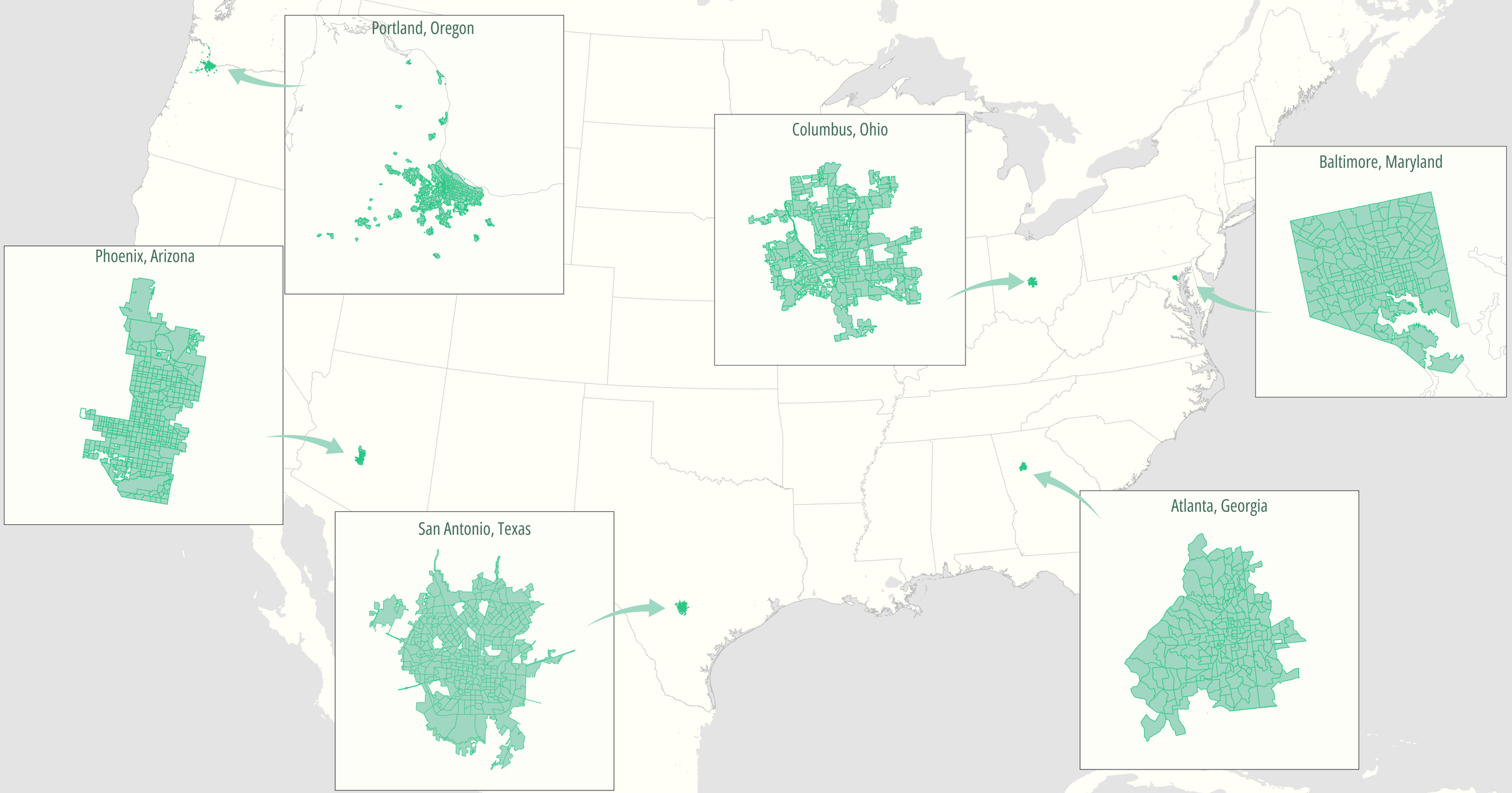
URBAN CARDIOMETABOLIC HEALTH AND STRUCTURAL CONTEXT IN SELECTED U.S. CITIES

This project examines neighborhood scale patterns of cardiometabolic health across six U.S. cities, Atlanta, Baltimore, San Antonio, Columbus (OH), Phoenix, and Portland, using census-tract–level estimates from the CDC PLACES project alongside socioeconomic, food access, and healthcare access indicators. The selected cities represent diverse regional, demographic, and urban forms, allowing comparison across distinct structural contexts rather than within a single metropolitan type.

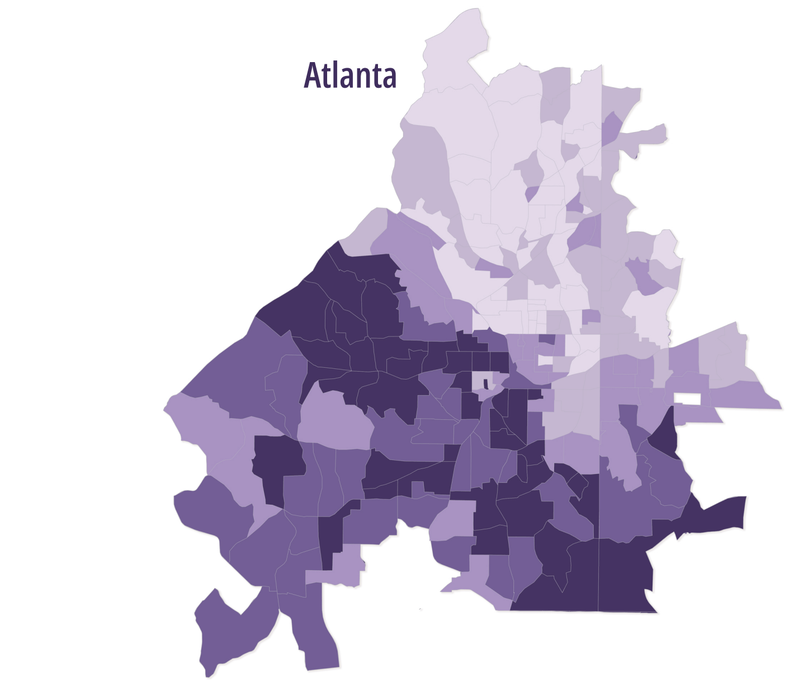
By combining systematic cross city comparisons with city specific case studies, this analysis seeks to identify how cardiometabolic risk is spatially organized and how that organization relates to income, food environments, and access to safety-net healthcare services. Maps are intended to reveal relative spatial patterns rather than establish causal relationships.

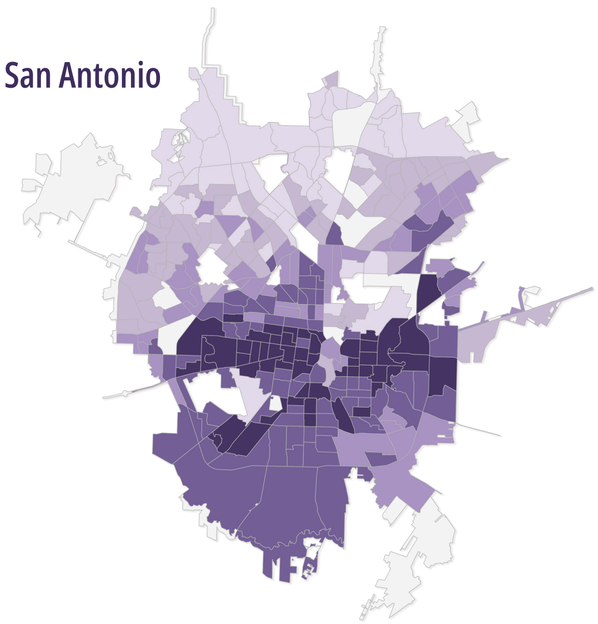


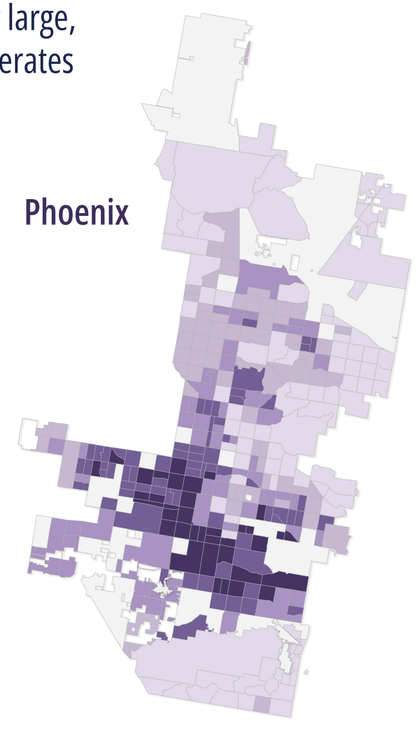
ADULT OBESITY PREVALENCE BY CENSUS TRACT

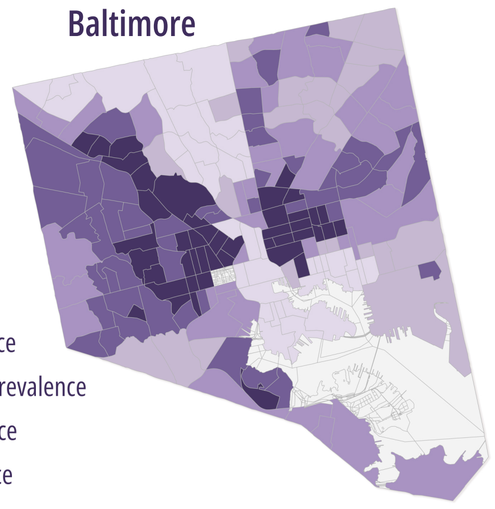
CDC PLACES estimates (adults aged 18+)

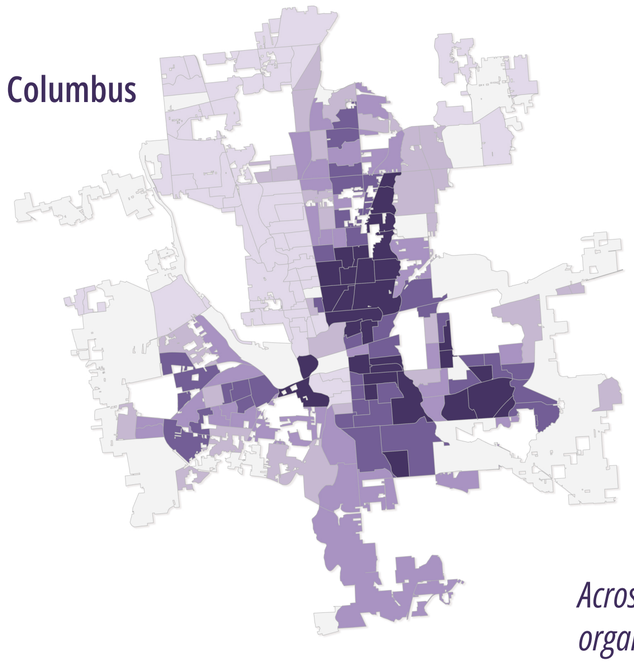
Across the cities examined, adult obesity prevalence exhibits substantial variation in both magnitude and spatial organization. Some cities display large, contiguous areas of elevated prevalence, while others show more fragmented or localized patterns. These differences suggest that obesity risk operates at distinct spatial scales across urban contexts, motivating closer examination of city-specific structural conditions.

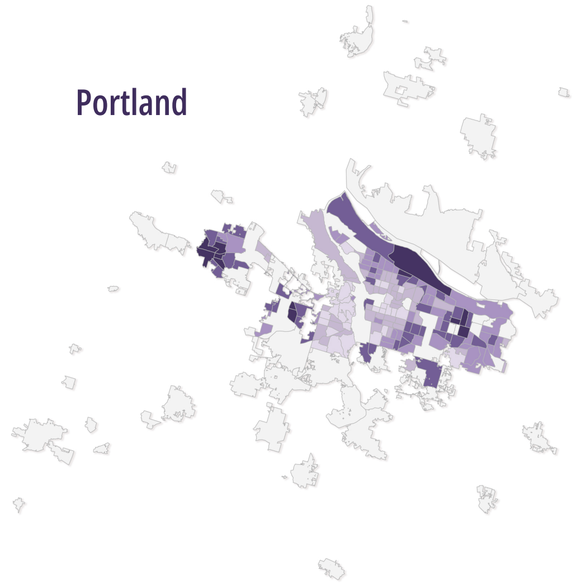












% crude estimate

- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence

No data

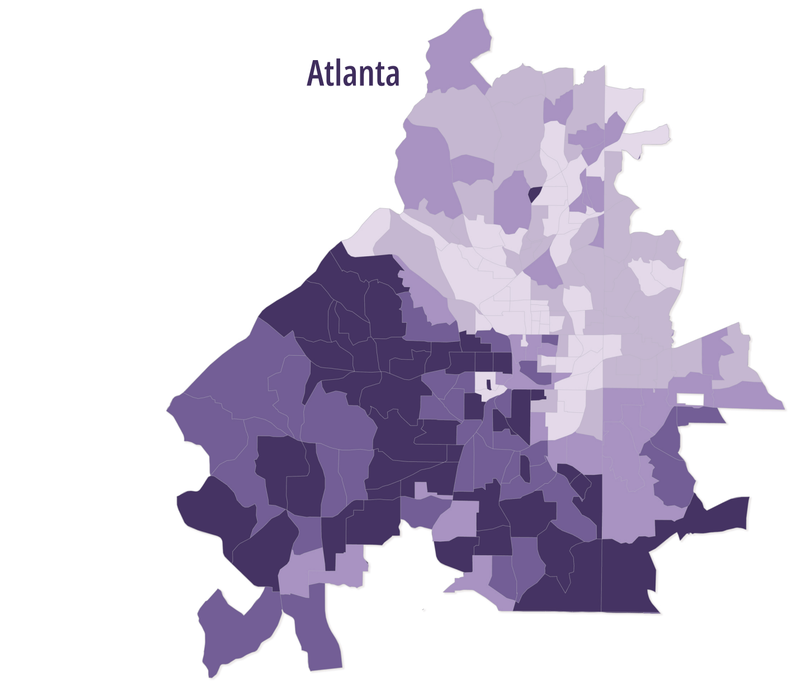
Across cities, adult obesity prevalence differs not only in magnitude but in spatial organization, ranging from large, contiguous areas of elevated prevalence to more fragmented, localized patterns.

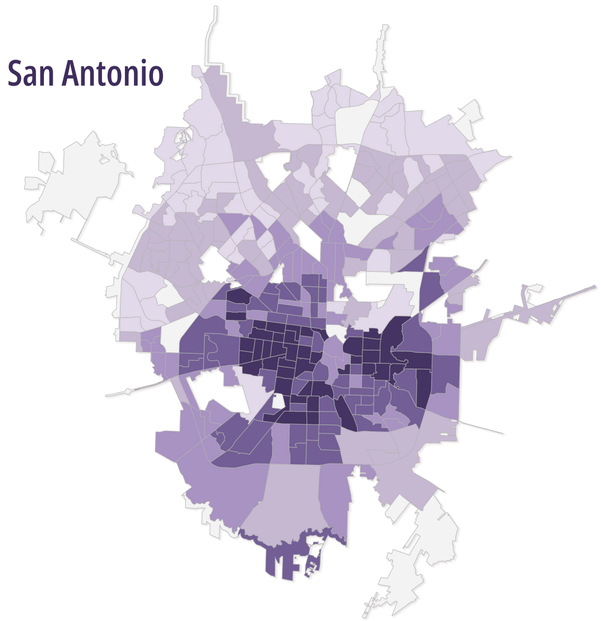
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

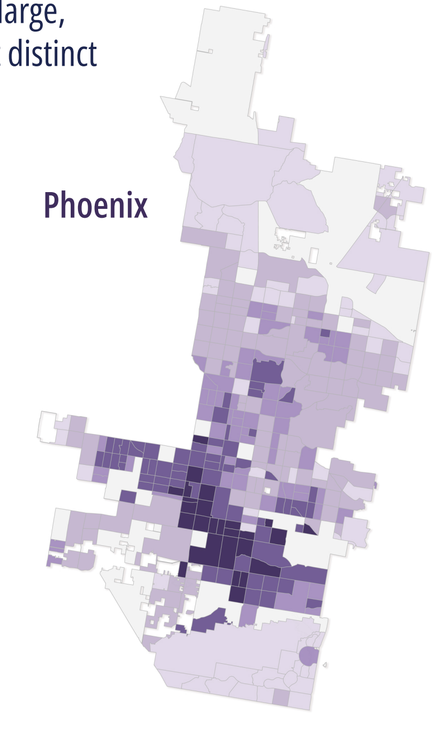
ADULT DIABETES PREVALENCE BY CENSUS TRACT

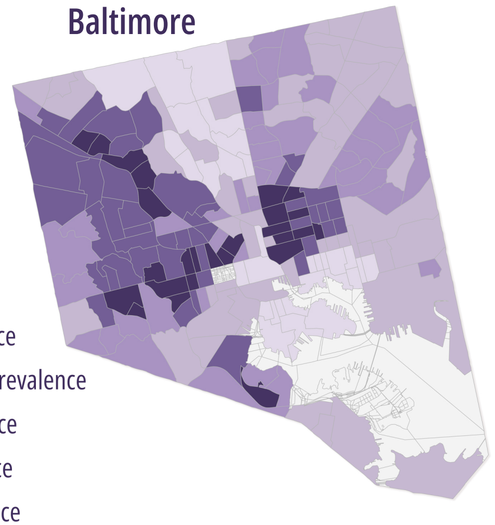
CDC PLACES estimates (adults aged 18+)

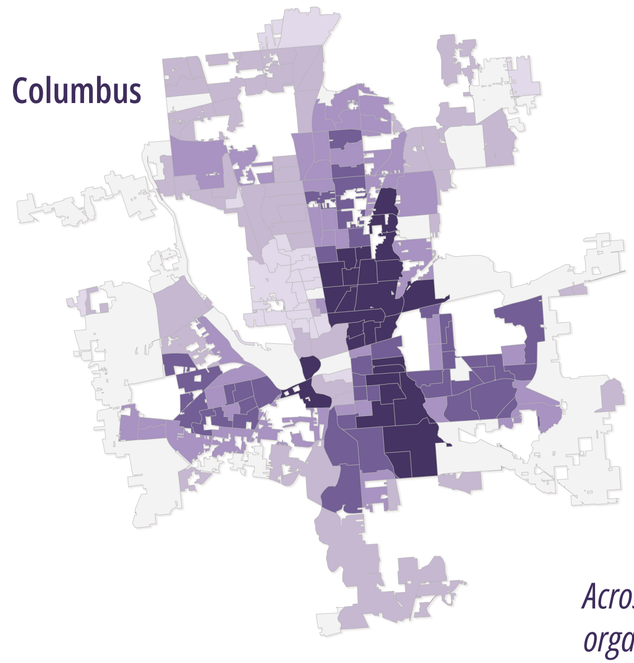
Across the cities examined, adult diabetes prevalence varies substantially in both magnitude and spatial organization. While some cities exhibit large, contiguous areas of elevated prevalence, others display more fragmented or localized patterns, indicating that cardiometabolic risk manifests at distinct spatial scales across different urban contexts.

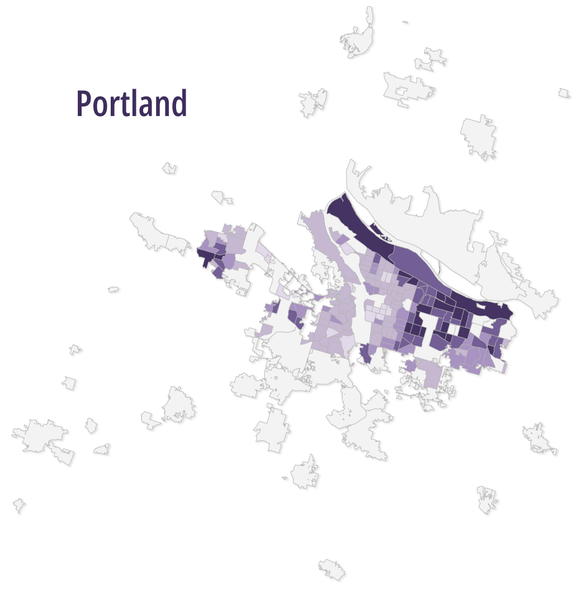












% crude estimate

- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence

No data

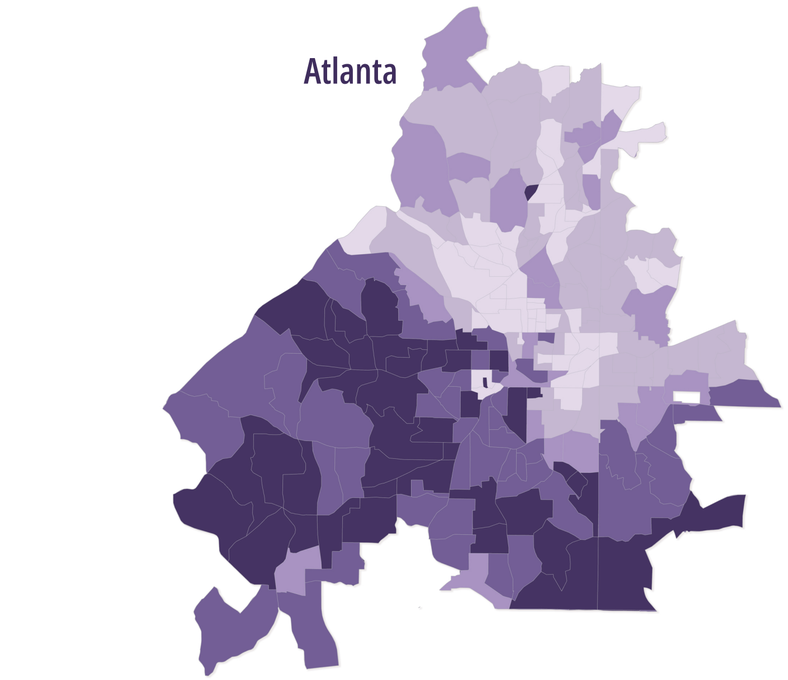
Across cities, adult diabetes prevalence differs not only in magnitude but in spatial organization, ranging from large, contiguous areas of elevated prevalence to more fragmented, localized patterns.

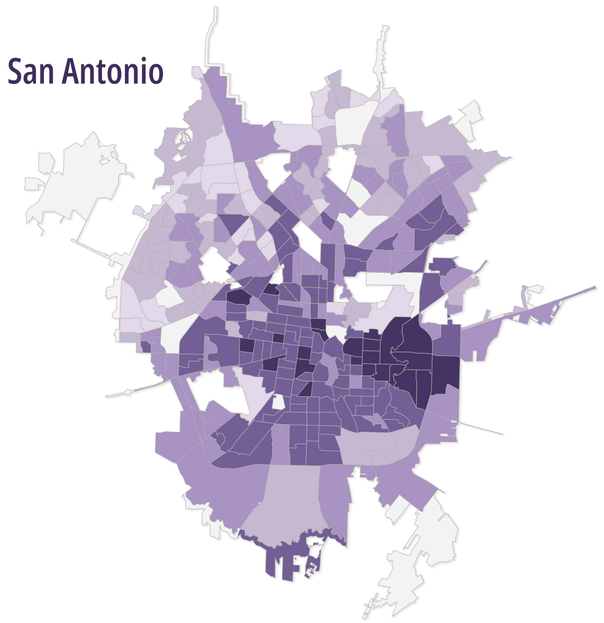
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

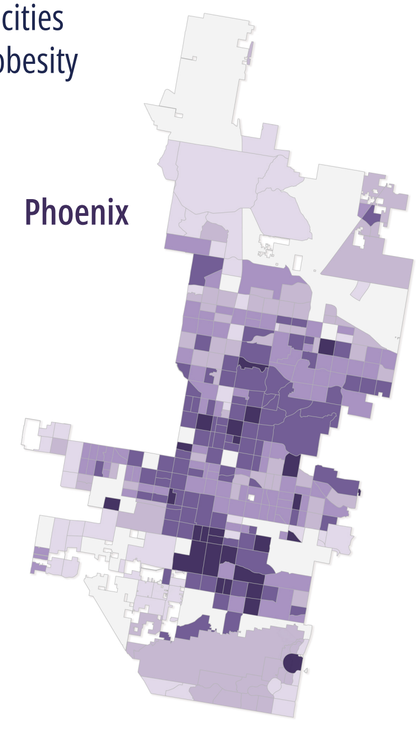
ADULT HIGH BLOOD PRESSURE PREVALENCE BY CENSUS TRACT

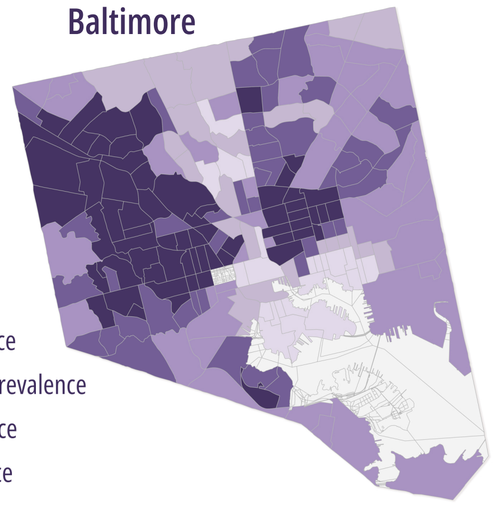
CDC PLACES estimates (adults aged 18+)

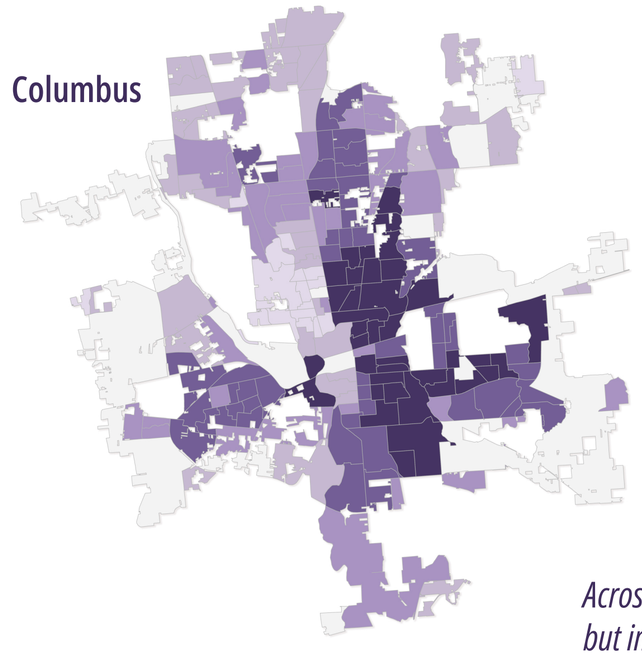
Across the cities examined, adult high blood pressure prevalence exhibits substantial variation in both magnitude and spatial organization. Some cities display large, contiguous areas of elevated prevalence, while others show more fragmented or localized patterns. These differences suggest that obesity risk operates at distinct spatial scales across urban contexts, motivating closer examination of city-specific structural conditions.

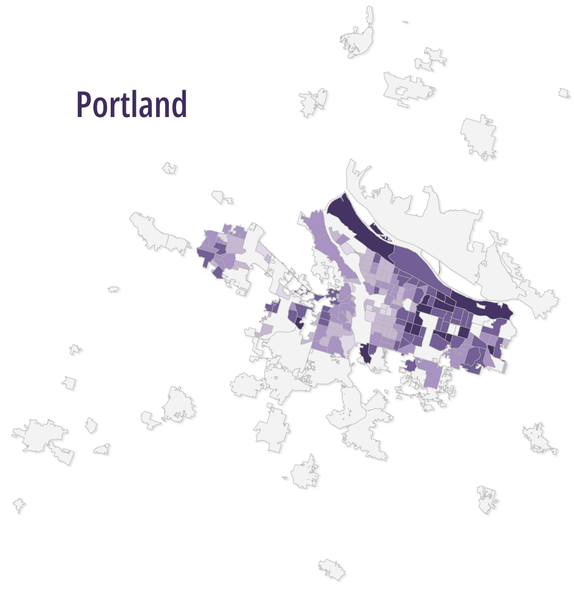












% crude estimate

- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence

No data

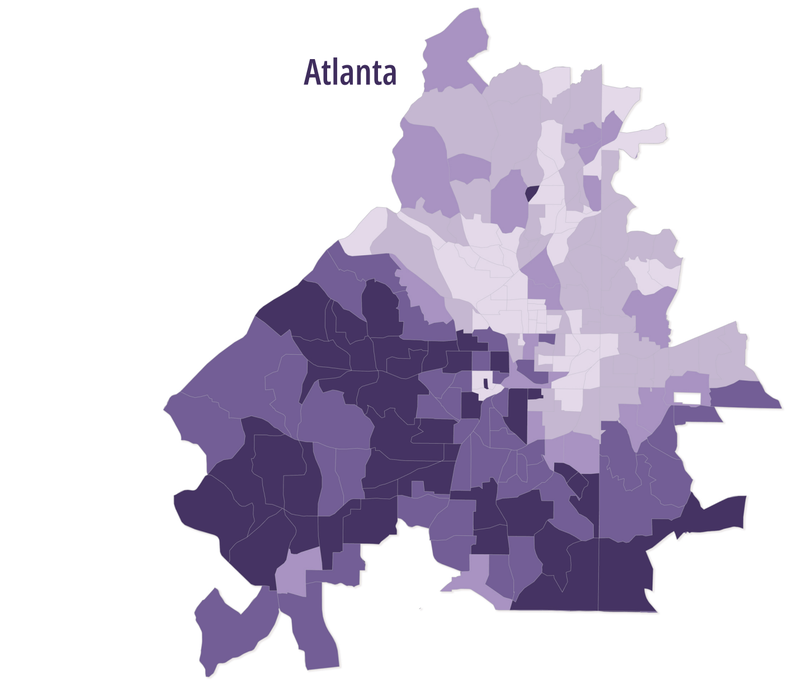
Across cities, adult high blood pressure prevalence differs not only in magnitude but in spatial organization, ranging from large, contiguous areas of elevated prevalence to more fragmented, localized patterns.

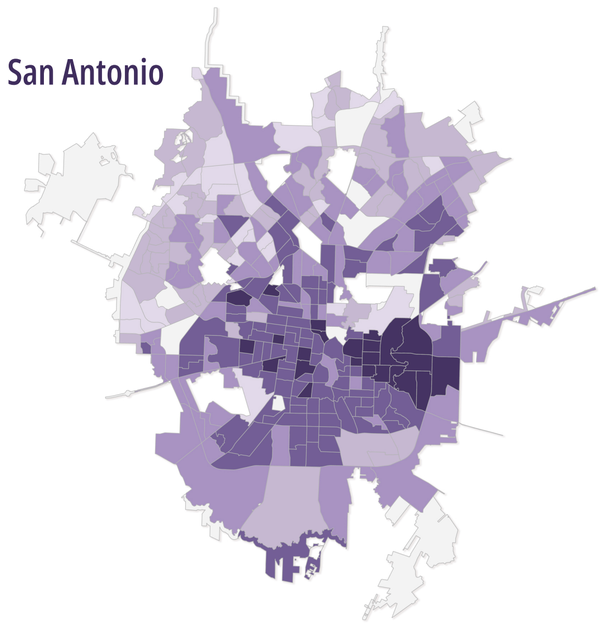
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

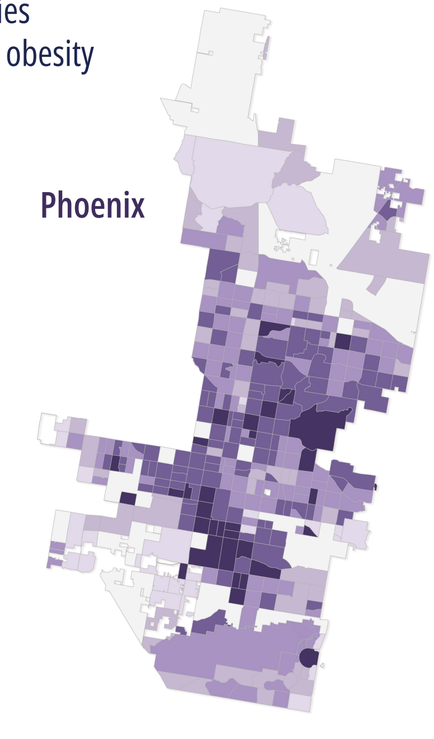
ADULT HIGH CHOLESTEROL PREVALENCE BY CENSUS TRACT

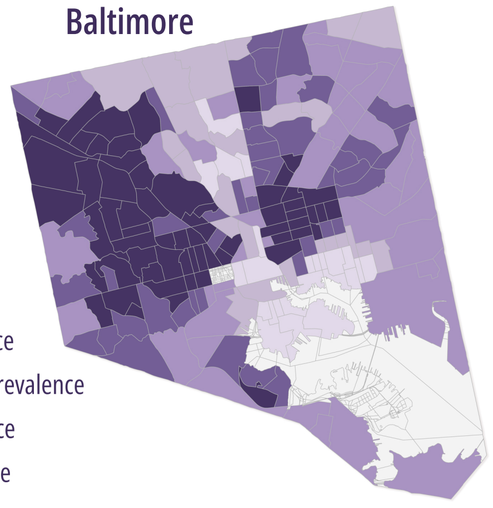
CDC PLACES estimates (adults aged 18+)

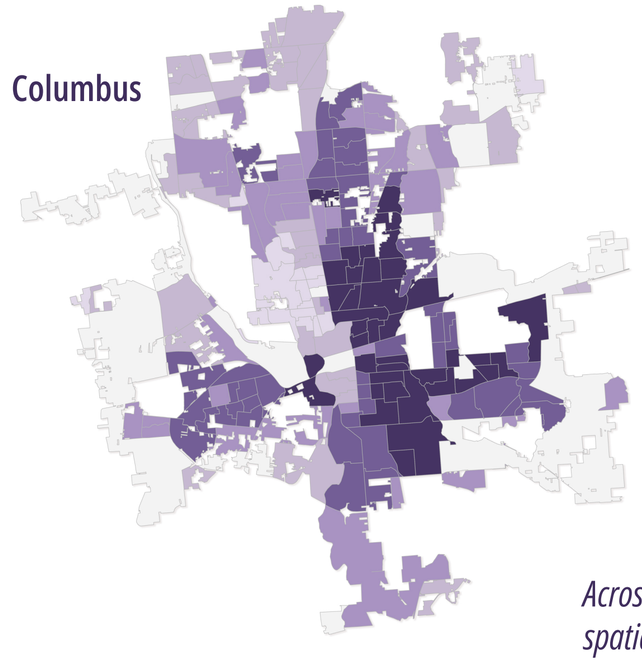
Across the cities examined, adult high cholesterol prevalence exhibits substantial variation in both magnitude and spatial organization. Some cities display large, contiguous areas of elevated prevalence, while others show more fragmented or localized patterns. These differences suggest that obesity risk operates at distinct spatial scales across urban contexts, motivating closer examination of city-specific structural conditions.

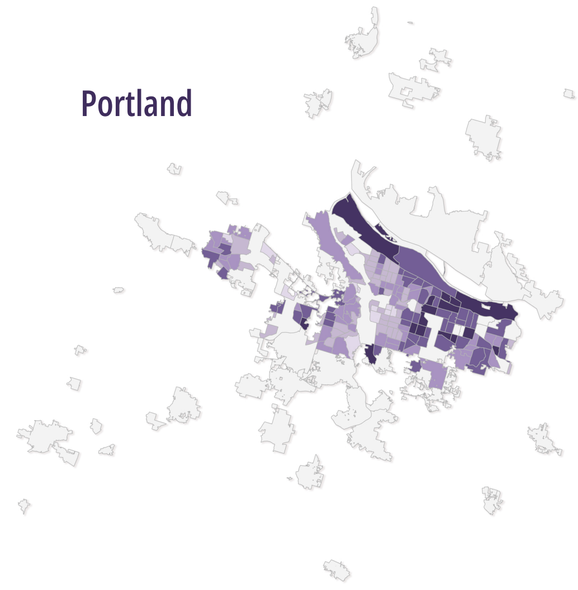












% crude estimate

- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence

No data

Across cities, adult high cholesterol prevalence differs not only in magnitude but in spatial organization, ranging from large, contiguous areas of elevated prevalence to more fragmented, localized patterns.

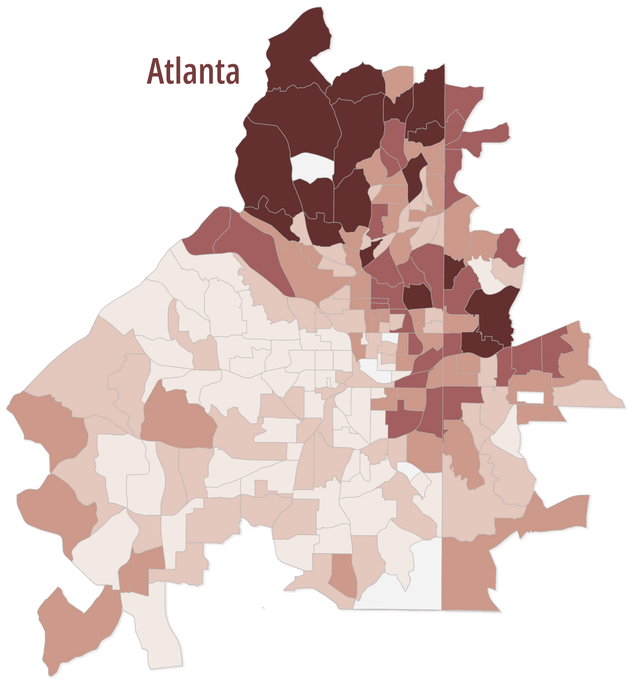
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

MEDIAN HOUSEHOLD INCOME BY CENSUS TRACT

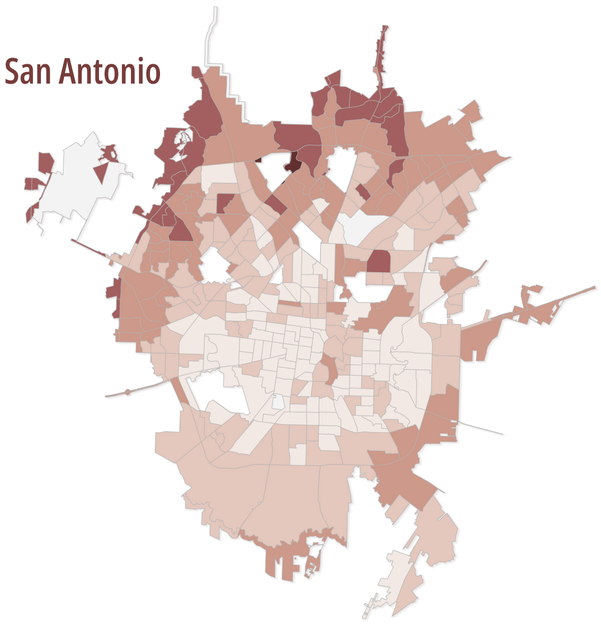
American Community Survey (5-year estimates)

Median household income exhibits pronounced spatial variation both within and across cities. Some cities display sharp income gradients and concentrated areas of economic disadvantage, while others show more diffuse or mixed patterns. These differences provide essential context for interpreting spatial variation in cardiometabolic health outcomes.

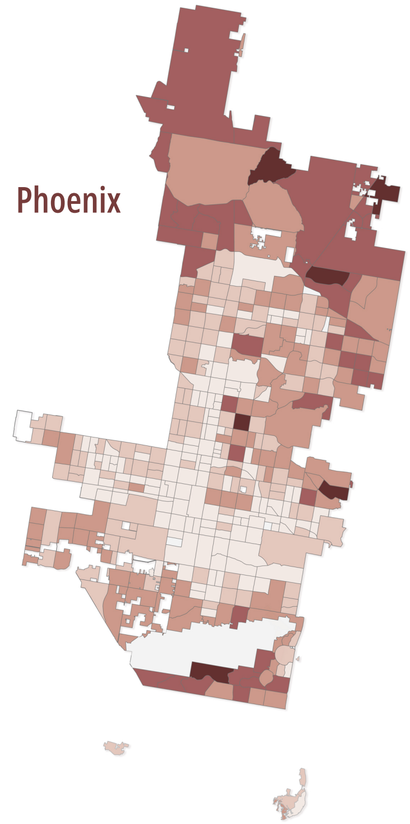
Atlanta



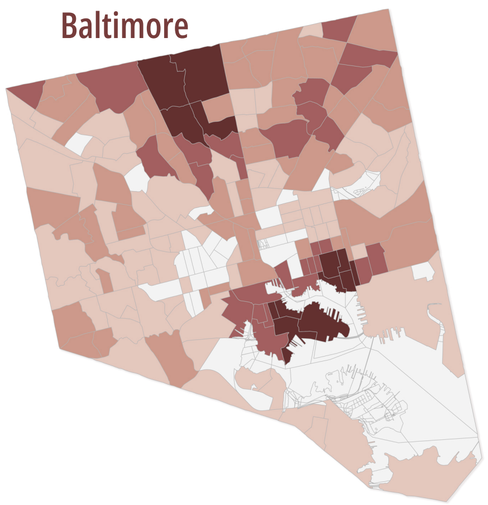
San Antonio



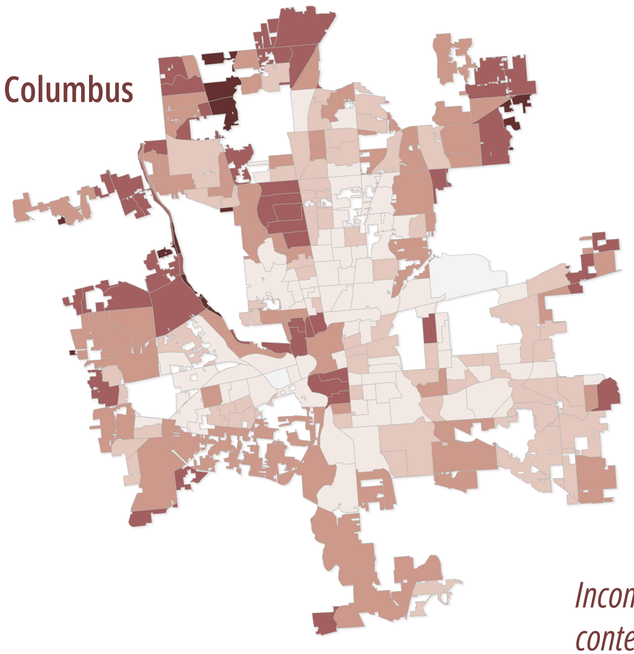
Phoenix



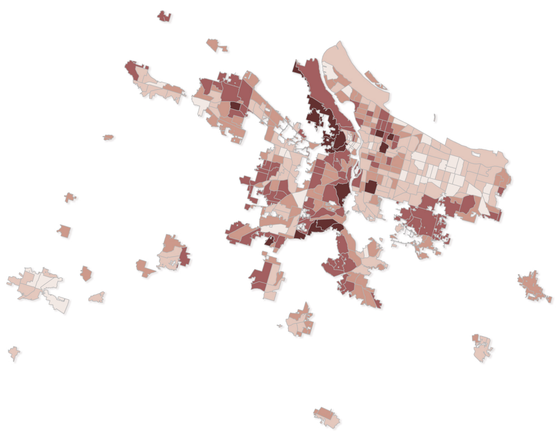
Baltimore



Columbus



Portland



- $16k - $ 50k
- $50k - $70k
- $70k - $100k
- $100k - $150k
- $150k - $225k

No data

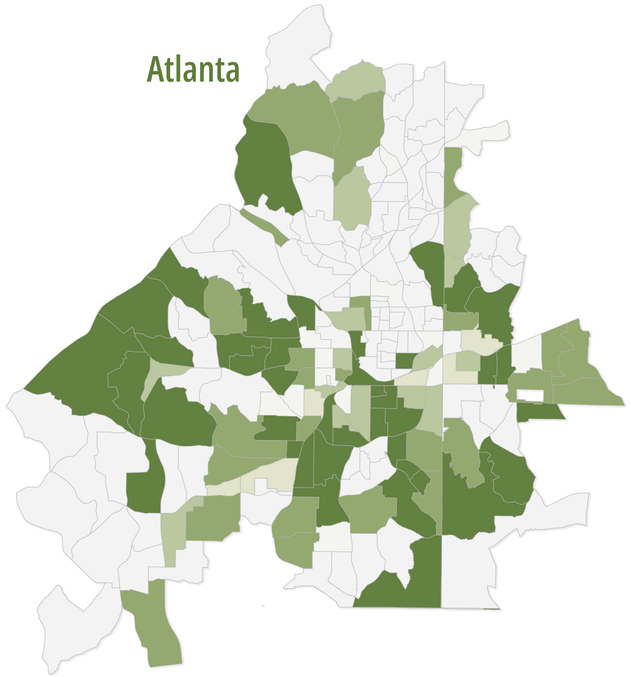
Income patterns vary markedly across cities, shaping distinct neighborhood contexts in which health risks emerge.

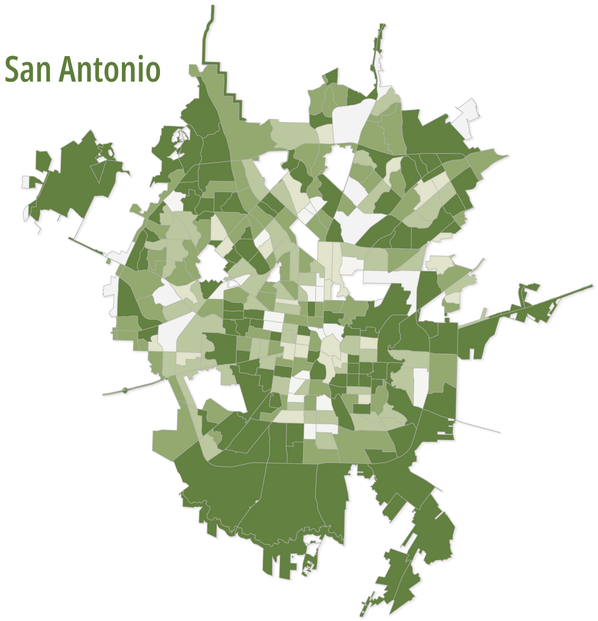
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

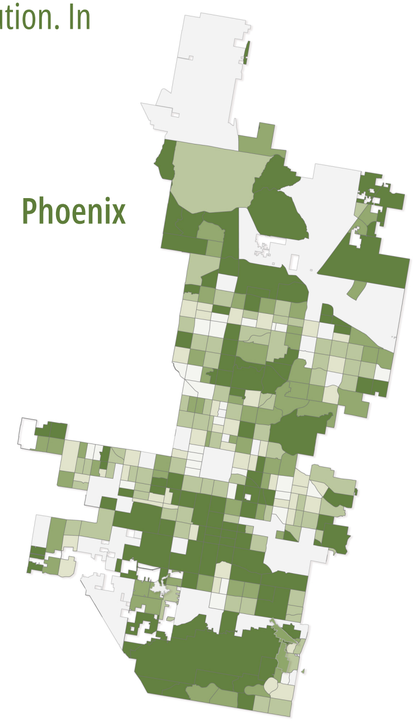
ACCESS TO HEALTHY FOOD OUTLETS BY CENSUS TRACT

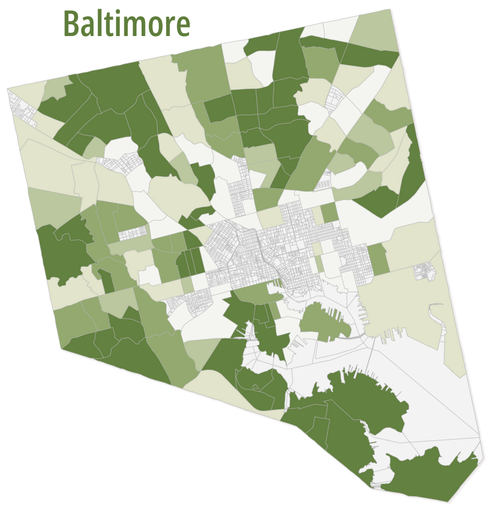
USDA Food Access Research Atlas

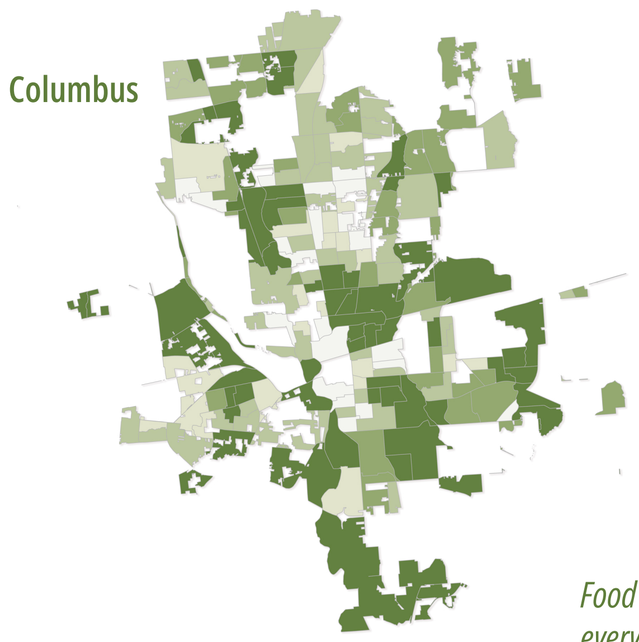
Access to healthy food outlets varies substantially across urban environments, reflecting differences in land use, transportation, and retail distribution. In some cities, limited food access forms large contiguous areas, while in others it appears as localized gaps within otherwise well-served regions.

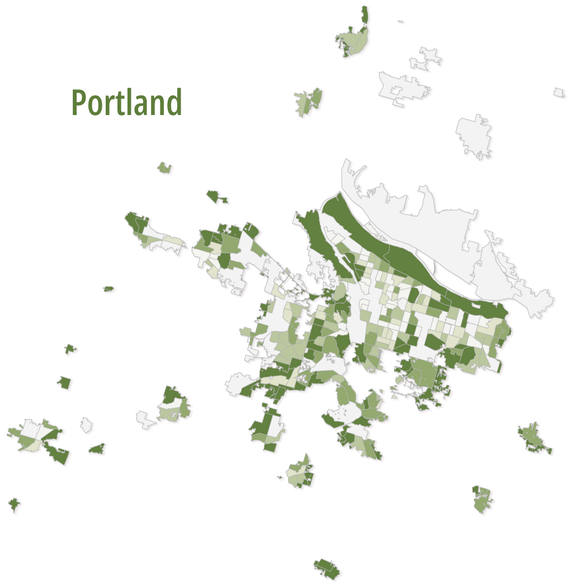












Food access

- 1 - 30
- 31 - 50
- 51 - 70
- 71 - 90
- 91 - 100

% population living >1/2 mile from a supermarket

Food access constraints operate at different spatial scales across cities, influencing everyday nutritional environments.

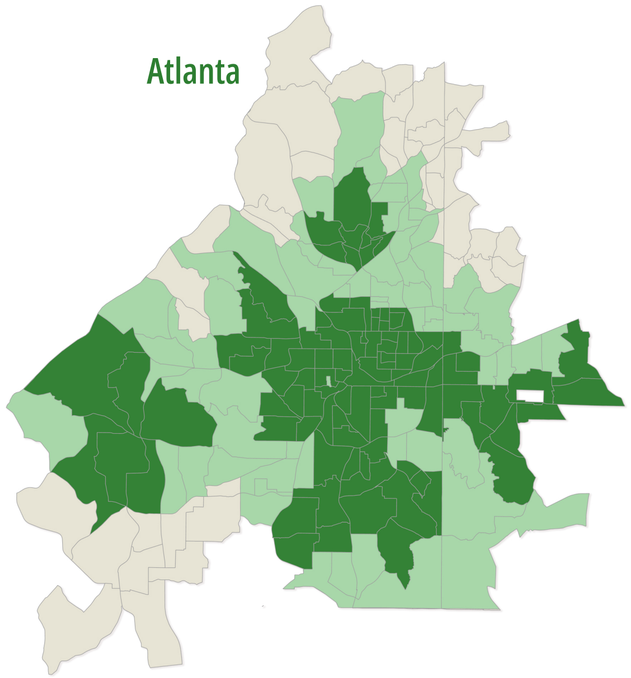
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

DISTANCE TO SAFETY-NET PRIMARY CARE SERVICES

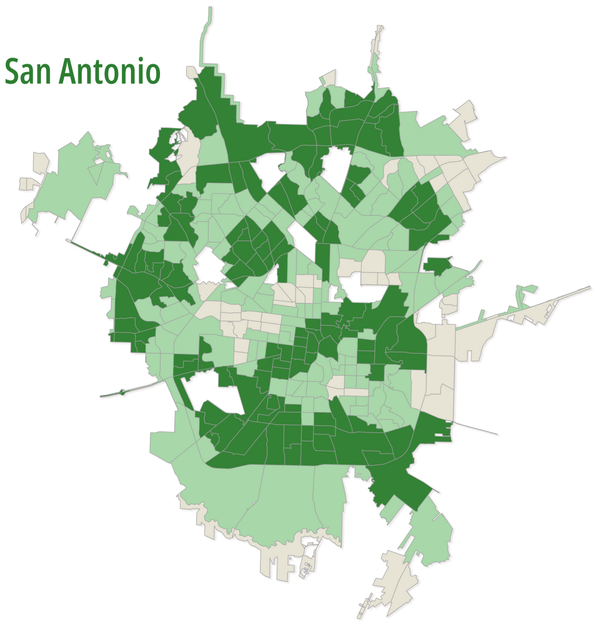
HRSA Health Center and Look-Alike Sites

Proximity to safety-net primary care facilities varies widely across cities, shaped by healthcare infrastructure placement and urban form. Spatial patterns of access range from dense central clustering to broad areas of limited proximity, highlighting differences in how healthcare services are distributed across metropolitan areas.

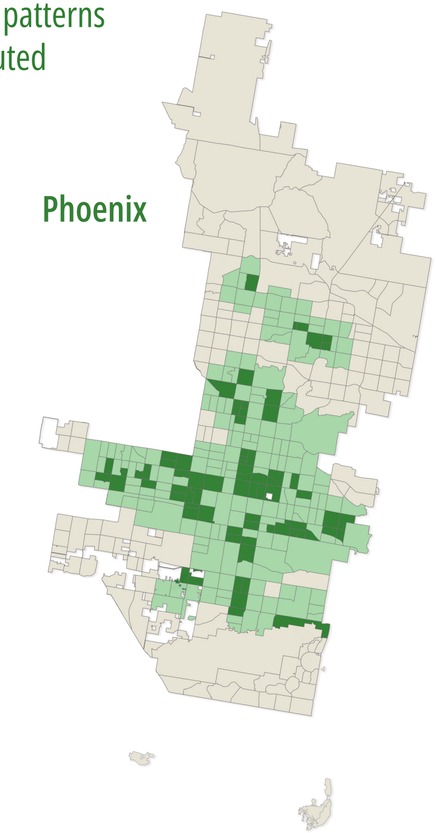
Atlanta



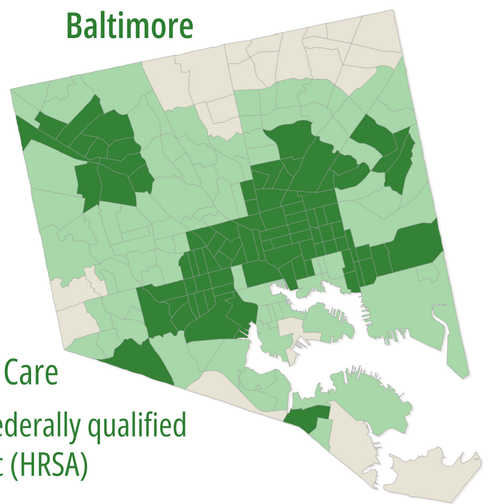
San Antonio



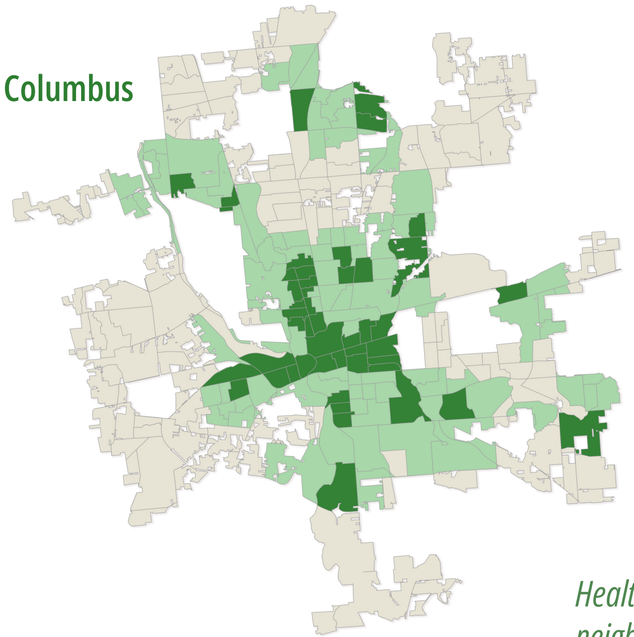
Phoenix



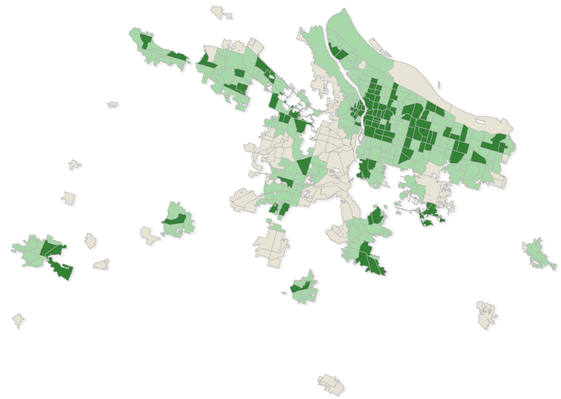
Baltimore



Columbus



Portland



Safety-Net Primary Care

Distance to nearest federally qualified health center or clinic (HRSA)

- <1 km
- 1 - 3 km
- >3 km

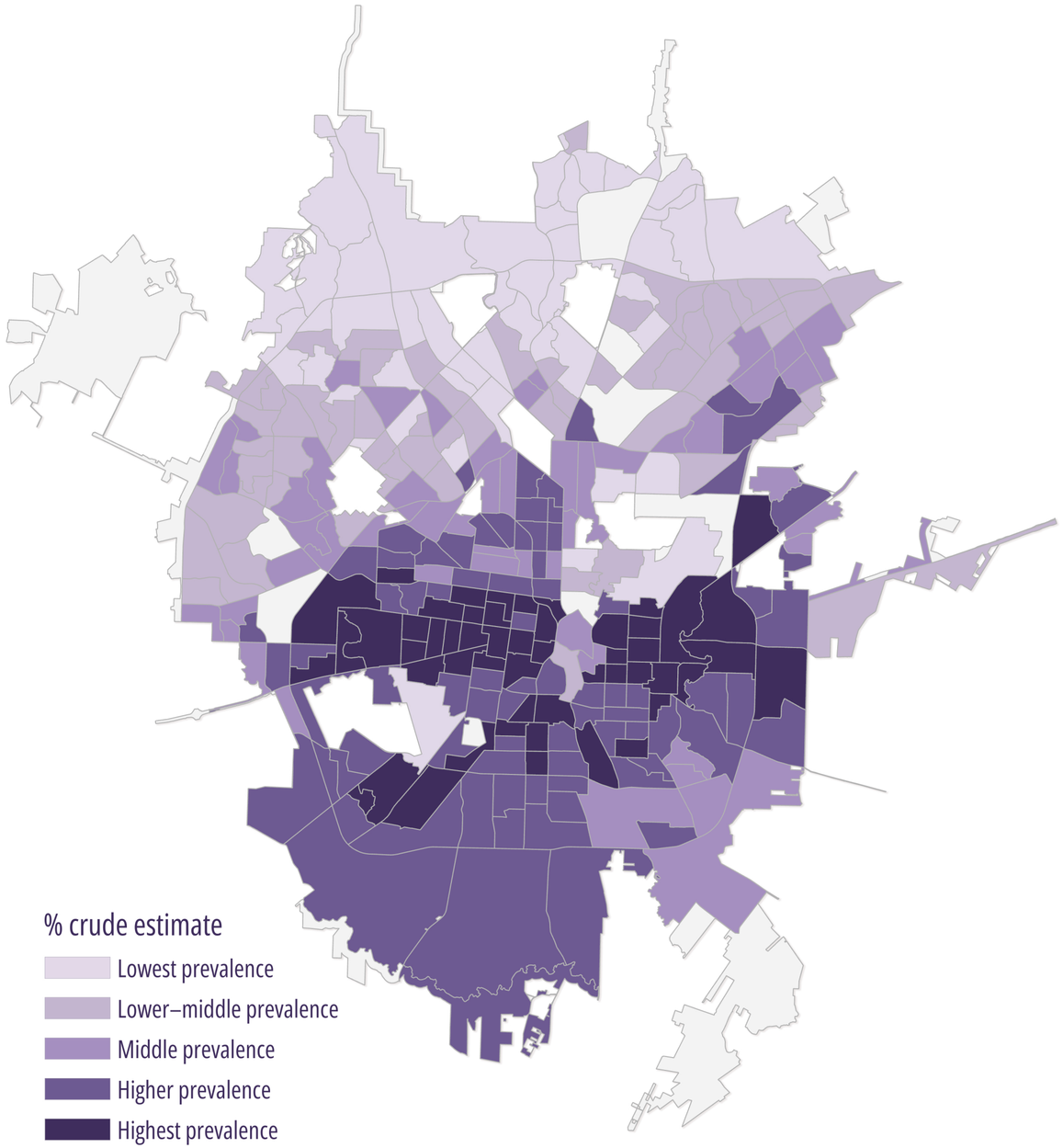
Healthcare access patterns differ across cities and do not uniformly align with neighborhood-level health outcomes.

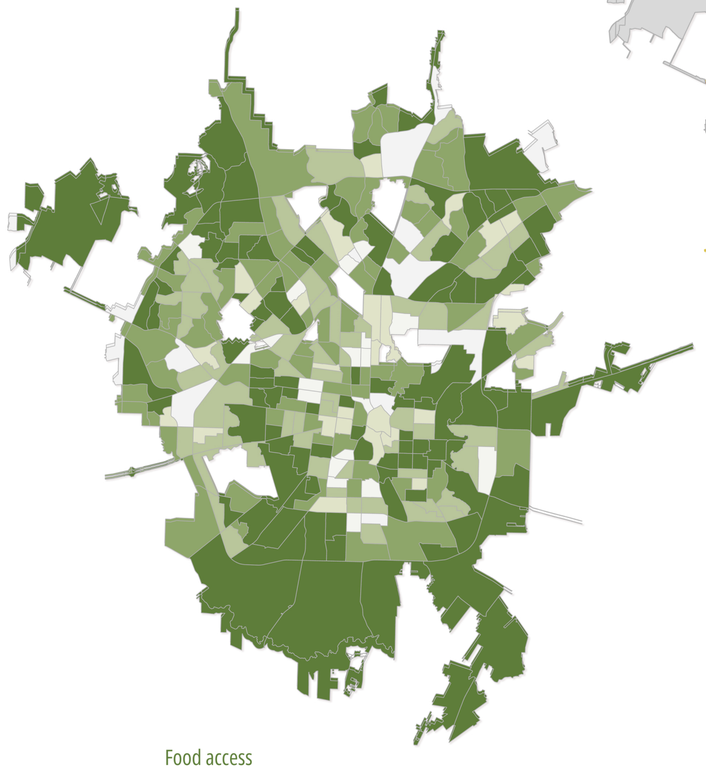
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

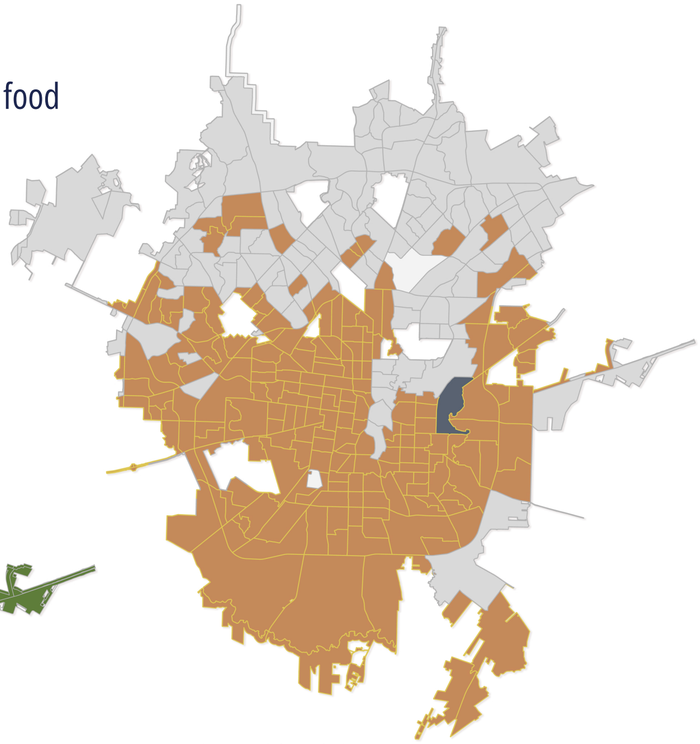
SAN ANTONIO, TEXAS: OBESITY AND STRUCTURAL CONTEXT

Neighborhood-scale patterns by census tract

San Antonio exhibits one of the highest and most spatially extensive patterns of adult obesity prevalence among the cities examined, with elevated rates spanning large portions of the urban area rather than appearing as isolated clusters. Unlike other cities in this study, San Antonio is characterized by a predominantly Hispanic/Latino population across much of the city, providing a distinct demographic context for observed health patterns. Areas of elevated obesity prevalence correspond closely with limited access to healthy food outlets, suggesting that everyday food environments play a central role in shaping risk at a citywide scale.







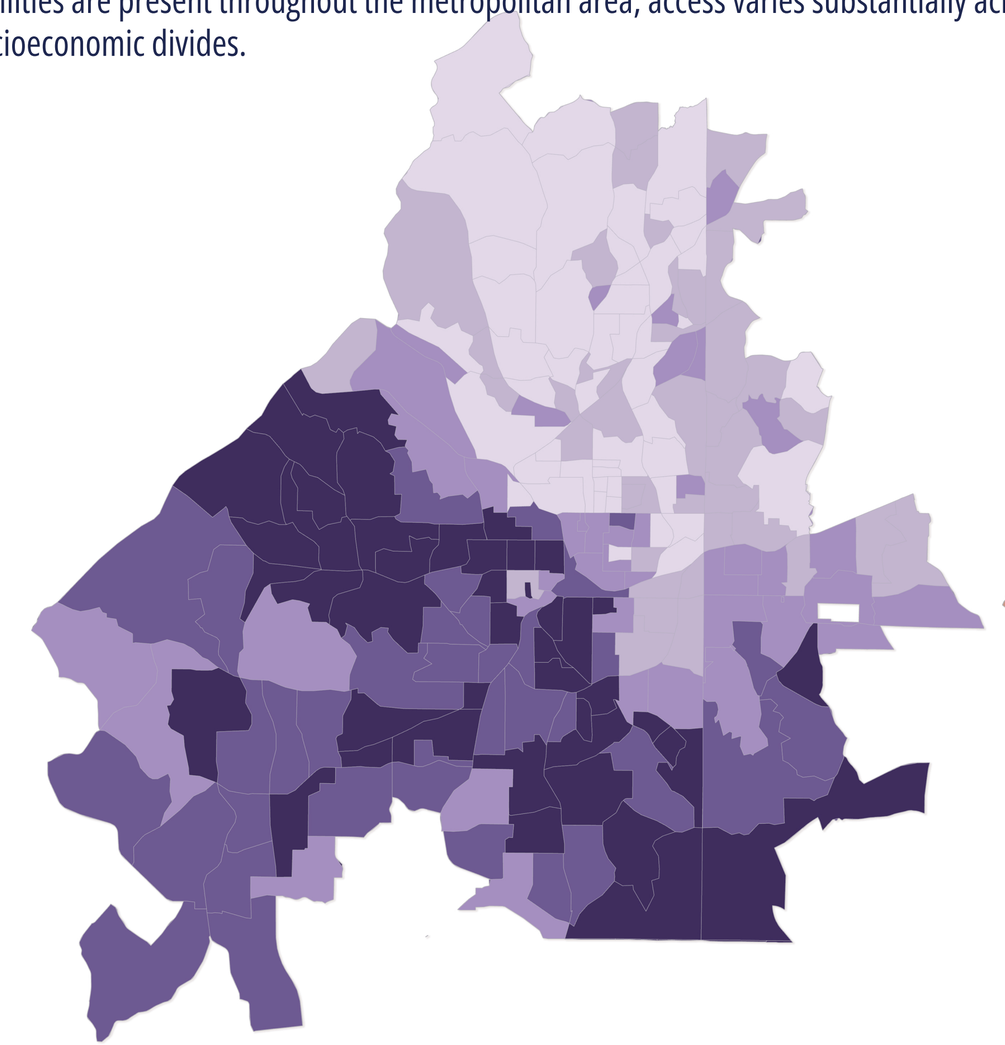
Obesity risk in San Antonio appears embedded in everyday food environments rather than explained by localized healthcare access gaps.

All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

ATLANTA, GEORGIA: OBESITY AND ECONOMIC SEGREGATION

Neighborhood-scale patterns by census tract

Atlanta displays pronounced spatial disparities in adult obesity prevalence, with elevated rates concentrated in historically disinvested neighborhoods. These patterns closely mirror long-standing income segregation, reflecting the city's uneven economic development and infrastructure investment. While healthcare facilities are present throughout the metropolitan area, access varies substantially across neighborhoods, reinforcing rather than offsetting existing socioeconomic divides.

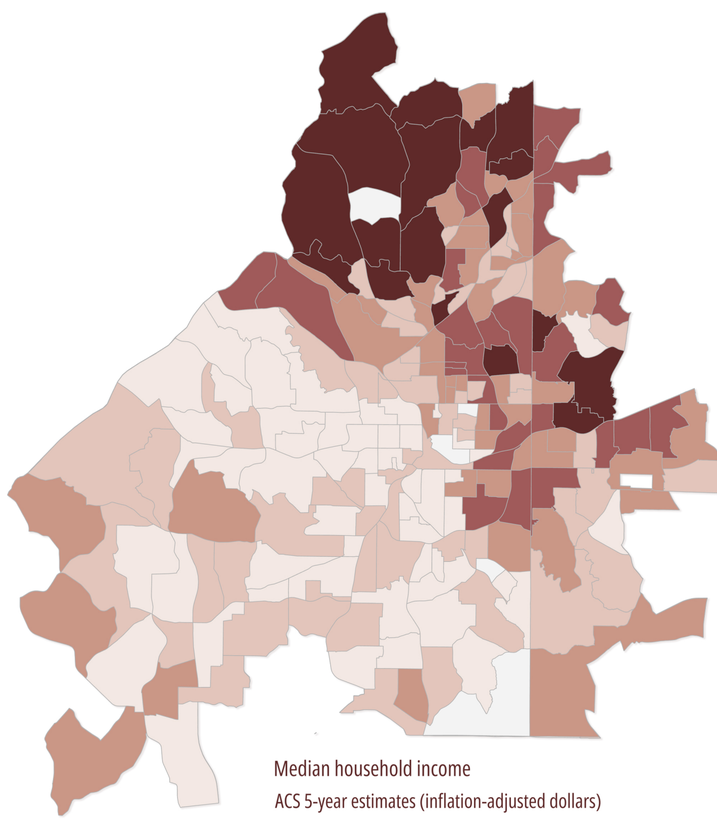


Adult obesity prevalence

% crude estimate

- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence

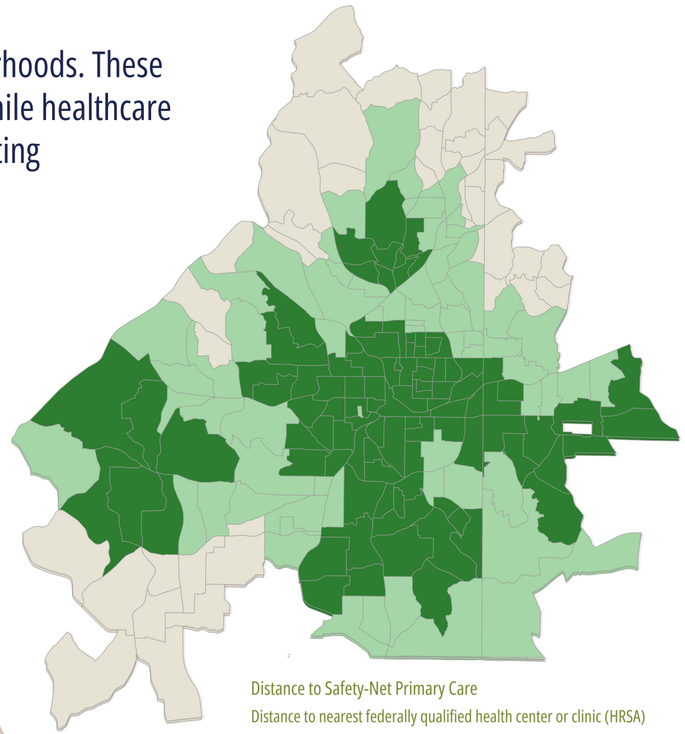
No data



Median household income

ACS 5-year estimates (inflation-adjusted dollars)

- $13k - $40k
- $40k - $70k
- $70k - $100k
- $100k - $150k
- $150k - $250k



Distance to Safety-Net Primary Care

Distance to nearest federally qualified health center or clinic (HRSA)

- < 1 km
- 1 – 3 km
- > 3 km

In Atlanta, cardiometabolic risk aligns strongly with income gradients and healthcare accessibility, reflecting deeply entrenched spatial inequalities.

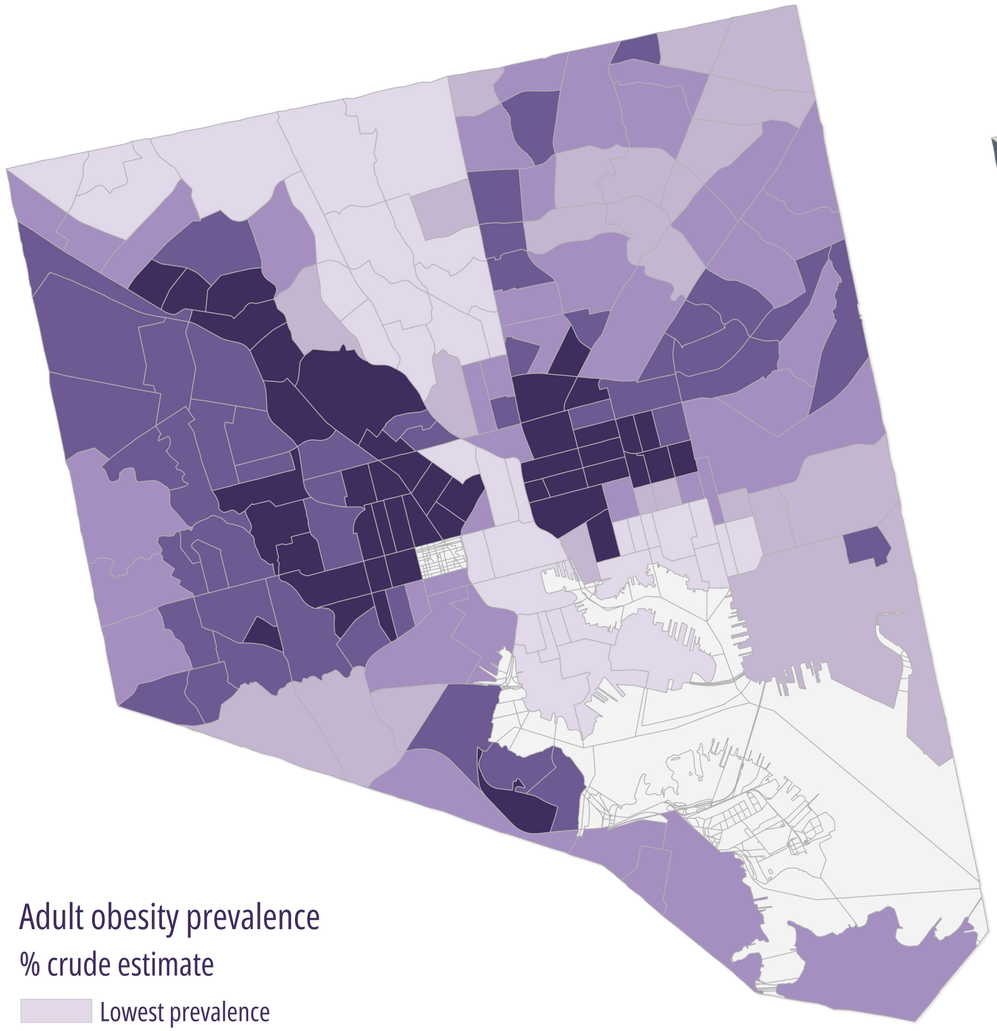
All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

Lorem ipsum

BALTIMORE, MARYLAND: OBESITY AND RACIALIZED DISINVESTMENT

Neighborhood-scale patterns by census tract

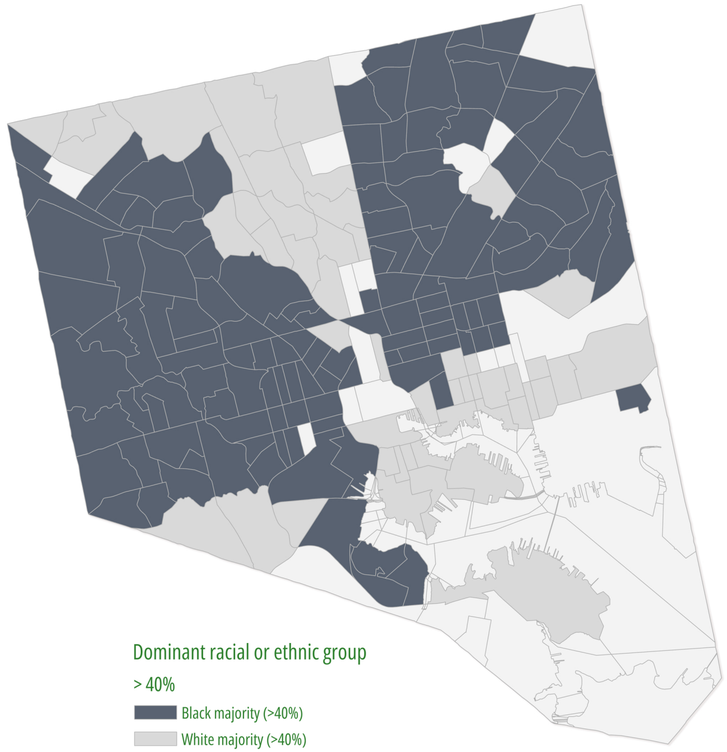
Baltimore's obesity patterns are sharply concentrated and spatially persistent, aligning closely with historically racialized patterns of economic disinvestment. Elevated prevalence is most apparent in neighborhoods that have experienced decades of structural exclusion and population loss. Income disparities reinforce these patterns, producing highly localized areas of compounded health and socioeconomic disadvantage.



Adult obesity prevalence

% crude estimate

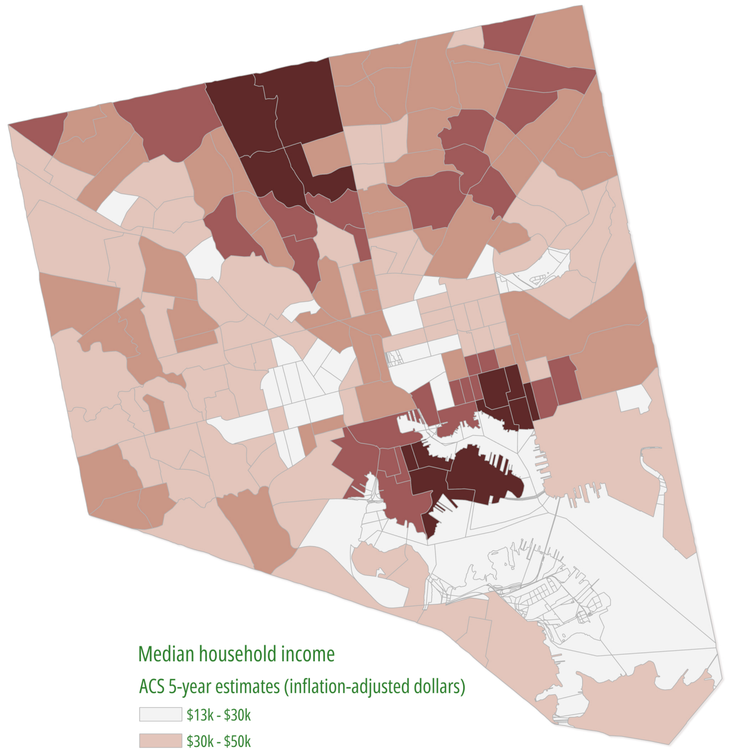
- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence
- No data



Dominant racial or ethnic group

> 40%

- Black majority (>40%)
- White majority (>40%)
- No majority >40%



Median household income

ACS 5-year estimates (inflation-adjusted dollars)

- $13k - $30k
- $30k - $50k
- $50k - $70k
- $70k - $110k
- $110k - $200k

In Baltimore, obesity prevalence reflects the enduring spatial overlap of race and income inequality.

All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

COLUMBUS, OHIO: OBESITY AND SUBURBAN CONTEXT

Neighborhood-scale patterns by census tract

Columbus exhibits more moderate and spatially dispersed obesity patterns than many other cities examined, reflecting a less segregated urban form. Elevated prevalence appears across a mix of urban and suburban neighborhoods rather than forming sharply bounded clusters. Income variation and access to healthy food outlets provide important context for understanding these diffuse patterns.

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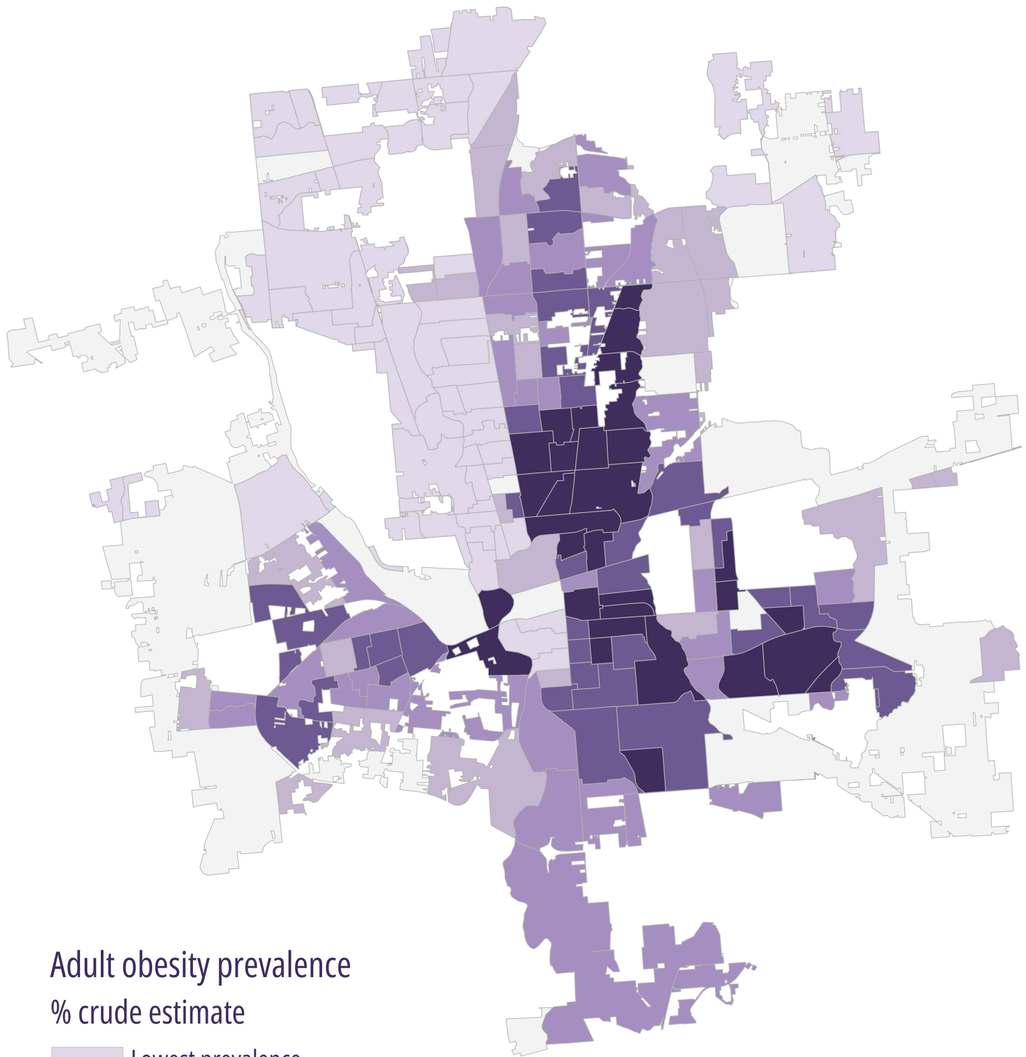
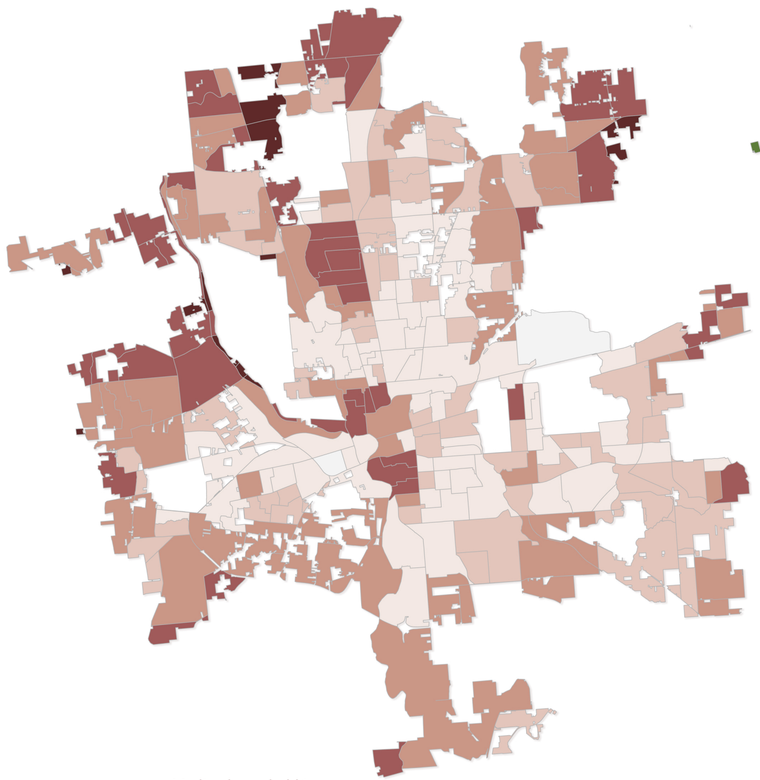


Adult obesity prevalence

% crude estimate

- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence

No data

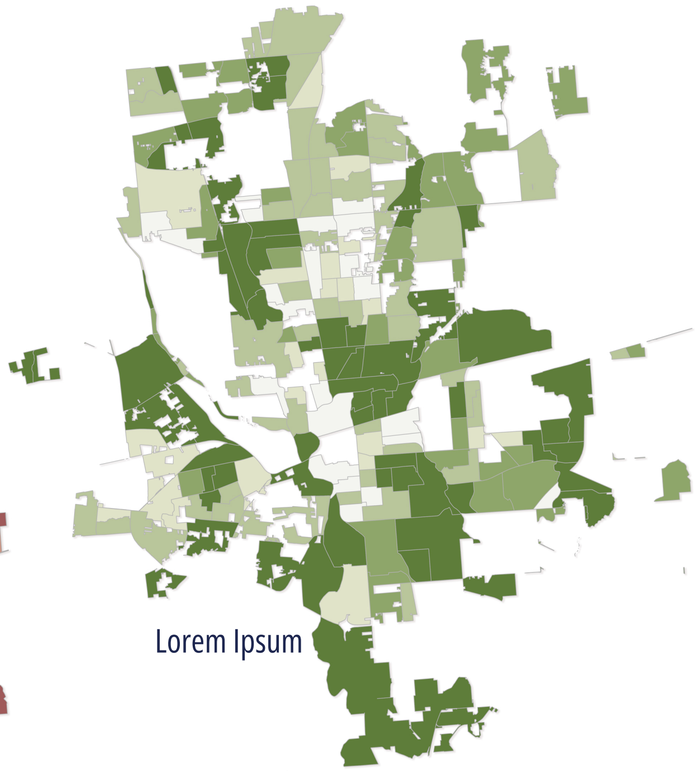


Median household income

ACS 5-year estimates (inflation-adjusted dollars)

- $14k - $40k
- $40k - $60k
- $60k - $80k
- $80k - $120k
- $120k - $175k

Lorem Ipsum



Food access

Percent of population living >½ mile from a supermarket

- 0 - 20
- 21 - 40
- 41 - 70
- 71 - 90
- 91 - 100

In Columbus, cardiometabolic risk appears shaped by income variation and suburban food access rather than sharply bounded neighborhood disadvantage.

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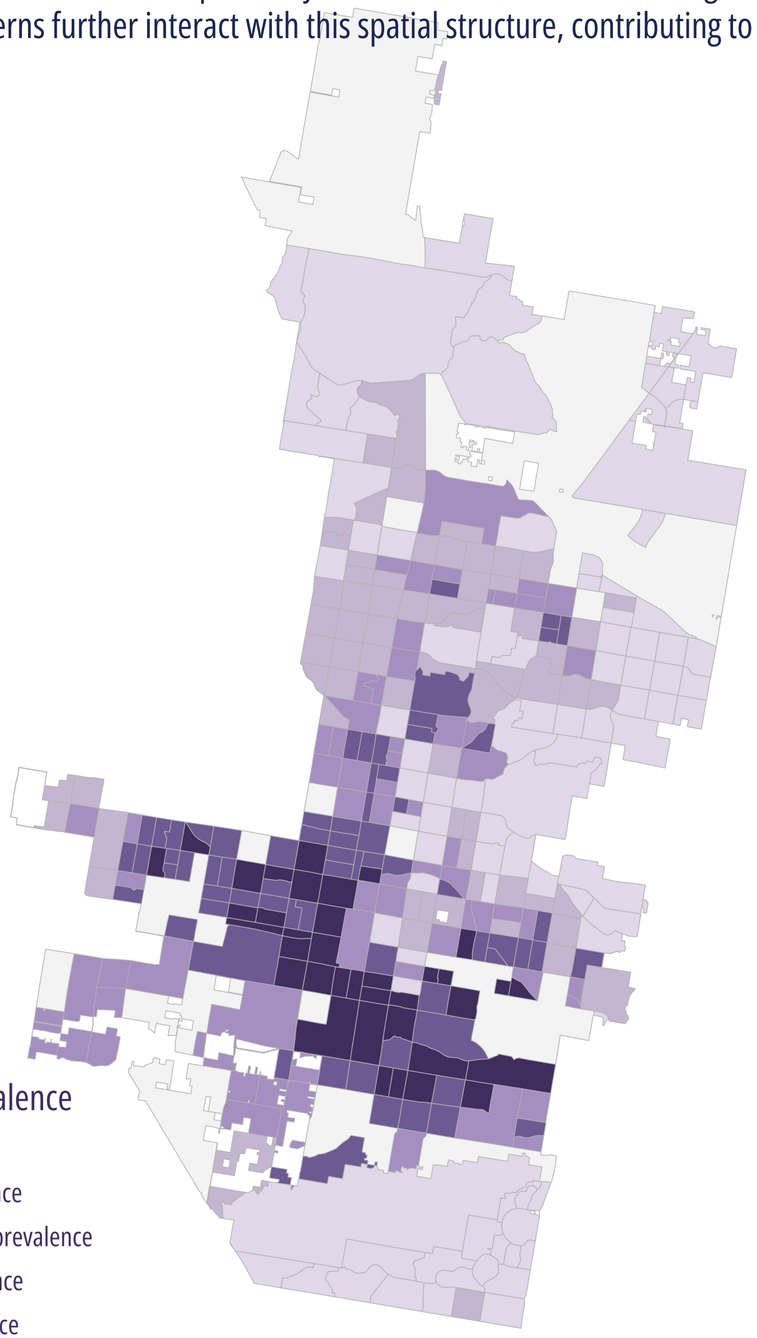
PHOENIX, ARIZONA: OBESITY AND DISTANCE

Neighborhood-scale patterns by census tract

Phoenix's sprawling metropolitan form produces heterogeneous obesity patterns across a large geographic area. Elevated prevalence occurs alongside pronounced variation in proximity to healthcare services, reflecting the importance of distance and transportation in shaping access. Demographic patterns further interact with this spatial structure, contributing to uneven health outcomes across neighborhoods.

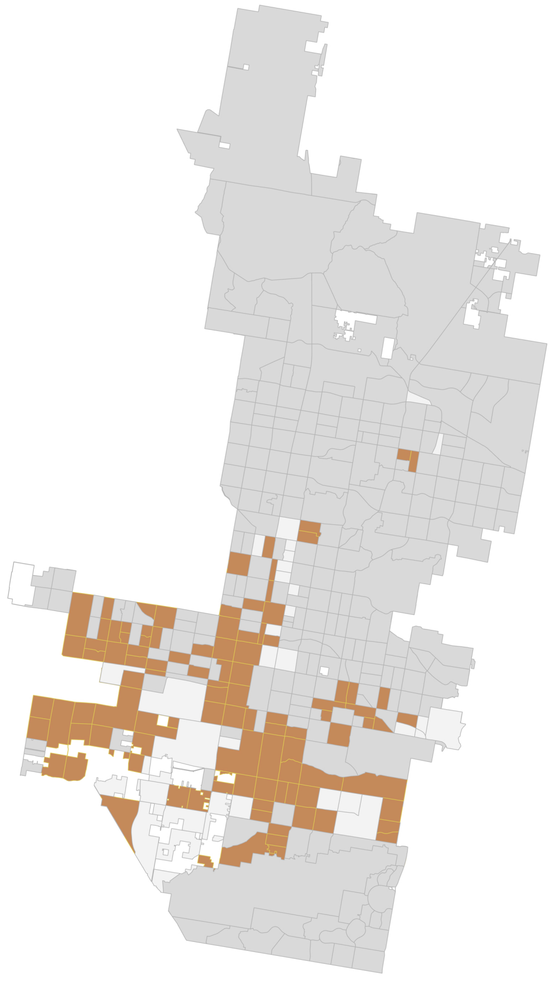


Adult obesity prevalence

% crude estimate

- Lowest prevalence
- Lower–middle prevalence
- Middle prevalence
- Higher prevalence
- Highest prevalence

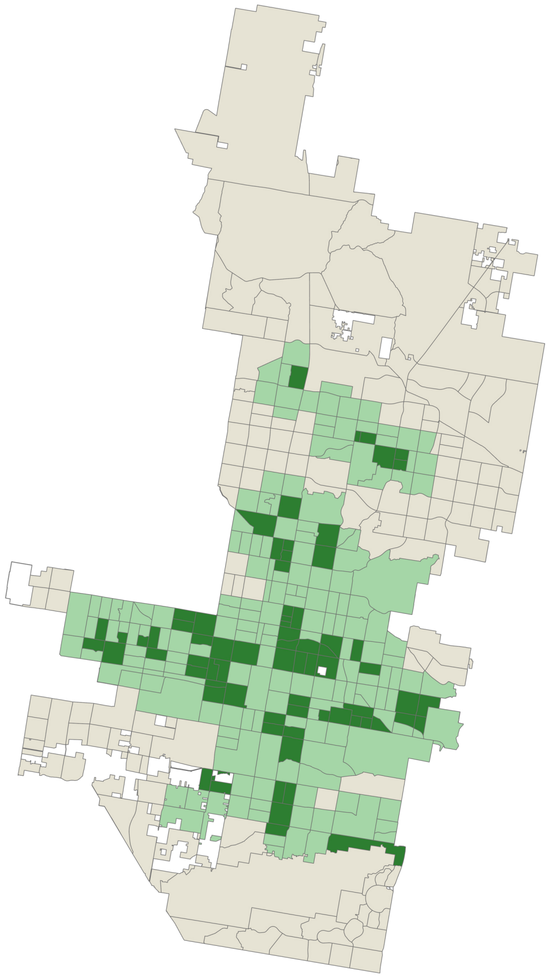
No data



Dominant racial or ethnic group

> 40%

- Hispanic majority (>40%)
- White majority (>40 %)
- No majority >40%



Distance to Safety-Net Primary Care

Distance to nearest federally qualified health center or clinic (HRSA)

- <1 km
- 1 - 3 km
- >3 km

In Phoenix, distance-based access to healthcare interacts with demographic patterns to influence spatial health disparities.

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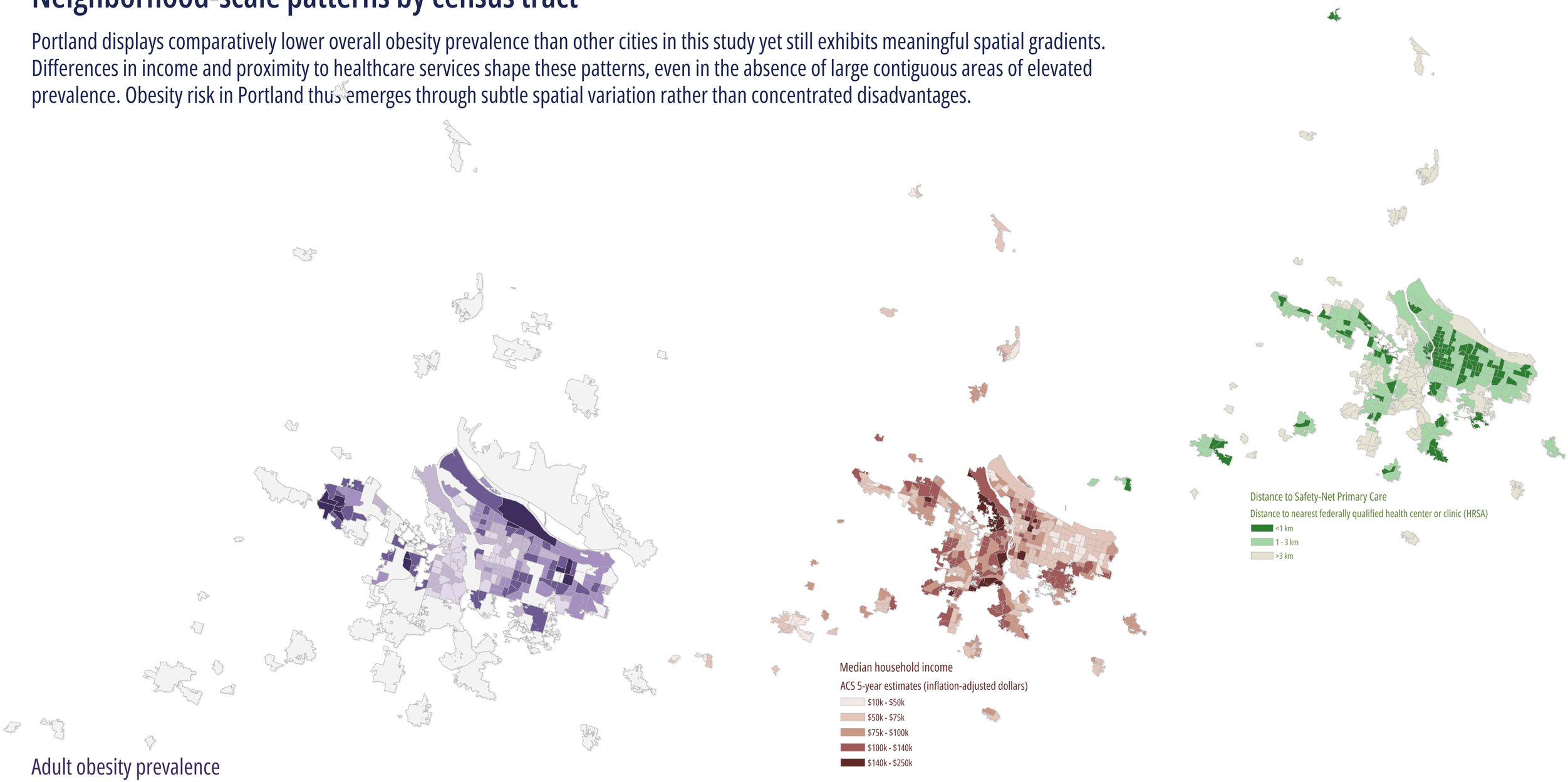
PORTLAND, OREGON: OBESITY IN A LOWER-BURDEN CONTEXT

Neighborhood-scale patterns by census tract

Portland displays comparatively lower overall obesity prevalence than other cities in this study yet still exhibits meaningful spatial gradients. Differences in income and proximity to healthcare services shape these patterns, even in the absence of large contiguous areas of elevated prevalence. Obesity risk in Portland thus emerges through subtle spatial variation rather than concentrated disadvantages.



In Portland, cardiometabolic risk emerges through subtle spatial gradients rather than large contiguous areas of disadvantage.

All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.

SPATIAL PATTERNS, STRUCTURE, AND URBAN HEALTH

Neighborhood-scale patterns by census tract

Across cities, cardiometabolic health outcomes reflect not a single dominant determinant but varying configurations of income, food environments, healthcare access, and demographic context. Cities differ not only in the severity of health burdens but in the spatial logic through which those burdens emerge, whether through concentrated disadvantages, diffuse environmental exposure, or distance-based access constraints.

These findings underscore the importance of place-specific analysis when considering urban health interventions, suggesting that policies effective in one city may not translate directly to another without attention to local structural conditions.

Final note

This document is intentionally exploratory and comparative. It is designed to support visual reasoning, policy discussion, and future qualitative investigation rather than to establish causal claims.

All maps display census-tract–level patterns and are intended to illustrate relative spatial differences rather than precise local estimates.