

## Graphic Detail

Geographic information systems (GIS) organize and clarify the patterns of human activities on the Earth's surface and their interaction with each other. GIS data, in the form of maps, can quickly and powerfully convey relationships to policymakers and the public. This department of Cityscape includes maps that convey important housing or community development policy issues or solutions. If you have made such a map and are willing to share it in a future issue of Cityscape, please contact [john.c.huggins@hud.gov](mailto:john.c.huggins@hud.gov).

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# A Cartographic Perspective on the Correlation Between Redlining and Public Health in Austin, Texas—1951

John C. Huggins

U.S. Department of Housing and Urban Development

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Consequences of historic redlining—the once federally sanctioned denial of services to residents of predominantly non-White neighborhoods—are often measured in terms of structural decay and economic stagnation. However, the effects of redlining are also evident in the health disparities observed between maligned neighborhoods and surrounding communities (Gee, 2008). With this fact in mind, in this article I juxtapose selected historic maps and data in an effort to examine the correlation between redlining and incidence of tuberculosis in 1950s Austin, Texas.

The impetus for this article was a 1952 fundraising flyer for a campaign sponsored by the Travis County Tuberculosis Association. On the back of the flyer was a supplemental map of reported cases and deaths resulting from the disease in the Austin area for the previous year (exhibit 1).

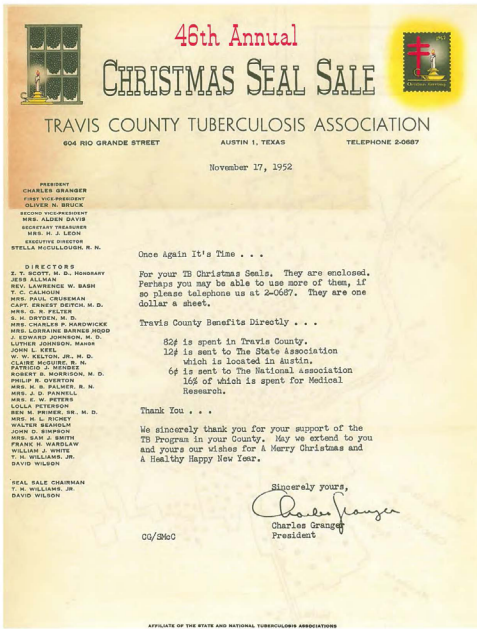
On examining the map, I was struck by a clear concentration of reported cases and deaths from the disease in the southeast area of the city, north of the Colorado River between East 1st and East 11th Streets. The high density of cases reported for that area suggested higher rates of the disease in those communities when compared with the rest of the map.

Certainly, maps drawn on the back of antique fundraising flyers found in used bookstores hardly constitute vetted data. However, the high density of cases shown for that part of the city was consistent with both the historic characteristics of the area and the behavior of the disease.

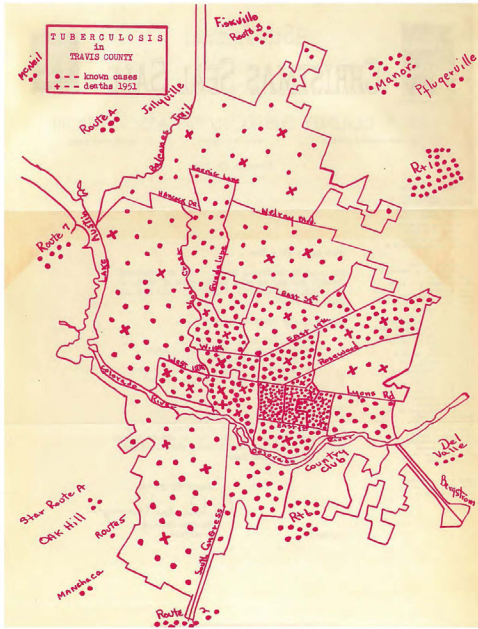
Exhibit 1

1952 Travis County Tuberculosis Association Fundraising Flyer (a) and Supplemental Map of Reported Cases and Deaths for the Previous Year (b)

(a)



(b)



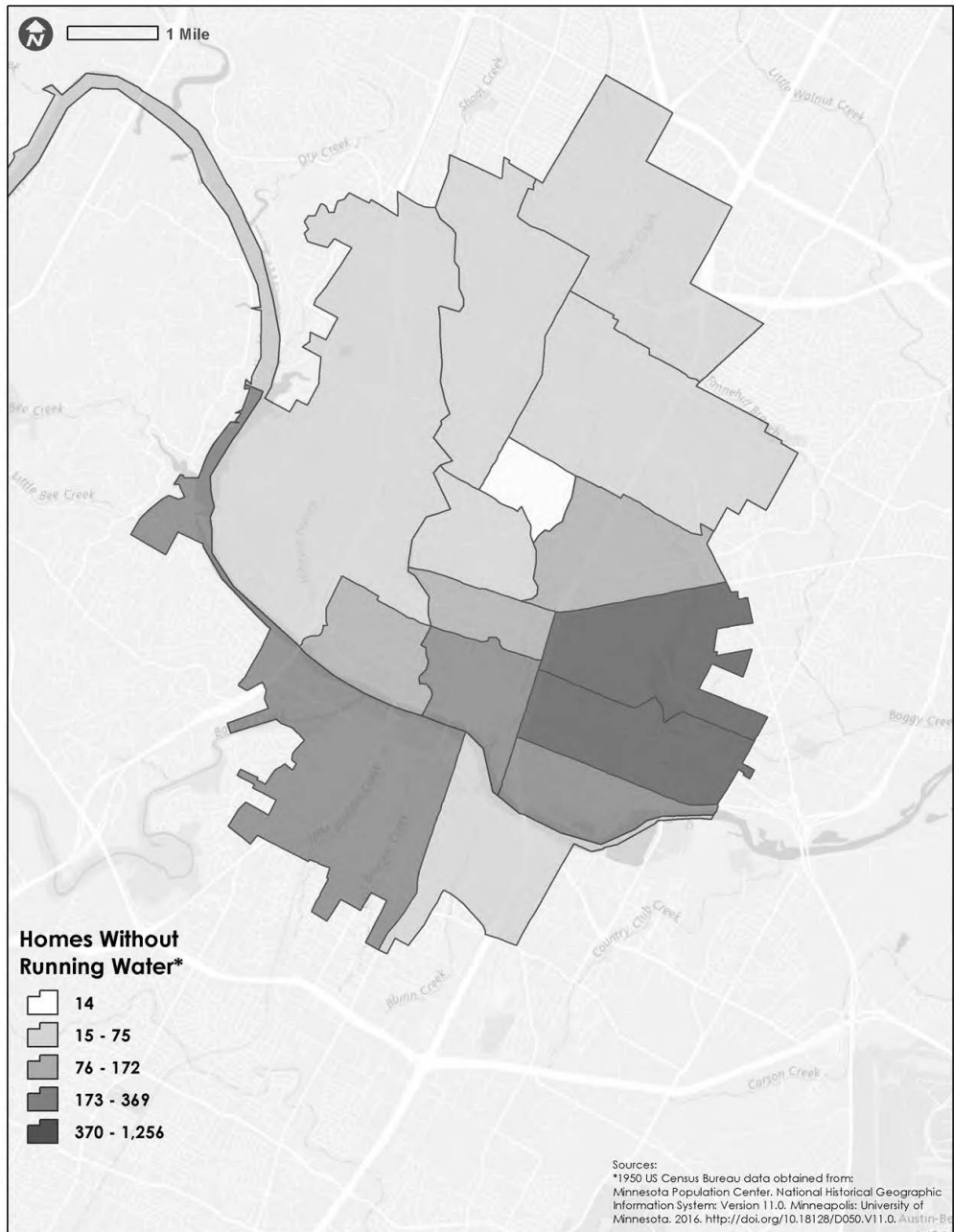
Southeast Austin, which contains the city’s traditional enclaves of African-American and Hispanic communities, has typically exhibited higher rates of socioeconomic distress than have surrounding neighborhoods. For example, data gathered from the 1950 U.S. census (exhibit 2) describe high rates of dilapidated housing with no private baths and no running water for tracts in southeast Austin (Minnesota Population Center, 2016).

Moreover, tuberculosis—an airborne pathogen commonly thought of as a disease of low-income people—is more readily transmitted between people living in poorly ventilated, close quarters (Schmidt, 2008). Although the data illustrated in exhibit 2 provide no indication of indoor air quality, we can assume that, given the lack of basic services in the area like running water, housing in those particular neighborhoods was older, dilapidated, and likely occupied by low-income residents.

While looking over the fundraising flyer, I was reminded of another historic map well known to those concerned with housing policy—The Home Owners’ Loan Corporation (HOLC) map for the city of Austin. Published in 1934, the map (and several like it) classified sections of the city according to an appraised risk for home financing. The HOLC map of Austin categorized and

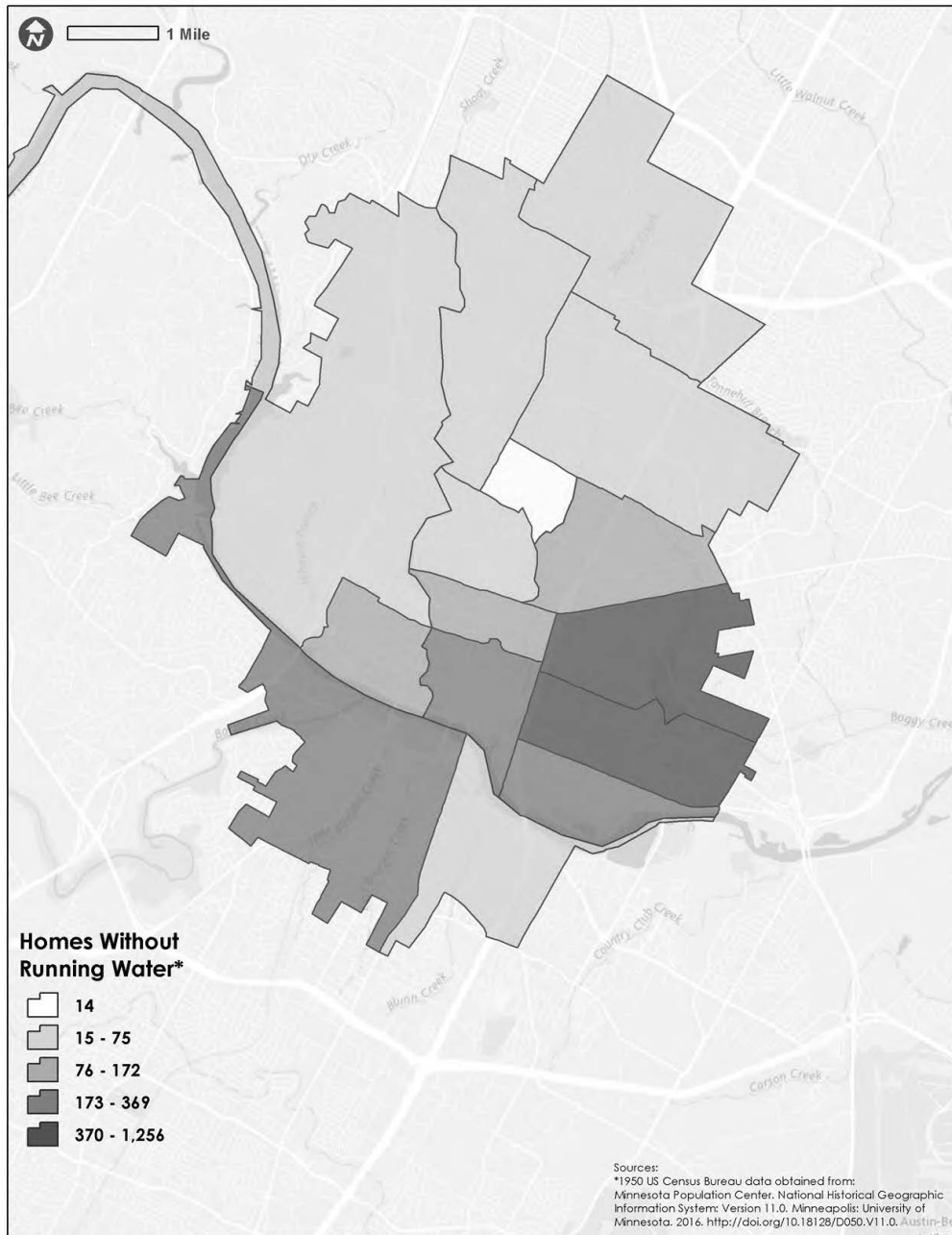
**Exhibit 2a**

Map of 1950 U.S. Census Tracts in Austin, Texas, Depicting Dilapidated Homes With No Running Water



### Exhibit 2b

Map of 1950 U.S. Census Tracts in Austin, Texas, Depicting Dilapidated Homes With No Private Bath



mapped neighborhoods as either best (green), still desirable (blue), definitely declining (yellow), and hazardous (red).<sup>1</sup> Communities were often deemed hazardous by the HOLC solely on the basis of the race and ethnicity of its residents. Hence the term “redlining.”

Studying both the tuberculosis and HOLC maps makes it clear that the high rates of tuberculosis reported on the flyer coincided with Austin’s historic redlined communities. To examine the relationship further, I georeferenced digital images of both maps relative to spatially referenced data of present-day Austin. Fortunately, many of Central Austin’s present-day rights of way have changed little in the past 75 years, and the digital images of the tuberculosis and HOLC maps overlaid present-day geographies with little error. Once the maps were aligned, I digitized reported cases of the disease (exhibits 3 and 4) and the boundaries of HOLC-redlined neighborhoods (exhibits 5 and 6).

After digitizing point data from the tuberculosis flyer, area data from the HOLC map, and gathering socioeconomic information from the 1950 U.S. Census, I added the data sets to a single model to view the information in tandem (exhibits 7 and 8). Although the final maps do not demonstrate causation, they do present what appears to be a clear alignment of socioeconomic distress, structural dilapidation, and poor physical health with the institutional maligning of minority communities that officially began nearly 20 years earlier.

To more effectively demonstrate contrasts in the distribution of cases throughout the city relative to redlined neighborhoods, I aggregated cases according to an overlaid mesh of 1/4-mile hexagons, a process known as hexbinning (exhibit 9).<sup>2</sup> I then used graduated symbols classified at equal intervals of five to visualize the resulting count per hexbin (exhibit 10).

In examining the occurrences of cases from this perspective, it becomes clear that (in general) the prevalence of the disease appears to have peaked at between one and five cases within a given 1/4-mile radius. As expected, the exception to this occurred in the redlined neighborhoods in the southeast area of the city, where the number of cases per 1/4-mile was as many as 16 to 20.

However, rates were not consistently higher across all of Austin’s redlined communities, which raises additional questions about the differences between redlined communities that perpetuated or prevented transmission of the disease.

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<sup>1</sup> A color version of the map can be found at the University of Texas’ Perry-Castañeda Library Map Collection. <http://www.lib.utexas.edu/maps/texas/austin-redlining-small-1935.jpg>

<sup>2</sup> Hexagons measured from the center of the shape.

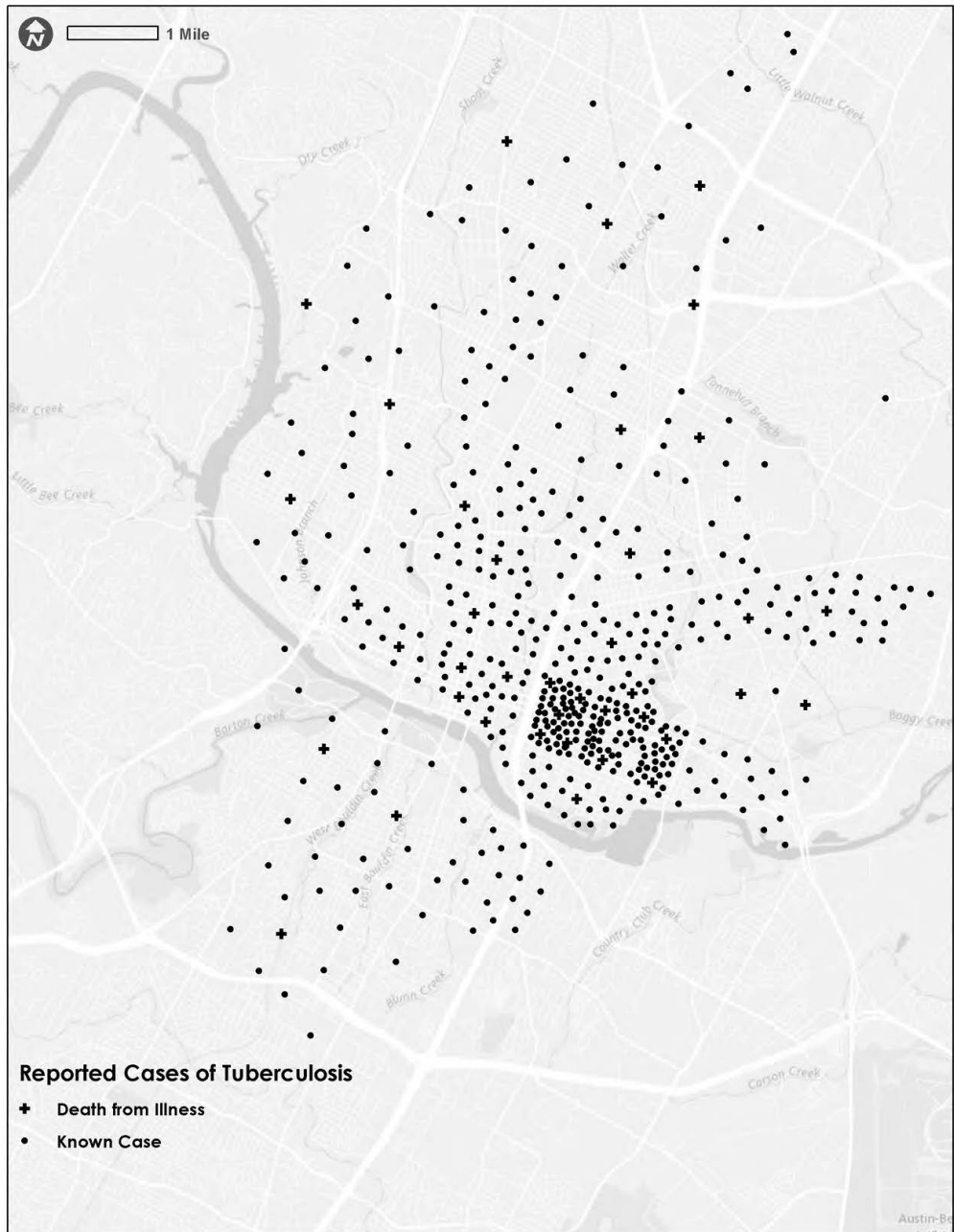
**Exhibit 3**

Digital Copy of the 1951 Tuberculosis Map Georeferenced and Overlaid on a Base Map of Austin, Texas



## Exhibit 4

Reported Cases and Deaths From Tuberculosis in 1951 Digitized From the Georeferenced 1951 Map of Austin, Texas



### Exhibit 5

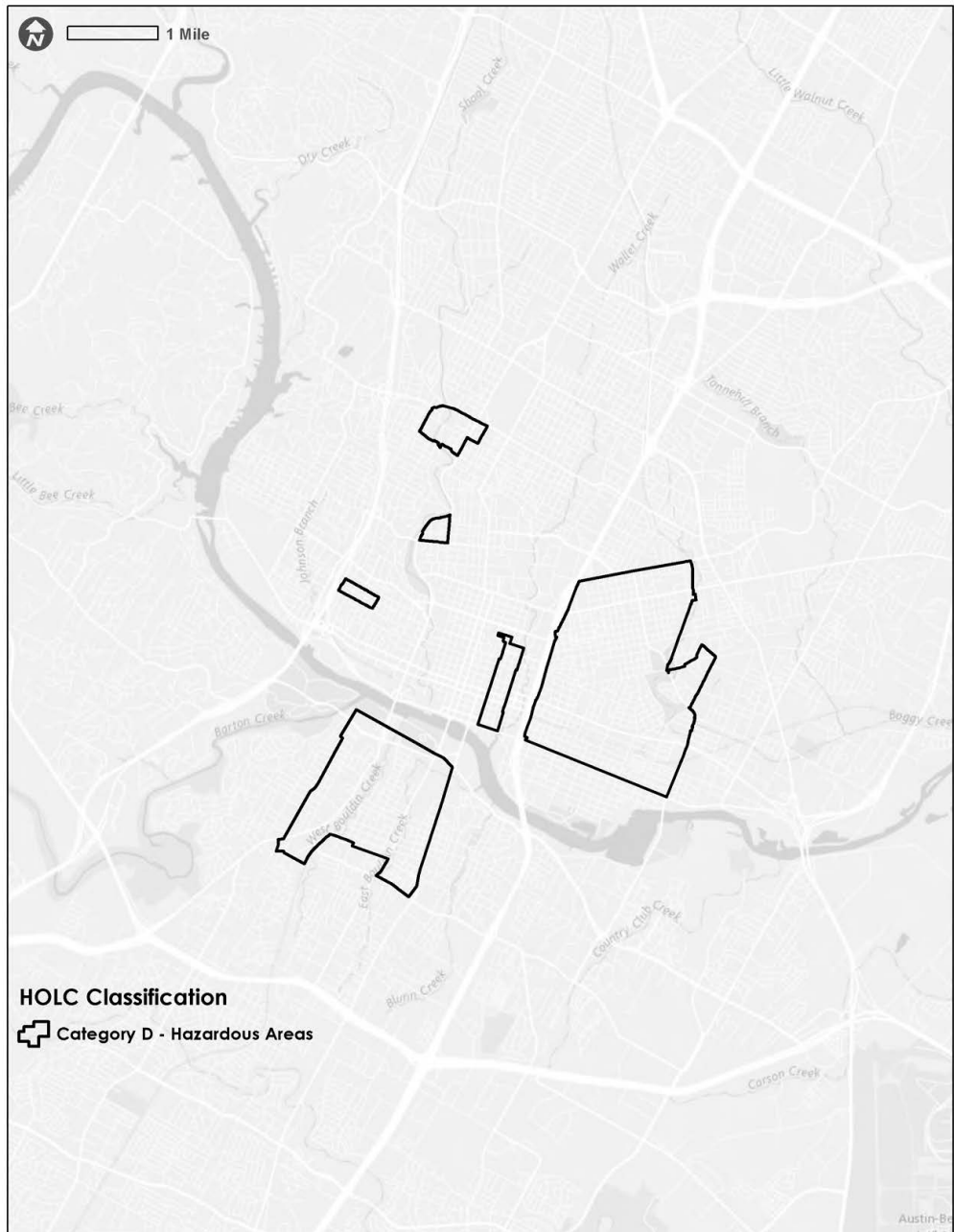
Digital Copy of the 1934 Home Owners' Loan Corporation Map Georeferenced and Overlaid on a Base Map of Austin, Texas





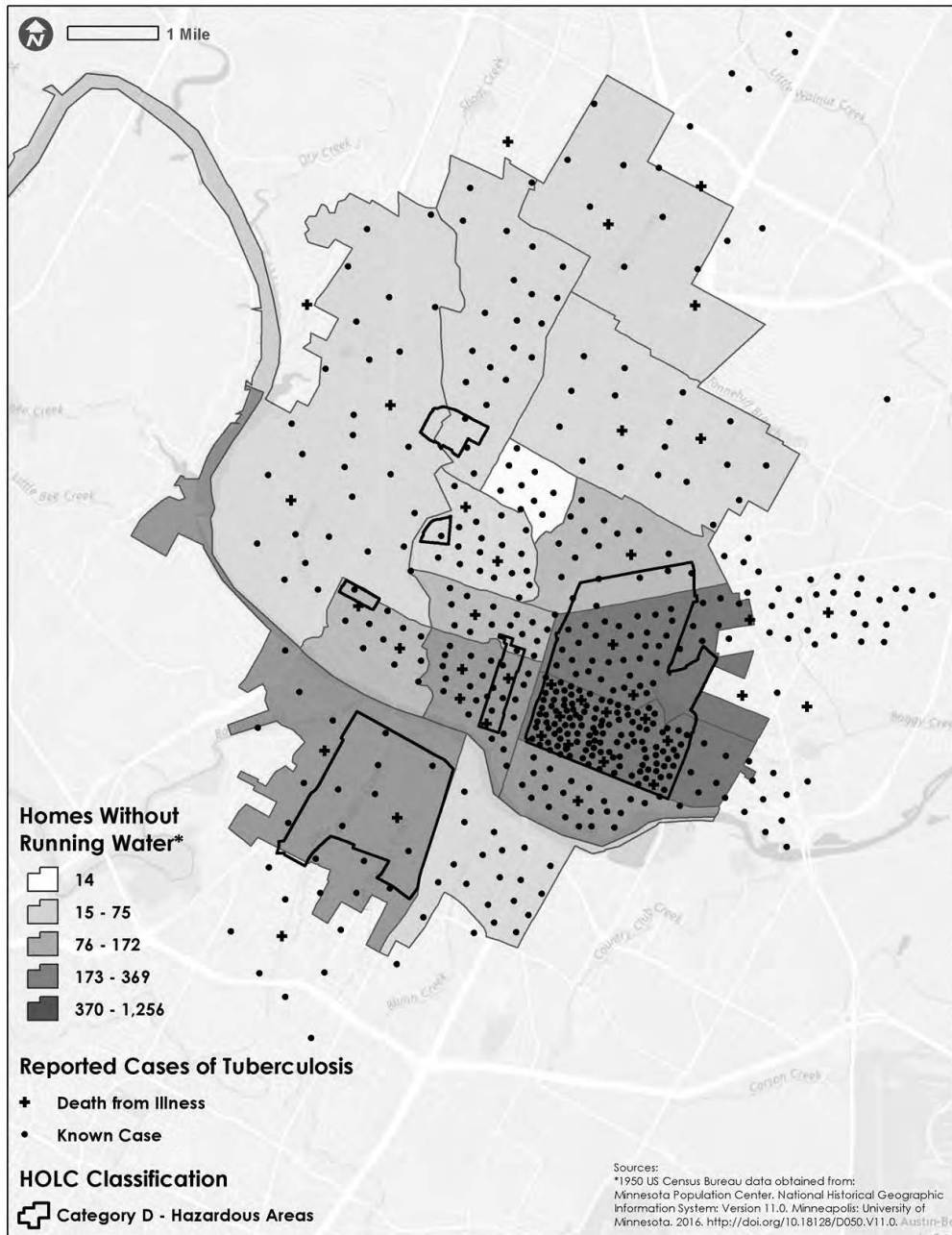
## Exhibit 6

Digitized Areas of “Hazardous” Redlined Communities From the Georeferenced 1934 Map of Austin, Texas



### Exhibit 7

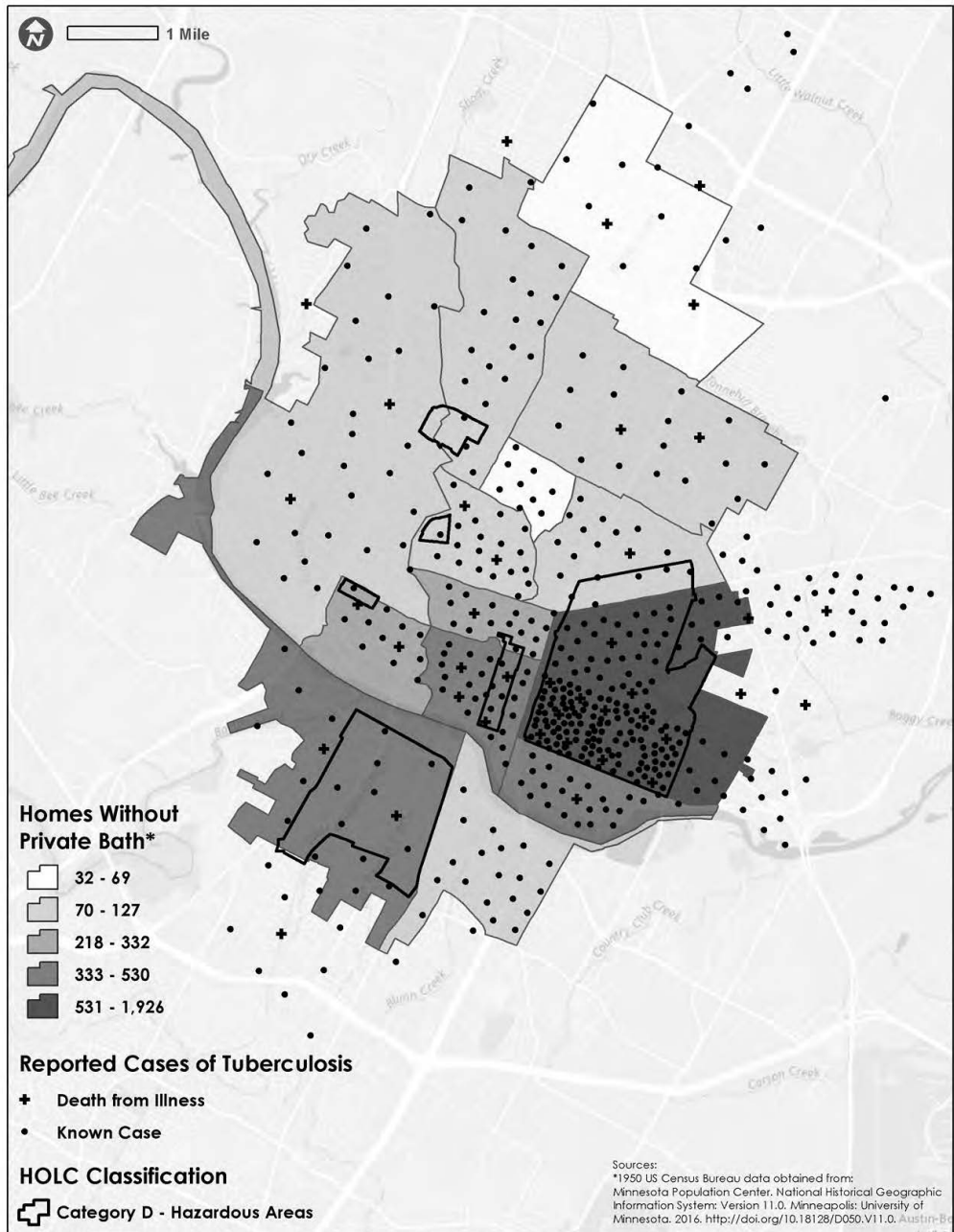
Reported Cases of Tuberculosis in 1951 Relative to Dilapidated Homes With No Running Water and HOLC-Designated Redlined Communities in Austin, Texas



HOLC = Home Owners' Loan Corporation.

### Exhibit 8

#### Reported Cases of Tuberculosis in 1951 Relative to Dilapidated Homes With No Private Bath and HOLC-Designated Redlined Communities in Austin, Texas

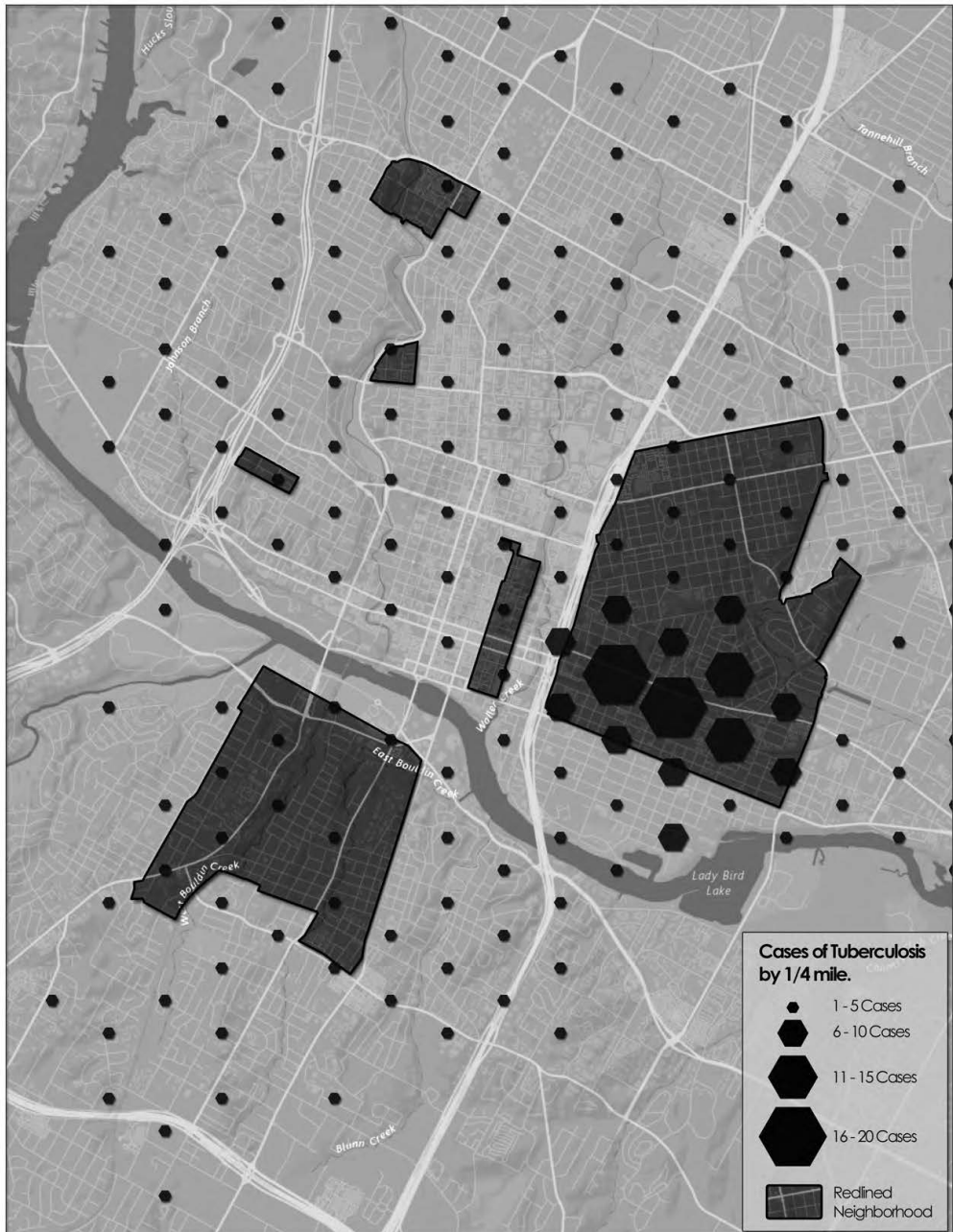


HOLC = Home Owners' Loan Corporation.



**Exhibit 10**

Graduated Symbols Indicating the Number of Reported Cases of Tuberculosis in 1951 per One-Fourth Mile in Austin, Texas



## Author

John C. Huggins is a social science analyst and research geographer with the U.S. Department of Housing and Urban Development, Office of Policy Development and Research, Program Monitoring and Research Division.

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