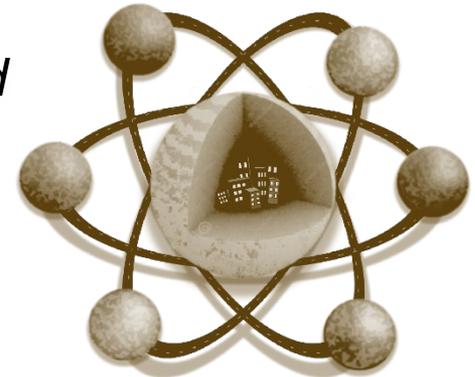


# Metropolitan Statistical Areas (MSA) of Northeast Ohio: *Past, Present, and Future Told through a Story Map*

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## Ohio GIS Conference

*September 21 – 23, 2020*



# The Research Question?

What is a Metropolitan Statistical Area (MSA) and why are there multiple MSAs in the Northeast Ohio region?

# What is a Metropolitan Statistical Area (MSA) ?

1. Core area containing a substantial population nucleus
2. Joined together with adjacent communities that have a high degree of economic and social integration with the core area (high work-commuting relationship)
  - Delineation criteria and standards are developed by the US Census Bureau and the US Office of Management and Budget (OMB)
  - Data used: Decennial Census and American Community Survey (ACS)



# MSA (Counties) Cleveland (5)

Akron (2)

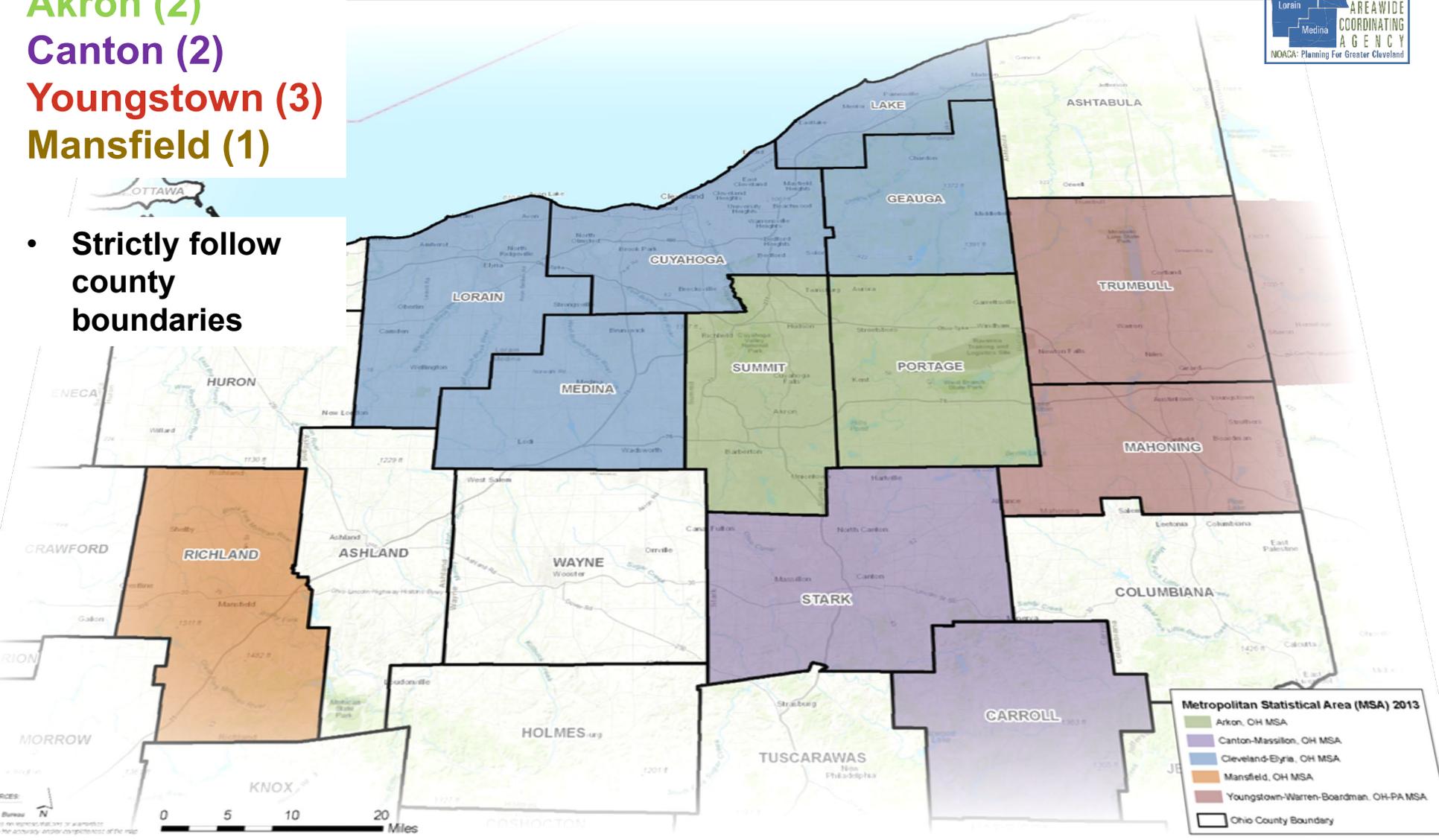
Canton (2)

Youngstown (3)

Mansfield (1)



- Strictly follow county boundaries



## UZAs

Cleveland

Lorain-Elyria

Akron

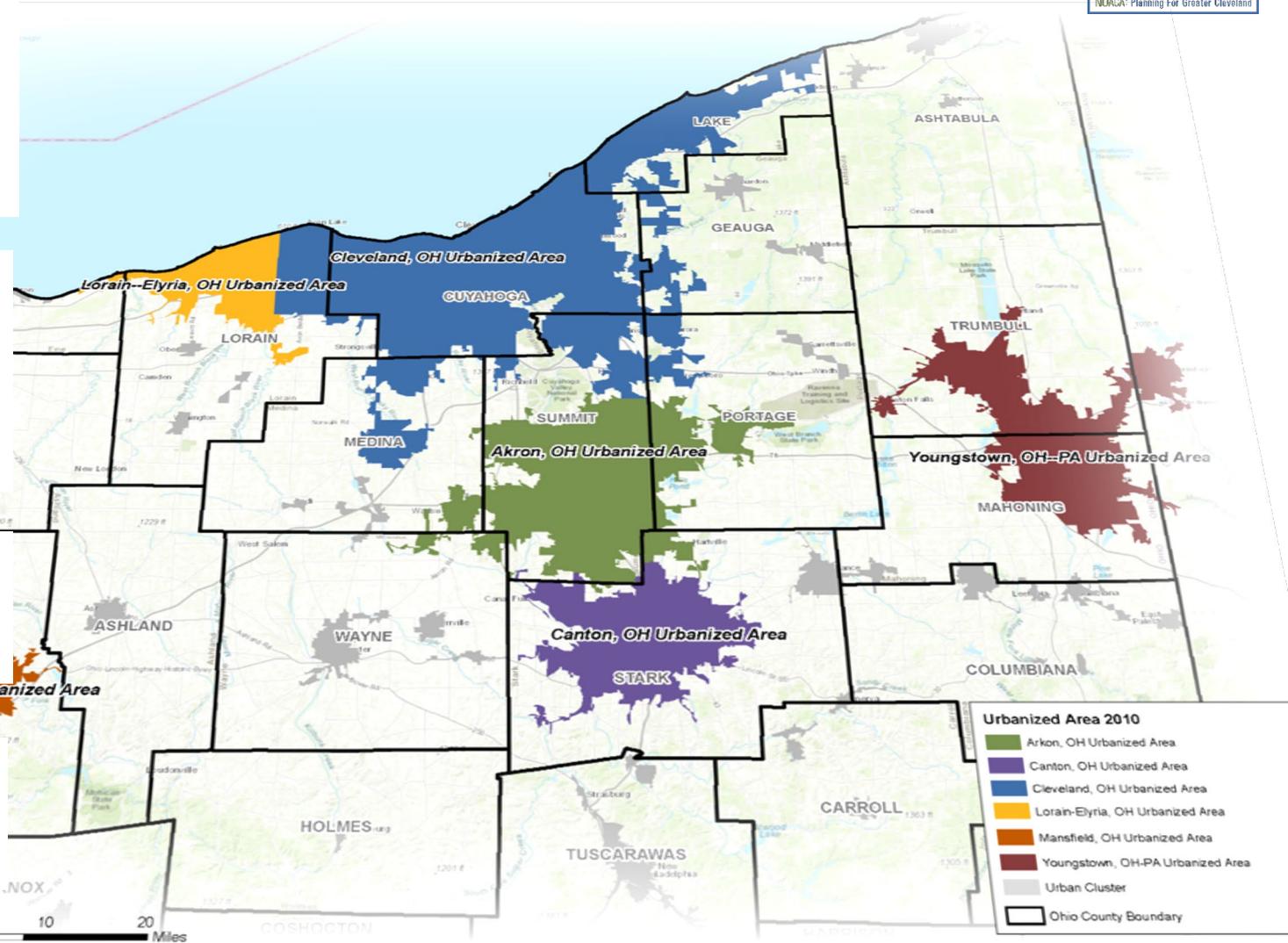
Canton

Youngstown

Mansfield



- Represent high levels of population and employment density
- Do not follow political boundaries
- Are the basis of the formation of MSAs



# How are MSAs used?

- Census Bureau releases demographic and socioeconomic data at the MSA geography
- Research Reports by Academic, Government, and Non-Profit Institutions
- Site selection for Economic Development
  - MSA data is part of the first impression for business site selectors and other researchers
  - Workforce and economic related data - college-educated, workers in industries/occupations, supply-chain businesses
- Worldwide and National **COMPARISONS** and **RANKINGS** of Metro Areas
- Important that MSA represents the entire economic area of a region



# Peer MSA Comparison

MSA	Population*	Population* Rank	Employment^	Employment^ Rank	Counties	Square Mileage
Pittsburgh	2,324,743	27	1,479,848	25	7	5,343
Columbus	2,106,541	32	1,370,011	30	10	5,380
Cleveland	2,057,009	33	1,331,464	33	5	2,017
Indianapolis	2,048,703	34	1,318,788	34	11	4,341
Akron	704,845	82	429,591	76	2	924
Youngstown	538,952	104	285,175	108	3	1,744
Canton	398,655	135	221,971	137	2	979

\*2018 Census Estimate

^2017 BEA Estimate



# History of Northeast Ohio MSAs

- MSAs were created in 1950
- Cleveland and other Northeast Ohio MSAs grew organically from 1950-1993 due to urban sprawl and longer commuting patterns (inter-county)
- In 2003, the OMB drastically changed the MSA delineation criteria, resulting in the Northeast Ohio MSAs changing dramatically



# History of Northeast Ohio MSAs



# How was an MSA formed prior to 2000?

- Initial Unit of Analysis = Major City above 50,000 Population
- Major City  “Central” County
- “Outlying” Counties or MSAs added based on 2 criteria
  - Similar “Economic Character” – population/employment densities
  - Variable commuting threshold = 15% to 50%

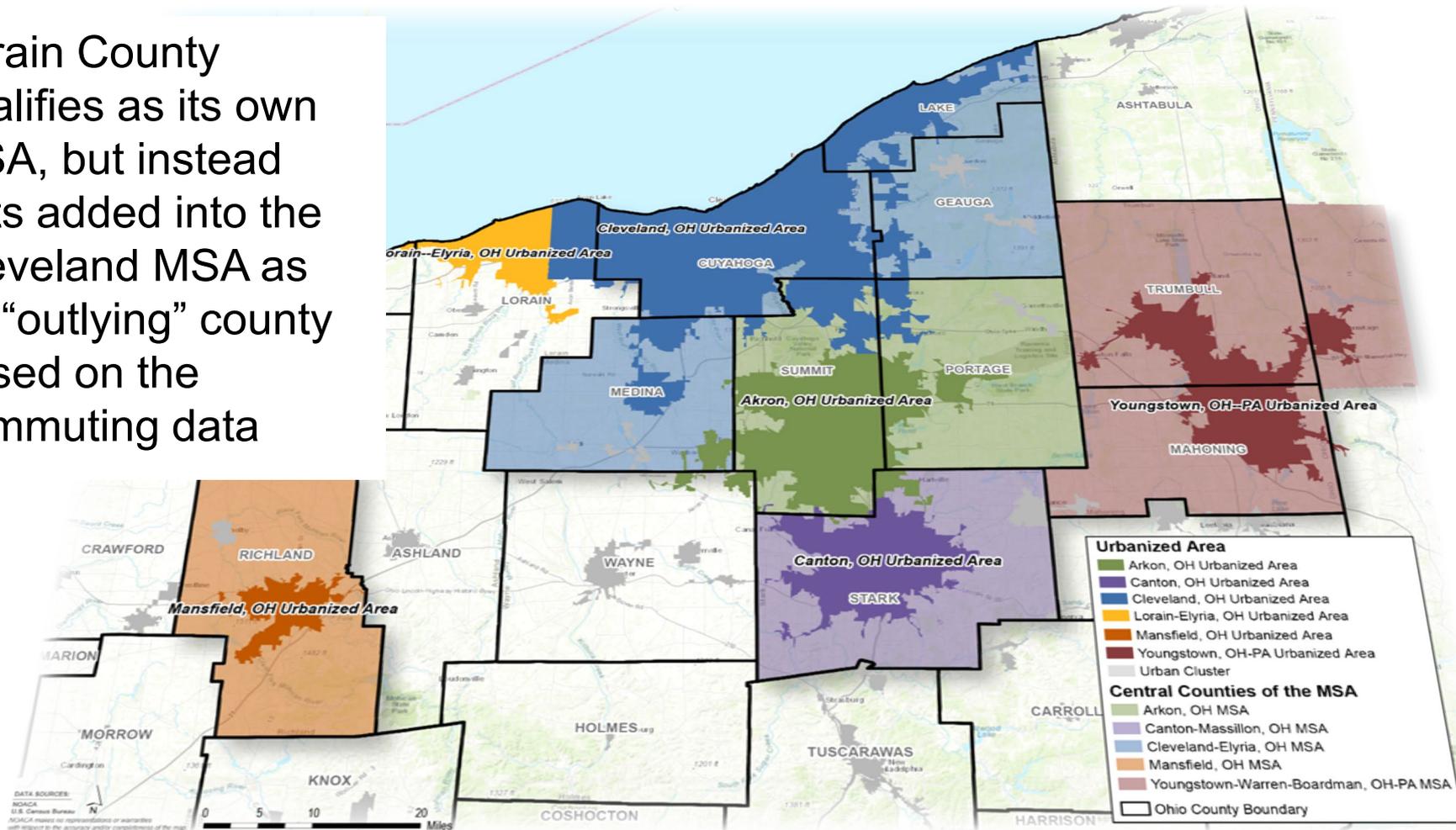
# How did MSA criteria change after 2000?

- Initial Unit of Analysis = Urbanized Area (UZA) above 50,000 Population
- Urbanized Area  “Central” County or Counties
  - If a county has multiple UZAs within it, county is assigned to the UZA that has most population within the county
- “Outlying” Counties or MSAs Added based on 1 criterion
  - Standardized and Strict commute threshold = 25%
  - “Economic Character” criterion dropped

# “Central” Counties of the Northeast Ohio MSAs



- Lorain County qualifies as its own MSA, but instead gets added into the Cleveland MSA as an “outlying” county based on the commuting data



# Lorain County added as “Outlying” County

RESIDENCE	WORKPLACE	COMMUTERS	PERCENTAGE
Lorain County	Cuyahoga County	42,170	31.3%
	Medina County	2,335	1.7%
	Lake County	585	0.4%
	Geauga County	125	0.1%
<b>LORAIN COUNTY TO CENTRAL COUNTIES COMMUTE TOTAL</b>		<b>45,215</b>	<b>33.6%</b>
<b>LORAIN COUNTY TO ALL WORKPLACES COMMUTE TOTAL</b>		<b>134,535</b>	<b>100.0%</b>

Source: ACS 2006-2010



# Ashtabula does not meet 25% threshold

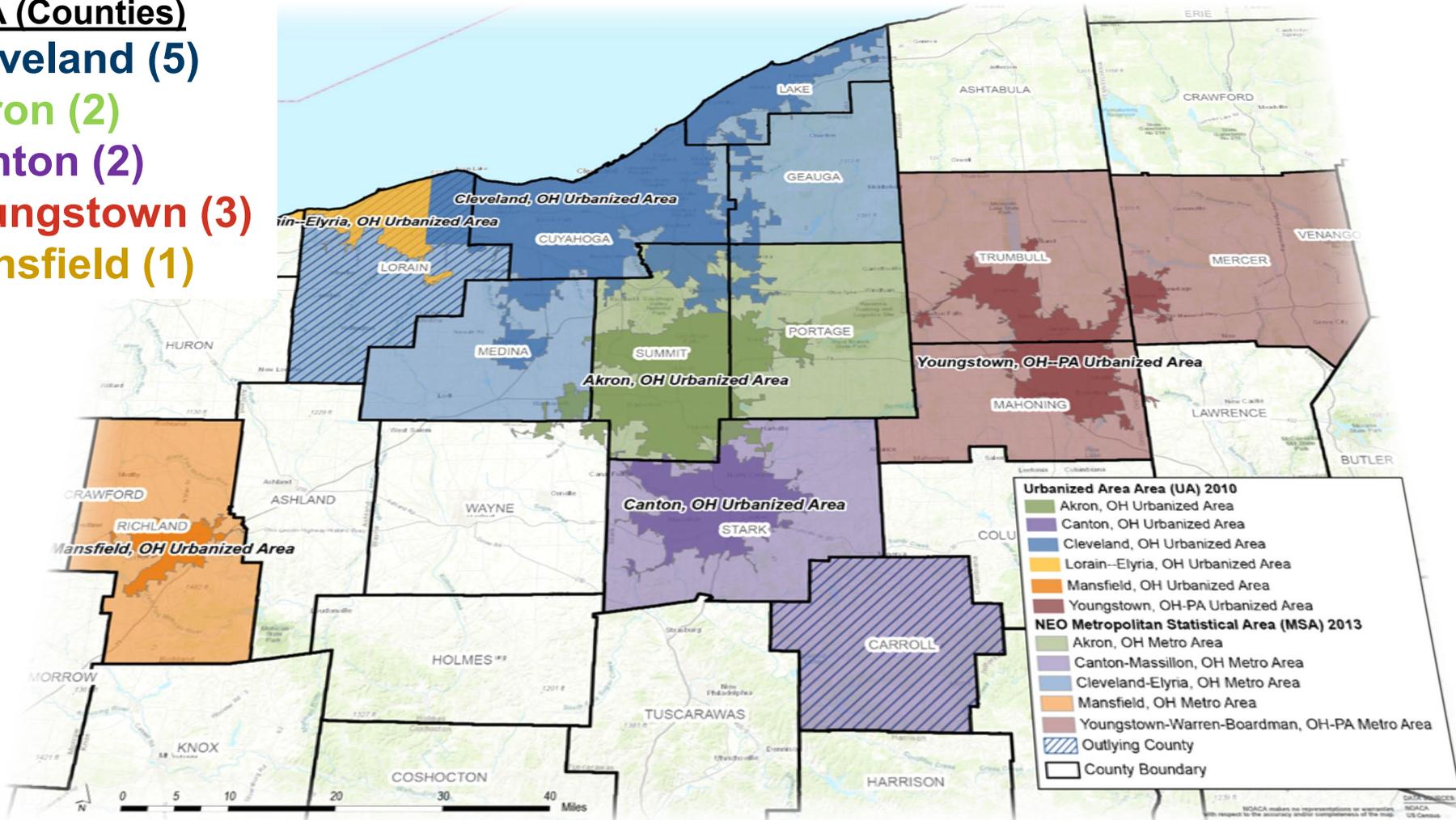
RESIDENCE	WORKPLACE	COMMUTERS	PERCENTAGE
Ashtabula County	Lake County	5,295	12.5%
	Cuyahoga County	2,640	6.2%
	Geauga County	2,090	4.9%
	Medina County	30	0.1%
<b>ASHTABULA COUNTY TO CENTRAL COUNTIES COMMUTE TOTAL</b>		<b>10,055</b>	<b>23.6%</b>
<b>ASHTABULA COUNTY TO ALL WORKPLACES COMMUTE TOTAL</b>		<b>42,520</b>	<b>100.0%</b>

Source: ACS 2006-2010

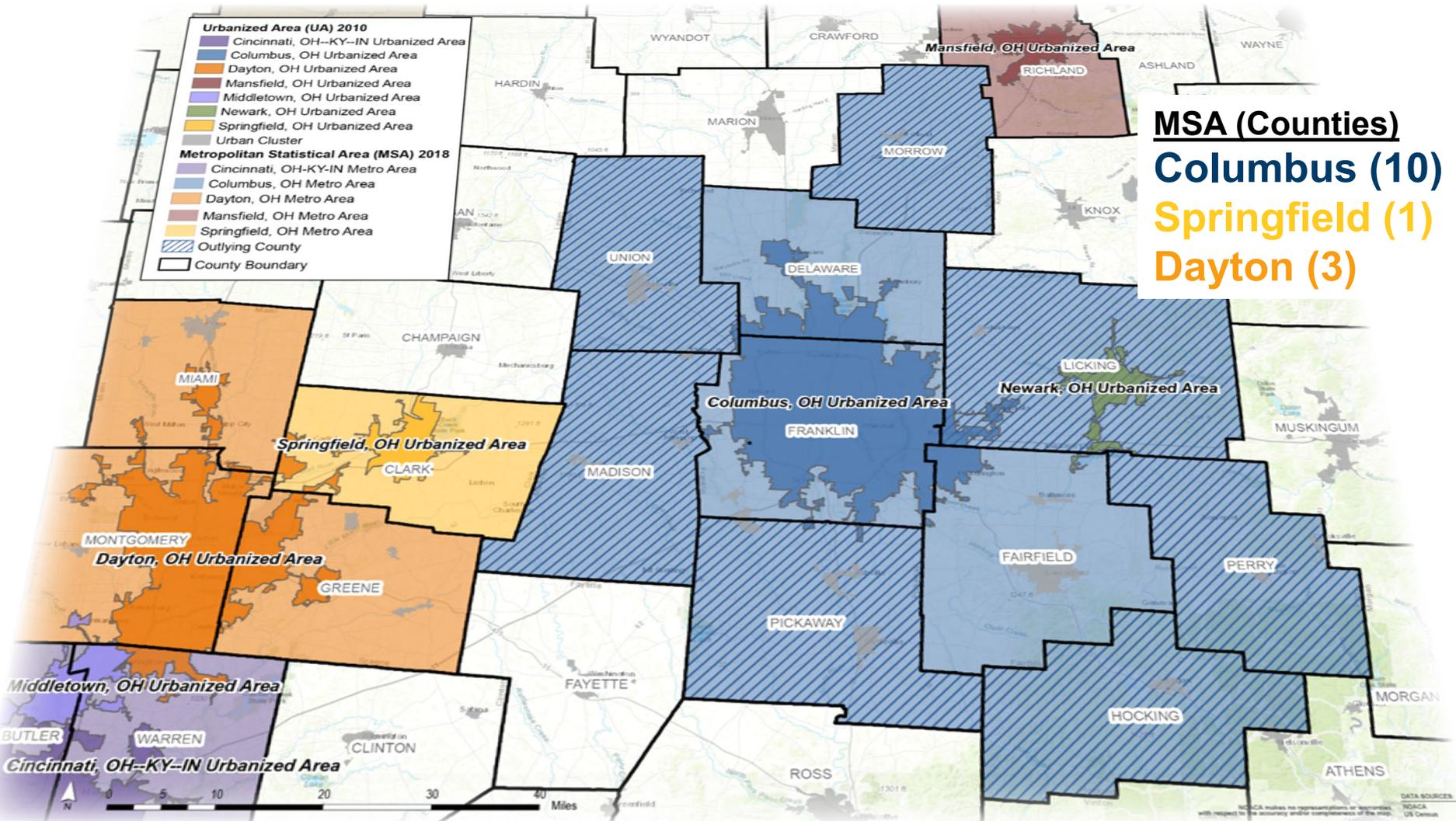
# Northeast Ohio MSAs and UZAs



- MSA (Counties)**
- Cleveland (5)**
  - Akron (2)**
  - Canton (2)**
  - Youngstown (3)**
  - Mansfield (1)**



# Central Ohio MSAs and UZAs



# How can Northeast Ohio be more accurately represented in the context of the MSA?

## Current criteria and 7 scenarios analyzed

Scenario	Commute Threshold %	Data Source	Expanded Urbanized Area?	No. of Central Counties of MSA	Total Counties of MSA	Total Population* of MSA	Increase in Counties	Increase in Population*
Current/Base	25	ACS	No	4	5	2,057,009	-	-
1	15	ACS	No	4	8	2,859,347	3	802,338
2	25	LODES	No	4	6	2,154,502	1	97,493
3	25	ACS	Yes	8	9	3,160,509	4	1,103,500
4	15	LODES	No	4	8	2,859,347	3	802,338
5	15	ACS	Yes	8	13	3,540,760	8	1,483,751
6	25	LODES	Yes	8	11	3,373,969	6	1,316,960
7	15	LODES	Yes	8	14	3,578,394	9	1,521,385

\* US Census - 2018 estimate

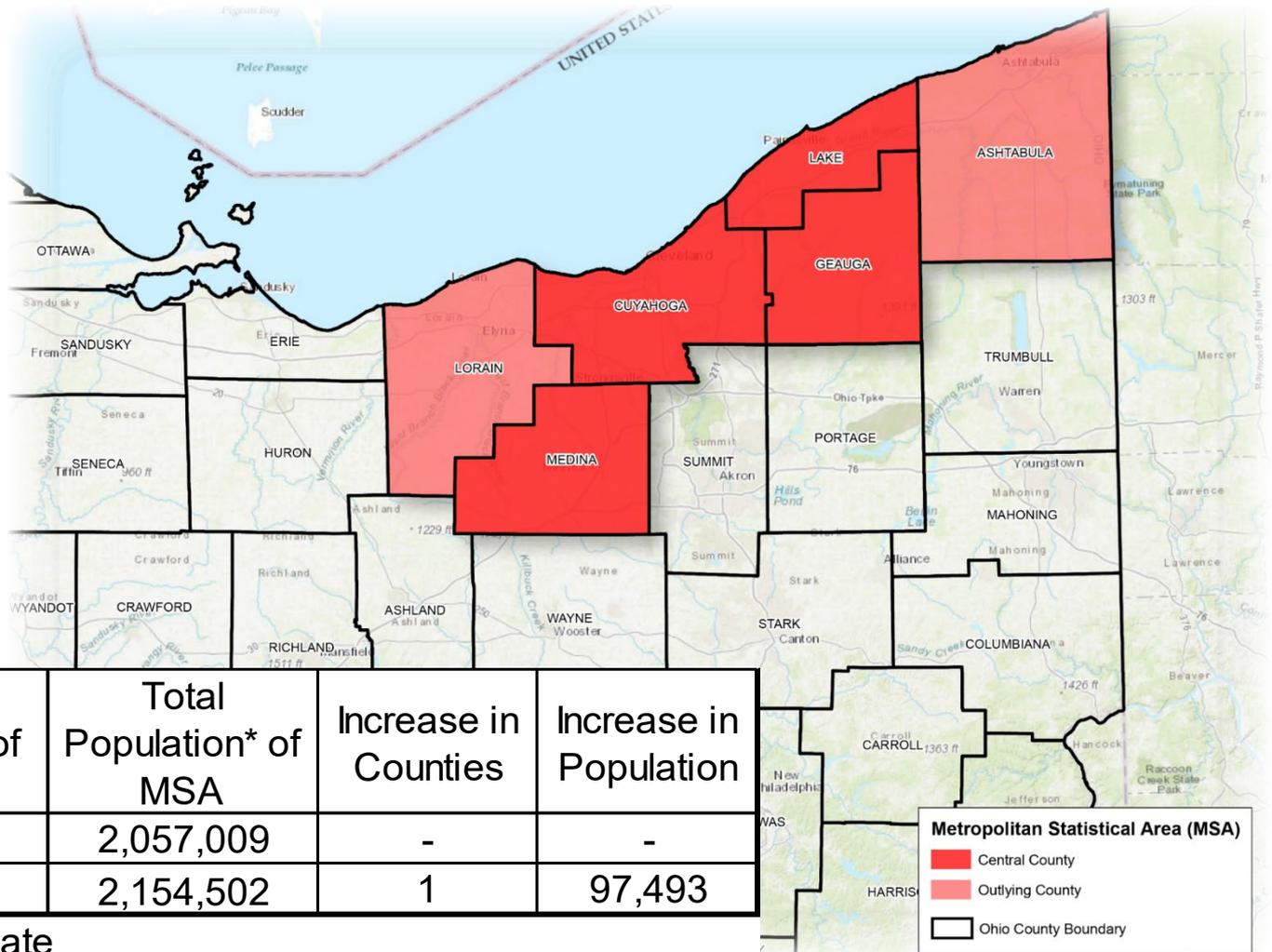
Highlight indicates a criteria or data modification



# Scenario 2 - Using Census LODES Data = 6 counties



## Additional Counties Ashtabula



Scenario	Total Counties of MSA	Total Population* of MSA	Increase in Counties	Increase in Population
Current/Base	5	2,057,009	-	-
2	6	2,154,502	1	97,493

**Metropolitan Statistical Area (MSA)**

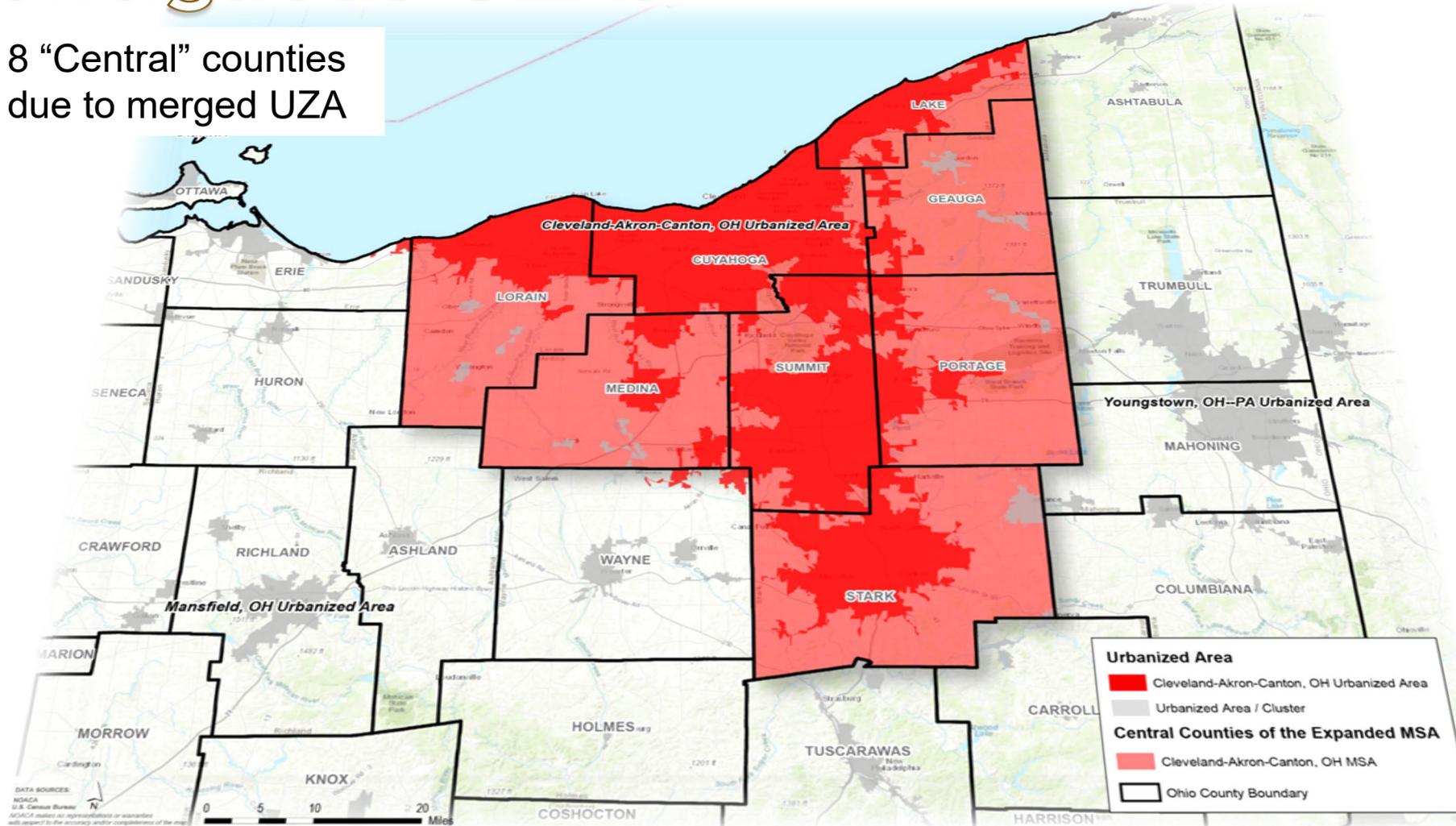
- Central County
- Outlying County
- Ohio County Boundary

\* US Census - 2018 estimate

# Scenario 3 - Merging of contiguous UZAs



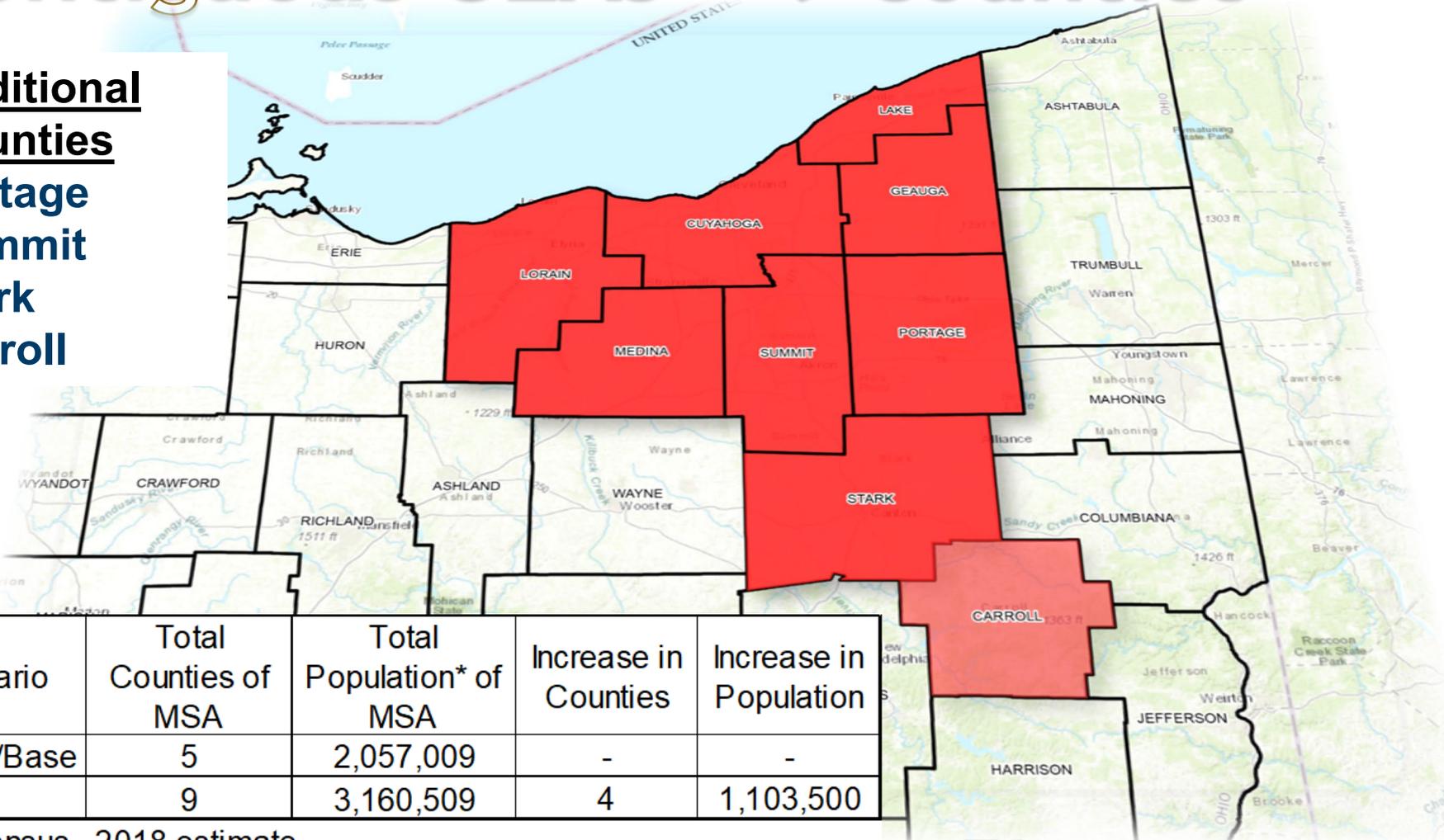
- 8 “Central” counties due to merged UZA



# Scenario 3 - Merging of contiguous UZAs = 9 counties



**Additional Counties**  
**Portage**  
**Summit**  
**Stark**  
**Carroll**



Scenario	Total Counties of MSA	Total Population* of MSA	Increase in Counties	Increase in Population
Current/Base	5	2,057,009	-	-
3	9	3,160,509	4	1,103,500

\* US Census - 2018 estimate

# Scenario 3 Comparison with Peer MSAs

MSA	Population*	Population* Rank	Employment^	Employment^ Rank	Counties	Square Mileage
Scenario 3	3,160,509	18	1,983,026	19	9	3,920
Pittsburgh	2,324,743	27	1,479,848	25	7	5,343
Columbus	2,106,541	32	1,370,011	30	10	5,380
<i>Cleveland</i>	<del>2,057,009</del>	<del>33</del>	<del>1,331,464</del>	<del>33</del>	<del>5</del>	<del>2,017</del>
Indianapolis	2,048,703	34	1,318,788	34	11	4,341
<i>Akron</i>	<del>704,845</del>	<del>82</del>	<del>429,591</del>	<del>76</del>	<del>2</del>	<del>924</del>
<i>Canton</i>	<del>398,655</del>	<del>135</del>	<del>221,971</del>	<del>137</del>	<del>2</del>	<del>979</del>

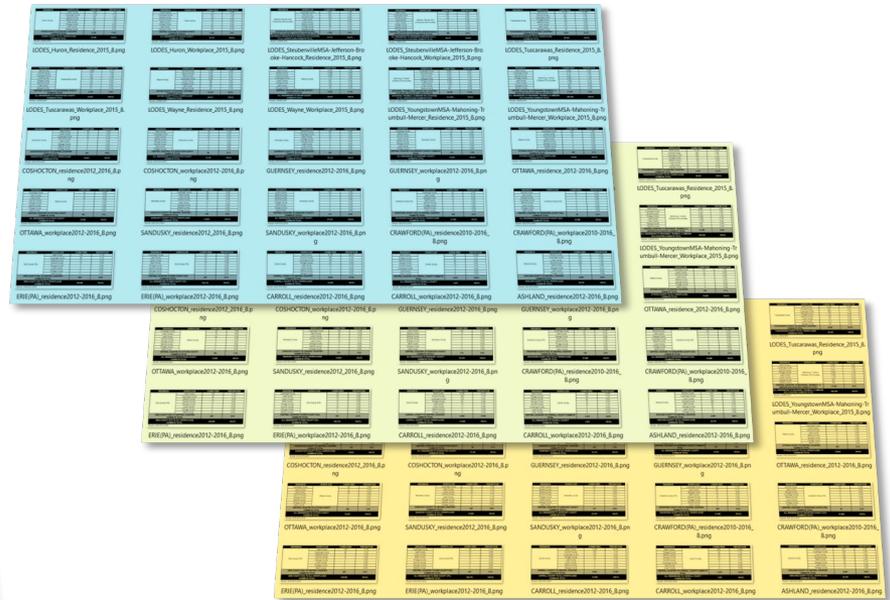
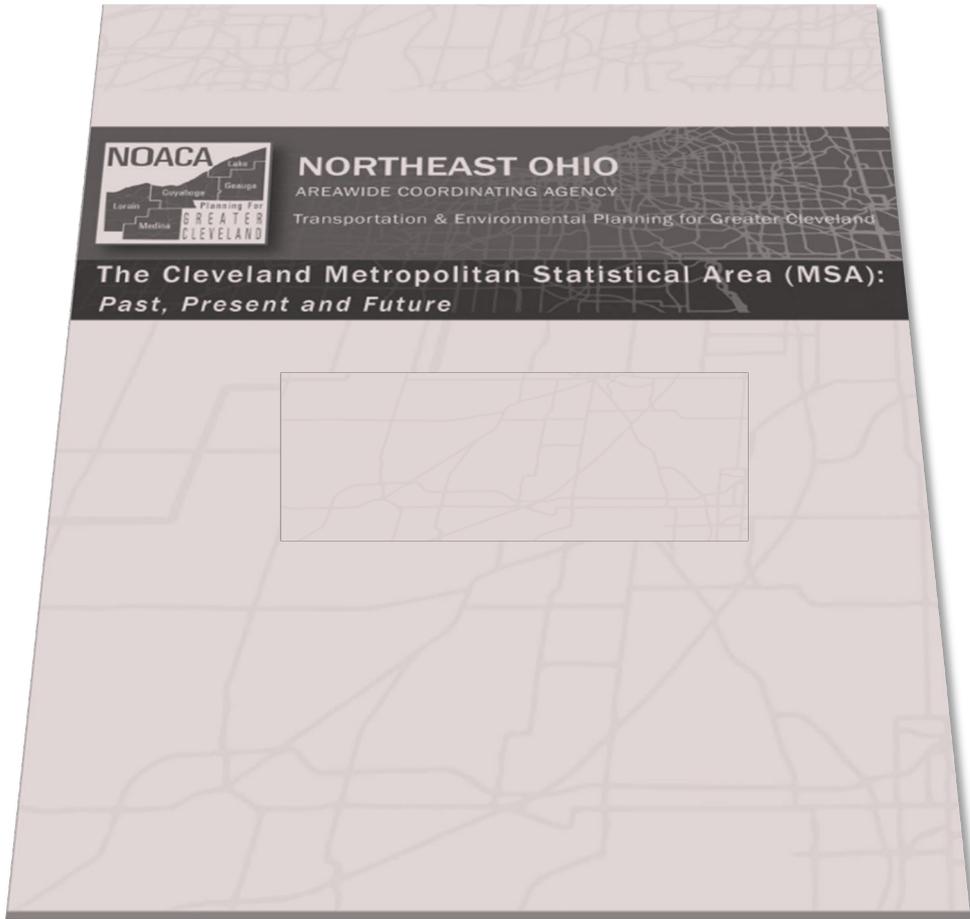
Scenario 3 is Merging the Contiguous Urbanized Areas (Results in **Cleveland MSA + Akron MSA + Canton MSA**)

\*2018 Census Estimate

^2017 BEA Estimate



# Detailed Research Report & Appendix



# POLL QUESTION

# The Problem

How to simplify complex concepts and make dense research more user friendly for elected officials and the public.

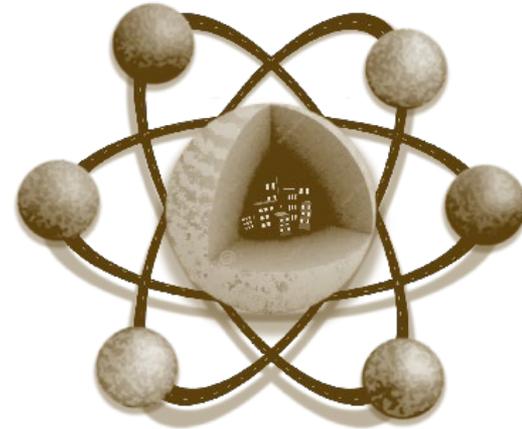
# How do we simplify everything?

## Complex concepts

- MSA vs UZA
- Central vs Outlying Counties
- Commuting patterns

## Dense research

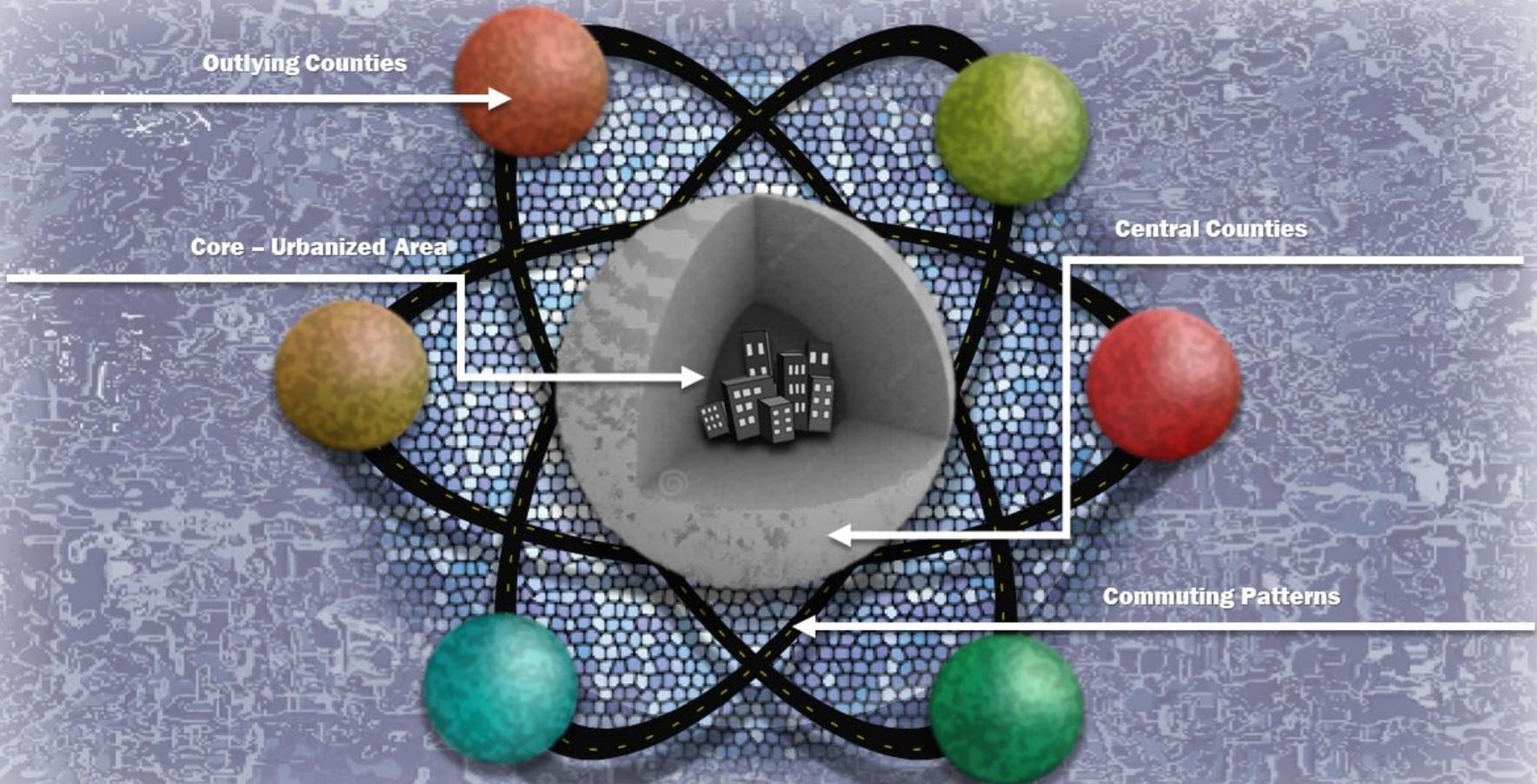
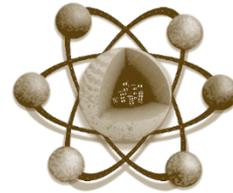
- Historical content
- 8 Scenarios
- 100 page Appendix
  - Maps
  - Tables
  - Data



# The Solution

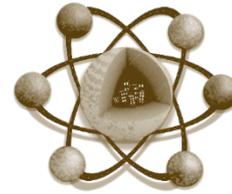
Use a well-themed story map centered around a graphical and easy to understand concept combining the report and appendix into one interactive experience.

# Molecule Concept



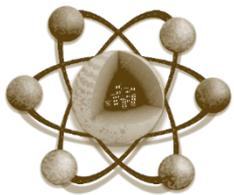
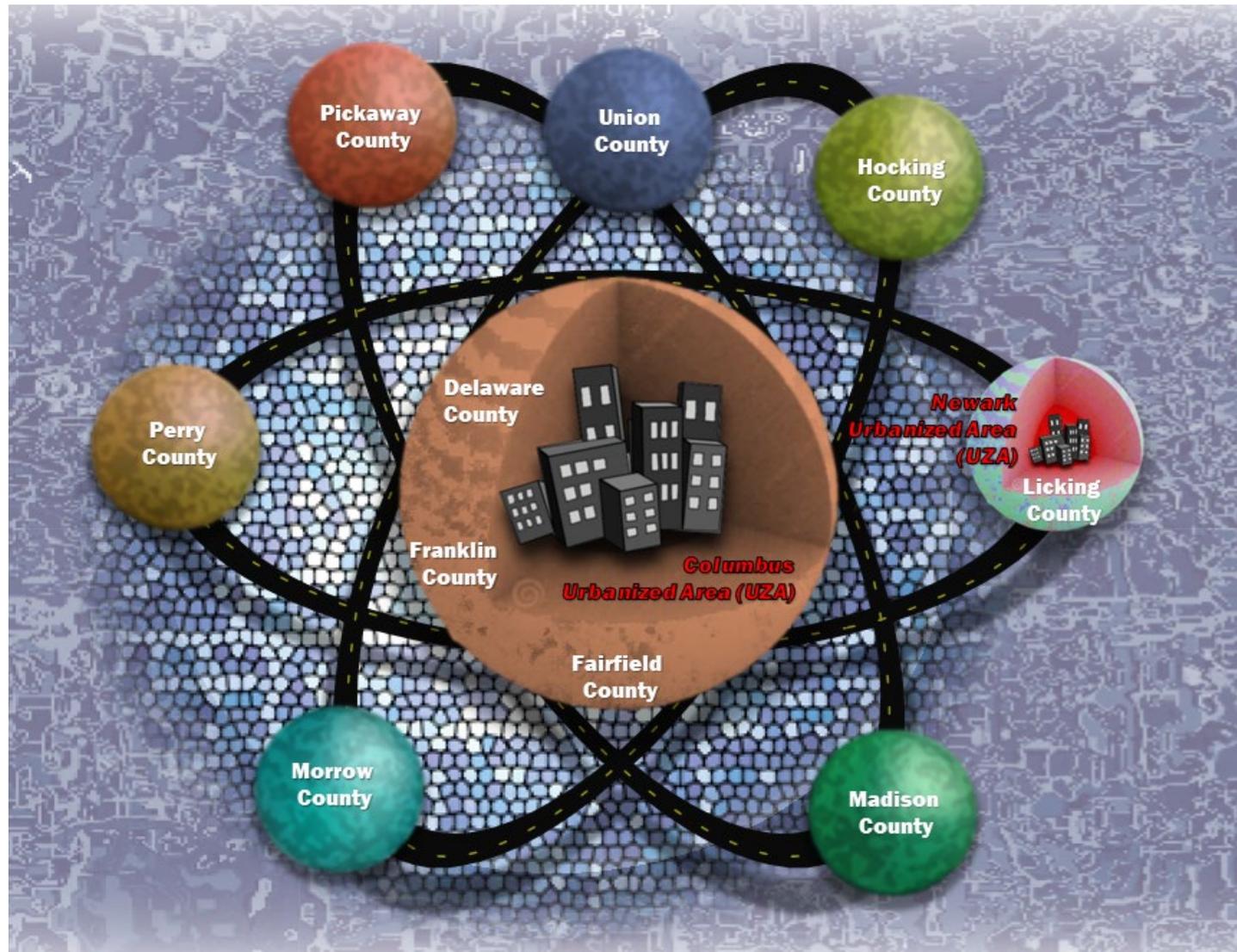
# Molecule Concept

NEO MSA



# Molecule Concept

COLUMBUS MSA



# Molecule Theme



## Anatomy of the Northeast Ohio (NEO) Metropolitan Statistical Area (MSA):

*Past, Present, and Future*

The Northeast Ohio (NEO) Metropolitan Statistical Areas (MSAs) have consistently changed over time since their creation.

Continue scrolling to learn more about their history, their current composition and our potential future as outlined in the 8 Scenarios contained in the content below.

*Tables, graphics & interactive maps will appear in the right pane to help guide you through the story of the Northeast Ohio MSA.*

What is a Metropolitan

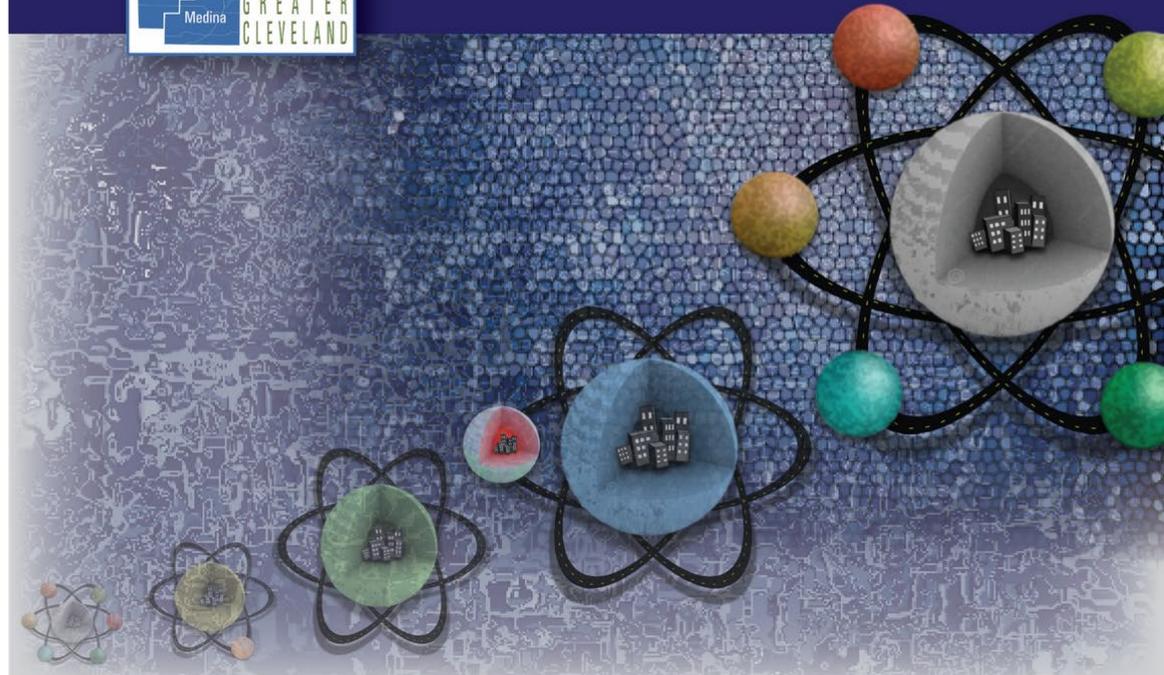
- Simple css code
- Hosting site locally
- Using graphics



## NORTHEAST OHIO

AREAWIDE COORDINATING AGENCY

Transportation & Environmental Planning for Greater Cleveland



# Molecule Theme



## Anatomy of the Northeast Ohio (NEO) Metropolitan Statistical Area (MSA): *Past, Present, and Future*

### *Past, Present, and Future*

Despite these stark differences, MSAs and UZAs are connected in a major way. UZAs that meet a certain size are used as the starting point to form MSAs.

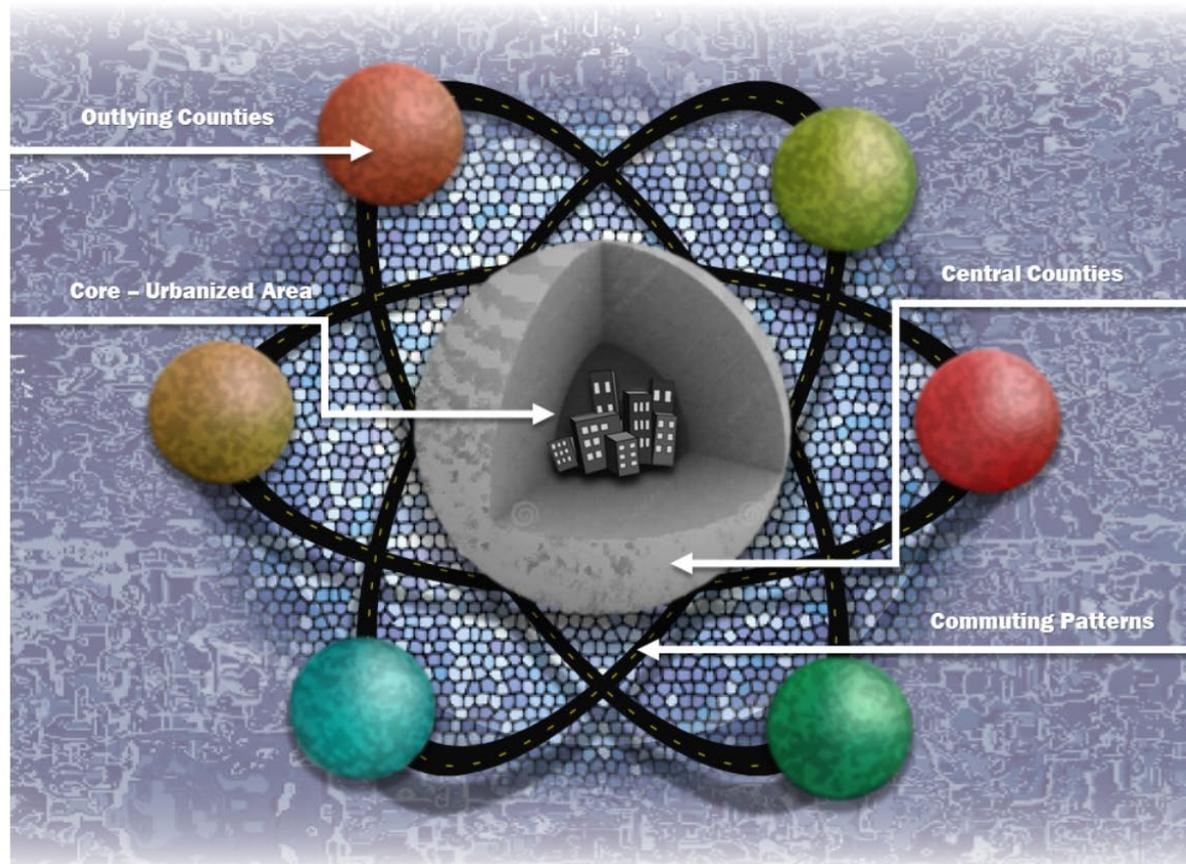
### Atom Analogy for an MSA.

The UZA of a region is the core of a MSA, much like protons are at the core of an atom.

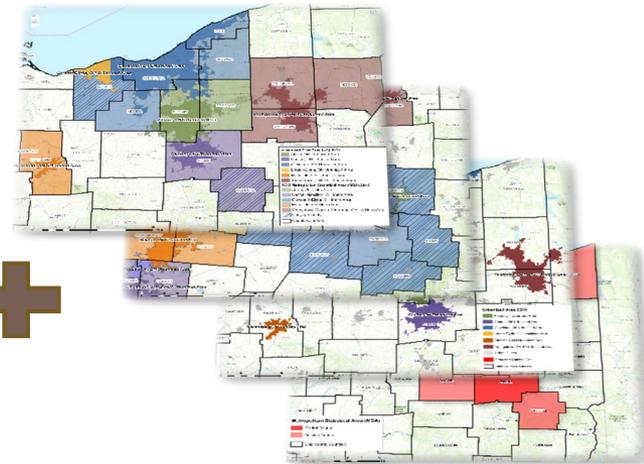
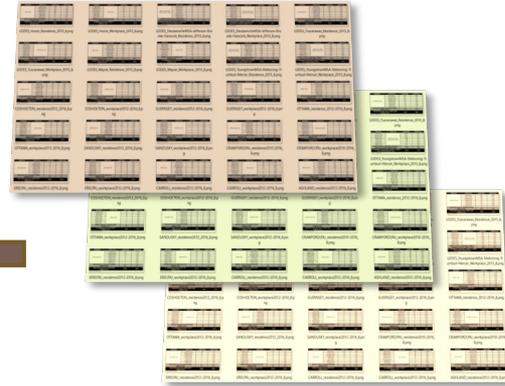
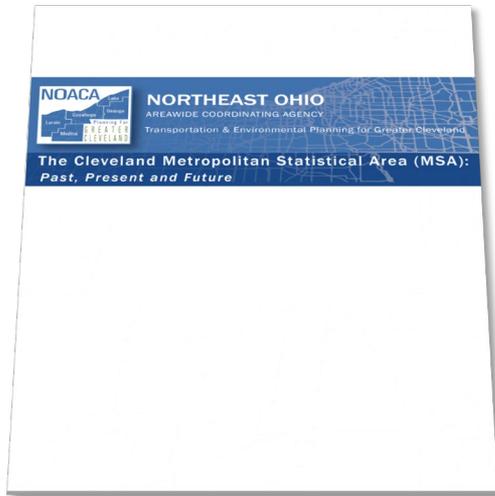
Counties that have the most overlap with the UZA are then assigned to the MSA. These are deemed "Central" counties and can be thought of as the neutrons that, along with the protons (UZA), join together to form the nucleus of an atom.

Additional counties, known as "Outlying" counties, are then added into the MSA based on their work commuting patterns with the "Central" counties. These "Outlying" counties of a MSA are like the electrons of the atom, and the work commute is like the atomic force that holds the entire atom together.

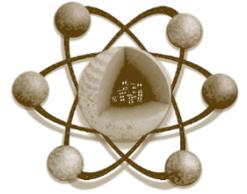
The larger the nucleus of the atom, the more electrons the atom will possess due to its greater atomic force. The same idea goes for



# Combined Report & Appendix



# Combined Report & Appendix



- Embedded Links in story map

## Anatomy of the Northeast Ohio (NEO) Metropolitan Statistical Area (MSA): Past, Present, and Future

However, around the lead up to the 2000 Census, the OMB significantly changed the MSA delineation standards resulting in many MSAs throughout the country changing dramatically, including the Cleveland MSA.

Click the "play" button on the map to the right to see the composition of the NEO MSA change over time.

This table displays the numerical changes in the county composition of the MSAs of Northeast Ohio from 1950 to 2013.

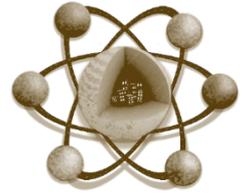
### How Did the MSA Delineation Criteria Change from 1950 to 2013?

#### MSA Delineation Criteria 1950-1993

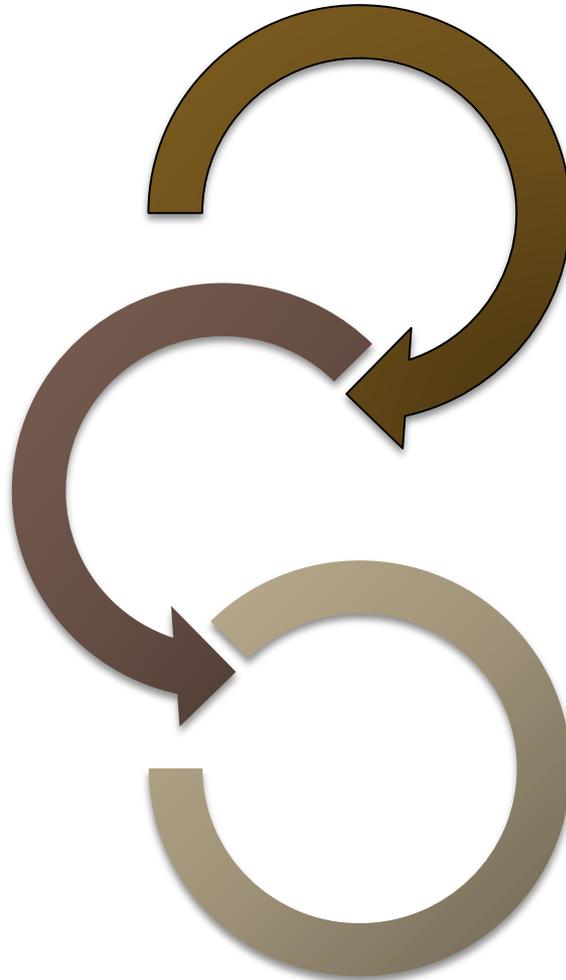
From the 1950s to the early 1990s, MSAs were delineated based on a relatively constant set of standards:

1. A MSA would originate with a city having a population of 50,000 or more, and the county in which this city was located would become known as the "central county".
2. Then any contiguous counties that met criteria centered on workforce integration and metropolitan character would be included into the MSA. By 1990, the criteria had evolved into

# Embedded Link



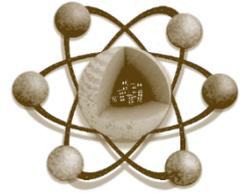
**Host** as much locally to enable custom code enhancements or customization based on language understanding



**Utilize** as much of ESRI Products for Developing, ArcGIS Online, Web App Builder, etc

**Embed** hosted customized links within Story Map Builder

# Combined Report & Appendix



- Appendix combined within the story map



## Anatomy of the Northeast Ohio (NEO) Metropolitan Statistical Area (MSA): Past, Present, and Future

### *Past, Present, and Future*

50,000 or more, and the county in which this city was located would become known as the "central county".

2. Then any contiguous counties that met criteria centered on workforce integration and metropolitan character would be included into the MSA. By 1990, the criteria had evolved into workforce commuting thresholds ranging from 15% to 50%, and varying thresholds for at least 4 different measures of metropolitan character, such as population and employment density. For example, if a neighboring county has a similar level of population and/or employment density with the designated central county of that area, it would be added into the MSA.
3. Levels of commuting and metropolitan character in the 1990 definition were fluid in nature, with higher levels of commuting requiring lower levels of metropolitan character similarity and vice versa.

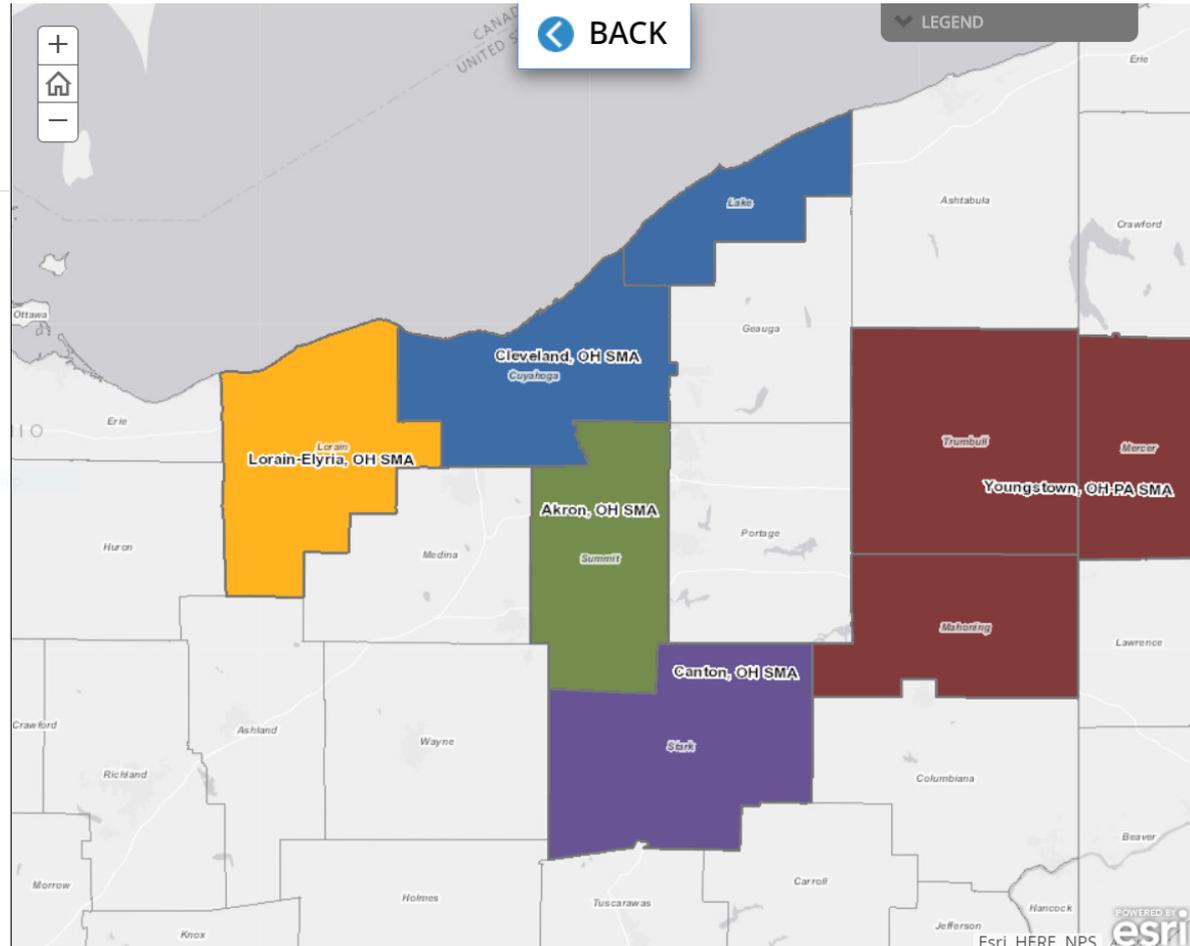
[1950](#)

*Click for map of the NEO MSA 1950-1963*

The Cleveland MSA consisted of only Cuyahoga and Lake counties, with Lorain and Summit counties being their own separate MSAs.

[1963](#)

*Click for map of the NEO MSA 1963-1973*



# Combined Report & Appendix



- Appendix combined within the story map



## Anatomy of the Northeast Ohio (NEO) Metropolitan Statistical Area (MSA): *Past, Present, and Future*

### Scenario 2:

*How Would the NEO MSA Change if the  
Commuting Threshold is Decreased from 25% to 15%?*

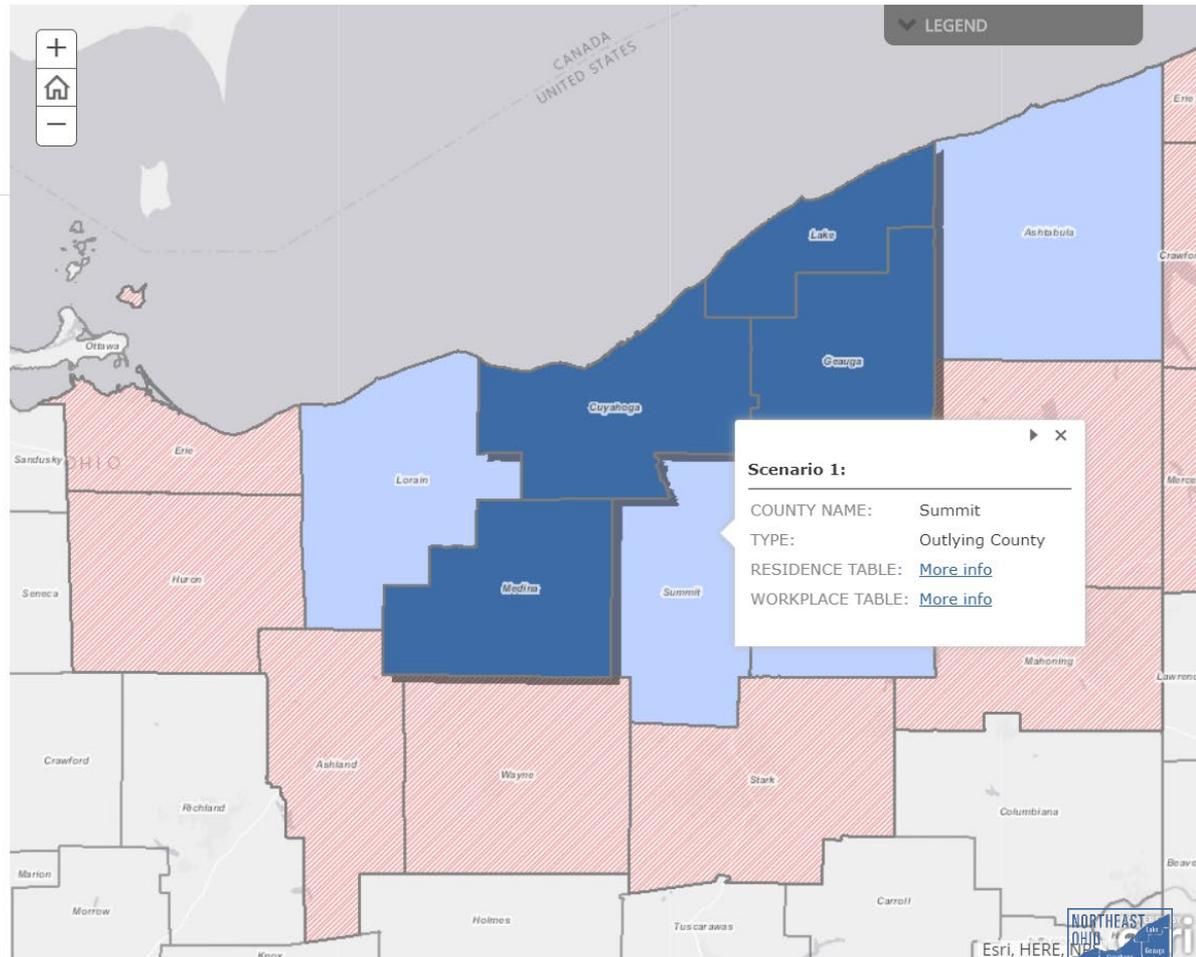
Map: Northeast Ohio Metropolitan Statistical Area - Scenario 2

Click on the individual counties to view the various commuting data tables.

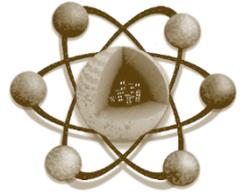
A change from 25% to 15% is not a new idea with regards to the formation of an MSA, as it was the threshold applied to many MSAs prior to 2003. Prior to 2003, MSAs had different commuting threshold values, based on their level of similarity in metropolitan character. When the metropolitan character criteria was dropped in the post-2000 delineation standards, all MSAs thresholds were equalized to 25%.

If the commuting threshold was decreased from 25% to 15% for 2023, the Northeast Ohio MSA would most likely expand to 8 counties: Cuyahoga, Geauga, Lake, Lorain, Medina, Summit, Portage and Ashtabula. This 8 county composition would be identical to the 1993 Cleveland-Akron MSA.

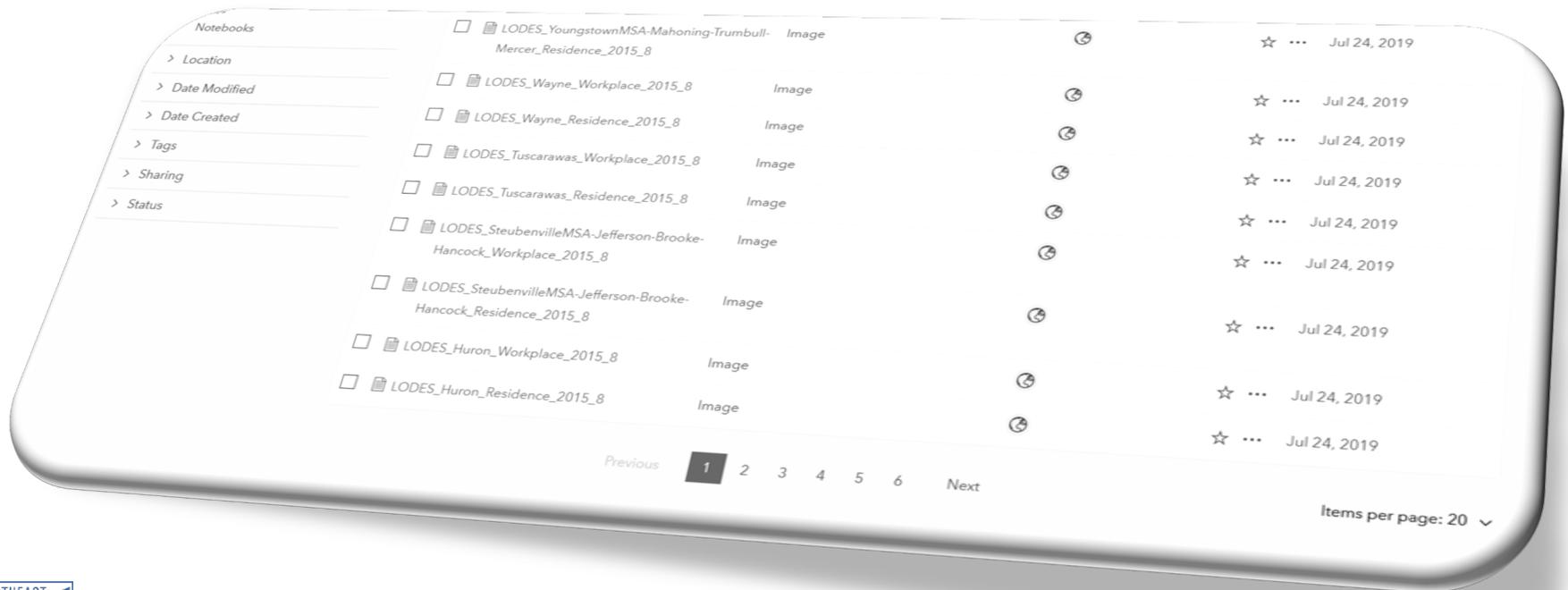
Summit and Portage, measured as a group since they qualify as their own MSA, would have approximately a 17% commuting share with



# Combined Report & Appendix



- ArcGIS Online account hosting dozens of tables, charts, and graphs



# Combined Report & Appendix



- ArcGIS Online account hosting dozens of tables, charts, and graphs



RESIDENCE	WORKPLACE	COMMUTERS	PERCENTAGE
Portage & Summit counties	Cuyahoga County	47,280	14.1%
	Medina County	6,465	1.9%
	Geauga County	3,405	1.0%
	Lake County	1,755	0.5%
<b>PORTAGE &amp; SUMMIT COUNTIES TO CENTRAL COUNTIES COMMUTE TOTAL</b>		<b>58,905</b>	<b>17.6%</b>
<b>PORTAGE &amp; SUMMIT COUNTIES TO ALL WORKPLACES COMMUTE TOTAL</b>		<b>334,696</b>	<b>100.0%</b>

Source: ACS 2012-2016

# Combined Report & Appendix



- Easy to compare maps



## Anatomy of the Northeast Ohio (NEO) Metropolitan Statistical Area (MSA): *Past, Present, and Future*

When examining the other three MSAs and their associated UZAs, it most notably shows that these UZAs do not have any large, neighboring UZAs to compete with for central counties being assigned to them. In addition, the lack of large, neighboring UZAs allows these MSAs to be assigned many outlying counties without any significant competition.

### Pittsburgh Metropolitan Statistical Area (MSA)

*Click for map of the MSAs of Southwest Pennsylvania Metropolitan Statistical Area 2013*

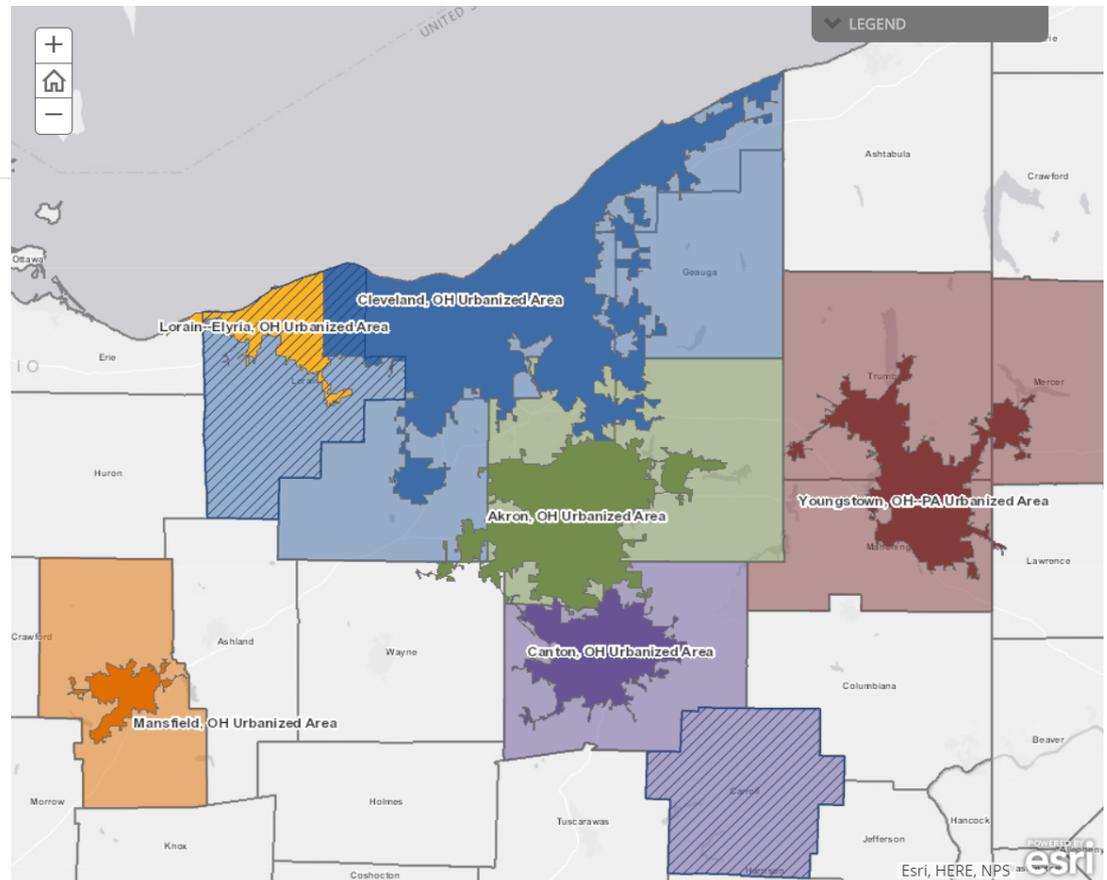
### Columbus Metropolitan Statistical Area (MSA)

*Click for map of the MSAs Central Ohio Metropolitan Statistical Area 2013*

### Indianapolis Metropolitan Statistical Area (MSA)

*Click for map of the MSAs Central Indiana Metropolitan Statistical Area 2013*

The Columbus MSA and associated Columbus UZA are a good example of this phenomenon. The central counties (shown in light blue and without hash-marks) assigned to the Columbus MSA are Franklin, Delaware, and Fairfield, due to the fact that the Columbus UZA is the dominant UZA of those counties. The only other UZA that is in geographic proximity to the Columbus UZA is the Newark UZA; located primarily in Licking County. Similar to Lorain County in the Cleveland MSA, Licking County does qualify as its own MSA due to



# NEO MSA

## Story Map Tour

# The Outcome

Benefits of both a static report and story map:

- Technical report for Regional Planners and Data Experts
  - More in-depth research
  - Citations
  - Appendix for reference
  - Printable maps
- Interactive web-based executive summary to reach a broader audience
  - High-level concepts
  - Custom graphics to enhance the story
  - Interactive maps
  - Appendix as integrated content

# Questions/Comments?