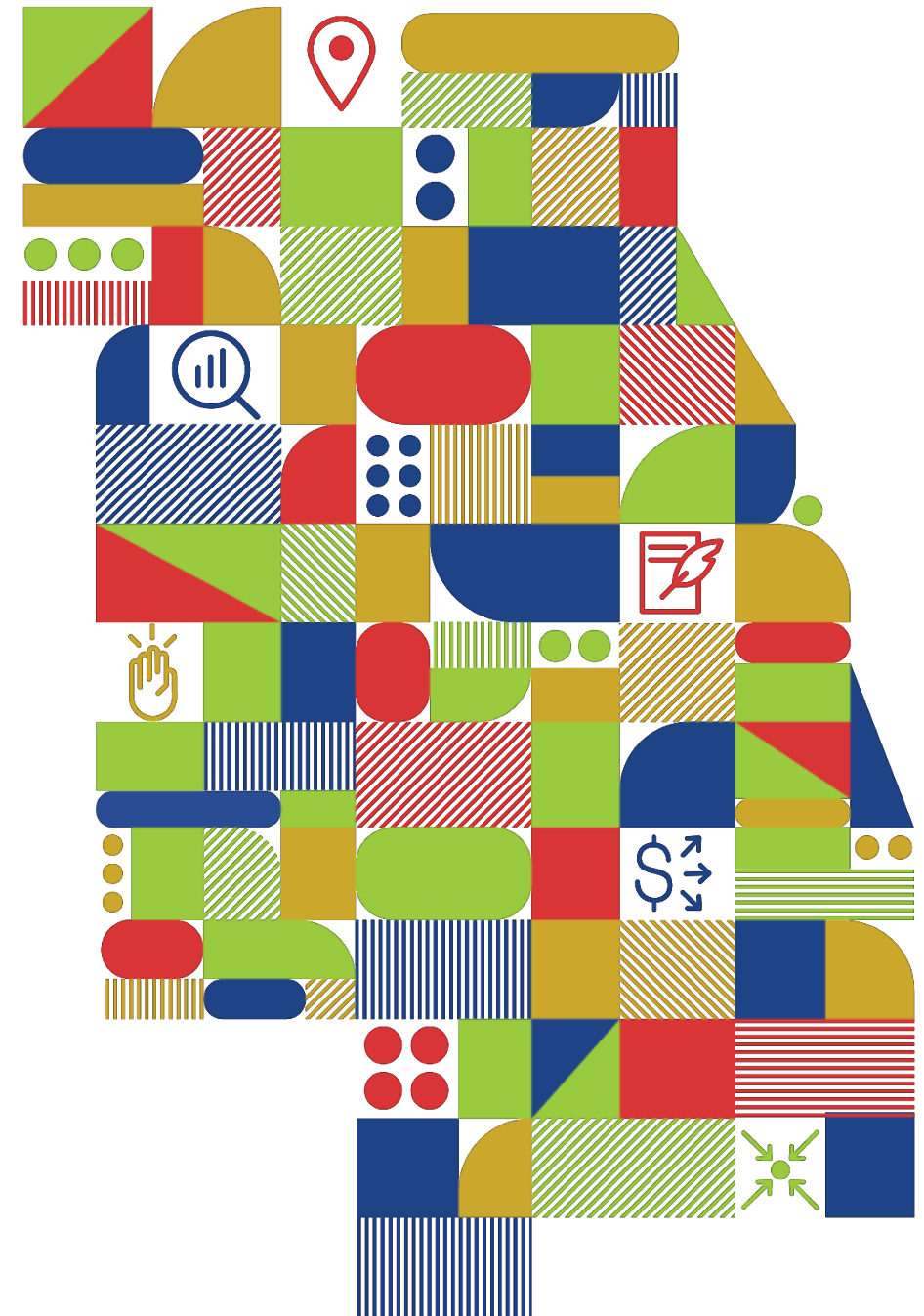




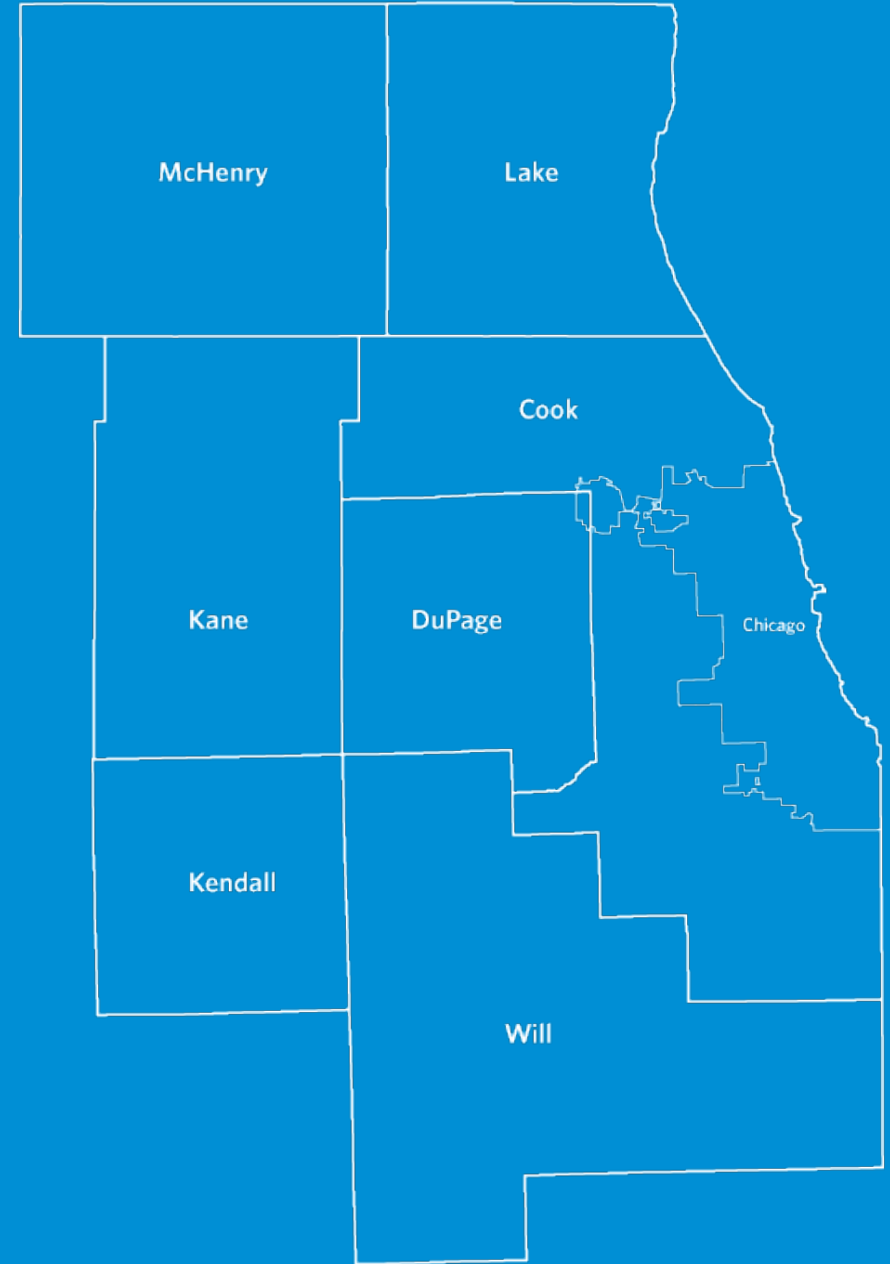
Equity & Sustainability:

Climate change and the inequities of flooding in northeastern Illinois

Fox River Sustainability Network
April 30, 2021



Chicago Metropolitan Agency for Planning



A group of people, including adults and children, are walking and cycling on a paved path outdoors. The path is lined with tall grasses and trees. The scene is bright and sunny. The word "Resilience" is overlaid in large white text across the center of the image.

Resilience

Prepare for rapid changes,
both known and unknown

Stresses and shocks



Stresses and shocks



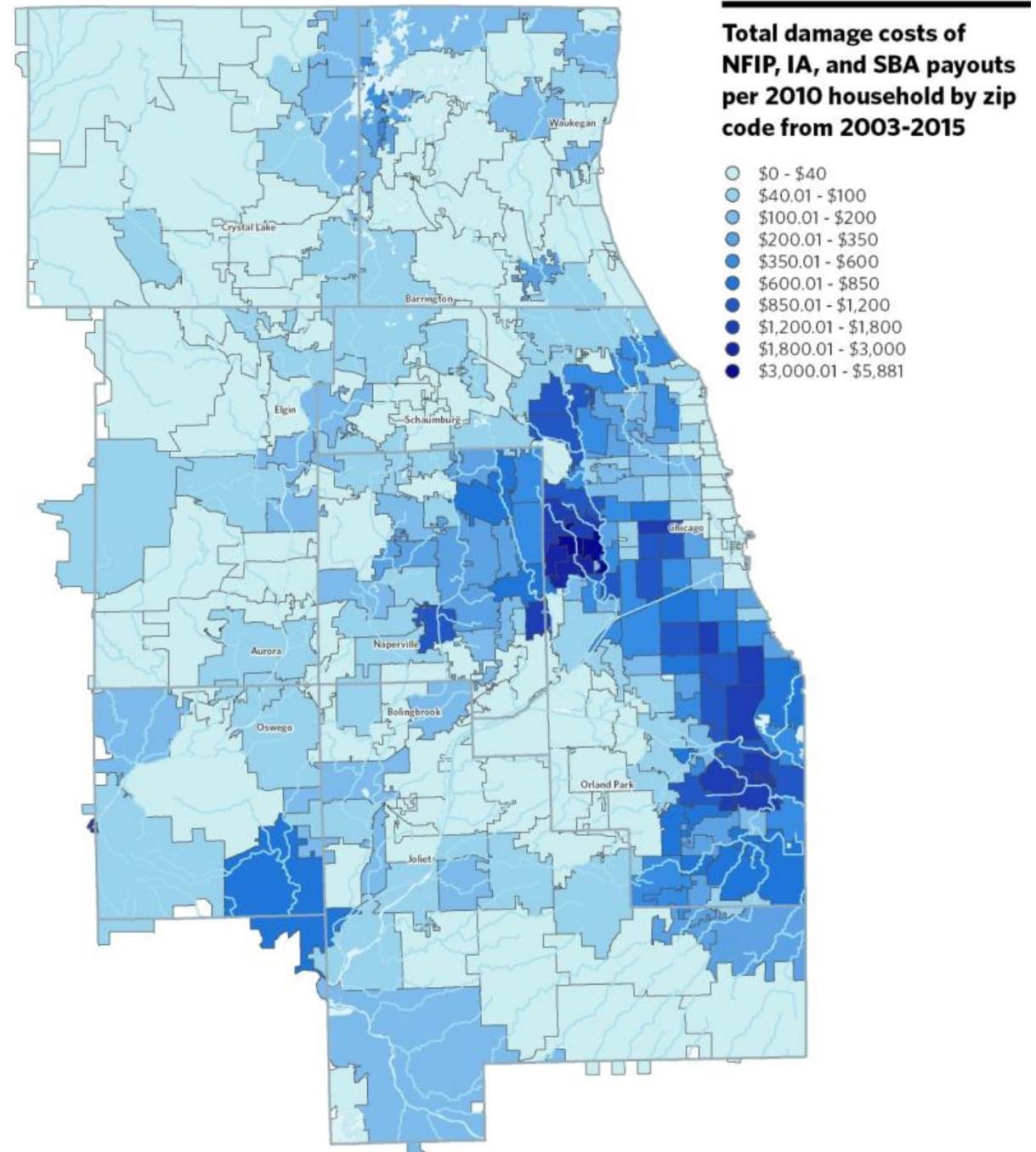
Flood Damages

~\$1 billion in damages

+70% outside of 100-year floodplain

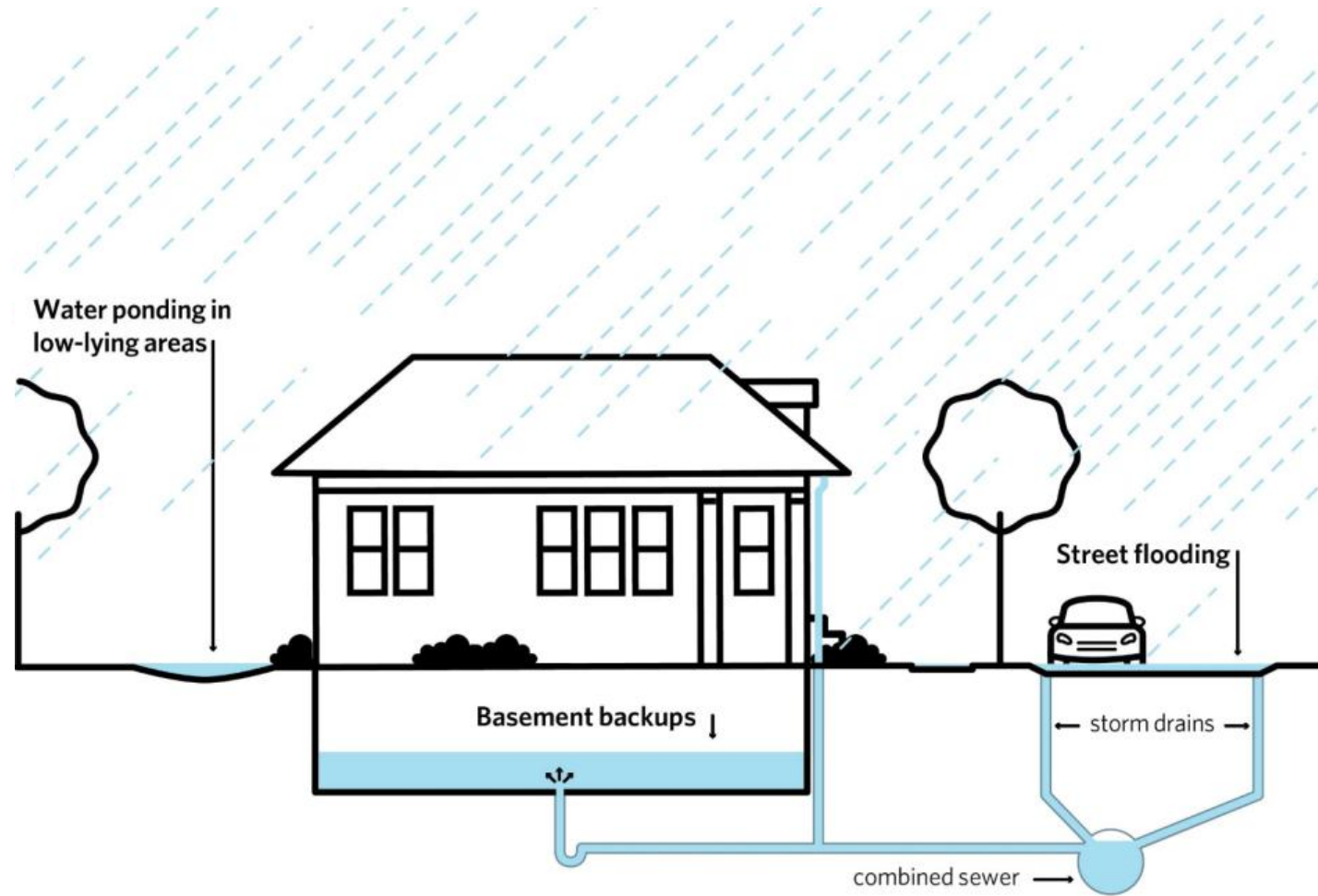
Barriers to insurance

Based on larger storm events



Urban flooding with a combined sewer system

Source: Chicago Metropolitan Agency for Planning, 2018.

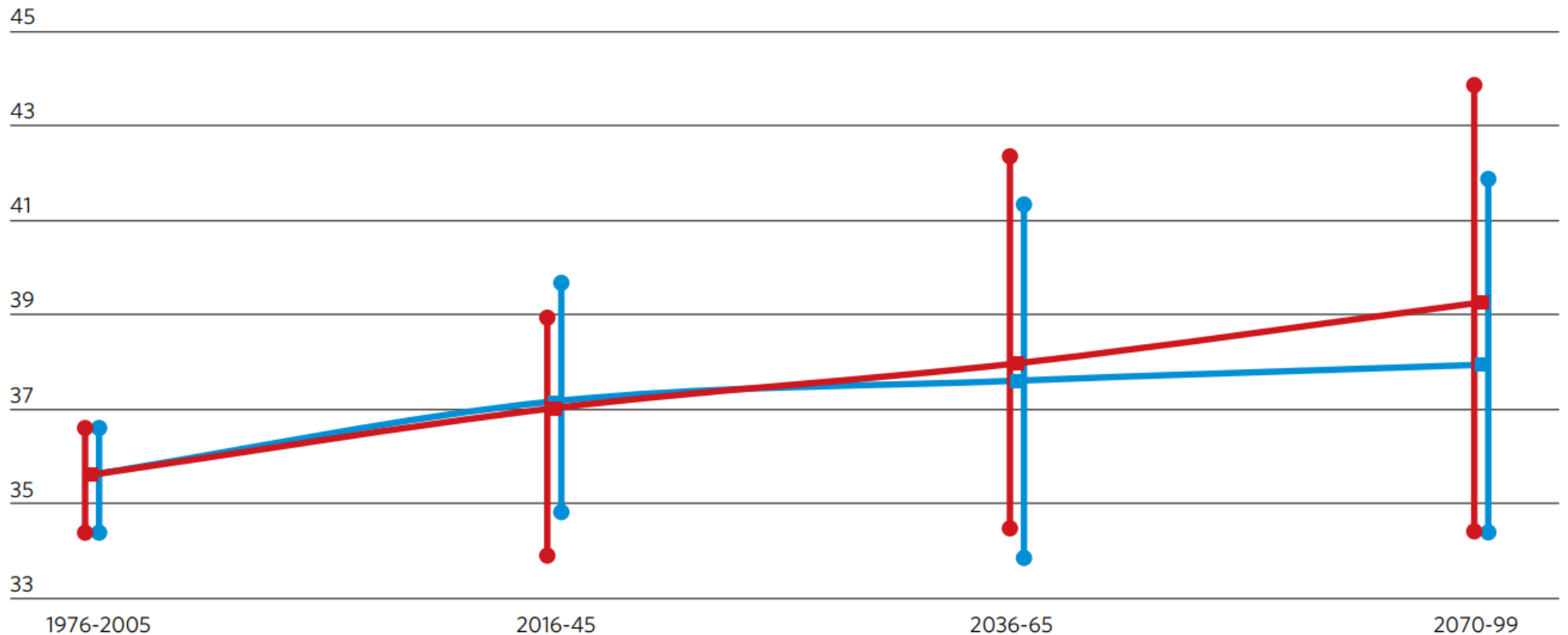


Moving target

Range of projected annual total precipitation, in inches, in northeastern Illinois

Source: D.W. Pierce, D. R. Cayan, and B. L. Thrasher, 2014: Statistical downscaling using Localized Constructed Analogs (LOCA). Journal of Hydrometeorology, 15, 2558-85.

- High-emissions scenario mean
- Low-emissions scenario mean



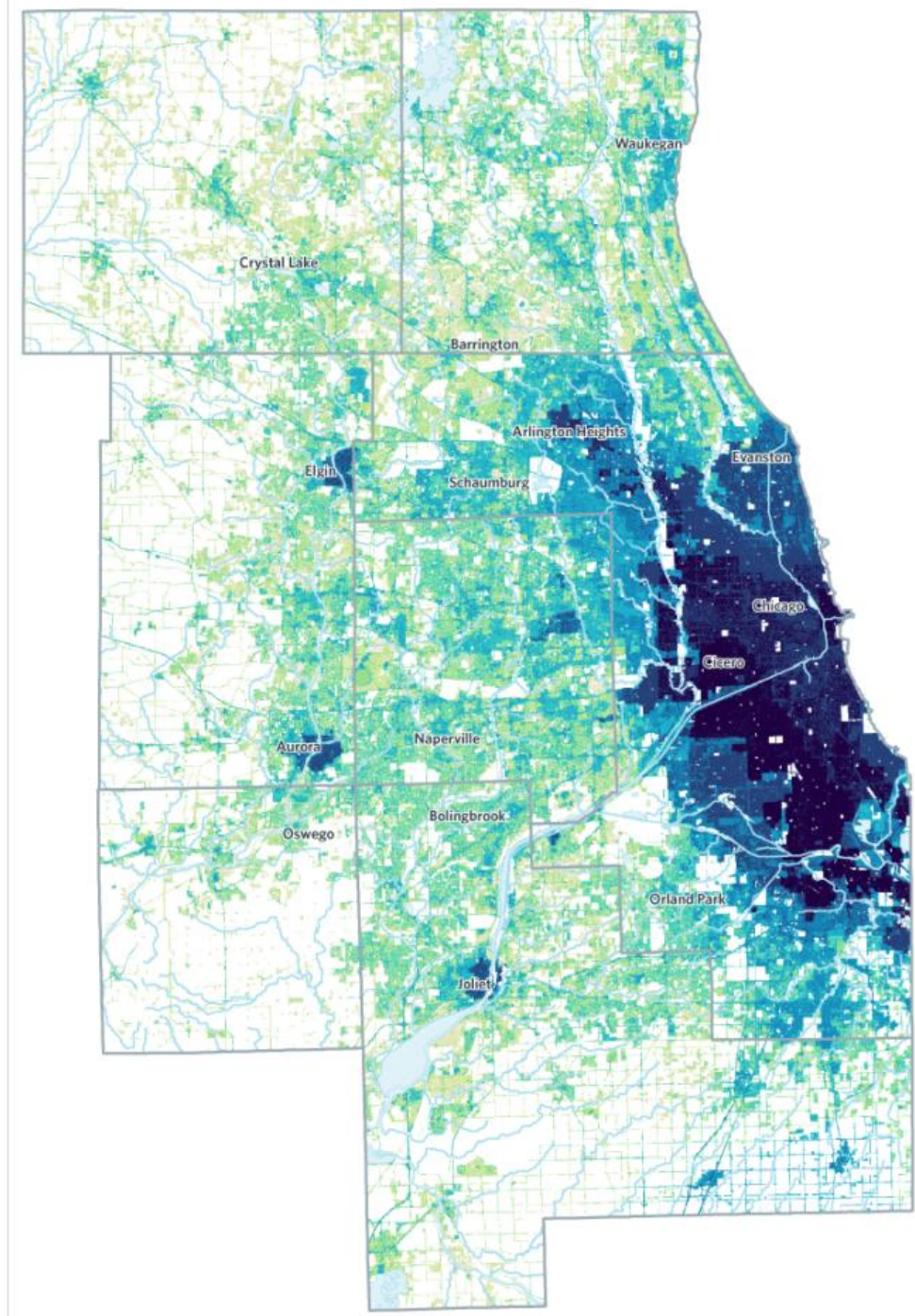
Urban Flood Susceptibility Index

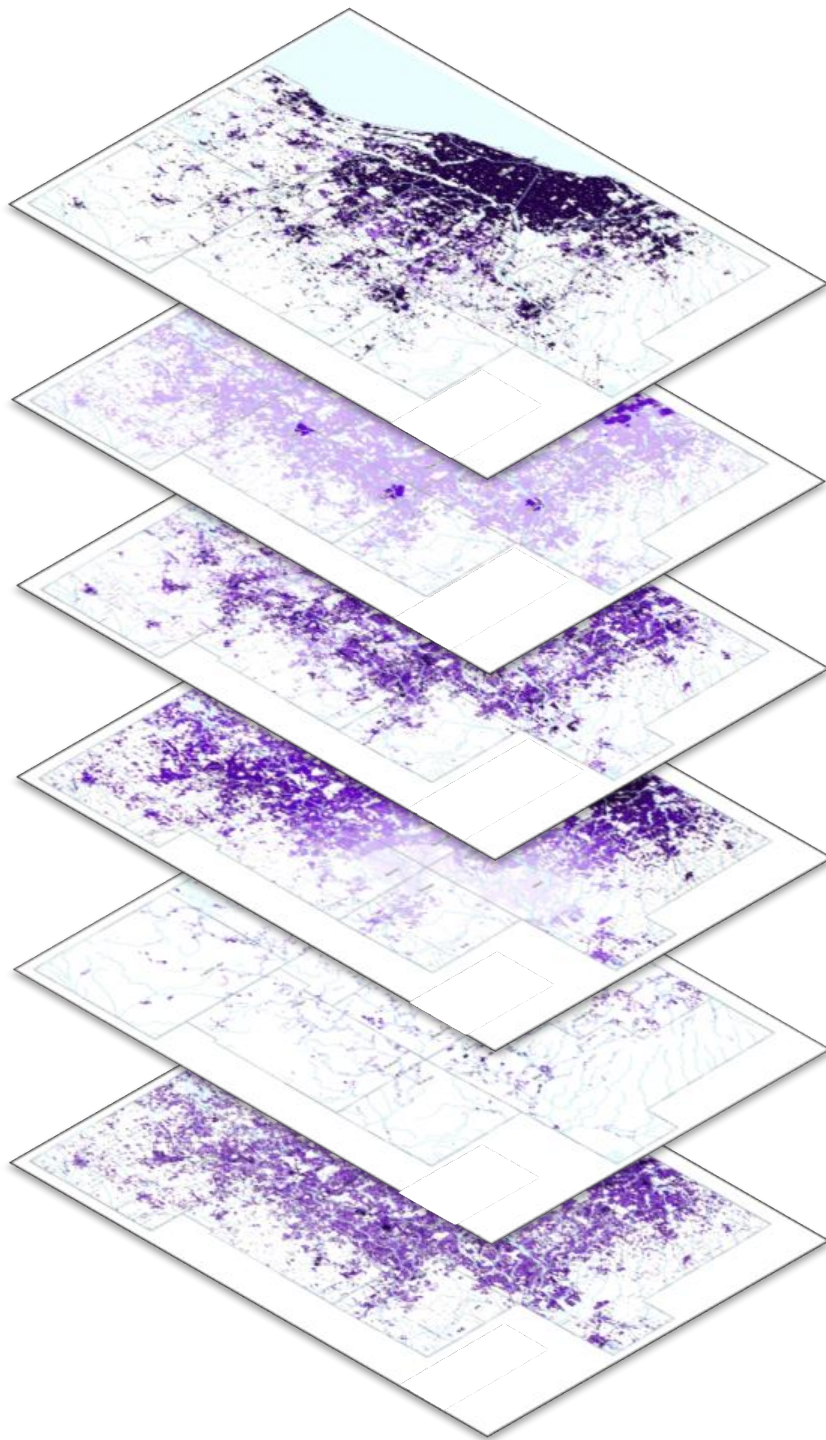
Identify priority areas across the region for flood mitigation activities

Focused on developed areas outside of 100-year floodplain

Urban Flooding Susceptibility Index

- 10 (more susceptible)
- 9
- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 1 (less susceptible)





Six factors

Age of first development

Sewer type

Impervious cover

**Precipitation variation,
10-year, 2-hour storm event**

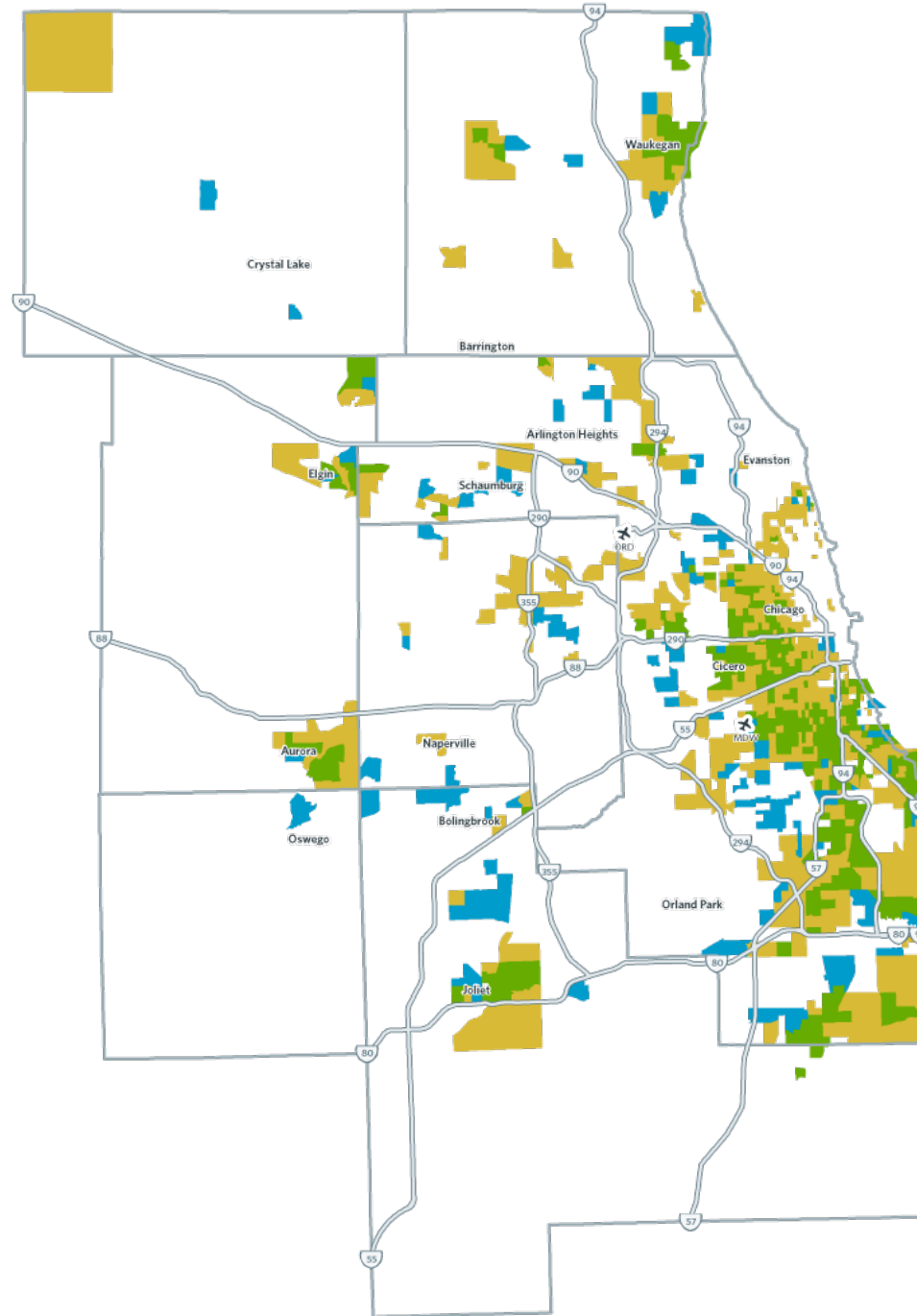
**Elevation differential
with base flood elevation**

Topographic wetness index

Economically Disconnected Areas (EDAs) and disinvested areas

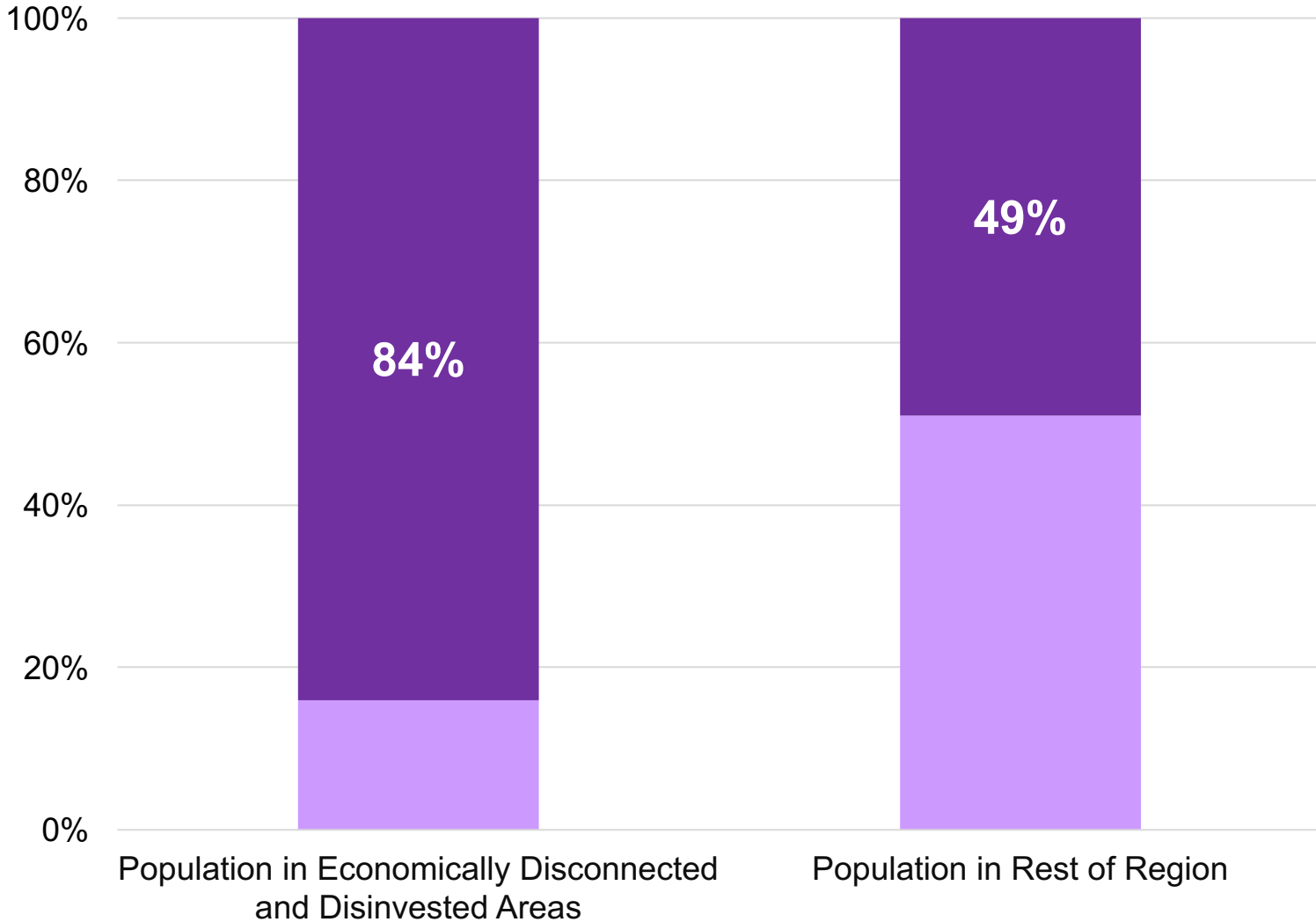
- Disinvested and EDA
- Disinvested area
- EDA

Source: Chicago Metropolitan Agency for Planning analysis of Illinois Department of Employment Security data, 1970, 1980, 1990, 2000, and 2015; Community Reinvestment Act (CRA) data on small loans made to businesses, 2007 and 2015 (accessed through the Woodstock Institute); county assessor data aggregated from parcel to tract level by property class, 2010 and 2015; and American Community Survey data, 5-year estimates, 2010-2014 and 2011-2015.

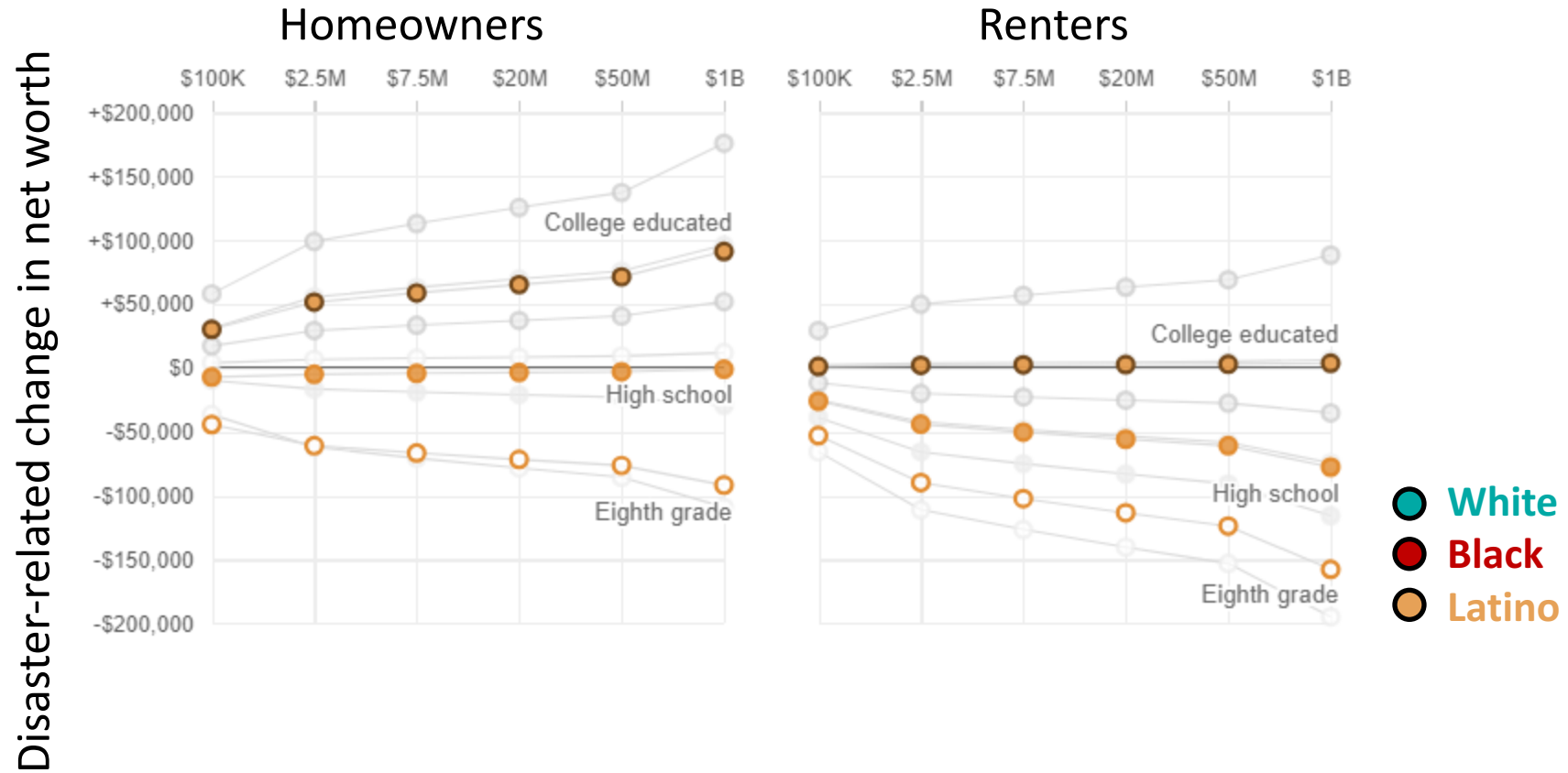


Share of residents living in higher flood susceptible areas in Economically Disconnected Areas and the remaining parts of the Chicago region

- Higher Flood Susceptible Areas (risk levels 8-10)
- Lower Flood Susceptible Areas (risk levels 1-7)

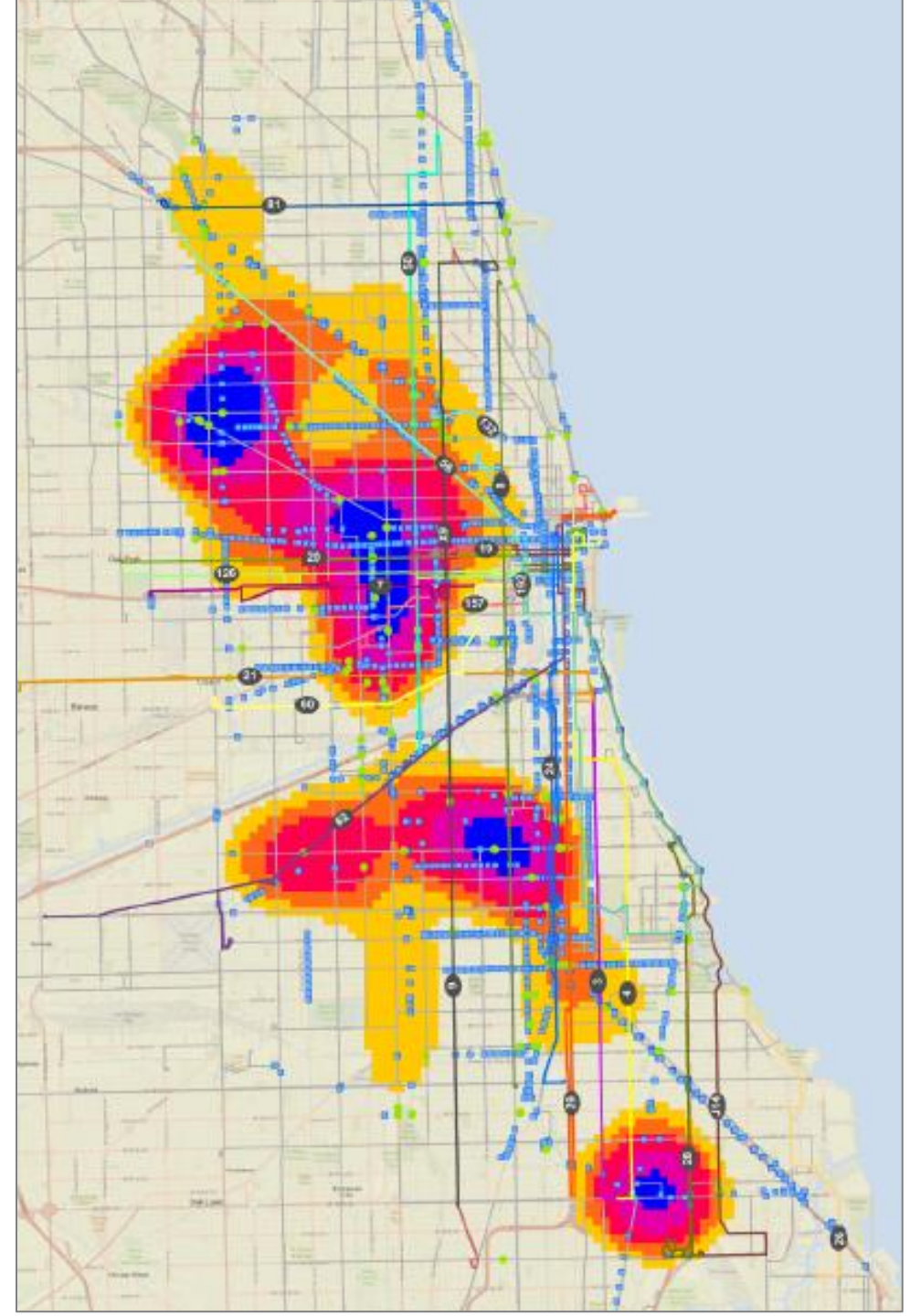


Access to assistance



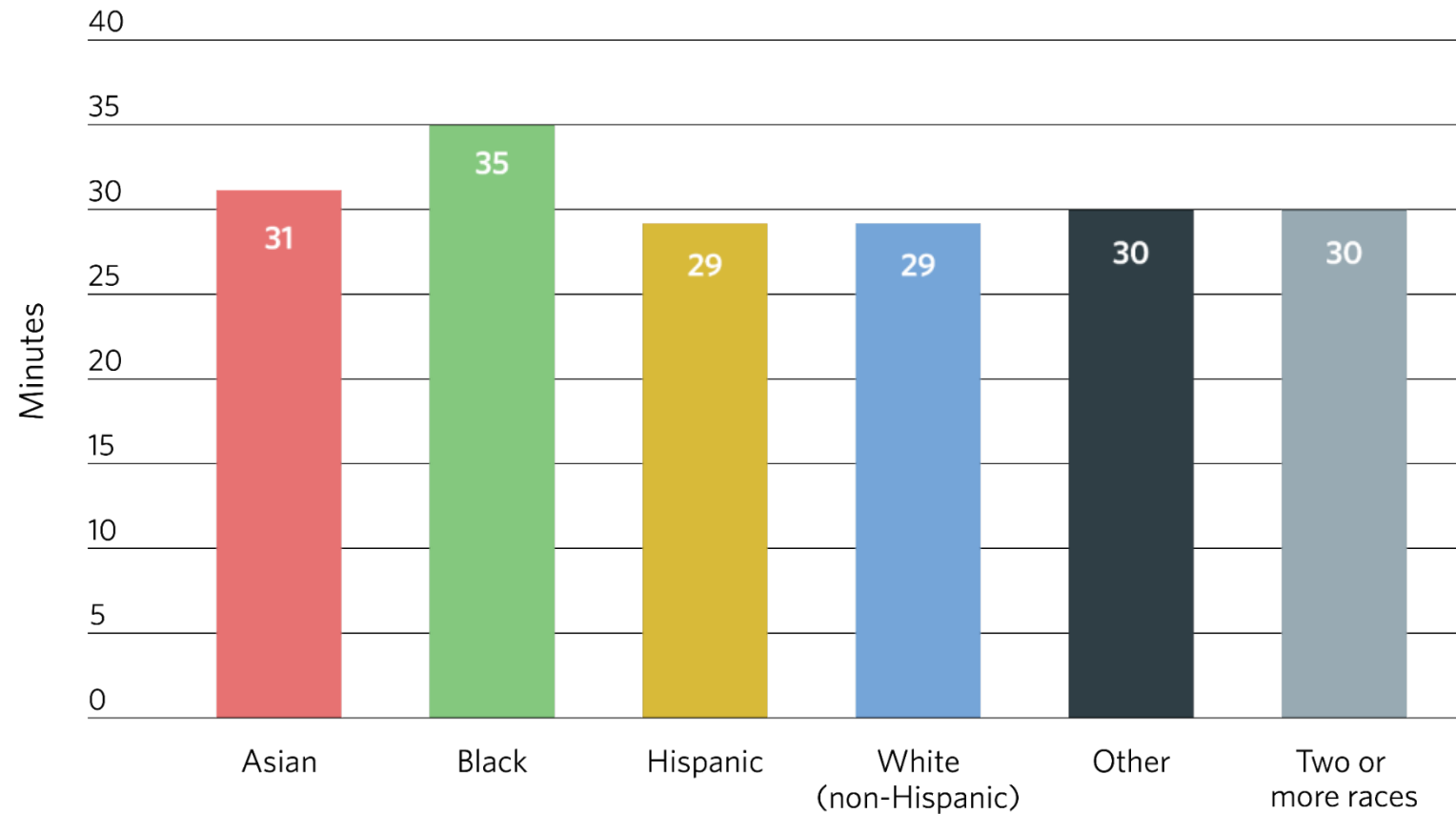
Credit: Rebecca Hersher and Alyson Hurt/NPR

Flooding and mobility



Commute time by race and ethnicity

Average Journey to Work Time by Race and Ethnicity



Source: CMAP analysis of public-use microdata from the Minnesota Population Center's IPUMS-USA database.

ENVIRONMENT

A region prepared for climate change

So what can we do?

Engage vulnerable populations in planning

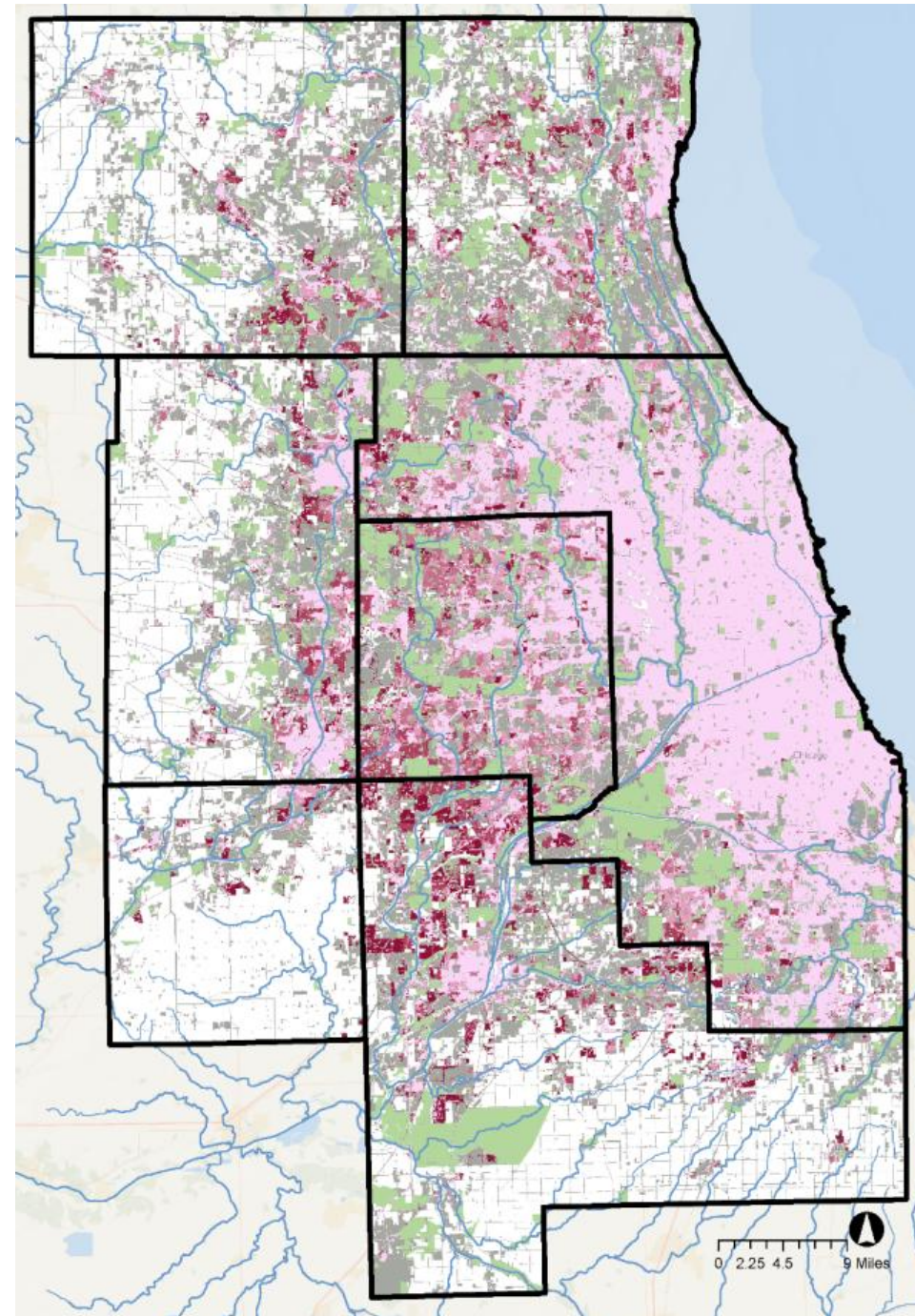
Integrate vulnerability into decision-making

Target investments in disconnected areas

Older development lacking today's BMPs

42%

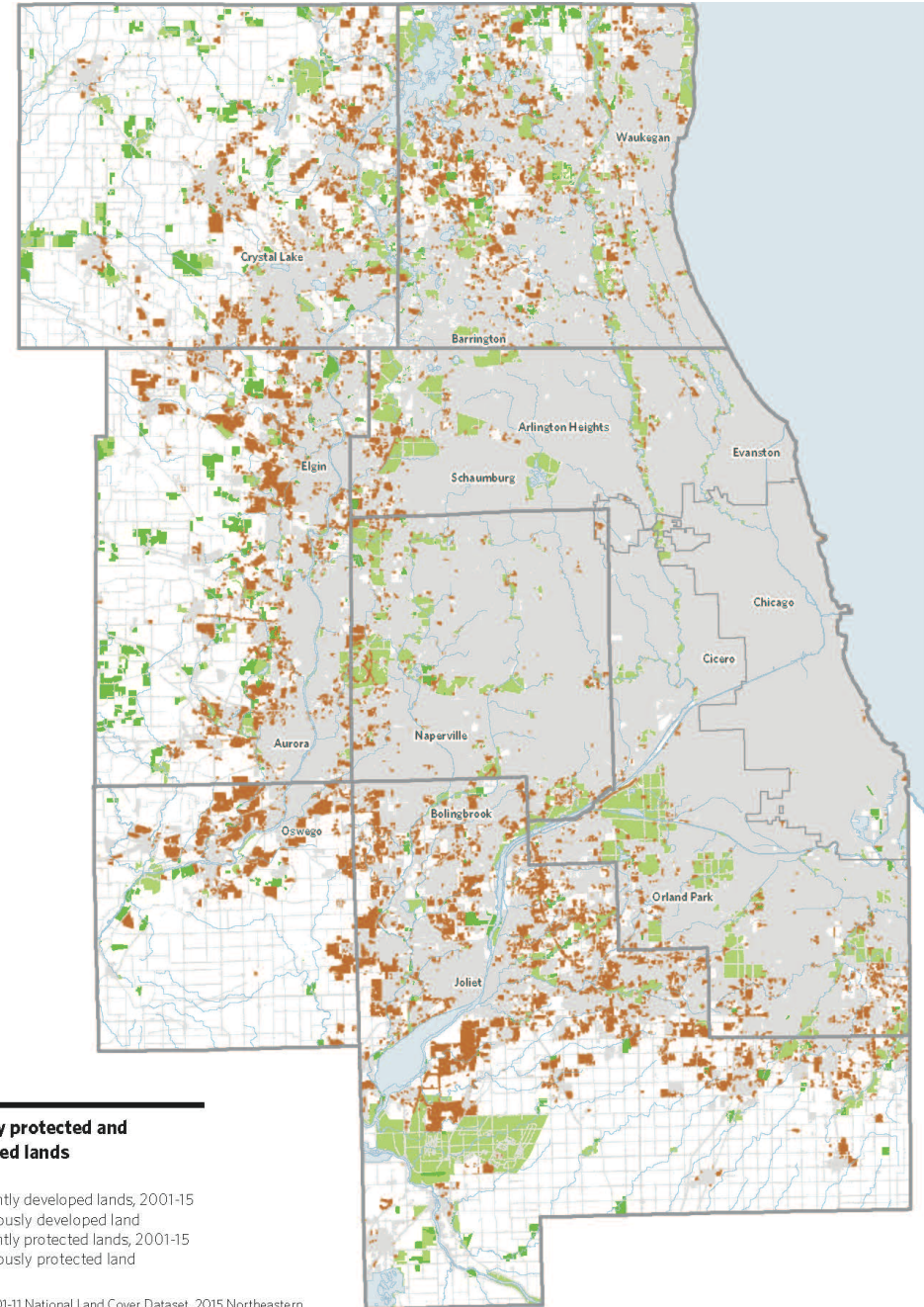
of developed acres
were first developed
prior to 1974



New development occurring on periphery

140,000
acres

of new development occurred in areas with limited infrastructure



Recently protected and developed lands

- Recently developed lands, 2001-15
- Previously developed land
- Recently protected lands, 2001-15
- Previously protected land

Source: 2001-11 National Land Cover Dataset, 2015 Northeastern Illinois Development Database, 2001/2005/2013 CMAP Land Use Inventory, 2012-15 National Conservation Easement Database, 2014 Kendall County Forest Preserve District Master Plan, 2016 Trust for Public Land Conservation Almanac, and 2016 I-View: Prairie State Conservation Coalition's database of Illinois protected natural lands.

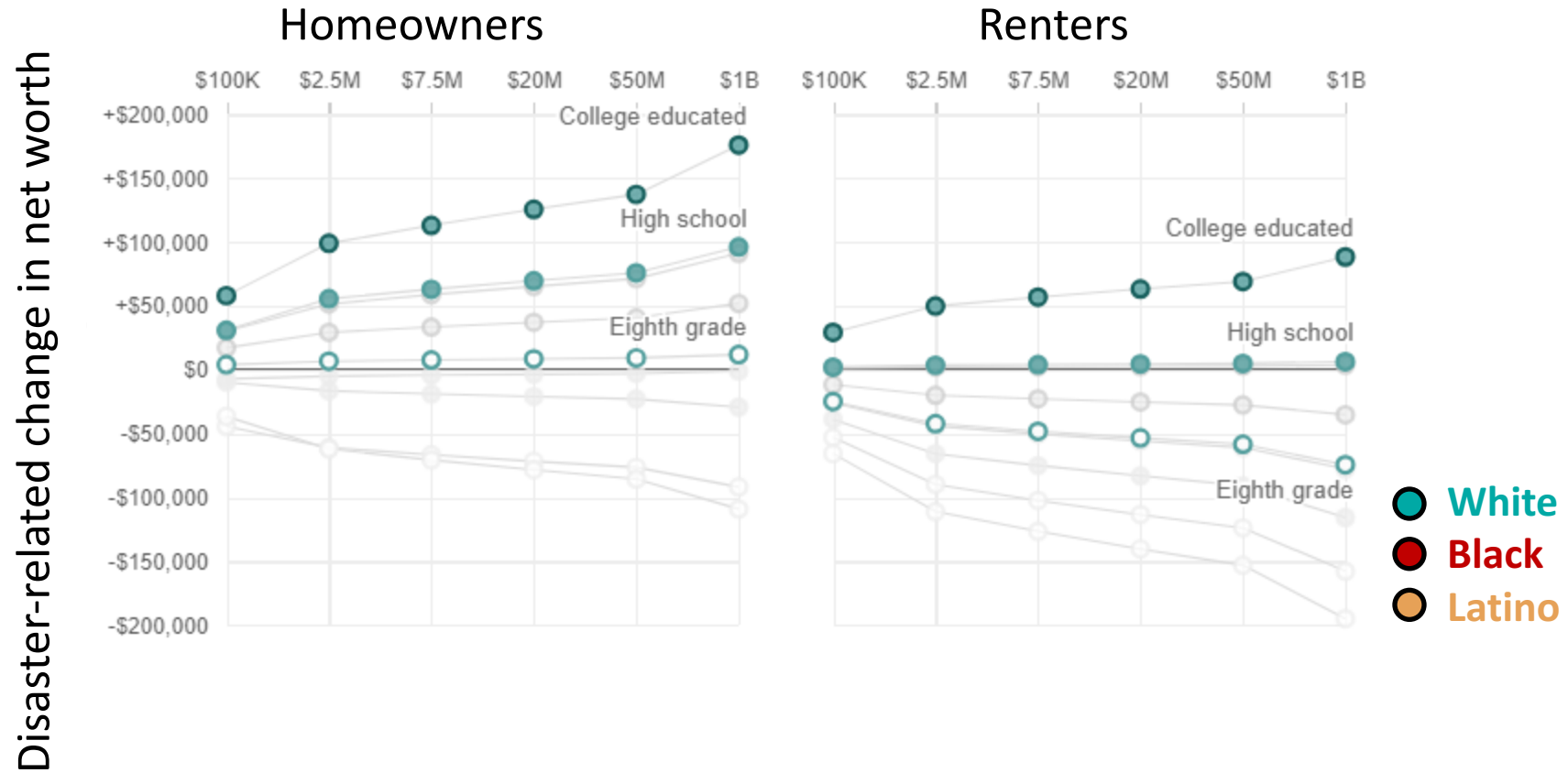


www.cmap.illinois.gov/onto2050

Nora Beck

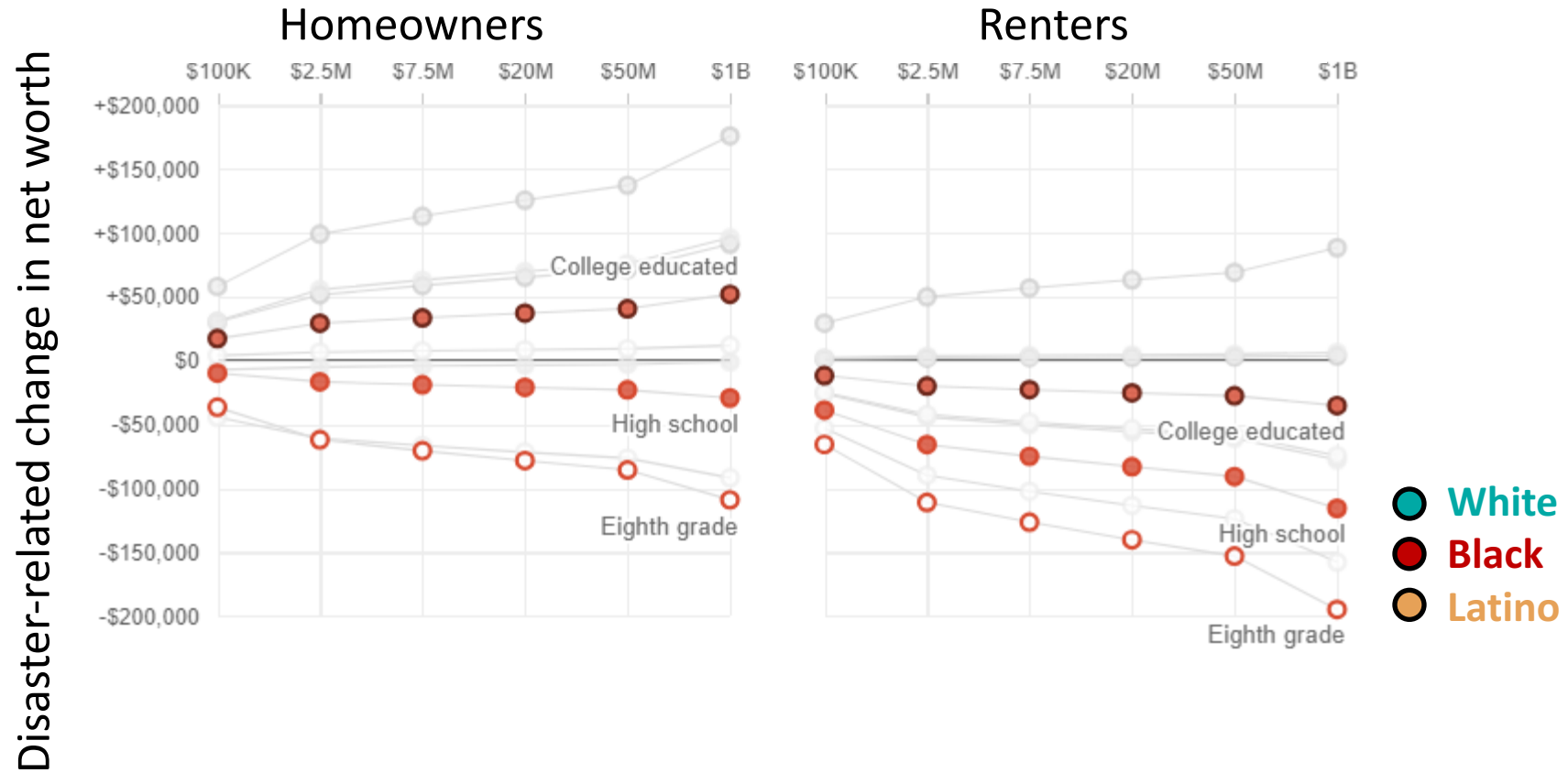
nbeck@cmap.illinois.gov

Access to assistance



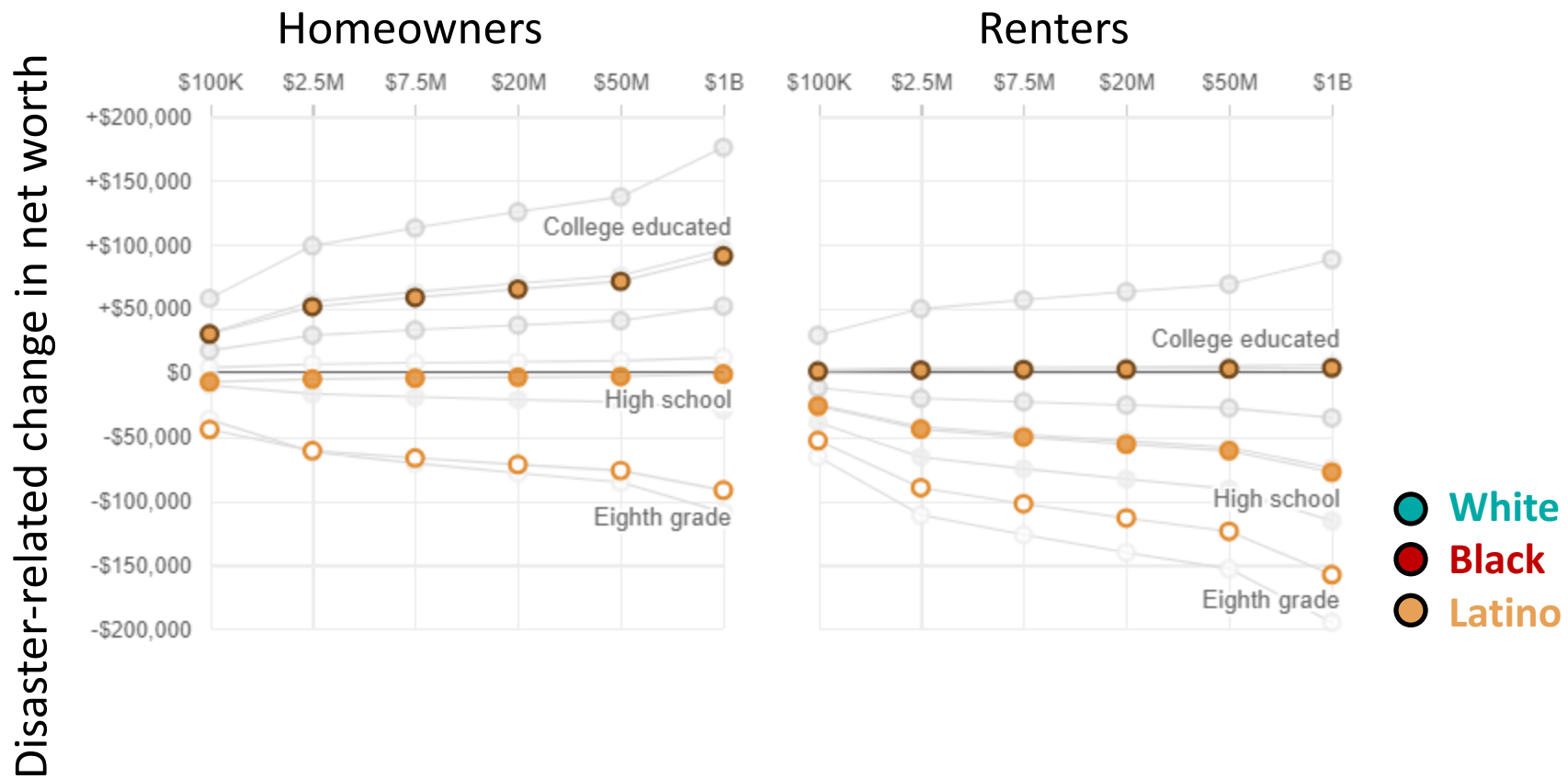
Credit: Rebecca Hersher and Alyson Hurt/NPR

Access to assistance



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