2022 State Transportation Plan Updates

MPO/RPA Quarterly Meeting
September 22, 2021

Agenda

- Rightsizing Policy
- Analysis updates
  - Resiliency
  - Accessibility/mobility

Long Range Transportation Plan
Rightsizing Policy

Rightsizing Policy

- Theme in 2017 long-range plan
- Relates to performance management, asset management, project prioritization
- Ongoing internal discussions with Transportation Asset Management (TAM) Implementation Team
- Implementation is multifaceted, with activities across policy, project planning and development, and programming
- SLRTP provides a logical vehicle for policy considerations

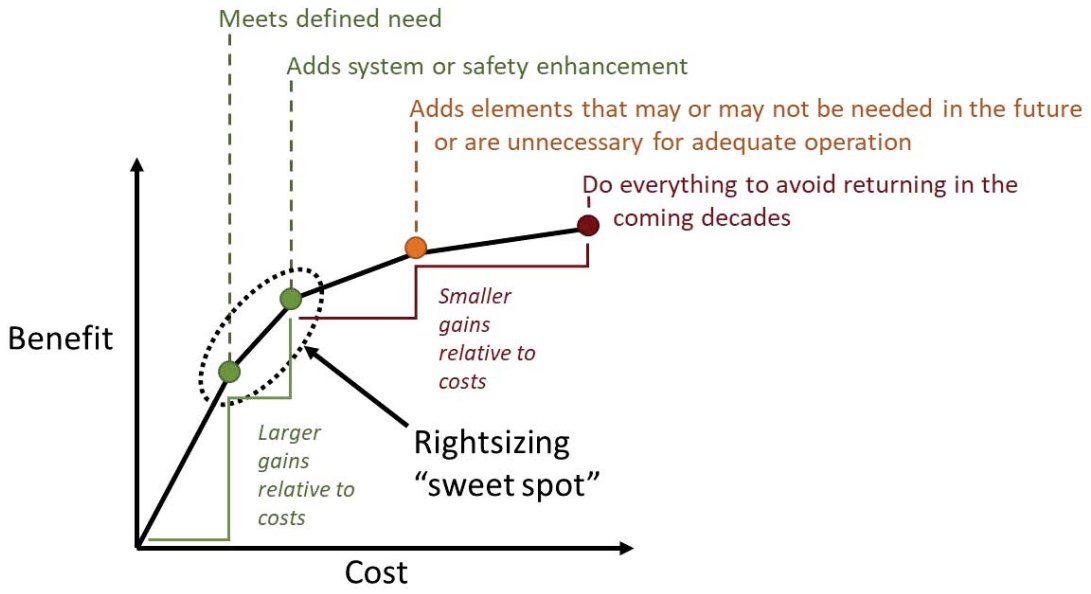
Rightsizing Policy

- Objective: adopt parameters/principles that help guide project development activities
- Research background:
  - NCHRP 917 – Rightsizing Report
  - Other State DOT long-range plans
  - State DOT project development guidance
- Used examples from research to seed discussion
- Brainstormed areas where parameters are needed

Approach

- Avoid temptation to gravitate to project development immediately
- Initial focus on policy, adopted into SLRTP
- Use initial policy to evaluate project development
  - Rightsizing aligns with other project development philosophies; many activities that could be considered rightsizing are already occurring
  - Identify gaps and develop action items

Rightsizing "sweet spot"



Policy: Rightsizing definition

- In summary…
  - Rightsizing means **seeking an appropriate level and type of investment**, and
  - leveraging existing assets and limited resources to **maximize the returns for users**

Policy statement topics being considered

- Project needs
- Comprehensive needs
- Stewardship priority
- Stratification of the system
- Equity
- Resiliency
- Congestion or operational issues
- Emerging technologies
- Speculative development
- New or revised interchange access

Long Range Transportation Plan

Analysis Updates

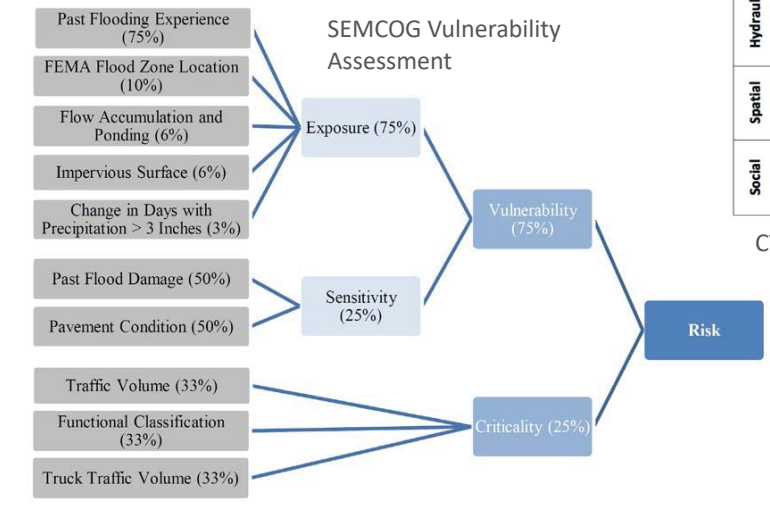
Analysis layers timeline

- Infrastructure condition analysis (ICE) – complete
- Operations analysis (ICE-OPS) – complete
- Freight network updates – complete
- Bottlenecks analysis (INRIX) – complete
- Resiliency analysis – in review
- Accessibility/mobility analysis – in review
- Capacity analysis (iTRAM) – in review
- Safety analysis – late Sept.
- Modal systems analysis – ongoing

Resiliency analysis

- Objective: Screen the Primary Highway System to identify locations vulnerable to a 100-year flood event
- Internal Resiliency Working Group functioned as a project steering committee
- Methodology developed based on research of similar efforts nationally
  - Resilience framework:
    - Robustness
    - Redundancy
    - Resourcefulness
    - Rapidity

Inspired by frameworks like…



SEMCOG Vulnerability Assessment

Figure 4. Road risk score methodology

		Very Low to Low			Moderate				Critical to Very Critical		
		1	2	3	4	5	6	7	8	9	10
Hydraulic		High adaptive capacity			Moderate adaptive capacity				Low adaptive capacity		
		No history of closure			History of periodic closures				Significant history of closure		
									Scour critical		
		Satisfies WSE criteria			Adjacent to scour critical structures				Does not satisfy WSE criteria		
Spatial		Outside FEMA flood zones			Within 500 year FEMA flood zone				Within 100 year FEMA flood zone		
		Low concentration of impervious surfaces			Moderate concentration of impermeable surfaces				High concentration of impermeable surfaces		
Social		Low ADT & V/C			Moderate ADT & V/C				High ADT & V/C		
		0-1 accidents			2 or more accidents				Emergency route		
		Non-NHS, non-emergency route			NHS route				Emergency services cluster		

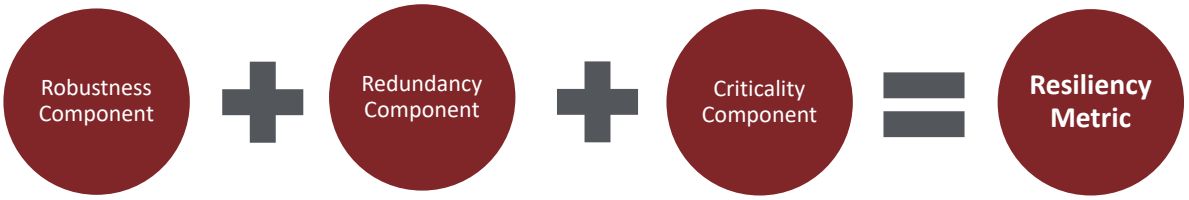
CTDOT Flood Vulnerability

Table 1. Criticality criteria and weights

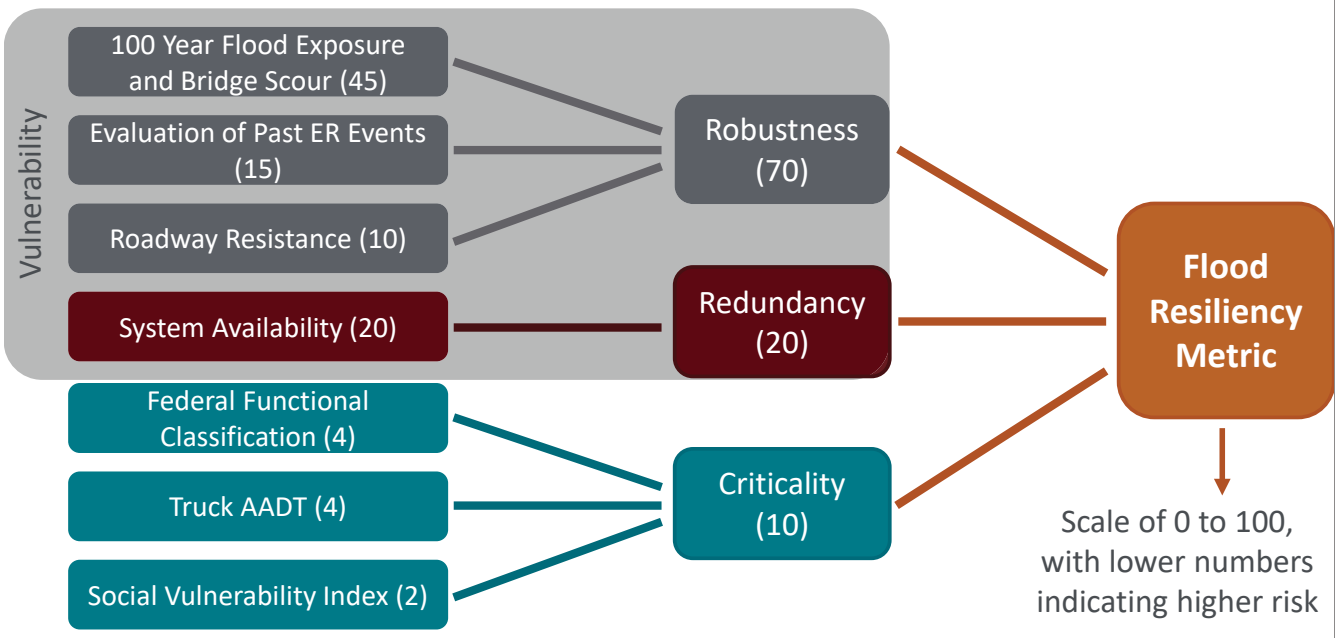
CRITERIA	WEIGHT %
System Redundancy	56
AADT	26
Truck ADT	18

Utah DOT Criticality

Overall Structure



Iowa resiliency metric – overall weighting

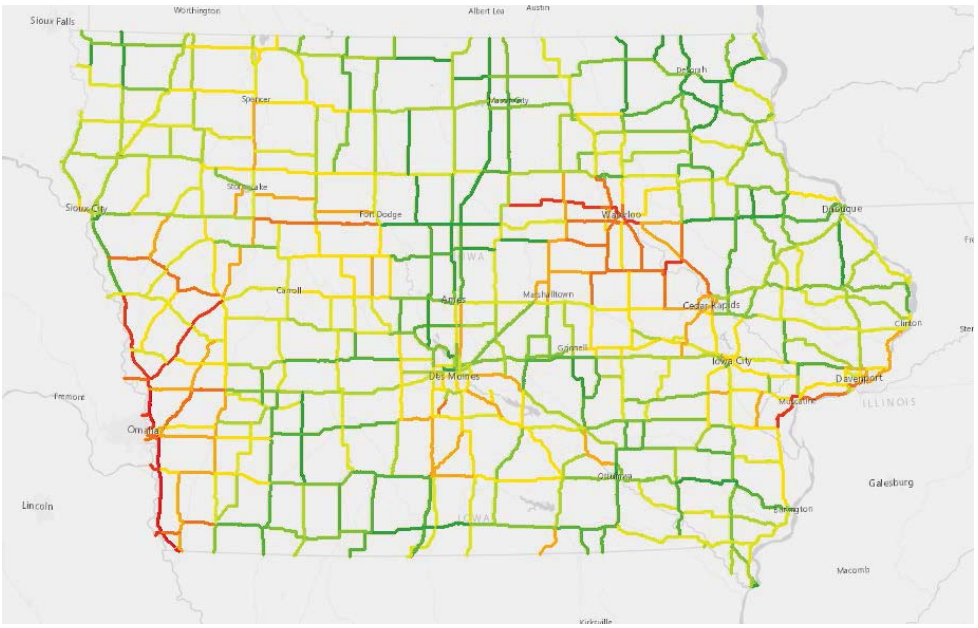


Initial Composite Scoring Results

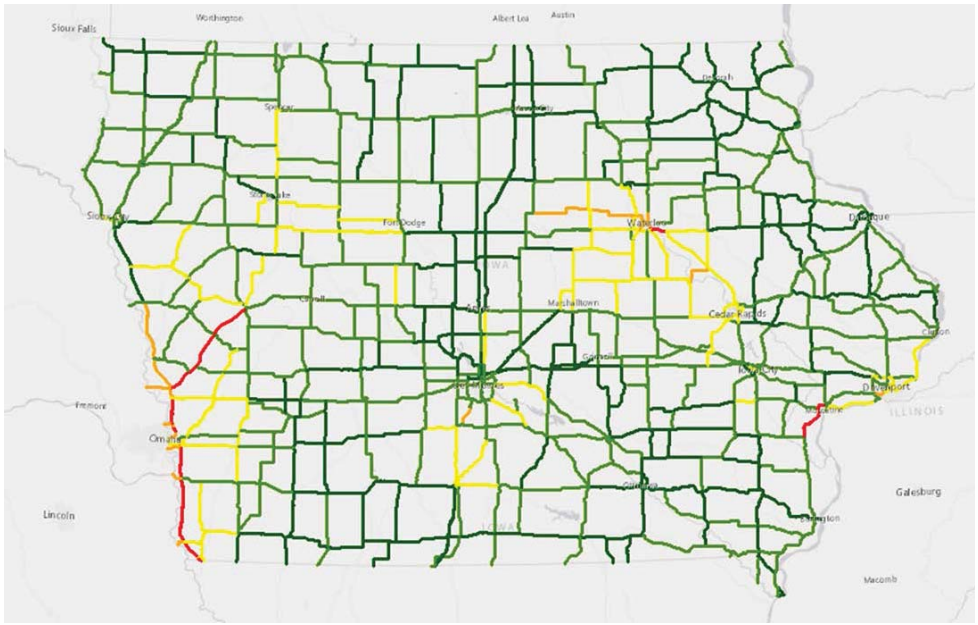
	Interstate	Non-Interstate	Overall
Min	36.6	54.3	36.6
Max	92.3	93.4	93.4
Mean	75.9	82.5	82.4

- Ongoing internal discussions
  - Whether to keep analysis for Interstates separate, or combine it with remainder of Primary Highway System
  - How to visualize results and what threshold to use to define the 'highest risk' corridors

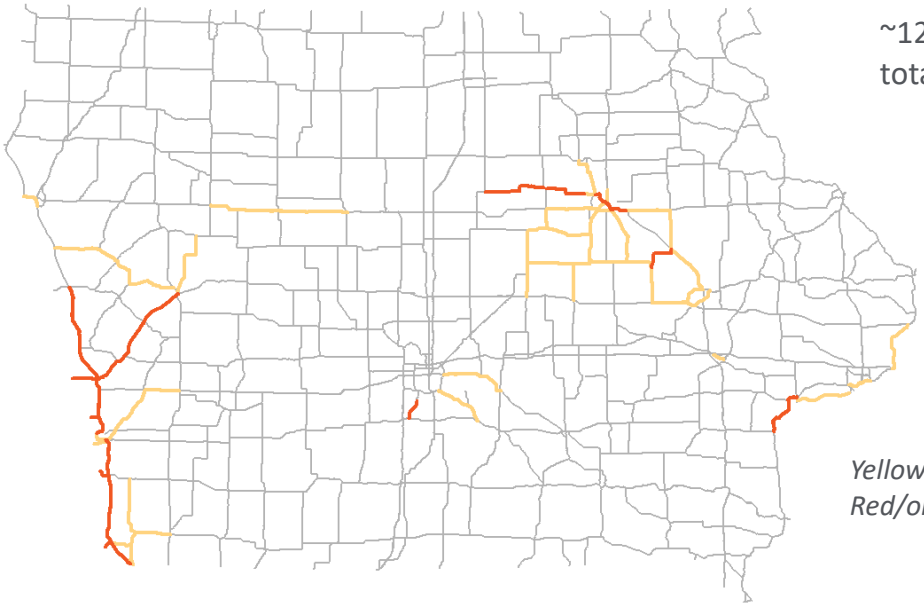
Initial Composite Scoring Results: Natural Breaks (10 classes)



Initial Composite Scoring Results: Standard Deviation



Full Primary System Analysis: Over 1 standard deviation from the mean



~12% of total system

Yellow = 1 - 2 SD
Red/orange = 2+ SD

Accessibility/mobility analysis

- Objective: Screen the state of Iowa to identify areas at greatest risk of accessibility/mobility challenges
- Methodology developed based on research of similar efforts and what was feasible/meaningful at statewide level
- Multi-disciplinary internal review

Approach and purpose

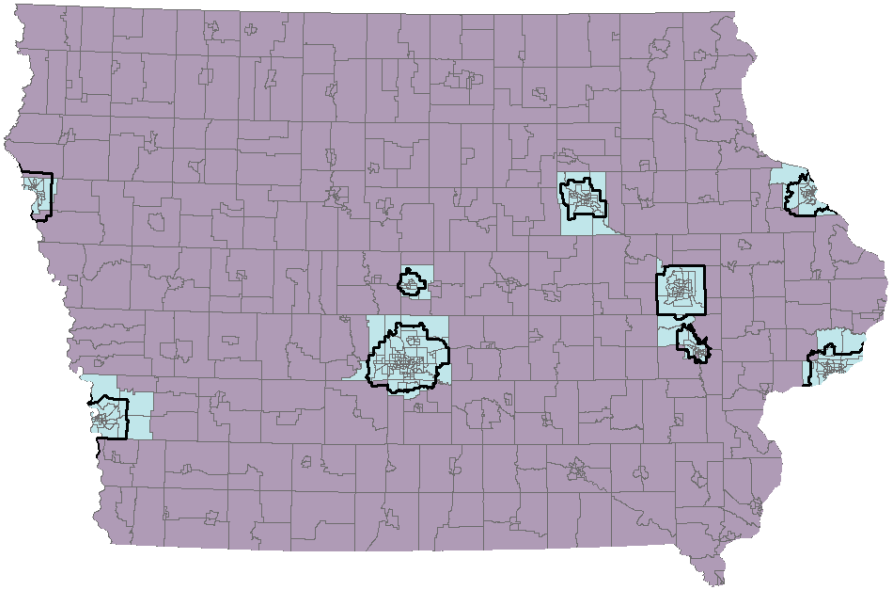
- Analyze accessibility/mobility through the lens of factors that may limit mobility, ability to access transportation infrastructure, and/or travel via personal vehicle
- Utilize during planning and project development process
  - While all planning should have a multimodal element, these populations may be particularly in need of or best served by alternatives to driving
  - These populations may also be better served by non-traditional outreach techniques

Data analyzed

- 2015-2019 American Community Survey data
- Census Tract geography
- Attributes included:
  - Under 18
  - 65 and over
  - Minority
  - Foreign-born
  - Limited English proficiency
  - With a disability
  - Income below poverty level
  - No vehicle available
  - College-enrolled
  - Single parent households

Analysis level

- Divided into separate rural and urban analyses rather than single statewide analysis
- Used MPO planning area boundaries to divide tracts

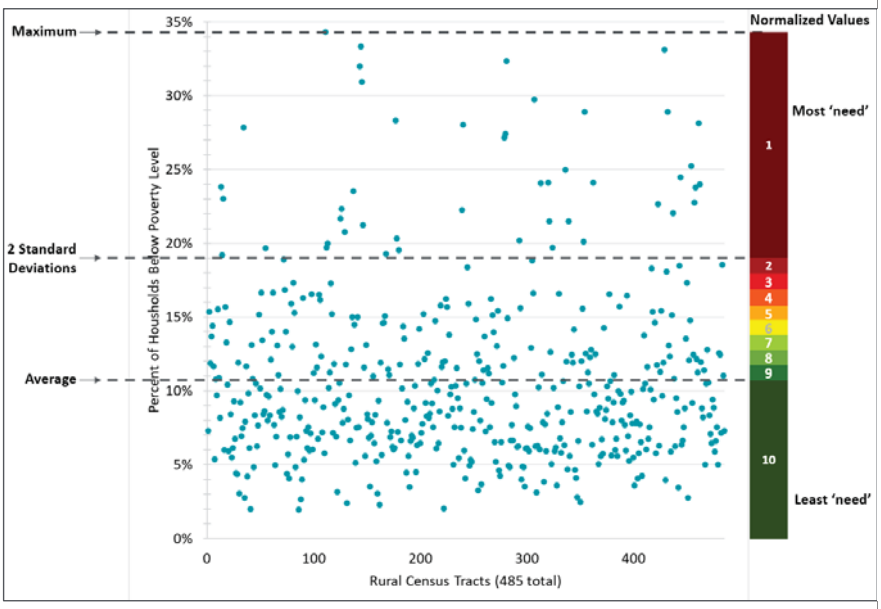


Analysis method

- Need to normalize data to be able to compare across attributes
- "ICE"-like methodology
  - ICE – Infrastructure Condition Evaluation tool
  - Methodology used in several other analyses
  - Focuses on data that is higher than the statewide average
  - Uses a ten-point normalized scale for each attribute
    - 1 (most need) to 10 (least need)

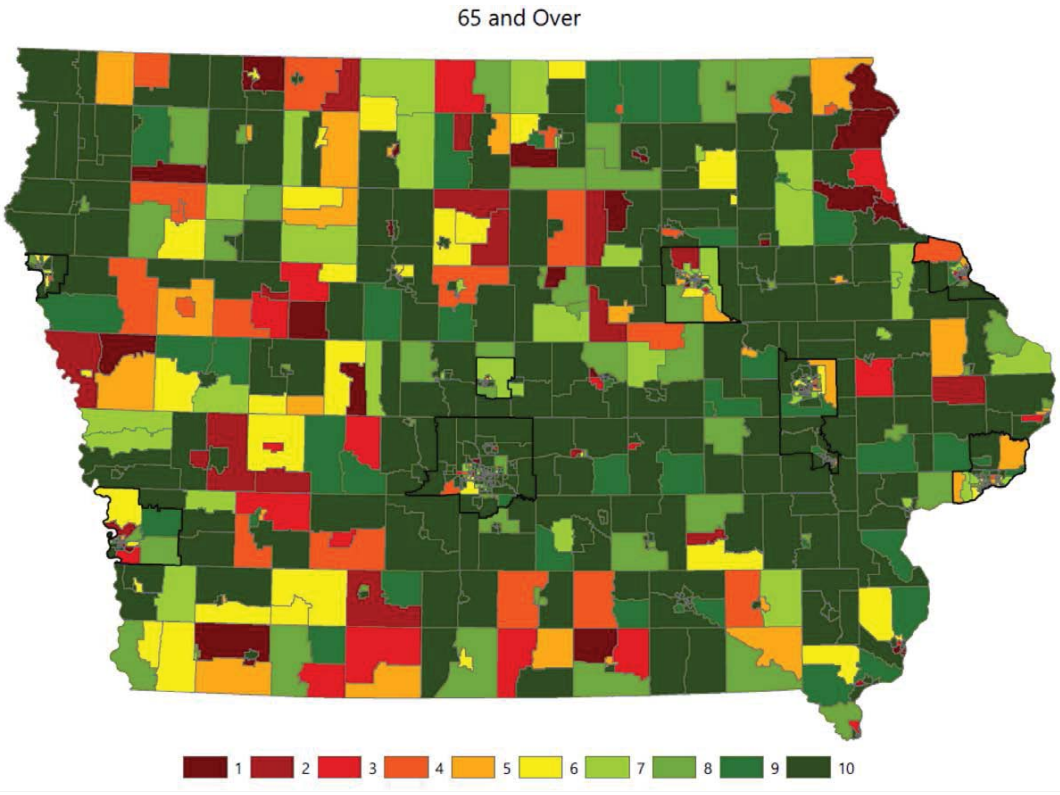
Methodology

- Calculated the average; tracts at/below mean assigned a value of 10.
- Very high values assigned a 1; remaining range is divided into values 2-9.
  - Values above two standard deviations above the mean were assigned a 1.
- Ten attributes; each attribute had a possible value of 1-10.
- Summed individual scores to determine composite score.
- Lower composite scores indicate the most 'need'; maximum composite score of 100 indicates the least 'need'.



Draft Output

65 and Over



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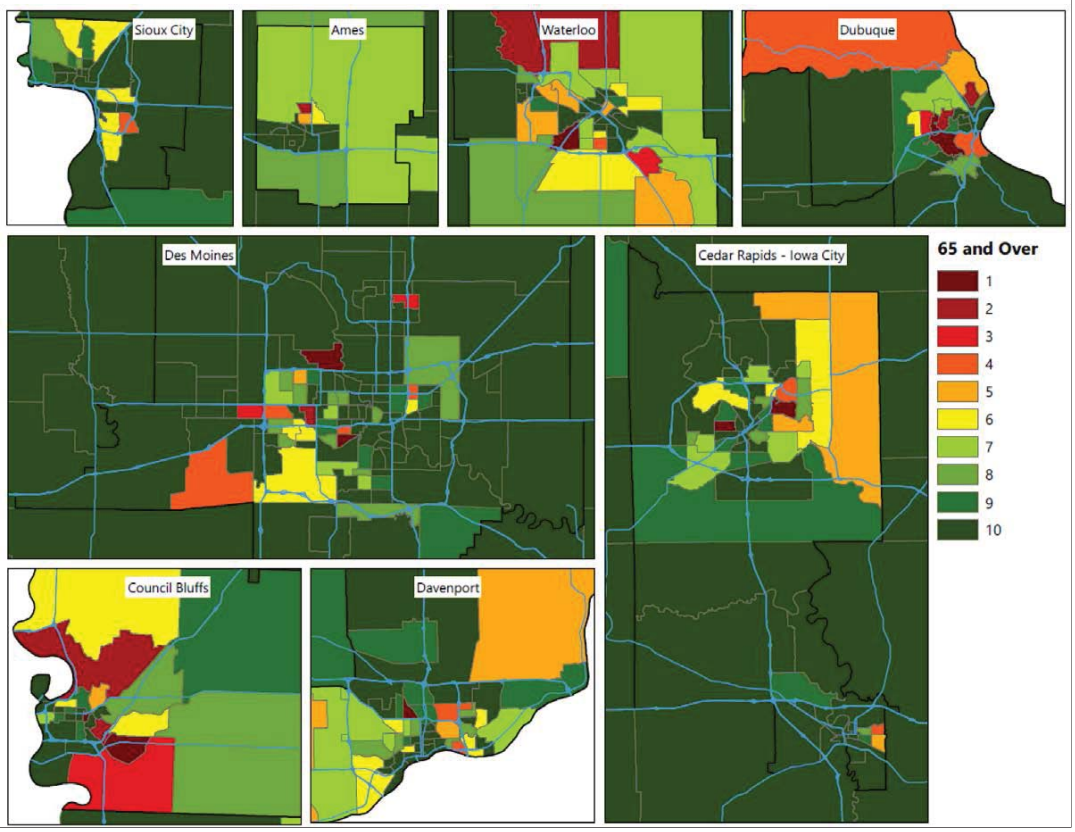

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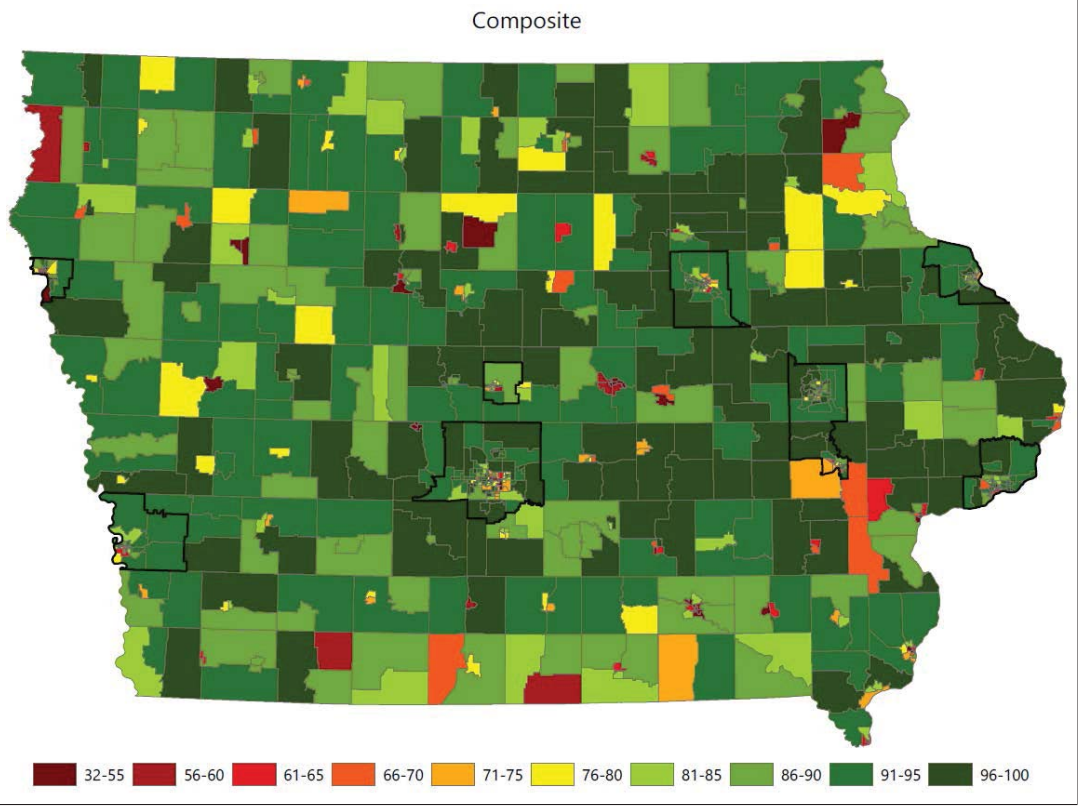
Composite



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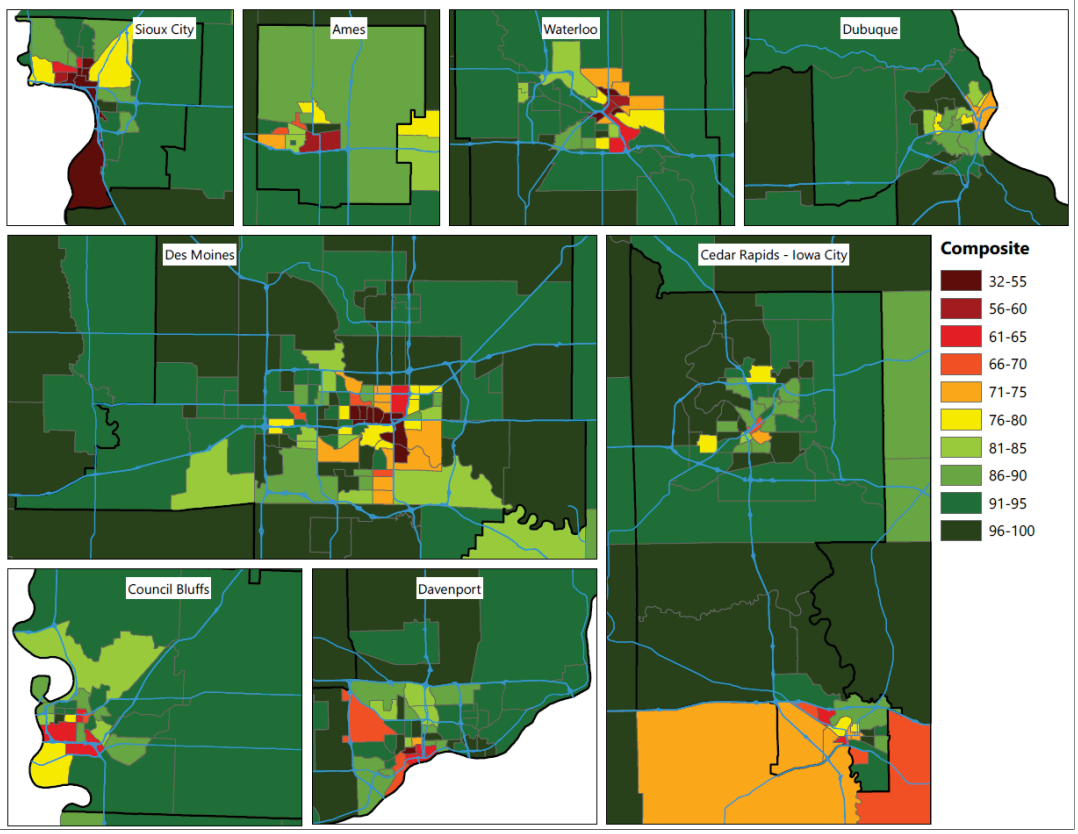
Composite



QUESTIONS?

Andrea White
Statewide Planning Coordinator
andrea.white@iowadot.us