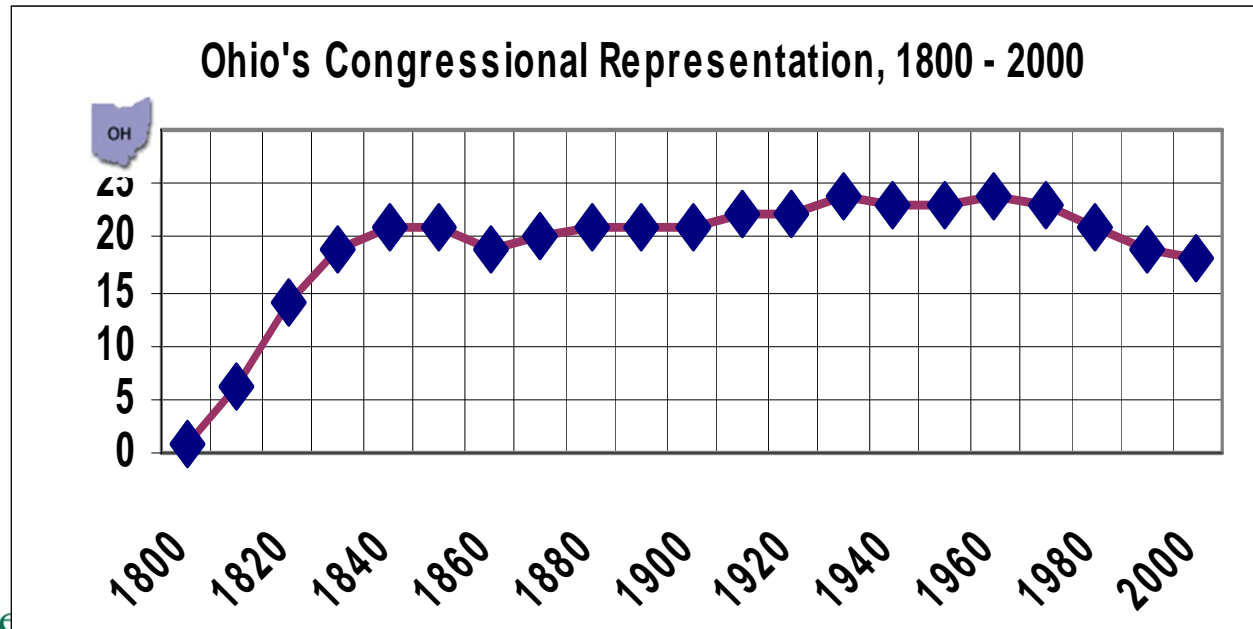
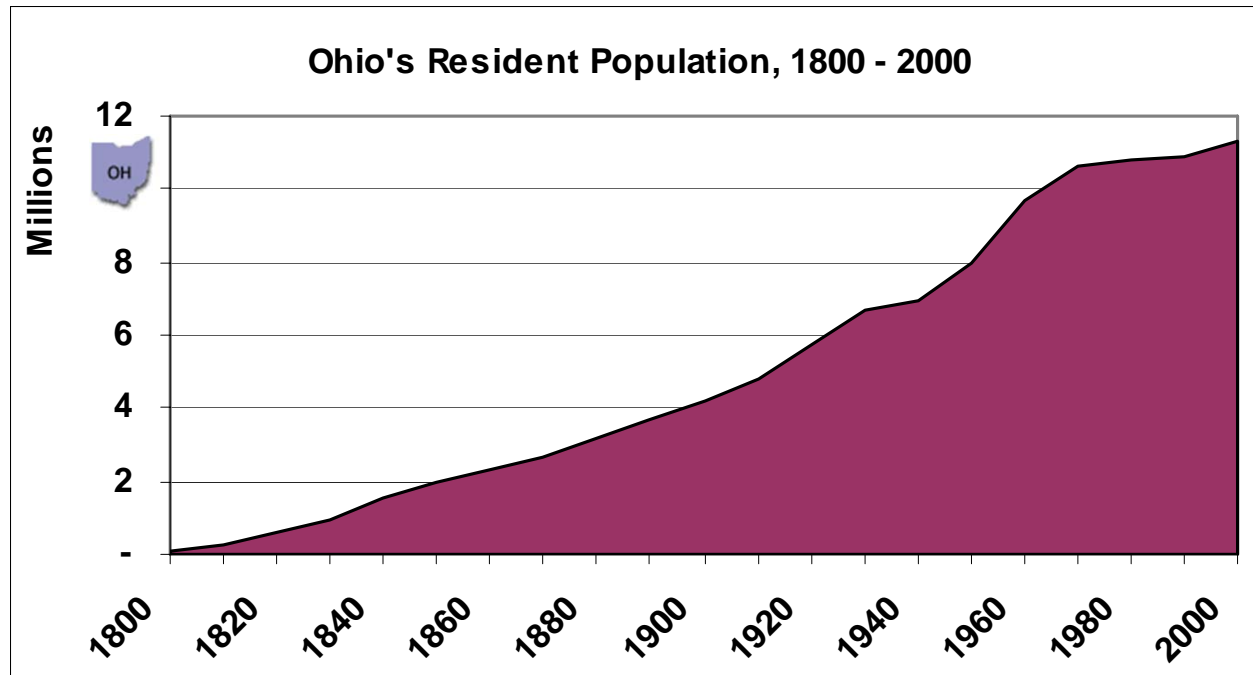
Prepared by:
The Northern Ohio Data & Information Service
NODIS
Maxine Goodman Levin College of Urban Affairs
Cleveland State University
March 2011 mjs

Source: U.S. Census

How is it Done?

U.S. Congress

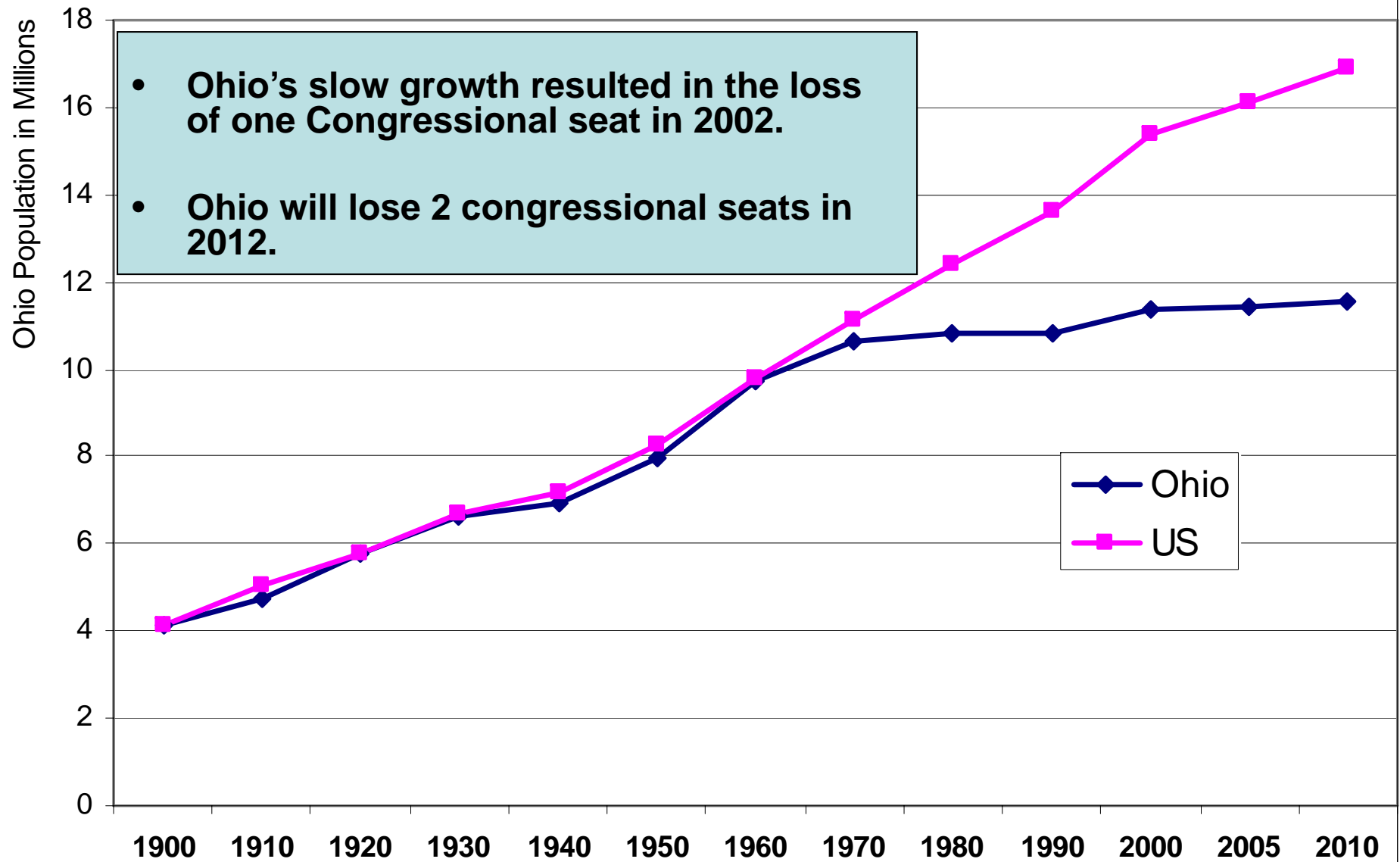
Reapportionment



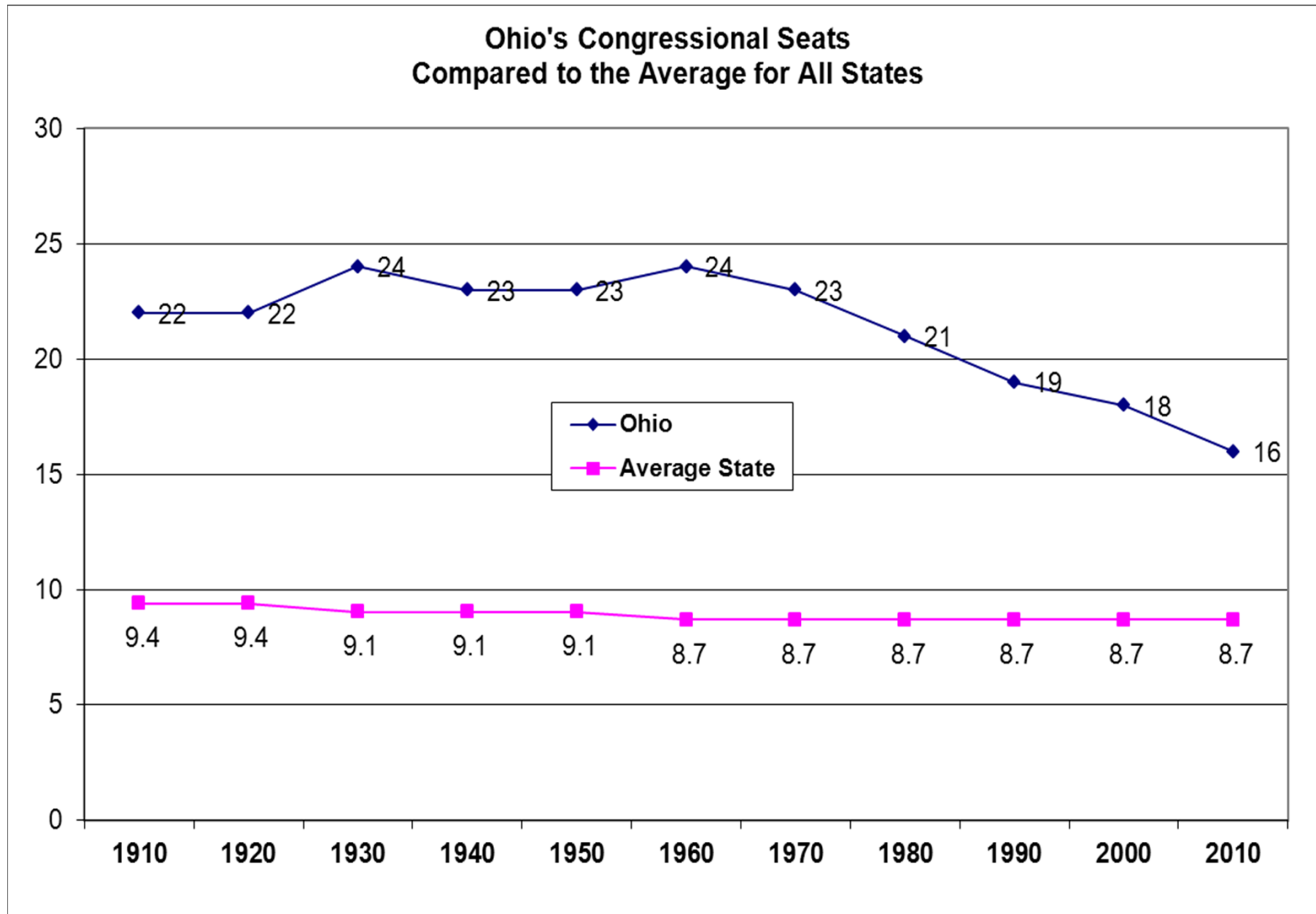
24 in 1960
18 in 2000

Population Growth Since 1900, Ohio vs. United States

(US Population scaled to ratio of US-to-Ohio Ratio in 1900)

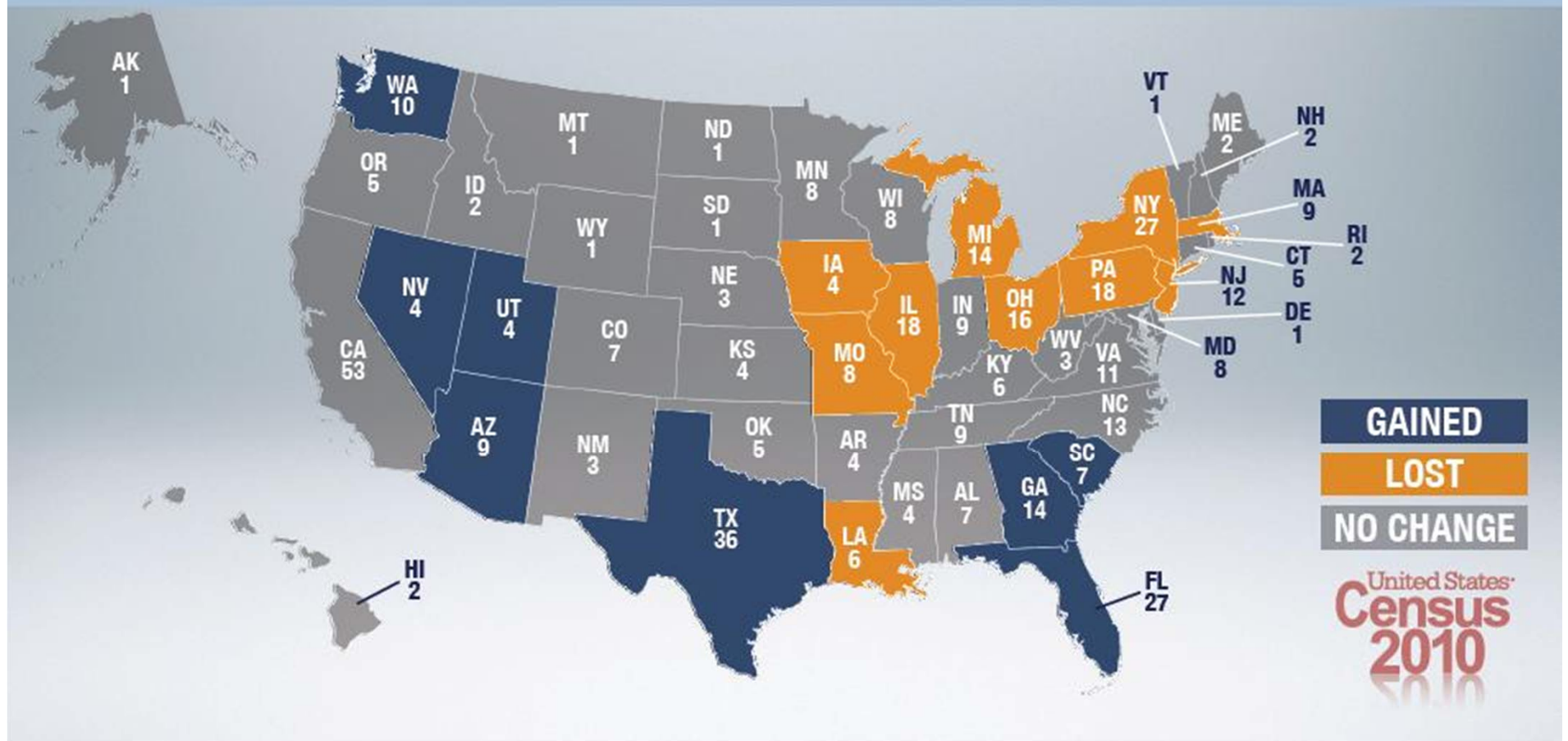


Apportionment: Population and the Number of Congressional Seats



CONGRESSIONAL SEATS

2010
OFFICIAL RESULTS



Objectives

- The US Constitution requires a decennial census for the purpose of assuring a fair distribution of seats in the US House of Representatives.
- (Near) equal population --- one person one vote
- Voting Rights Act of 1965
...outlawed the discriminatory voting practices adopted in many southern states after the Civil War, including literacy tests as a prerequisite to voting

Congressional Redistricting

Who Decides?

- ◆ Legislature with governor's signature— every 10 years

Geography

- ◆ Described by Census geography.
 1. Census blocks are the smallest geographic units
Detailed in Ohio Revised Code
 2. U.S. Constitution requires the population of each district to be as close to the average in each state as “reasonably possible”. (Therefore equal populations within a state)
 3. Must meet the requirements of the Voting Rights Act
...outlawed the discriminatory voting practices adopted in many southern states after the Civil War, including literacy tests as a prerequisite to voting

Principal of equal representation

One person, one vote

Population per Congressional District

Ohio population / districts = average population size

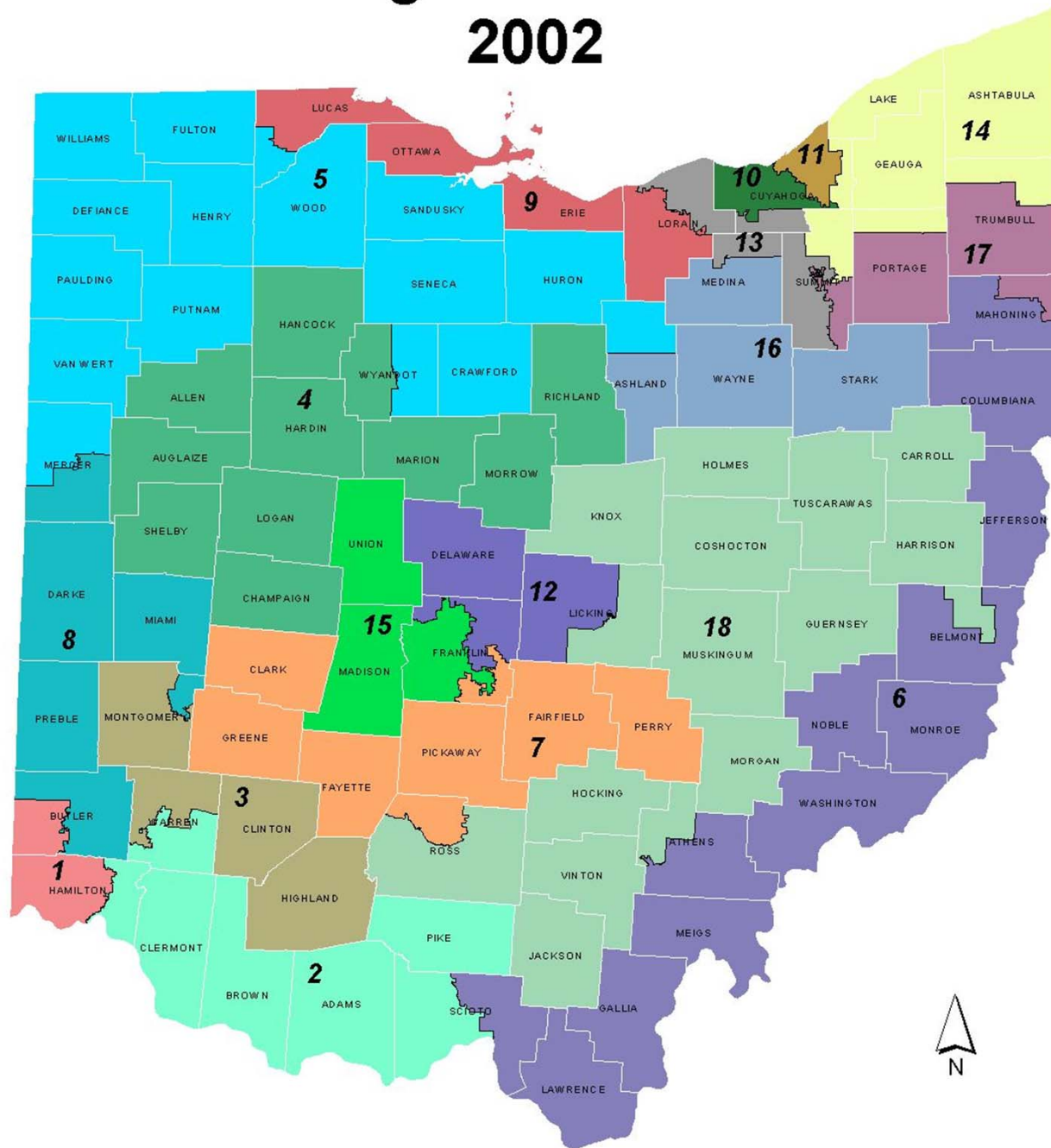
2000

$11,353,140 / 18 = 630,730$ persons
per district

2010 Census

$11,536,504 / 16 = 721,031.5$ persons
per district

Ohio Congressional Districts 2002



Ohio Legislature

Redistricting

How We Redistrict the Ohio General Assembly

Who Decides?

➤ Reapportionment Board – every 10 years

5 members:

- Governor
- Secretary of State
- State Auditor
- One member of each party in the General Assembly

2012 General Assembly (target) Population Size

2011 Redistricting

House

99 districts - average 2010 population is 116,530

Senate

33 districts - average 2010 population is 349,591

Ohio's Rules in the State's Constitution

Congressional Redistricting

Who Decides?

Legislature with governor's signature— every 10 years

Geography

- **Described by Census geography**
- **Census blocks are the smallest geographic units**
- **Population of each district must be as close to the average in each state as “reasonably possible”.**

Target population: $11,536,504 / 16 = 721,031.5$ persons per district

- **Must meet the requirements of the Voting Rights Act**

Redistricting Ohio's State Legislature

Who Decides?

Apportionment Board – Governor, Secretary of State, State Auditor, one representative from the two parties.

Geography – 99 House Districts

- Equal Population, within specified range and use of governmental units
- Nesting - Hierarchy of contiguous (and compact) territory - aggregation of governmental units:
 - > One or more whole counties (allows range of 10% of target population); i.e., keep whole counties if possible. When a county must be split, split it only once and use...
 - > Governmental units – townships, municipalities, and then wards – in that order of priority. Then there is only a 5% tolerance in population variation.

Thus: Keep local government units whole if possible.

33 Ohio Senate Districts

Each contains 3 contiguous House districts

- Keep whole counties in one senate district if possible.
- If a county is split, it can be split only once.

Summary: Redistricting Objectives

Equal population
and
Voting Rights Act

Congressional
and
Ohio General Assembly



Contiguity
Compactness
Political boundaries
Communities of interest

Ohio General Assembly



Others not included...

Competition and Representational Fairness

The Ohio Common and Unified Redistricting Database

prepared by

Northern Ohio Data & Information Service – NODIS
Maxine Goodman Levin College of Urban Affairs
Cleveland State University

and

Voinovich Center for Leadership and Public Affairs
Ohio University

for

The Legislative Services Commission
of the Ohio General Assembly

What do we mean **Common** and **Unified**?

Common – everyone uses the same data

Unified – includes:

1. Census data ...population by race
2. Election Results ...federal and state 2008 & 2010
3. Boundary (GIS) data –
 - Census blocks
 - precincts, wards
 - cities, villages, townships, counties
 - current General Assembly and Congressional districts

Census data and election results are provided for all these geographic types

Census, Redistricting, and Election Schedule

April 2010 - Census

By December 31, 2010 – Census reports population by state for congressional reapportionment

By April 1, 2011 - PL94-171 (block-level) data from Census

**August 1 - October 1, 2011 –
Reapportionment Board convened, plan adopted**

Summer/Fall 2011 - Legislature adopts new congressional district plan

Spring 2012 - Primary elections using new district plans

November 2012 - General election with new districts

The Data

- Census – population by race
- Recent election results
- Geographic data

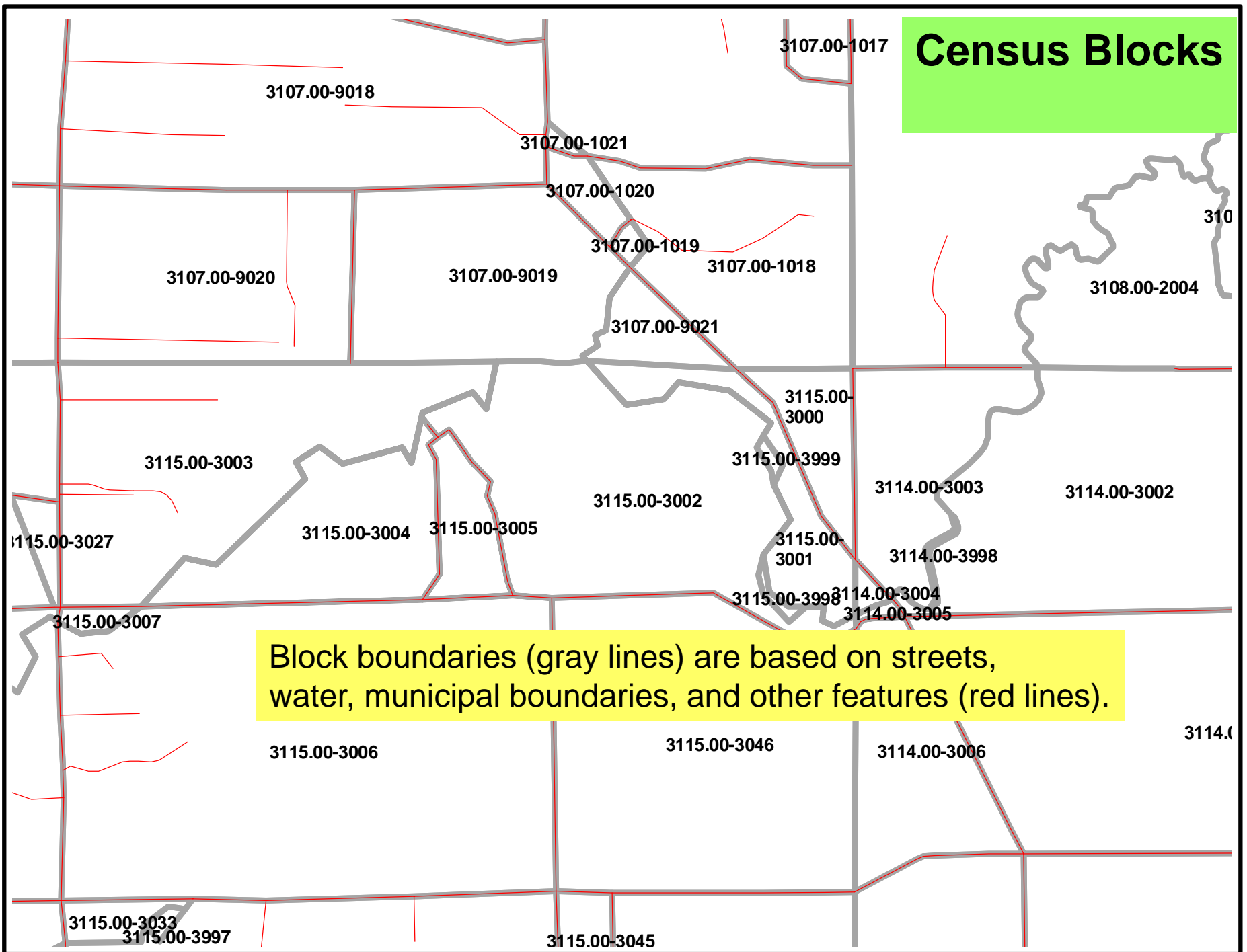
Data on recent election results are generated by precinct (voting tabulation district in Census terminology).

In order to include data on political leanings among the electorate, it is necessary to draw the precinct boundaries on TIGER.

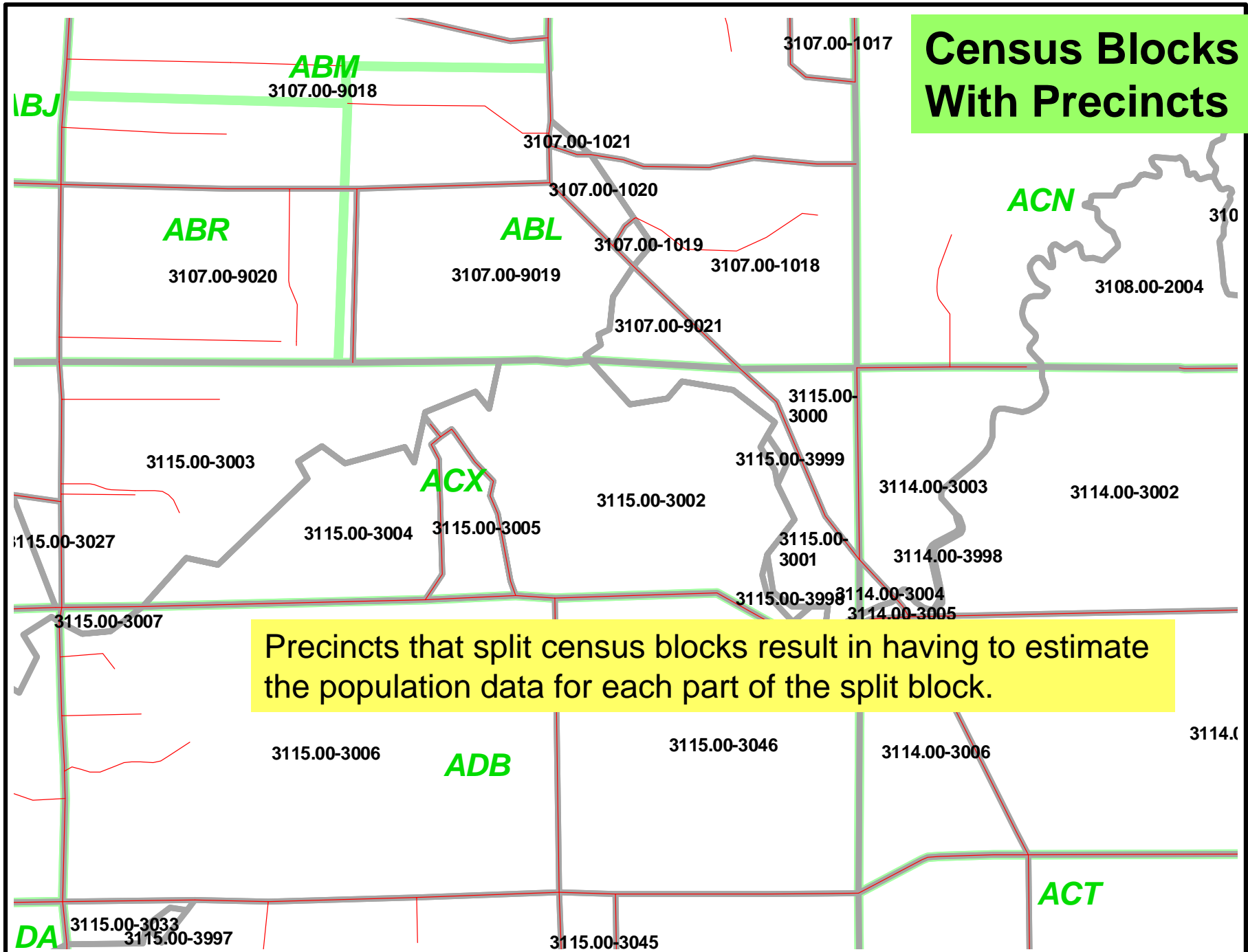
This enables apportionment of election results data to the census block and higher levels of census geography.

But first it is necessary to split any blocks that are shared by precincts and estimate the population and election results data for those split polygons.

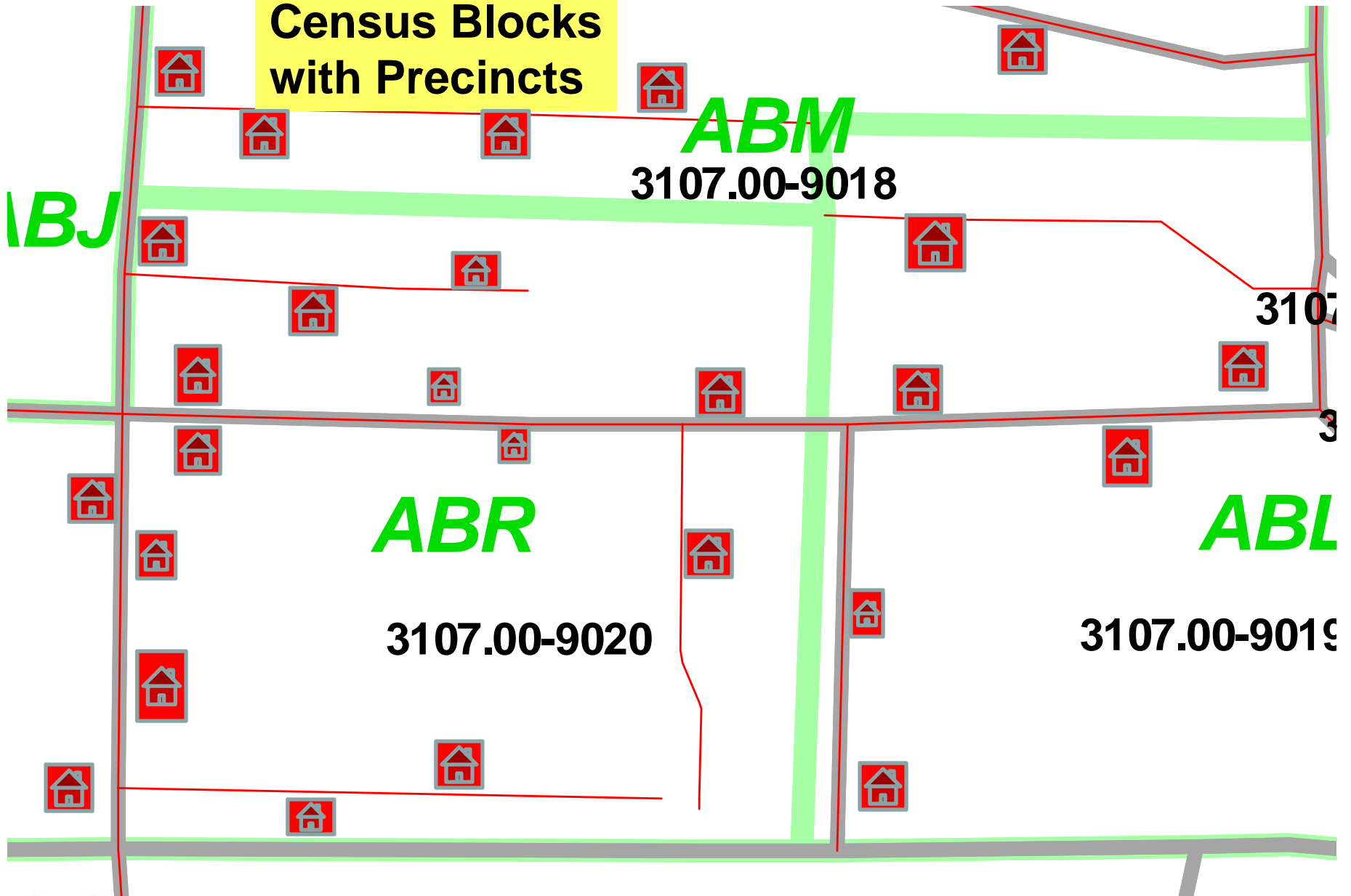
Census Blocks



Census Blocks With Precincts



**Census Blocks
with Precincts**



GEOGRAPHIC ISSUES

Geographic Issues

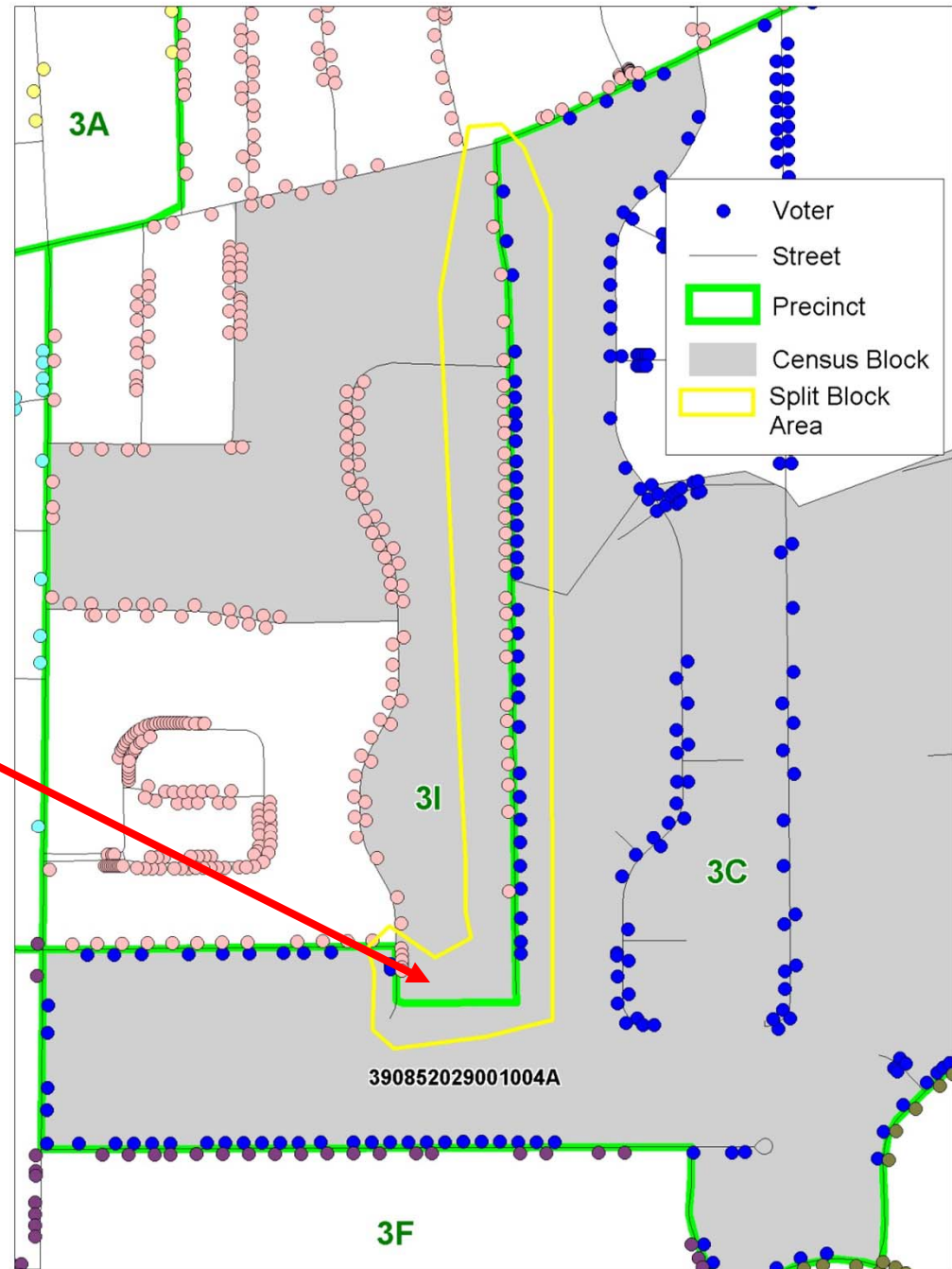
TIGER Spatial Accuracy

The Census base map (TIGER) is used for the redistricting database,

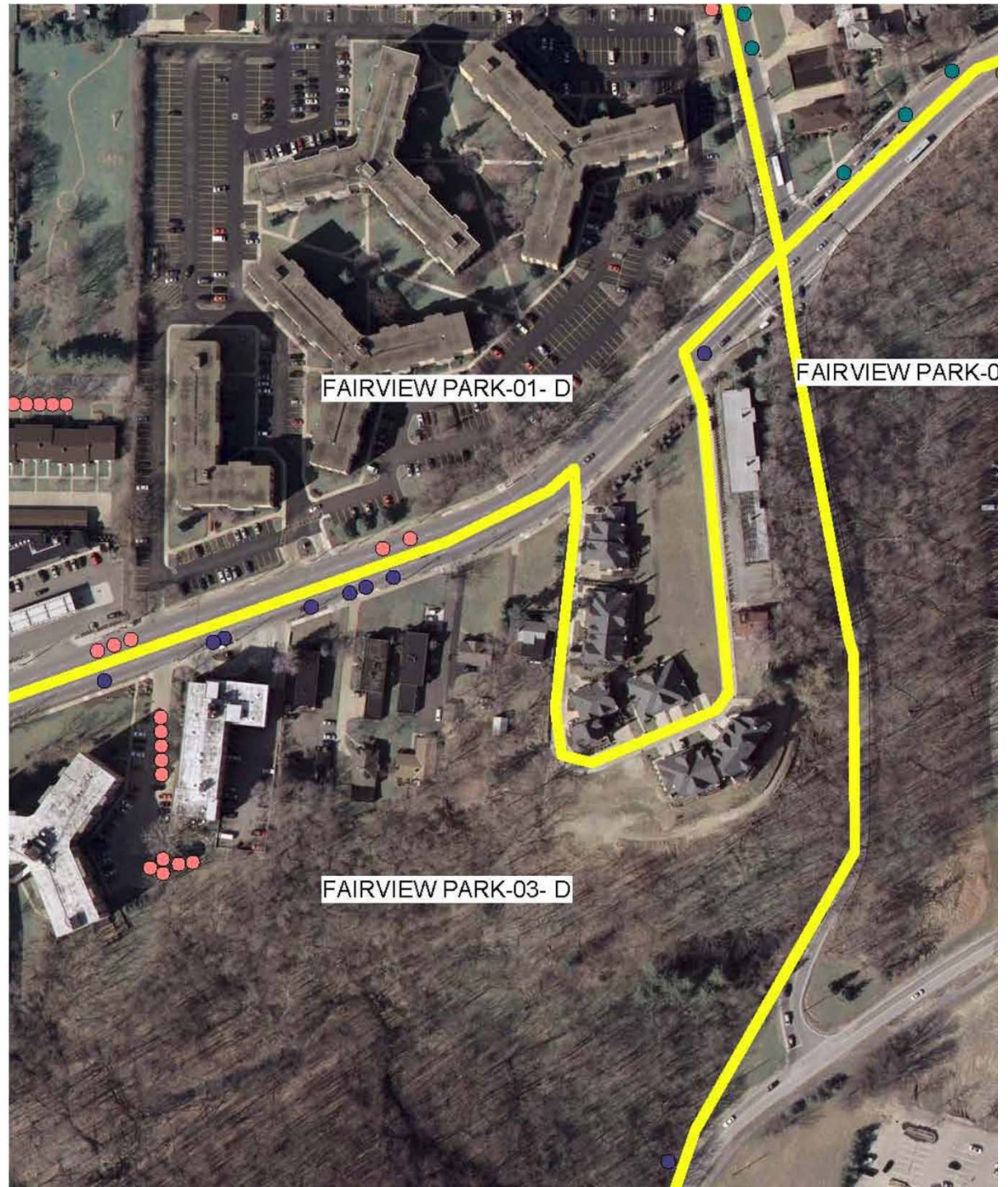
but county boards of elections generally use local county engineer's or auditor's base maps.

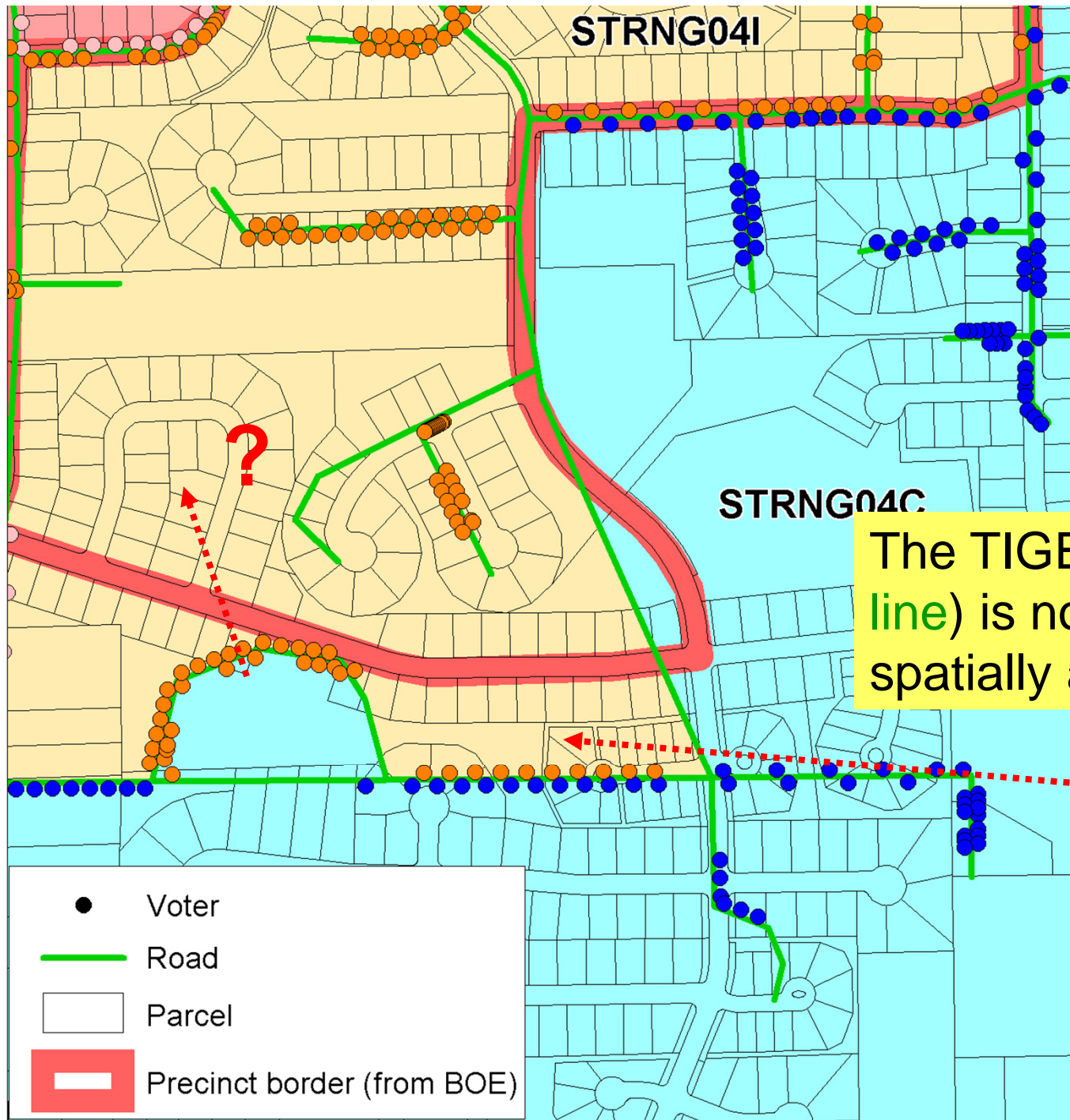
Precincts Split Census Block

We used geocoded registered voters to help delineate and adjust precinct boundaries.



Making sure the
boundaries don't
put houses (voters)
in the wrong
precinct





←..... Pretty good

The TIGER street (green line) is not always spatially accurate.

Bad

Census and Municipal Boundaries

Census Bureau's Boundary and Annexation Survey (BAS)

vs.

Local maps used by the Boards of Elections

Currency and Accuracy

Harrison

HAMILTON COUNTY

Are there voters here voting
in the wrong House district
election?

Harrison T.

Carolina Trace

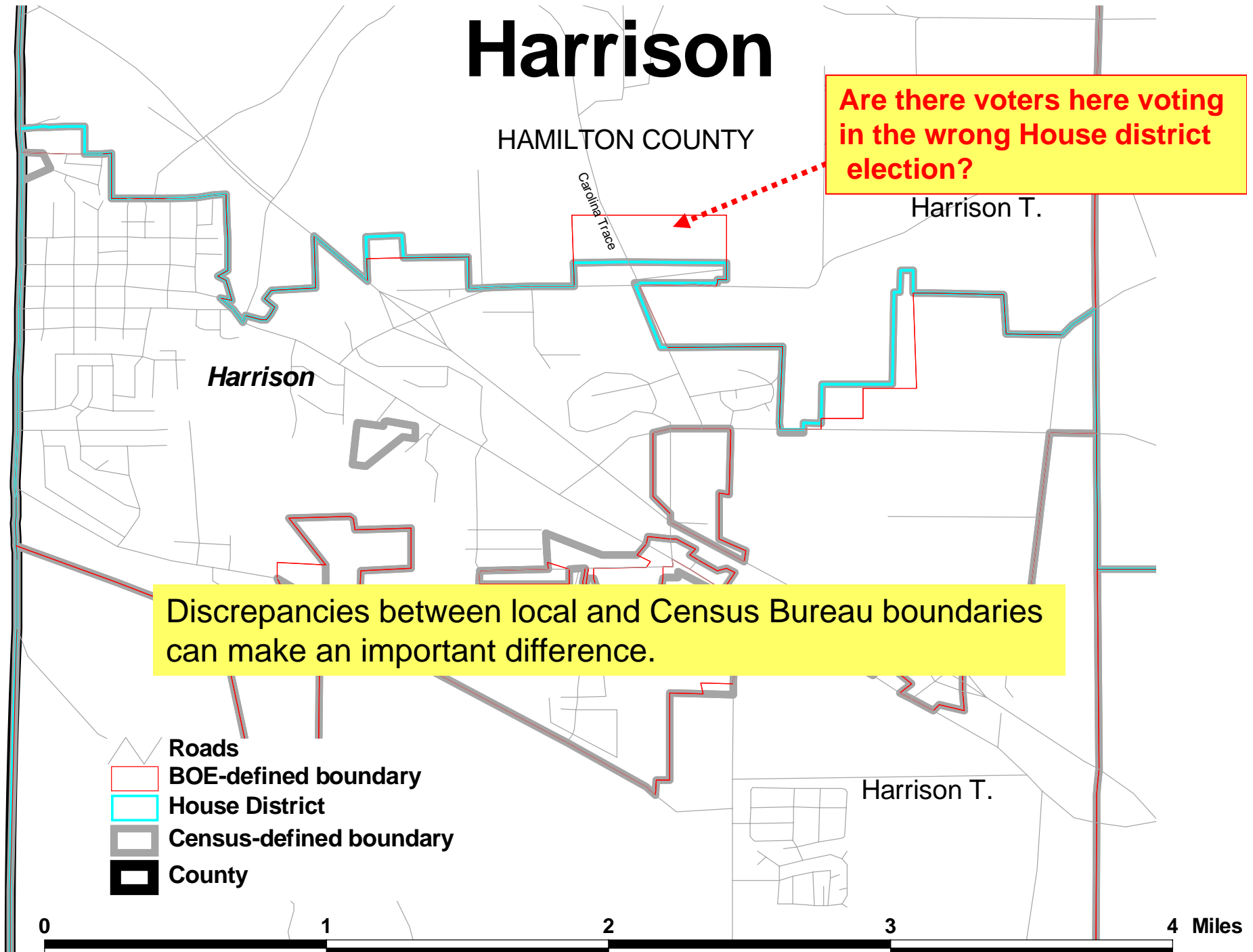
Harrison

Discrepancies between local and Census Bureau boundaries
can make an important difference.

Harrison T.

- Roads
- BOE-defined boundary
- House District
- Census-defined boundary
- County

0 1 2 3 4 Miles



CSU and OU Responsibilities

