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**TUBERCULOSIS IN CHICAGO'S BLACK BELT, 1933-1934**

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PRESENTED TO:

DIANE LAUDERDALE

ROBERT RICHARDS

EMMA KITCHEN

BY:

WILLIAM ISAAC KRAKOWKA  
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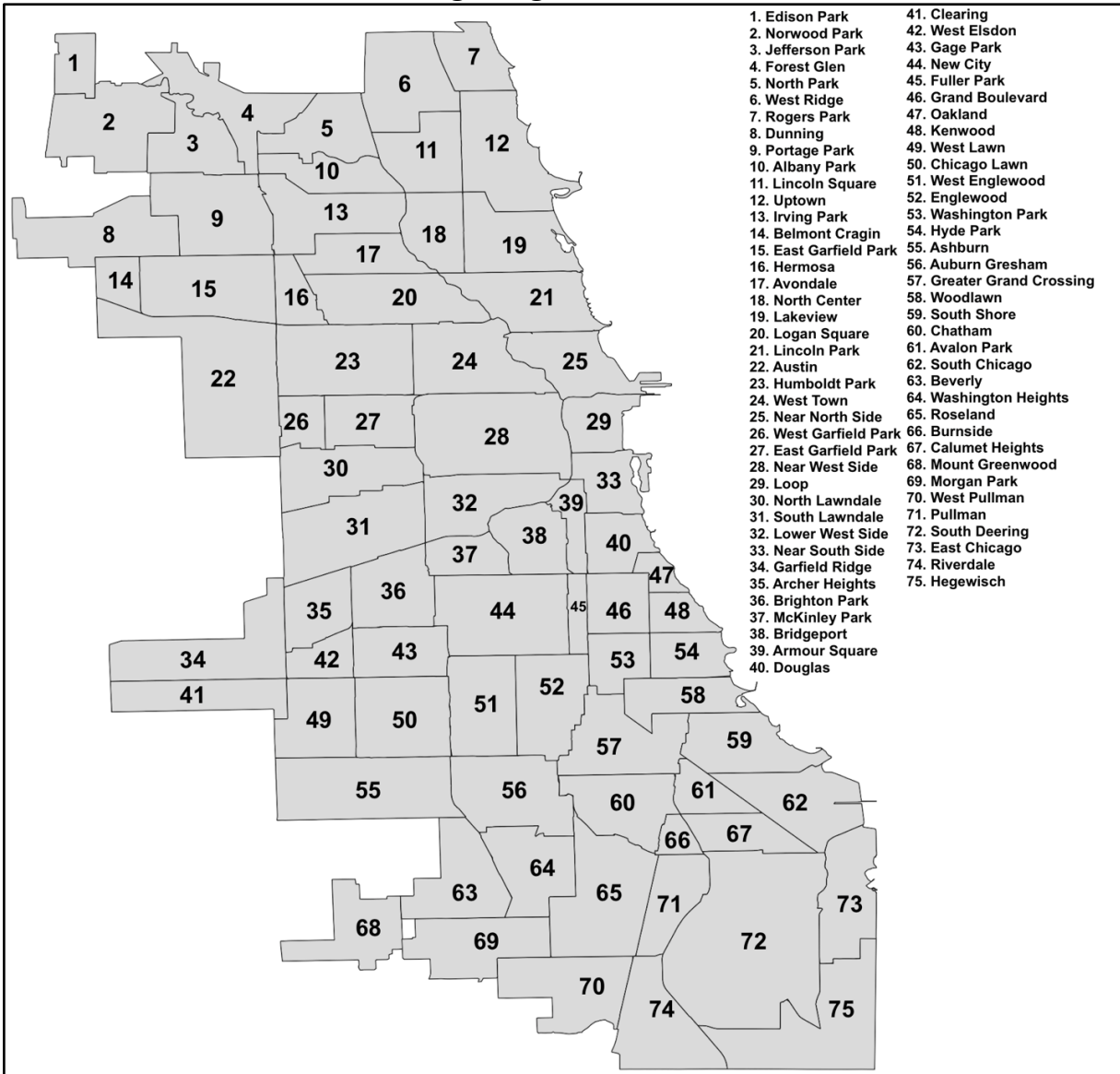
*To friends and family that have been with me through this whole year. Your company and continued reassurance kept me writing.*

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# Introduction

## Chicago Neighborhoods, 1934



**Figure 1:** Neighborhood community areas in Chicago, 1934. Data were compiled from the Chicago Tuberculosis Institute.<sup>1</sup>

<sup>1</sup> Marion Nelson, *The Negro Tuberculosis Problem in Chicago*. (Chicago, IL: Published by the Chicago Tuberculosis Institute, 1936).

In 1934, Chicago was home to 75 distinct neighborhoods, each with their own heritage, cultures, and diversity that grouped Chicago residents together with similar backgrounds. Some neighborhoods housed working class Chicagoans, while others were home to the city's wealthiest. By the beginning of the twentieth century, the "Black Belt" developed on the city's South Side. The Black Belt was a corridor of three neighborhoods – Douglas, Grand Boulevard, Washington Park – that housed over 90% of the city's Black population. As the city grew, this distinct enclave presented Black Chicagoans with substandard housing, nutrition, and healthcare access, all of which constrained health outcomes. This thesis will examine why Black Chicago was so disproportionately affected by tuberculosis in 1934 and analyze these determinants of health.

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I open my analysis of the Black Belt by looking at how the neighborhood took shape, both physically and culturally. The city's most vibrant Black communities lived in these three neighborhoods, and Chicago's South Side became one of the most notable Black urban centers in the United States. Afterwards, I look closer at their socioeconomic standing in the city of Chicago. An examination of the housing options and job opportunities will emphasize the lived reality of Black residents in the city and why the resulting crowded conditions were relevant for health, especially infectious diseases. Following this section, I review Black Chicago's access to healthcare and treatment methods for tuberculosis to begin to answer why tuberculosis was so disproportionately burdensome in the Black Belt. Finally, I substantiate my claims with a case study of tuberculosis in 1933-1934, providing a visual and statistical analysis of the disease. I conclude by reflecting on this urban history and applying this research broadly to Chicago's history of redlining to show how a racialized city continued to affect Black Chicago throughout the twentieth century.

## Formation of Black Communities in Chicago from 1890 – 1930

During the late nineteenth and early twentieth century, Chicago emerged as the cultural center of the American Midwest, attracting migrant Americans and European immigrants with its growing commerce. During the decades between the Civil War and World War I, Chicago developed into an urban boomtown of industry that drew hundreds of thousands of working-class Americans from the surrounding region and the southern United States. Such economic opportunities drew Black laborers to the city's South Side, and Lake Michigan's burgeoning economic epicenter soon became home to one of the largest Black communities in the country. During this period of economic expansion, Chicago's Black community skyrocketed in population, though the neighborhoods that Black Chicagoans occupied remained rigid. This was deemed the "Great Migration."<sup>2</sup> Despite the ideals of freedom and hope in the city, Black Chicagoans were never afforded the opportunity to flourish like their white counterparts. Interracial conflict constricted expansion out of the three Black Belt neighborhoods, and this overcrowding exacerbated public health inequality, constrained life chances, and reduced overall wellbeing for the majority of Black Chicagoans.

At the onset of the Civil War, Chicago was home to one hundred thousand residents. By the start of World War I, the city boasted an impressive two million residents packed along the shore of Lake Michigan. Such a dramatic spike can be attributed to expansion of stockyards, factories, meat-packing plants, and railroad yards that established Chicago as a center of commerce, travel, industry, and economic opportunity.<sup>3</sup> Chicago's growing urban center is marked by the construction of nearly sixty thousand structures, two-thirds of which were constructed from

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<sup>2</sup> Allan H. Spear, *Black Chicago: The Making of a Negro Ghetto* (Chicago, IL: The University of Chicago Press, 1967), 100.

<sup>3</sup>St. Clair Drake, *Black Metropolis* (New York, NY: Harper & Row, 1962), 46.

wood. Fires were frequent, and in 1871 the Great Chicago Fire burned nearly one-third of the city's buildings. Again in 1874, flames swallowed large parts of the city, displacing many Black households and businesses. Where the fire burned, neighborhoods were rebuilt. Black families congregated in these neighborhoods, and the city's "Black Belt" was born.<sup>4</sup>

From Chicago's inception, the majority of Black residents had lived on the South Side of the city, and during the middle of the nineteenth century, 82% of the city's Black population lived in a region bound to the north by the Chicago River, west by the river's bend, 16<sup>th</sup> street to the south, and Lake Michigan to the east.<sup>5,6</sup> However by the turn of the century, Black Chicago had grown considerably in population, and the Black Belt stretched south to 39<sup>th</sup> Street.<sup>7</sup> The decade following 1900 saw the steady increase in Black residents of Chicago, though appreciably lower than the decade prior. During the first decade of the twentieth century, Black growth rate declined from 111% to 46%.<sup>8</sup> Despite a decreased growth rate, over 77% of the city's Black residents were born outside of Illinois.<sup>9</sup> Nevertheless by 1910, forty thousand Black Chicagoans lived among the two million residents in the city, and during the first two decades of the twentieth century, the Black Belt absorbed seventeen thousand migrant Black Americans.<sup>10</sup> As the population of Black Chicago continued to grow, Black residents were not spreading throughout the city. Rather, they were confined to clearly delineated Black regions.<sup>11</sup> This first decade of the twentieth century stabilized the physical geography of Black Chicago and began to carve out eight or nine distinct

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<sup>4</sup> Ibid., 47.

<sup>5</sup> Spear, Allan H.

<sup>6</sup> B. L. Pierce, *History of Chicago* (University of Chicago Press, 1957), 11.

<sup>7</sup> Spear, 18.

<sup>8</sup> Ibid., 26.

<sup>9</sup> United States, Congress, Government Printing Office, *Negro Population in the United States*, (United States Census Bureau, 1918).

<sup>10</sup> Ibid.

<sup>11</sup> Spear, 29.

neighborhoods with significant Black populations, though the vast majority crowded into Douglas, Grand Boulevard, and Washington Park.<sup>12</sup>

By 1910, the Black Belt expanded southward to 55<sup>th</sup> Street, propelled by this steady influx of Black migrants to Chicago's South Side.<sup>13</sup> The expansion of Black Chicago to the south reflects interracial conflict in northern neighborhoods that forced expansion exclusively southward. The Black Belt could not expand to the north, as the also expanding business district of Chicago encroached on Black neighborhoods to the near south of the city's downtown. Additionally, westward expansion was limited by immigrant homes, industry, and railroad yards. The lack of available housing west of the Black Belt made westward expansion an unviable option for the city's Black residents, and the restriction of Black Chicagoans to the Black Belt reinforced the growing pattern of discrimination and segregation that accompanied Black influx in American cities.<sup>14</sup>

These next subsections will examine the different neighborhoods across Chicago. In general terms, the adjusted neighborhoods welcomed Black residents, and the neighborhoods of opposition resisted Black residents.

### *Adjusted Neighborhoods*

By 1920, the Black Belt housed 90% of the city's Black residents.<sup>15</sup> In the second decade of the twentieth century, Black Chicagoans were crowded into the Black Belt more than any decade before. Black Chicagoans overwhelmingly lived in the three adjusted neighborhoods of the Black Belt, and the population increased largely without conflict for several years.<sup>16</sup> However, the

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<sup>12</sup> Ibid, 28.

<sup>13</sup> Chicago Commission on Race Relations, *The Negro in Chicago; a Study of Race Relations and a Race Riot* (University of Chicago Press, 1922).

<sup>14</sup> Spear, 31.

<sup>15</sup> Chicago Commission on Race Relations, 140.

<sup>16</sup> Ibid., 109.



growing numbers of residents began to overcrowd these neighborhoods, and Black Chicagoans sought other neighborhoods to live. Attempts at lateral expansion into previously white neighborhoods accompanied this population influx, and some were without conflict. In Woodlawn, a neighborhood adjacent to the adjusted neighborhoods of the Black Belt, steady movement of Black residents into this white space occurred reasonably peaceably, and this was largely attributable to the joint impetus of Black and white residents to coexist. In this neighborhood, there was an organized coalition of Black property owners that were concerned with maintaining the physical appearance of homes in their neighborhood. Despite this, the discriminatory patterns of white neighborhoods spread into this adjusted neighborhood. While there was little physical conflict, there was an attempt made by white property owners to bar Black residents from moving to Woodlawn, though this had little success.<sup>17</sup> Woodlawn exemplifies the expansion of adjusted neighborhoods as Black Residents pushed to widen the physical boundaries of the Black Belt to meet the growing population until the beginning of World War I.

However, peaceable migration into neighborhoods like Woodlawn was not accepted everywhere. The Chicago Commission of Race Relations defined the two types of white neighborhoods at the time as the neighborhoods of unorganized opposition and the neighborhoods of organized opposition. Within the neighborhoods of organized opposition, there were exclusive and contested neighborhoods. The following subsection will discuss how these different neighborhoods defined the borders of the Black Belt.

#### *Neighborhoods of Unorganized Opposition*

While the adjusted neighborhoods represented the preferred living situations for most Black Chicagoans, the majority of the city's neighborhoods maintained their prejudiced stance

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<sup>17</sup> Ibid., 111.

against Black expansion into white spaces. As the Black population steadily increased in the city's Black neighborhoods, anti-Black sentiment grew in white neighborhoods who opposed Black migration.<sup>18</sup> Historians have categorized these white neighborhoods into two factions. The first group of neighborhoods were dubbed the neighborhoods of unorganized opposition by the Chicago Commission of Race Relations in 1922. There were very few Black residents in these neighborhoods. These neighborhoods were certainly hostile towards Black tenant migration into these regions, and white residents exhibited prejudiced actions towards Black Chicagoans that were only passing through the neighborhood.<sup>19</sup> However, these neighborhoods have been grouped as neighborhoods of unorganized opposition because their prejudice against Black Chicagoans was not the result of institutional resistance against Black migration.

In the region of the city west of Wentworth Avenue extending between 22<sup>nd</sup> and 63<sup>rd</sup> street, unorganized opposition to Black residents was common, and Wentworth Avenue had historically been identified as a boundary between white and Black Chicago on the South Side.<sup>20</sup> Practically no Black Chicagoans lived west of this boundary, as active hostility deterred their migration. In this region, many Black Chicagoans living in the Black Belt worked in the stockyards west of Wentworth Avenue.<sup>21</sup> Because of the anti-Black attitudes of this region, active antagonism towards Black Chicagoans was frequent, and it was in this region that the highest number of riot clashes occurred.<sup>22</sup> These neighborhoods of unorganized opposition like those west of Wentworth served as the western boundary of the city's Black Belt, and westward movement was restricted.

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<sup>18</sup> Ibid., 113.

<sup>19</sup> Ibid., 113.

<sup>20</sup> Ibid., 115.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid.

### *Neighborhoods of Organized Opposition*

In the years immediately preceding World War I, surrounding white neighborhoods and their residents exhibited “white flight” by leaving their neighborhoods as Black Chicago outgrew its confines in the Black Belt. White flight largely preceded the violent exchanges that categorized contested neighborhoods and neighborhoods of disorganized opposition. Hyde Park is an example of a neighborhood that exemplified white flight as Black residents crossed Cottage Grove seeking housing. During the first two decades of the twentieth century, many houses and apartment buildings were being constructed while white tenants were simultaneously moving out of Hyde Park to the north or South Shore neighborhoods of the city.<sup>23</sup> The resulting housing vacancy in the few years preceding World War I allowed many Black residents to rent apartments at low and affordable prices that were supported by both Black and white real estate agents.<sup>24</sup> Hyde Park exemplifies the tendency of white residents in neighborhoods throughout the city that border the Black Belt to leave at the possibility of Black movement into these white spaces.

However, Hyde Park was also home to deliberate acts of violence aimed at barring Black access to the neighborhood. When World War I called for American involvement, the ultimate suspension of building operations in 1918 shortly after the war signaled a wartime acute housing shortage, as the white demand for housing in the postwar period exceeded supply.<sup>25</sup> As housing options became limited during the wartime effort, white demand for property led Chicago real estate agents to re-establish neighborhoods as exclusively white. Hyde Park and Kenwood were two neighborhoods east of the Black Belt that experienced a whiteness reclamation project. In 1908, the Hyde Park Improvement Collective Club was organized in response to the influx of

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<sup>23</sup> Ibid., 117.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

Black residents who were able to purchase affordable property in this neighborhood.<sup>26</sup> In 1909, the Club declared that Black Chicagoans must return to the Black Belt, real estate agents must refuse to sell to Black tenants, and property landlords must hire only white janitors. The Club's creation served as the predecessor to the Kenwood and Hyde Park Property Owners' Association – another organization aimed at maintaining the anti-Black status quo that Hyde Park and Kenwood championed for the decades leading up to Black Belt overcrowding. The Association rose to prominence in 1918 when issuing their statement to “make Hyde Park white” and resisting their displacement from this white stronghold.<sup>27</sup>

Overt violence taken against Black residents was not the primary tactic of the Association. Had that been the reality for Hyde Park's and Kenwood's Black residents, they would have experienced immediate opposition in the years preceding World War I when Black Chicagoans began moving into the region.<sup>28</sup> Reactionary violence was more common in neighborhoods of disorganized opposition. Instead, residents of these neighborhoods and supporters of the Association opposed Black movement into white spaces because of its effect on depreciating property value. By positioning Black Chicagoans as the reason for property depreciation, it was easy to convince white community members that “white fight” (as opposed to “white flight”) would re-establish these contested neighborhoods as exclusively white, with these white reclaimant organizations limiting Black migration into these neighborhoods.

### *Exclusive Neighborhoods*

These neighborhoods were a subset of the neighborhoods of organized opposition, and they often were predicated exclusively on social class. This classist barrier applied to both Black and

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<sup>26</sup> Spear, 32.

<sup>27</sup> Chicago Commission on Race Relations, 118.

<sup>28</sup> Ibid.

white tenants, though the economic barrier was enough to deter all of Black Chicago. These exclusive neighborhoods were reserved for white homeowners, and oftentimes that racial preference was explicitly stated in the prospectus of properties.<sup>29</sup> It would be impossible for Black Chicagoans to move here.

### *Contested Neighborhoods*

In addition to the exclusive neighborhoods, the contested neighborhoods in Chicago were part of the neighborhoods of organized opposition. Contested neighborhoods were frequently marked by anti-Black actions taken by white community members. In addition to the violence that accompanied unorganized opposition, contested neighborhoods were marked by violence and deliberate housing exclusion. The struggle between Black and white Chicagoans in contested neighborhoods resulted in bombings, mortgage foreclosures on Black properties, and court disputes.<sup>30</sup> These violent exchanges were planned, as opposed to the racial clashes in neighborhoods of disorganized opposition. Of the prominent neighborhoods near Chicago's Black Belt, Kenwood and Hyde Park were two neighborhoods that deliberately pushed back against Black migration as Black Chicago outgrew the Black Belt.<sup>31</sup> Violent exchanges in the late 1910s in both of these neighborhoods firmly established Hyde Park and Kenwood as unwelcoming to Black residents in addition to the Association's actions, and the southeastern border of the city's Black Belt took shape with Cottage Grove Avenue serving as the eastern barrier opposite of Wentworth.

To the west, Wentworth Avenue separated Black enclaves from the city's neighborhoods of disorganized opposition. To the east, Lake Michigan and South Cottage Grove Avenue

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<sup>29</sup> Ibid., 115.

<sup>30</sup> Ibid., 117.

<sup>31</sup> Ibid.

separated the Black Belt from the contested neighborhoods of Kenwood and Hyde Park. To the north, the exclusive business district of the city continued to pressure Black Chicago further south into their Black neighborhoods. To the south, unobstructed growth of the Black Belt continued, but the southern border of Washington Park at 63<sup>rd</sup> street served as the final border that separated the city's Black population. The population of Black Chicago continued to increase, but the borders of the Black Belt remained firm.

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World War I marked the transition in white response to Black movement out of the Black Belt from white flight to white fight. Rising tensions and instances of violence against Black residents ultimately climaxed in the 1919 race riots in Black and contested neighborhoods throughout the city. From July 1917 to March 1921, 58 bombings targeted Black households. Of the 58, 32 took place within the Black Belt.<sup>32</sup> From July 27 1919 – August 2, 1919, the race riots in the city took 38 lives, injured 537, and left about 1000 homeless.<sup>33</sup> During the five days of violence, white “athletic clubs” terrorized Black citizens in the city's Black Belt, largely supported by ward politicians who supported their white reclamation efforts.<sup>34</sup> After the riot subsided, the deep-seated prejudice against Black migration into white neighborhoods remained. For Black Chicagoans, racial solidarity began to take shape as distrust in white governance overtook the collective consciousness of Black Belt residents.<sup>35</sup> Given white fight violence in response to property constraints, Black Chicagoans continued to crowd into the city's Black Belt as its borders became even more impermeable.

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<sup>32</sup> Ibid., 122-3.

<sup>33</sup> Ibid., 1.

<sup>34</sup> Drake, 66.

<sup>35</sup> Chicago Commission on Race Relations, 46.

During the years following World War I, overcrowding was common in the Black Belt. Housing opportunities for Black residents were difficult to access, and many housing options lacked the necessary amenities that would have been considered standard for white homes and apartments. Of these, poor access to gas and indoor plumbing fixtures, leaks, peeling plaster, and rotten pipes were some of the common problems with Black housing in the Black Belt.<sup>36</sup> Oftentimes, this poor quality of housing in Black residences was not conducive to overall wellbeing and good health. During the late 1920s, the economic restrictions posed by the Great Depression caused Black Chicagoans to live nearly 90,000 per square mile, significantly higher than the 20,000 residents per square mile in white apartment-house neighborhoods.<sup>37</sup> Such overcrowding was one of the major contributors to disease of the first few decades of the twentieth century in the Black Belt, which will be examined more closely in the following section.

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<sup>36</sup> Ibid., 153.

<sup>37</sup> Drake, 204.

## **Neighborhood Composition and Distribution of Black Communities in the 1930s**

The formation of Chicago's Black Belt was the result of dramatic growth of the city's Black population in the first few decades of the twentieth century. During this time period, migrant Black residents moved largely to the south side of the city in search of economic opportunities and a better quality of life, and the result was the city's "Black Metropolis."<sup>38</sup> The latter half of the 1920s in Black Chicago welcomed the expansion and success of Black enterprises in the Black Belt, and general optimism surrounded the city's Black middle class.<sup>39</sup> Nevertheless, this positivity was largely misguided, as Black Chicagoans experienced limited economic mobility and decreased job opportunities that were made available to white residents in the city's burgeoning economic ecosystem. Interracial conflict and restrictive housing covenants solidified the boundaries of the city's Black Belt, halting outward geographic expansion for an increasing Black population. Black Chicago's third decade of the twentieth century signaled intense overcrowding and constrained economic opportunities. An introductory analysis on the economic state of the Black Belt and its residents will preface a discussion of overall living conditions and an examination of neighborhood economic indicators of the Black Belt. By 1933, these living conditions were conducive to increased transmission of many communicable diseases, allowing tuberculosis to rapidly spread through Black Chicago at disproportionately high rates.

### *Black Economics and the Black Job Ceiling*

In the ten years between the First World War and the Great Depression, Chicago's industries expanded to keep pace with post-wartime industrialization of 1920s urban America. The resulting economic boom raised Chicago's share of gross American industry production to 15%

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<sup>38</sup> Spear, 81.

<sup>39</sup> Gareth Canaan, "'Part of the Loaf': Economic Conditions of Chicago's African-American Working Class during the 1920's," *Journal of Social History* 35, no. 1 (2001): 147, <https://doi.org/10.1353/jsh.2001.0079>.



by employing an estimated 328,000 largely unskilled laborers.<sup>40</sup> Of this workforce, 64,000 were Black laborers who had migrated from the South.<sup>41</sup> This decade saw a steady increase in the laboring population, doubling the working population in that ten-year period. Black men found employment as furnacemen and smelters, ironworkers, building tradesmen, and meatpacking and slaughterhouse workers, among options available in an industrialized city. Black women pursued employment in domestic and personal service positions, along with restaurant and retail work.<sup>42</sup> In all of these trades, Black Chicagoans experienced an unprecedented increase in employment volume and share of employment. Despite an upturn in overall employment though, the rate of skilled labor among Black Chicagoans did not increase.<sup>43</sup>

Employment of Black women as unskilled laborers was less frequent, and the job market remained largely restricted to the service positions that Black women occupied during the prewar Great Migration period. Between 1920 and 1930, 62% of women seeking employment were employed as domestic servants, increasing from 10,000 servant jobs to 25,000 over 10 years.<sup>44</sup> In the 1930s, Black Chicagoans were still more than 50% unskilled, while 20% of the city's Black population was considered semi-skilled. Another 20% self-identified as skilled laborers.<sup>45</sup> These data illustrate the trend that Black employment did not offer upwards economic mobility to skilled labor positions after migration, and the emergence of the Black job ceiling – the “cap” on both skilled and unskilled labor opportunities – proved to be a nearly impenetrable hinderance to Black upward mobility in the years preceding the Great Depression.

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<sup>40</sup> Drake, 228.

<sup>41</sup> Ibid.

<sup>42</sup> Estelle Hill Scott, *Occupational Changes among Negroes in Chicago* (Chicago, IL: The University of Illinois, 1939), 217.

<sup>43</sup> Ibid., 218.

<sup>44</sup> Ibid., 220.

<sup>45</sup> Ibid., 219.

World War I necessitated an influx of unskilled labor, and wartime needs were largely not discriminatory of Black employment in previously white spaces. The percentage of Black unskilled job opportunities in manufacturing increased fivefold during the war, and the proportion of semiskilled employment increased tenfold.<sup>46</sup> However after the war, those same unskilled labor positions were returned to white laborers coming home from World War I.<sup>47</sup> During the second decade of the twentieth century, Black workers were twice as likely to have unskilled jobs as that of foreign-born whites, and six times as likely as native-born white residents.<sup>48</sup> 1920 opened with widespread economic opportunity but closed with extensive layoffs and Black unemployment.<sup>49</sup>

Early in 1920, employment opportunities opened for Black women in traditionally white occupations as well. For example, Montgomery Ward alone in Chicago employed 60 Black women as clerks and stenographers and another 2,000 as clerks and typists.<sup>50</sup> However, all of these women were fired by the year's end,<sup>51</sup> likely replaced by white women. Employment remained difficult for Black Chicagoans, as the Chicago Urban League's employment bureau found jobs for only 127 of 1,073 applicants in November of 1920, while attendance in that office increased by 100%.<sup>52</sup> The League's job placements fell by 50%.<sup>53</sup> Despite the demonstrably larger body of Black unskilled labor to white unskilled labor, the fact that the number of white unskilled employment opportunities overtook Black unskilled employment during this decade shows how difficult it was for Black Chicagoans to gain any economic traction during the 1920s. The examples of Black female employment and the difficulties in finding job placement through the Chicago Urban

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<sup>46</sup> Spear, 115.

<sup>47</sup> Canaan, "Part of the Loaf," 149.

<sup>48</sup> Scott, 219.

<sup>49</sup> Canaan, "Part of the Loaf," 151.

<sup>50</sup> *Ibid.*

<sup>51</sup> *Ibid.*

<sup>52</sup> *Ibid.*

<sup>53</sup> *Ibid.*

League show how the economic market in Chicago was disproportionately constrained against Black workers, creating the Black job ceiling.

The Black job ceiling describes the phenomenon in which Black laborers and workers became readily available to the city, though the employment rates did not increase with the population. The result of this inequity left many Black Chicagoans without employment. Census data shows that the population of Black Chicago more than doubled from 109,594 to 233,903 between 1920 and 1930, but job openings for unskilled labor were overwhelmingly being given to white unskilled workers – these positions were not becoming available at a rate that would be necessary to keep up with the influx of the Black labor force.<sup>54</sup> This inequity created a widening gap in employment rates over this decade.

The Black job ceiling was exacerbated by the fact that it was not uncommon to quickly change jobs during the War, as industry necessitated readily available laborers to fulfill wartime needs. During the 1910s, job turnover was estimated to be at 300%, as Black laborers were able to go from one position to another in search of the best pay.<sup>55</sup> However, this economic mobility was futile in the 1920s. During this decade, Black and white employees continued to quit positions with the expectation that they would be able to find more gainful employment with adequate pay. However, because it was much more common for white laborers to retain these positions during the interwar period, Black Chicagoans increasingly quit their jobs without viable alternative positions available and went jobless for extended periods of time during the decade.<sup>56</sup> This rapidly drying job market, coupled with the reality that Black workers were being laid off in favor of white

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<sup>54</sup> Ibid., 153.

<sup>55</sup> Ibid., 154.

<sup>56</sup> Ibid.

workers, constrained economic opportunities for residents that still had to find ways to pay for the cost of living.

The Black job ceiling was birthed from unequal opportunity and consideration for similar laboring positions, as Gareth Canaan argues in his analysis of working-class conditions of Black Chicago during the 1920s. Had Black Chicagoans been extended the equal opportunities that they were largely given during the wartime period, their employment distribution would have looked much different than how it was in 1930.<sup>57</sup> Data surrounding employment distribution and proportionate share was tabulated by Estelle Hill Scott and the Work Projects Administration in 1930.<sup>58</sup> During this year, Black men accounted for 20,000 servant jobs, but their proportionate share of such employment should have only been 5,000 servant jobs. Similarly, over 24,000 servant jobs were occupied by Black women, but their proportionate share of this employment should have been only around 7,000. On the opposite end of the employment spectrum, 15,000 skilled clerical jobs should have been extended to Black men, but only a little over 5,000 were. Black women should have occupied over 18,000 clerical positions but only held about 2,000.<sup>59</sup> While these data are only a snapshot of the Black employment experience, Scott's data paint an unfavorable picture of employment inequity that closed the 1920s.

The Black job ceiling kept qualified Black employees out of positions that their white counterparts occupied at disproportionately high rates, and such unemployment and underemployment created a restrictive, low-income economic ecosystem in the Black Belt.

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<sup>57</sup> Ibid.

<sup>58</sup> Scott, 217.

<sup>59</sup> Ibid., 217 – 251.

## *Black Belt Housing*

After the Great Migration, Black Chicagoans continued to look to the Black Belt for increasingly scarce suitable housing options. In 1911, the state of housing in the Black Belt was so poor that only 26% of housing space was seen to be in good repair. About 24% of housing space was in bad repair, and the remaining 50% was in fair living conditions.<sup>60</sup> However, it was not uncommon for these housing spaces to be lacking adequate plumbing amenities, poor electricity, and faltering heating and cooling.<sup>61</sup> By 1923, these already poor housing options grew markedly worse. 41% of housing options were in bad repair, 40% were in fair repair, and only 14% of housing options were in good repair.<sup>62</sup> Given the economic constraints that the majority of Black Chicago experienced during this decade, landlords and property owners likely were not compelled to improve the standard of housing because Black residents were unable to find any better or more affordable housing outside of the Black Belt.<sup>63</sup> If the interracial violence was not enough to block Black mobility out of the Black Belt, the Black job ceiling made it particularly difficult to seek housing alternatives that were not in cheap, substandard condition.

The quality of life for working-class Black Chicagoans was directly related to Black Chicago's ability to find work, as low-income labor positions frequently led to substandard urban housing arrangements. The near impossibility of finding stable housing was very common for the class of Black laborers that had recently been displaced by white workers. The need for housing in the Black Belt gave way to the "kitchenette living" model of apartment ownership in which landlords would further subdivide existing apartments into multiple distinct living spaces, thereby

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<sup>60</sup>Alzada P. Comstock, "Chicago Housing Conditions, VI: The Problem of the Negro." *American Journal of Sociology* 18, no. 2 (1912): 247, <https://doi.org/10.1086/212075>.

<sup>61</sup> Spear, 113.

<sup>62</sup>Alice Q. Rood, "A Study of Social Conditions among the Negroes on Federal Street between Forty-Fifth Street and Fifty-third Street" (unpublished master's thesis, University of Chicago, 1924), 32-36.

<sup>63</sup> Spear, 113.

profiting off of the unequal job market that displaced Black families from larger apartments.<sup>64</sup> To create a kitchenette style apartment, property owners would divide an existing flat into multiple, considerably smaller apartments to optimize rental yield from the multiple families that were dealing with housing displacement and the poor job market. During its mainstay as a popular housing “solution” during the 1920s and into the 1930s, kitchenette living was seen as a social evil by its residents, though it did allow families to rent apartments that did not exceed their budget or income level.<sup>65</sup> Kitchenettes were a common tactic employed by property owners to maximize the profits gained from renting to Black residents by reducing the cost of the apartment space by only providing an icebox and a hot plate per single-room apartment.<sup>66</sup> These dormitory room-esque living conditions were insufficient for families larger than a single individual or two occupying the space, and the horrendous kitchen appliance situation for Black residents reflected the prejudice of property owners in the Black Belt. This quality of housing was reflective of the residential racial segregation in Chicago, and these substandard apartments were often still overpacked and overpriced for their quality.<sup>67</sup>

Overcrowding of individual apartment units was quite common within the Black Belt, and housing displacement was greatly accelerated by onset of the Great Depression in 1929. The Depression levied a devastating blow to the Black community that had been experiencing economic hardship since the end of World War I.<sup>68</sup> To attempt to balance the price of living, Black families frequently supplemented their income by renting out space to borders, or lodgers, to offset the disproportionately high costs of rent for Black families.<sup>69</sup> For Black families that were not

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<sup>64</sup>Christopher R. Reed, *The Rise of Chicago's Black Metropolis: 1920-1929* (Urbana, IL: Univ. of Illinois Press, 2011), 62.

<sup>65</sup> Spear, 114.

<sup>66</sup> Reed, 576.

<sup>67</sup> Canaan, “Part of the Loaf,” 148, 162.

<sup>68</sup> *Ibid.*, 148.

<sup>69</sup> Reed, 54.

afforded equal economic opportunities and were often the victim of white job cycling, the disproportionately high rental payments were unavoidable. Landlords and property owners were free to charge a higher rent for space because there were very few, if any, residential neighborhoods where Black Chicagoans could viably move to out of the Black Belt. Taking on an additional lodger to occupy a room in an apartment was a way to temporarily keep everybody out of the cold and under a roof.

The general conditions of apartments, limited food and cooking facilities, overcrowding, and the addition of borders created an environment that would exacerbate poor public health outcomes in such a population-dense neighborhood. Mortality rates between Black and white Chicago were perhaps most staggering. Data were compiled by the Chicago Commissioner of Health in 1925.<sup>70</sup> By the middle of the 1920s, the death rate for Black Chicagoans was about 22 per 1000, whereas the death rate for white Chicagoans was about 11 per 1000. Additionally, the infant mortality at the same time was about 118 deaths per 1000 births among Black newborns but only about 71 per 1000 births for white newborns.<sup>71</sup> Communicable disease death rates among Black Chicagoans were much greater than white mortality from the same disease, as 382.5 per 100,000 Black Chicagoans died from tuberculosis, yet only 65.7 per 100,000 white Chicagoans died from tuberculosis. Again, 301.8 deaths per 100,000 were attributable to pneumonia among Black Chicagoans, which is considerably higher than the 102.7 deaths per 100,000 among white Chicagoans.<sup>72</sup> In addition to these diseases, the report identifies scarlet fever, measles, nephritis, heart disease, and puerperal fever as causes of death that afflict the Black population of Chicago in higher degrees than white Chicago. The rates for infectious diseases like tuberculosis in which

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<sup>70</sup> H. L. Harris, "Negro Mortality Rates in Chicago." *Social Service Review* 1, no. 1 (1927): 58, <https://doi.org/10.1086/630217>.

<sup>71</sup> *Ibid.*, 58-77.

<sup>72</sup> *Ibid.*, 64.

sanitation and overall living conditions contribute greatly to individual health outcomes was much higher for Black Chicagoans than the rates of white Chicagoans.<sup>73</sup>

### *Neighborhood Demographics*

These mortality rates quantify the public health problems that disproportionately affected Black neighborhoods. The reason for such high rates of mortality likely arose from a multitude of factors, such as working conditions, poor housing infrastructure, poor nutrition, and limited access to healthcare. Discriminatory economic and housing policies created the environment under which communicable diseases, like tuberculosis and pneumonia, were able to thrive.<sup>74</sup> To best analyze the spread of tuberculosis in Chicago in 1934, an overview of neighborhood demographics that comprise the Black Belt and its surrounding neighborhoods will illuminate how prevalent the negative social determinants of health were in these Black enclaves. All data were collected by the Chicago Tuberculosis Institute in 1936. The institute compiled data for Chicago's neighborhoods and public health outcomes from 1933-1934.

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<sup>73</sup> Ibid.

<sup>74</sup> Canaan, "Part of the Loaf," 164.



**Demographics and Economic Indicators of Black Belt and Three Nearby Neighborhoods, 1934**

	<b>Grand Boulevard</b>	<b>Washington Park</b>	<b>Douglas</b>	<b>Armour Square</b>	<b>Woodlawn</b>	<b>Fuller Park</b>	<b>City of Chicago</b>
<b>Total Pop.</b>	88,741	44,872	41,643	20,629	59,969	13,595	3,258,528
<b>Number of Black Residents</b>	85,100	42,502	41,643	3,536	9,773	1,139	236,305
<b>Percent Black</b>	95.90	94.72	90.63	17.14	16.30	8.38	7.25
<b>Percent of Citywide Total Pop.</b>	2.72	1.38	1.41	0.63	1.84	0.42	--
<b>Percent of Citywide Black Pop.</b>	36.01	17.99	17.62	1.50	4.14	0.48	--
<b>Individuals per family</b>	4.6	4.3	4.6	4.5	3.6	4.1	4.0
<b>Percent of families on relief</b>	52.3	36.1	63.6	30.7	15.5	26.9	14.0
<b>Percent of families who rent</b>	89.7	91.3	87.8	76.1	86.7	67.3	70.8

*Table 1: Data gathered demonstrates the population distributions of the three Black Belt neighborhoods (Grand Boulevard, Washington Park, Douglas) in comparison with three nearby neighborhoods (Armour Square, Woodlawn, Fuller Park). The data reflect the total population in each neighborhood, the total number of Black residents in each neighborhood, the percentage of Black residency in each neighborhood, the percent of the citywide population that lived in each neighborhood, the percent of the citywide Black population that lived in each neighborhood, the number of individuals per family in each neighborhood, the percentage of families that received relief in each neighborhood, and the percentage of families who rent their apartment instead of own in each neighborhood.<sup>75</sup>*

The selected data above is illustrative of the economic and sociodemographic distinctions between the Black Belt neighborhoods (Grand Boulevard, Washington Park, Douglas) and nearby neighborhoods (Armour Square, Woodlawn, Fuller Park). These data reveal difficulties in accessing safe and healthy housing in the Black Belt. The Black Belt and the majority of the selected nearby neighborhoods have disproportionately high apartment occupancy compared to the whole city of Chicago, the exception being Woodlawn. Given the constraints that overcrowded

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<sup>75</sup> Nelson, M., 24-29.

apartments posed on population health, these data reflect that continued trend into 1934. Similarly, all six selected neighborhoods had higher percentages of households that received compensatory relief packages, and the highest of these are in the city's Black Belt. Finally, high rates of property rental suggested economic hardships for these neighborhoods, the only exception being Fuller Park. These rental disparities suggest decreased home ownership and stability in property investments in these selected neighborhoods. All Black Belt neighborhoods had rental percentages nearing 90%. This may suggest that rental price gouging was affecting a disproportionately high number of Black residents in these neighborhoods, as most residents could not avoid raised rental costs relative to the general quality of most housing options.

Including these data quantifies the impacts that the Black job ceiling had on families in the city's Black Belt, demonstrating how economic hardships and housing inequality extended past the 1920s into the early 1930s. As Black families migrated to Chicago in search of unskilled labor opportunities during the war, economic needs were met by the influx of workers. However, after the war's conclusion, job insecurity and unequal access to labor positions detrimentally affected Black Chicago. These economic disparities were expressed largely through the underemployment and low income that was paired with inadequate housing.

## **Healthcare Access for Black Communities During Chicago's Interwar Period**

During the beginning of the twentieth Century, Black Chicago disproportionately experienced poor health outcomes that were at least in part attributable to the lack of investment in neighborhood infrastructure and adequate housing options. By the middle of the 1930s, tuberculosis typified these inequalities, and mortality rates from tuberculosis substantiate the combined effects of Black migration, constrained economic opportunities, and poor housing options. Much of this housing landscape arose from Black Chicagoans' economic insecurities; Black Chicago was losing their wartime employment to white laborers, and job insecurity made the cost of urban living considerably more difficult to manage. Given the financial limitations of Black Belt residents, healthcare options to treat the individual burdens of disease for Black Chicagoans were scarce. Additionally, racial exclusionary policies of private practices made healthcare to treat these burdens of disease nearly inaccessible, and medical costs frequently made public hospitals an impossibility. Provident Hospital in Chicago arose as a possible solution to this medical racism, though underfunding and financial insecurity led to Provident's ultimate demise, despite having provided medical care for Chicago's Black community. When the Great Depression came to the city's south side, tuberculosis was widespread through the Black Belt. A lack of healthcare resources perpetuated the unequal healthcare access of an underfunded Black Chicago by under-hospitalizing individuals who were also experiencing adverse living conditions, overcrowding, and poor nutrition. Without having access to hospitals to isolate unwell Black community members, communicable diseases like tuberculosis became more common and more dangerous for the residents of the Black Belt.

## *Tuberculosis in America*

Tuberculosis is a bacterial disease caused by the bacterium, *Mycobacterium tuberculosis*. The tuberculosis bacteria tend to attack the lungs of an infected individual, and if left untreated, tuberculosis may be fatal. The bacteria spread through the air from person to person, and the bacteria are released into the air when expelled from a person's lungs or throat when coughing or speaking. For those in close proximity to an infected individual, they may inhale the bacteria and become infected.<sup>76</sup> Tuberculosis is most dangerous for those who have been recently infected with tuberculosis bacteria and for those with immunocompromised immune systems. The latter risk factor is exacerbated by substance abuse, diabetes mellitus, kidney disease, low body weight, or any other health outcome that dampens the body's immune response.<sup>77</sup> Related to diabetes and body weight risk factors, contemporary research suggests that undernutrition also is a risk factor for tuberculosis.<sup>78</sup> Tuberculosis is considered to be moderately infectious, with infection occurring in around 30-50% of those with extended indoor contact with infected persons.<sup>79</sup> Without any treatment, incident cases of tuberculosis progress to fatal cases often over 50% of the time.<sup>80,81</sup>

However, much of the information that is known today about tuberculosis and its transmission was not widely available to the public during Chicago's tuberculosis outbreaks of the 1930s, and the risk factors that exacerbated infection were made worse by the living conditions and nutrition of Black Chicago residents. It is also worth noting that contemporary treatment

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<sup>76</sup> "Basic TB Facts," Center for Disease Control and Prevention: The Department of Health and Human Services, 20 Mar. 2016, <https://www.cdc.gov/tb/topic/basics/default.htm>.

<sup>77</sup> *Ibid.*

<sup>78</sup> Peter J. Cegielski et al., "Nutritional Risk Factors for Tuberculosis among Adults in the United States, 1971–1992," *American Journal of Epidemiology* 176, no. 5 (2012): 409–22, <https://doi.org/10.1093/aje/kws007>.

<sup>79</sup> Marilyn J. Field et al., "The Tuberculin Skin Test," *Tuberculosis in the Workplace*. Washington, D.C.: National Academy Press, 2001, 26.

<sup>80</sup> *Ibid.*, 28.

<sup>81</sup> Denis A. Mitchison, "The Diagnosis and Therapy of Tuberculosis during the Past 100 Years," *American Journal of Respiratory and Critical Care Medicine* 171, no. 7 (2005): 700, <https://doi.org/10.1164/rccm.200411-1603oe>.

methods were unavailable during the 1930s, so the progression from incident to fatal cases was likely higher at the beginning of the twentieth century than today, as the contemporary mortality rate from tuberculosis is 0.2 individuals per 100,000.<sup>82</sup> Living in overcrowded apartments and tenement houses increases the risk of transmitting the tuberculosis bacteria from person to person, and the lack of adequate kitchens and healthcare infrastructure for the Black Belt's residents worsened their often unmedicalized burdens of disease. Treatments for tuberculosis in the 1900s was imprecise, and the largest advantages of hospitals was likely their role in isolating sick community members from healthy community members. While this section will demonstrate that hospitals historically excluded Black patients from beds, the lack of primary care availability likely worsened many of the preexisting conditions of Black Chicagoans that would lead to more lengthy, debilitating, and fatal tuberculosis cases.

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In 1882, Robert Koch identified *Mycobacterium tuberculosis* as the bacterial agent of tuberculosis.<sup>83</sup> After isolating the bacteria that was responsible for infection, Koch modeled a possible cure for the disease after extensive animal modeling yielded promising results. The concentrated filtrate from *M. tuberculosis* cultures protected guinea pigs from experimental tuberculosis, and Koch named this filtrate "tuberculin."<sup>84</sup> Despite tuberculin's lack of success in curing infection, it was incredibly helpful in diagnosing tuberculosis in infected individuals. Earliest tuberculin skin tests were often administered as a cutaneous scratch, percutaneous patch, and a conjunctival application.<sup>85</sup> Eventually, intracutaneous injection became widespread because

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<sup>82</sup> Suzanne F. Beavers et al., "Tuberculosis Mortality in the United States: Epidemiology and Prevention Opportunities," *Annals of the American Thoracic Society* 15, no. 6 (2018): 683–92, <https://doi.org/10.1513/annalsats.201705-405oc>.

<sup>83</sup> Field, "The Tuberculin Skin Test," 25.

<sup>84</sup> *Ibid.*, 179.

<sup>85</sup> *Ibid.*

of its reproducible results.<sup>86</sup> In the early 1900s, any physiological reaction to tuberculin skin tests – such as fever, muscle aches, abdominal discomfort, nausea, and vomiting – would be considered a positive test and would confer the tuberculosis diagnosis.<sup>87</sup> A lack of symptoms to the test would be considered a negative test. By the 1920s and 1930s, tuberculosis prevalence continued to decrease generally as living conditions improved from the nineteenth to twentieth centuries, and tuberculin skin tests were used in assessing the infected state of individuals instead of being used purely as a diagnostic tool.<sup>88</sup> Regardless, these tuberculin skin tests were the most readily available diagnosis an individual could receive. In lieu of these diagnostic tests, clinical diagnosis typically required fluoroscopy and X-Ray radiographs during the first 30 to 40 years of the twentieth century.<sup>89</sup> Images were assessed for possible cavities or lesions that would ascribe a tuberculosis-positive diagnosis. However, this procedure was potentially dangerous, as it asked that patients stood still while undergoing fluoroscopy without a protective barrier.<sup>90</sup>

In 1939, Wade Hampton Frost published an analytical study that examined age selection and mortality of tuberculosis across successive decades. In his paper, he argues that changes in death rates by age for each individual birth cohort addresses a shift in the balance between dangers of the foreign tubercle bacillus and the sum of the host-resistance against infection.<sup>91</sup> Frost's data show that mortality from tuberculosis is incredibly high during infancy and the first years of a child's life. However, by age 10, the death rate of tuberculosis per 100,000 is at its lowest point. His findings also suggest that as individuals get older, their risk of mortality from tuberculosis

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<sup>86</sup> Ibid.

<sup>87</sup> Ibid., 181.

<sup>88</sup> Ibid.

<sup>89</sup> Mitchison, "The Diagnosis and Therapy of Tuberculosis during the Past 100 Years," 699.

<sup>90</sup> Ibid.

<sup>91</sup> Wade Hampton Frost, "The Age Selection of Mortality from Tuberculosis in Successive Decades," *The Milbank Memorial Fund Quarterly*, vol. 18, no. 1, (1940): 92, <https://doi.org/10.2307/3347652>.

steadily increases.<sup>92</sup> Despite these trends gathered from varied ages in his birth cohort analysis, it is more telling that tuberculosis mortality considerably decreases in each successive birth cohort. Separated by periods of twenty and thirty years, Frost collected data surrounding tuberculosis mortality from 1880, 1910, and 1930 in Massachusetts. In each birth cohort, mortality was demonstrably lower at each successive time period: at the same age for different birth cohorts, mortality was worse for earlier-born cohorts. This negative trend suggests that each case of tuberculosis was giving rise to fewer than one case.<sup>93</sup> These data reflect the demographics of Massachusetts, which would have been an overwhelmingly white population.

Frost's birth cohort study is significant when considered in light of Black Chicago's localized tuberculosis epidemic. His analysis confirms that tuberculosis was a decreasing threat in the United States, at least in the white population in the northeast. As the United States progressed through the nineteenth century to the twentieth century, tuberculosis declined in importance in public health. During the beginning of the nineteenth century, René Théophile Hyacinthe Laennec published his book, *D'Auscultation Mediate* in 1819. In this work, he demonstrated that death rates in London, Stockholm, and Hamburg from tuberculosis approached 800–1000/100,000 per year at the time. Similar death rates in America confirmed Laennec's findings about tuberculosis contagion and mortality.<sup>94</sup> Once Robert Koch identified *M. tuberculosis* as the etiologic agent of disease for tuberculosis in 1882, the rising standard of living, nutrition, and sanitation that coincided with medical advances decreased the dangers of tuberculosis. This was most evident for communities who could access diagnostic tuberculin skin tests and sanitarium treatment to isolate

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<sup>92</sup> Ibid., 93.

<sup>93</sup> George W. Comstock, "Cohort Analysis: W.H. Frost's Contributions to the Epidemiology of Tuberculosis and Chronic Disease." *Sozial- Und Präventivmedizin SPM*, vol. 46, no. 1 (2001) 7–12, <https://doi.org/10.1007/bf01318793>.

<sup>94</sup> Thomas M. Daniel, "The History of Tuberculosis." *Respiratory Medicine*, vol. 100, no. 11, (2006) 1864, <https://doi.org/10.1016/j.rmed.2006.08.006>.

sick persons in the United States.<sup>95</sup> However, the poor living conditions of Black Chicago certainly lent to increased susceptibility and transmissibility of this infectious disease.

Consistent with Frost's serial cross-sectional analysis of death rates of different birth cohorts in different years, tuberculosis mortality was largely on the decline given the improvements in living conditions from the nineteenth to twentieth centuries.<sup>96</sup> However, Black Chicago did not experience these same positive outcomes and still experienced poor housing options. In 1900, the mortality rate of tuberculosis among Black cases was 589.4 deaths per 100,000. At the same time in 1900, the white mortality rate was 173.4 deaths per 100,000. In 1900, the ratio of Black to white mortality was 3.6.<sup>97</sup> While the high mortality ratio was problematic in its own right, disparities in health outcomes became even more evident by the 1930s. In 1934, the Black mortality rate was 259.0 per 100,000 deaths, and the white mortality rate was 59.5 per 100,000.<sup>98</sup> It is encouraging to see that the mortality rates did indeed decrease, and these data support Frost's findings that tuberculosis mortality rates were decreasing. However, the ratio of Black to white mortality in 1934 was 6.0, an alarming 66% increase in mortality rate ratio.<sup>99</sup> An analysis of the healthcare providers for the Black Belt will demonstrate that Black Chicago's tuberculosis problem could reflect not only poor living conditions but also unequal distribution of care and treatment.

Treating tuberculosis was no straightforward task during the early 1900s. Collapse therapy via artificial pneumothorax and thoracoplasty were some of the leading medical interventions extended to individuals with tuberculosis. These practices were far from perfect, and advanced

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<sup>95</sup> Ibid., 1862.

<sup>96</sup> John F. Murray et al., "Treatment of Tuberculosis. A Historical Perspective." *Annals of the American Thoracic Society* 12, no. 12 (2015): 1749–59, <https://doi.org/10.1513/annalsats.201509-632ps>.

<sup>97</sup> Nelson, M., 19.

<sup>98</sup> Ibid.

<sup>99</sup> Ibid.



medicinal treatment had not yet been discovered. The intentions of artificial pneumothorax collapse therapy were to collapse the infected lung and hope for healing through rest and inactivity. Thoracoplasty resulted in a permanently collapsed lung through the removal of part of the rib cage.<sup>100</sup>

These two methods were all incredibly invasive, and potential hospitalization to combat tuberculosis using these interventions was costly. Across the Atlantic in France, the Albert Calmette and Camille Guérin (BCG) vaccine was developed to fight tuberculosis and began to be distributed to children in 1921.<sup>101</sup> Over 7 years, 100,000 children were immunized, and the vaccine was readily accepted in much of Europe.<sup>102</sup> However, BCG was not recommended as an effective treatment in the United States unless given to the most at-risk populations. Instead of utilizing the BCG vaccine and following European public health data, the United States based their tuberculosis response on (a) tuberculin tests to identify affected individuals and (b) hospital therapy to treat sick Americans.<sup>103</sup> The treatments most available to Chicagoans at the time were artificial pneumothorax and extended clinical supervision, both of which were provided at primary care clinics and hospitals.<sup>104</sup> Pneumothorax therapy involved the artificial introduction of air to collapse the lung, and physicians would monitor the patients' lung deflation via radiography and fluoroscopy upon applying a calculated air pressure to the respiratory system.<sup>105</sup> This form of collapse therapy was designed to close any pleural cavities that arose from tuberculosis infection,

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<sup>100</sup> Linda Bryder, "The Medical Research Council and Treatments for Tuberculosis before Streptomycin." The James Lind Library, October 31, 2017. <https://www.jameslindlibrary.org/articles/the-medical-research-council-and-treatments-for-tuberculosis-before-streptomycin/>.

<sup>101</sup> Daniel, "The History of Tuberculosis," 1867.

<sup>102</sup> Ibid.

<sup>103</sup> Simona Luca et al., "History of BCG Vaccine," *Maedica. Media Med Publicis*, (March 2013). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3749764/>.

<sup>104</sup> Thomas Neville Bonner, *Medicine in Chicago: 1850-1950* (Madison, WI: The American History Research Center, 1957), 139.

<sup>105</sup> Murray, "Treatment of Tuberculosis. A Historical Perspective," 1752.

as prolonged pulmonary tuberculosis had nearly the 50% mortality rate.<sup>106,107</sup> Chicago opened their Tuberculosis Sanitarium to create an environment for infected individuals to quarantine together and receive these collapse therapies before antibacterial streptomycin was introduced in 1945.<sup>108,109</sup> These sanitariums promoted cooperative rest and recovery of the patient and the collapsed lung while limiting exposure to unaffected populations.

The effectiveness of pneumothorax therapy was inconclusive, though it was probable that it was effective given that it often resulted in a cavity closure and negative sputum culture test result. There were no clinical trials of its effectiveness, but individual observational studies suggest it. In one example of a pneumothorax therapy clinic in Öresund Hospital in Copenhagen, a study monitored the health outcomes of patients that received pneumothorax treatments. At the time of pneumothorax initiation, all patients were sputum-positive. After follow up, 65 individuals died from tuberculosis, 11 remained sputum-positive, 8 were continuing pneumothorax treatment but were behaving well, and 107 had been discharged from the hospital and were well.<sup>110</sup> Another sample of data from the Trudeau Sanatorium in Saranac Lake, New York yielded similar results. After following up with the 557 patients treated at the sanatorium, 119 died from tuberculosis, 60 were chronically ill, and 326 were working and well.<sup>111</sup> While clinical trials have not been conducted to assess its effectiveness, these studies suggest that artificial pneumothorax was an

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<sup>106</sup> Mitchison, "The Diagnosis and Therapy of Tuberculosis during the Past 100 Years," 700.

<sup>107</sup> Field, "The Tuberculin Skin Test," 28.

<sup>108</sup> Bonner, 139.

<sup>109</sup> Mitchison, "The Diagnosis and Therapy of Tuberculosis during the Past 100 Years," 700.

<sup>110</sup> Oli Hjaltested et al., "Clinical Aspects of Pneumothorax Therapy as Illustrated by the Results Obtained in 191 Cases of Completed Treatment," *The British Journal of Tuberculosis*, no. 33 (1939): 4–16.

<sup>111</sup> Mitchell, R. S., "Artificial Pneumothorax: a Statistical Analysis of 557 Cases Initiated in 1930-1939 and Followed in 1949. I. The Influence of Clinical Findings before Induction on Early and Late Results," *American Review of Tuberculosis* 64, no. 1 (July 1951): 1–20.

effective measure to reduce death from a disease with mortality rates around 50%. Artificial pneumothorax was utilized at the Chicago Municipal Tuberculosis Sanitarium.<sup>112</sup>

### *Cook County Hospital*

During the interwar period in Chicago's development, it was nearly impossible for a Black patient to receive the same care that a white patient would receive. The socioeconomic barriers and job ceiling, combined with the racist exclusion of Black patients in many hospitals in Chicago, made healthcare much less accessible to Black Chicagoans. Black laborers often lived without essential care until absolute emergencies arose. During the 1920s, it was estimated that only eight of every one hundred hospital beds across the city were open to Black patients, and only six care providers offered service to Black Chicago.<sup>113</sup> Given the effectiveness that isolating patients from their neighborhood had on community health, this is insufficient for the Black Belt neighborhoods with the highest rates of tuberculosis and infectious disease.

Racial policies perpetuated this attitude of avoiding medical care among Black patients. Across the city, very few hospitals accepted, or even tolerated, Black patients.<sup>114</sup> The institutions that did open their doors to Black Chicagoans included Cook County Hospital, charity locations, and the few Black hospitals throughout the South Side. Dr. Carl Glennis Roberts asserted that it was not uncommon for victims of serious accidents to be denied first aid at nearby private hospitals that closed doors to Black patients, and that upon their denial, it was not uncommon for these patients to die while being transported across the long distances necessary to access accommodating hospitals.<sup>115</sup> Oftentimes, these patients had to be transported to Cook County

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<sup>112</sup> Bonner, 139.

<sup>113</sup> Reed, 63.

<sup>114</sup> Carl Glennis Roberts, "Hospitals in Chicago." *Journal of the American Medical Association*, vol. 22, no. 3 (1930): 123.

<sup>115</sup> *Ibid.*

Hospital, which was situated on the west side of downtown, miles north of the Black Belt. For decades, Cook County Hospital stood as the only public general hospital that would accept Black patients. Even up through the 1960s, Black patients had to travel eight times farther for hospital care than they would have if the nearest healthcare provider accommodated Black patients.<sup>116</sup> Such a dual hospital system that defined Chicago's healthcare landscape illustrates Roberts' observation that the physical distance traveled for Black patients was a significant barrier to accessible healthcare. South Chicago did indeed have access to the elevated train system, though the travel duration and stairs on the train platforms required for Black healthcare aboard these elevated lines was not conducive to emergency situations.

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In 1926, there were a total of 7,602 deaths reported in Chicago from communicable diseases that *did not* include tuberculosis. Of these cases, 25% of the total deaths from communicable disease were among the city's Black population, suggesting the general lack of healthcare access for communicable diseases in addition to tuberculosis.<sup>117</sup> Nevertheless, perhaps these data would be lower if equitable healthcare were available throughout the whole city, as diagnostic tuberculin skin tests and hospital beds to isolate patients from their community were harder to access for Black residents. Black Chicago steadily grew in size and proportion in the city, and by 1934, the city's total population amounted to 3,258,528. The Black population in Chicago tallied 236,305 in that same year.<sup>118</sup> At the time of the Chicago Tuberculosis Institute's compilation of citywide demographics and tuberculosis statistics, Black Chicago accounted for 7.25% of the city's total population. Despite Black residency steadily rising from 1890 to 1934,

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<sup>116</sup> Pierre DeVise, *Slum Medicine: Chicago's Apartheid Health System* (University of Chicago Press, 1969), iv.

<sup>117</sup> Jesse R. Gerstley et al., "Progress in Pediatrics: Survey of the Communicable Disease Situation in Chicago," *American Journal of Diseases of Children*, (1928):, 1050–1051.

<sup>118</sup> Nelson, M., 24.

total Black percentage never got close to the 25% that would represent parity with the share of communicable disease death that the Institute of Medicine of Chicago reported. In their report, Chicago Ward 2 and Ward 3 held disproportionately high death rates for communicable diseases, and these wards were home to the Black Belt.<sup>119</sup>

While tuberculosis is a particularly compelling case study to analyze, communicable diseases of all kinds negatively affected Black Chicago, and these health outcomes were only perpetuated by a lack of hospital access. Beds were necessary for isolating sick individuals from their communities. In 1926, Cook County Hospital had a total of 3,000 beds at any given time.<sup>120</sup> However outside of Cook County Hospital, Black patients occupied only 8% of beds throughout the city, which are necessary for isolating sick individuals.<sup>121</sup> Given that 25% of the 7,602 deaths from communicable disease occurred among Black Chicagoans, roughly 1,901 deaths from communicable disease occurred during 1926 in Black Chicago. Among hospitalization of Black patients for tuberculosis at Cook County Hospital, 58% of pulmonary cases died while in the hospital at an average of 92 days. For the remaining 42% of pulmonary cases that were discharged alive, the average stay was 110 days.<sup>122</sup> General hospital admission was limited, and the total number of beds struggled to keep up with the worsening health state of the city's South Side.

#### *The Chicago Municipal Tuberculosis Sanitarium*

Black Chicagoans suffering from tuberculosis infection were able to find treatment at the city's Municipal Tuberculosis Sanitarium. However, as the Chicago Tuberculosis Institute emphasizes, the majority of tuberculosis hospitalizations reported to Cook County.<sup>123</sup> The

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<sup>119</sup> Gerstley, "Progress in Pediatrics: Survey of the Communicable Disease Situation in Chicago," 1060.

<sup>120</sup> Ibid., 1078.

<sup>121</sup> Reed, 63.

<sup>122</sup> Nelson, M., 13.

<sup>123</sup> Ibid.

Sanitarium opened its doors in 1915, and it possessed a total of 950 beds to treat tuberculosis patients requiring hospitalization from across the city.<sup>124</sup> In 1934, the Sanitarium admitted 169 Black patients. The average stay of these patients was 333 days.<sup>125</sup> The Sanitarium still played a pivotal role in treating tuberculosis among patients that were not hospitalized, as 27,838 Black Chicagoans visited Sanitarium dispensaries, which accounted for 11.5% of the total Black population in 1934. These data include both continued and new patients.<sup>126</sup> These stations were definitely pivotal in the diagnosis of acute treatment of tuberculosis, but for cases that continued to progress to the point of hospitalization, the Sanitarium and Cook County hospitals did not possess adequate beds to handle the large numbers of Black tuberculosis patients. By 1939, Black patients accounted for only about 15% of the patients treated with pneumothorax therapy at the Chicago Municipal Tuberculosis Sanitarium, and Black patients were only 24% of those under clinical supervision.<sup>127</sup> For these reasons, the individual burden of disease for Black Chicagoans that would exacerbate tuberculosis infection was likely under-hospitalized, and when treatment was extended at the sanitarium, it was inadequate in treating the volume of Black patients isolating from the Black Belt.

### *Provident Hospital*

During the interwar period, a seemingly viable solution to healthcare access was the construction and opening of hospitals in Chicago's Black Belt by Black medical professionals that guaranteed healthcare access to the city's most vulnerable populations. However, prominent Black hospitals like Provident Hospital faced their own unique share of difficulties. Provident Hospital

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<sup>124</sup> Theodore B. Sachs, "Provision for Infants in Chicago Municipal Tuberculosis Sanitarium," *Journal of the American Medical Association*, 2 (Jan. 1915): 72.

<sup>125</sup> Nelson, M., 13.

<sup>126</sup> *Ibid.*, 12.

<sup>127</sup> Bonner, 139.

famously opened as the nation's first Black-controlled hospital in 1891.<sup>128</sup> Black medical achievement during these early years accompanied Provident, as perhaps most notably its founder, Daniel Hale Williams, performed one of the nation's first open-heart operations within its confines.<sup>129</sup> The goals of Provident hospital were to provide proper care to all patients, regardless of race or creed. Furthermore, the hospital opened to extend employment to Black nurses and doctors that otherwise experienced a constrained job market across the city.<sup>130</sup> Provident was a small hospital, originally located at the intersection of 29<sup>th</sup> Street and Dearborn Street as a two-story frame house that was funded by public fundraising.<sup>131</sup> However, as the needs for immediate Black healthcare grew stronger over the ensuing decade, Provident expanded in size and moved further South. In 1898, Provident opened at 36<sup>th</sup> and Dearborn.

With the move south, the new Provident increased its total bed count from 14 to 75 to serve both Black and white patients in need of medical care.<sup>132,133</sup> This was the vision of Dr. Williams; he did not want to isolate Black physicians from the mainstream world of medicine, and his interracial hospital staff reflected his ideals. In the first year of its operation, 18% of the total patients admitted were white.<sup>134</sup> Despite Williams' intentions, though, Provident increasingly became an oasis for Black healthcare in an increasingly segregating medical economy. By 1915, 93% of Provident's patients were Black.<sup>135</sup> As the Black Metropolis grew and found its own

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<sup>128</sup> Vanessa Northington Gamble, "The Provident Hospital Project: An Experiment in Race Relations and Medical Education," *Bulletin of the History of Medicine*, vol. 64, no. 4, (1991): 457.

<sup>129</sup> *Ibid.*

<sup>130</sup> Henry B. Matthews, "Provident Hospital – Then and Now," *Journal of the National Medical Association*, vol. 53, no. 3 (May 1961): 209.

<sup>131</sup> *Ibid.*

<sup>132</sup> Gamble, "The Provident Hospital Project: An Experiment in Race Relations and Medical Education," 459.

<sup>133</sup> Matthews, "Provident Hospital – Then and Now," 211.

<sup>134</sup> Gamble, "The Provident Hospital Project: An Experiment in Race Relations and Medical Education," 260.

<sup>135</sup> *Ibid.*

identity in Chicago, Provident Hospital stood as a Black-owned and operated enterprise alongside the Black Belt's numerous Black restaurants, shops, and businesses.<sup>136</sup>

Provident was able to accept so many Black patients because of its policies towards the medically indigent (those that required medical attention but could not afford to pay for treatment). As the Black Belt developed, documentable economic insecurity was widespread among the city's Black residents, and being unable to pay for medical treatment often deterred Black patients. At Cook County Hospital, the average cost per day to be hospitalized was \$3.24,<sup>137</sup> and prolonged hospital stays would have been a financial impossibility for unemployed Black residents during the 1920s and through the Great Depression. Instead of requiring payment, Provident extended free care to those who were unable to pay for their visits.<sup>138</sup> While a noble pursuit, Provident struggled financially because of these policies for its early duration. Despite being clean and orderly in its operation, British travelling nurse Ethel Johns noted that the hospital was run-down, and the equipment needed to care for these Black patients was medically inadequate.<sup>139</sup> Such was the reflection of the lack of financial backing that Provident Hospital dealt with during the beginning of the twentieth century.

To ameliorate Provident Hospital's deteriorating financial situation, sitting director George C. Hall sought an affiliation with the University of Chicago. Hall saw that white support and funds were necessary to keep Provident Hospital afloat, and in turn, Provident would expand its educational outreach by providing residency training.<sup>140</sup> The contract between Provident and the University of Chicago became official on May 15<sup>th</sup>, 1933, and Provident again moved further

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<sup>136</sup> Ibid.

<sup>137</sup> Gerstley, "Progress in Pediatrics: Survey of the Communicable Disease Situation in Chicago," 1080.

<sup>138</sup> Gamble, "The Provident Hospital Project: An Experiment in Race Relations and Medical Education," 461.

<sup>139</sup> Ibid.

<sup>140</sup> Ibid., 462.



south to 426 East 51<sup>st</sup> Street.<sup>141</sup> However, from 1929 to 1931, Provident’s financial situation became ever more precarious; the hospital’s deficit increased from \$10,000 to \$164,000.<sup>142</sup> The looming financial crisis ultimately caused the University to terminate its contract with Provident Hospital in 1938, a year in which Provident estimated a loss of \$69,000 to free and reduced-cost patients.<sup>143</sup> Regardless of its ultimate dissociation with the University of Chicago, Provident developed into much more of a teaching and educational hospital during this time period. At its best, Provident offered 100 beds at a time to patients that required hospitalization during the 1930s, regardless of their ability to pay. Unfortunately for both Provident and the patients that benefitted from its accommodation of medically indigent patients, Provident’s financial insecurities left those it served with less adequate healthcare than better funded hospitals in the interwar period in Chicago.

\* \* \* \*

As Black Chicago grew in size, healthcare expansion did not keep pace. Mortality from communicable disease impacted the Black Belt greatly, and healthcare outlets were insufficient in treating Black Chicagoans’ individual burdens of disease. From the racial hospital policies that barred Black admission in private practices to the shortages of beds in general hospitals that accommodated Black patients, mortality rates during this period of Black Chicago’s history surpassed their white counterparts. Provident Hospital was a unique option for Black neighborhoods, but it proved to be more of a short- than a long-term solution to healthcare inequality. In the next section, the cumulative effects of Black migration, overcrowding, financial

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<sup>141</sup> Matthews, “Provident Hospital – Then and Now,” 212.

<sup>142</sup> Gamble, “The Provident Hospital Project: An Experiment in Race Relations and Medical Education,” 467.

<sup>143</sup> *Ibid.*, 474.

insecurity, and poor healthcare options will be illustrated by an epidemiologic case study of tuberculosis incidence, risk, and mortality for select Black neighborhoods from 1933-1934.

## Case Study: Tuberculosis in Chicago, 1933-1934

In Chicago during the 1930s, Black migration to South Chicago ended in community areas with inadequate housing, unequal employment opportunities, and inadequate healthcare. The combination of these determinants of health created an environment that allowed tuberculosis to easily spread through the Black population of the city, largely placing the weight of tuberculosis incidence and mortality on the shoulders of Black Chicago. In this section, a statistical and geospatial analysis of tuberculosis infection will demonstrate how Black Chicago's health outcomes and life chances were considerably more constrained in comparison to the rest of Chicago's 72 neighborhoods.

This section is illustrative of the housing, economic, and healthcare racism that disproportionately affected Black Chicago. All maps were created in QGIS using shapefiles provided by the Chicago Data Portal.<sup>144</sup> All tuberculosis data analyzed and mapped in this section were published by the Chicago Tuberculosis Institute in 1936.<sup>145</sup> After visualizing Chicago's tuberculosis crisis, epidemiological measures will be calculated to quantify and substantiate the differences in risk associated with living in the Black Belt versus the rest of Chicago. By creating visual images of Black Chicago and adverse health outcomes, this case study will set the stage for a concluding discussion of redlining in Chicago and its role in maintaining this racial status quo in the city's housing sector. This case study serves as a microcosm for all the expository inequality that Black Chicago faced during the beginning of the twentieth century and beyond. Data for all Chicago neighborhoods used in map creation and calculations may be found in **Appendix B**.

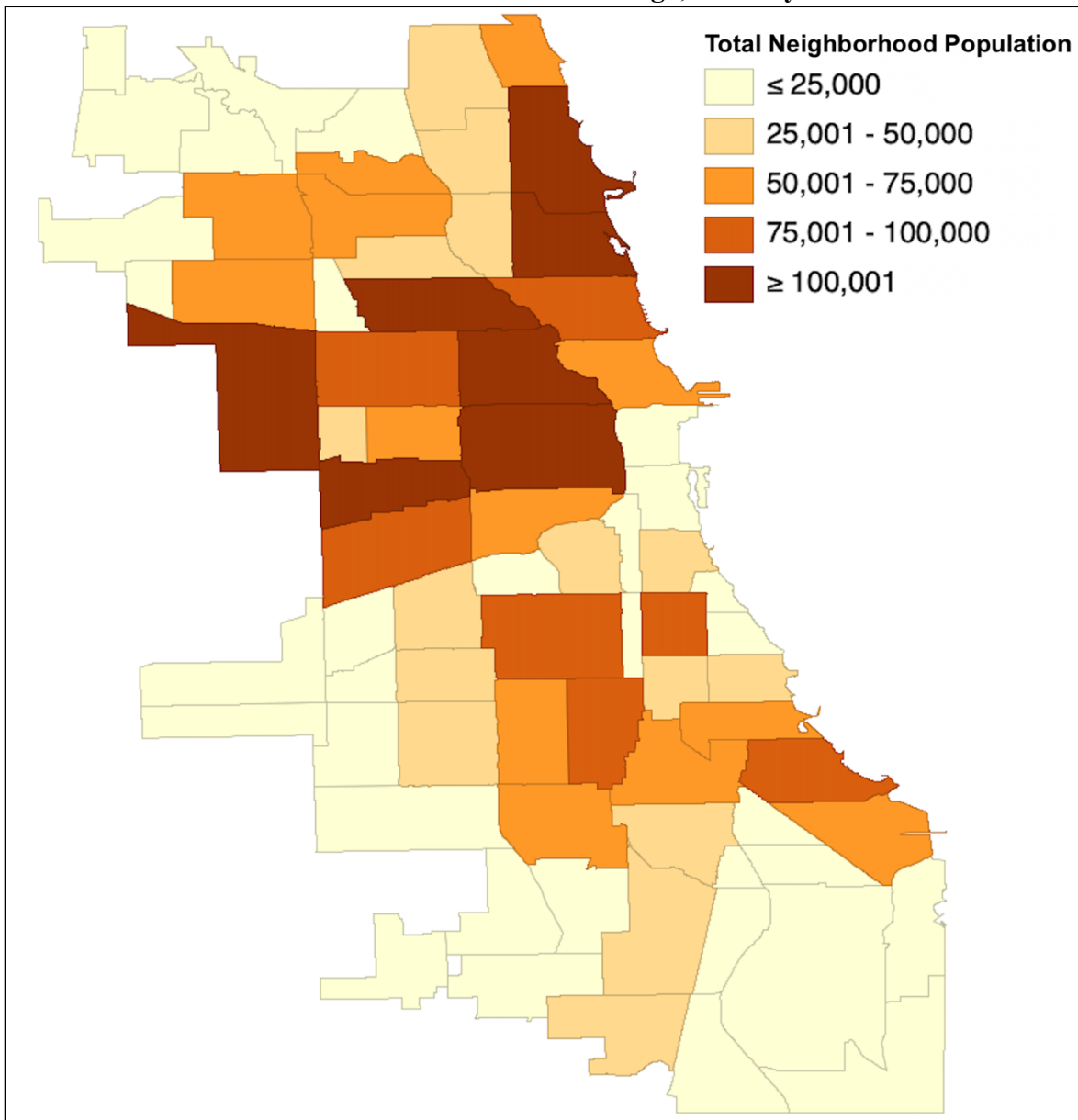
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<sup>144</sup> "Boundaries - Neighborhoods: City of Chicago: Data Portal," Choose Chicago, *Chicago Data Portal*, City of Chicago, 11 July 2018, <https://data.cityofchicago.org/Facilities-Geographic-Boundaries/Boundaries-Neighborhoods/bbvz-uum9>.

<sup>145</sup> Nelson, M.

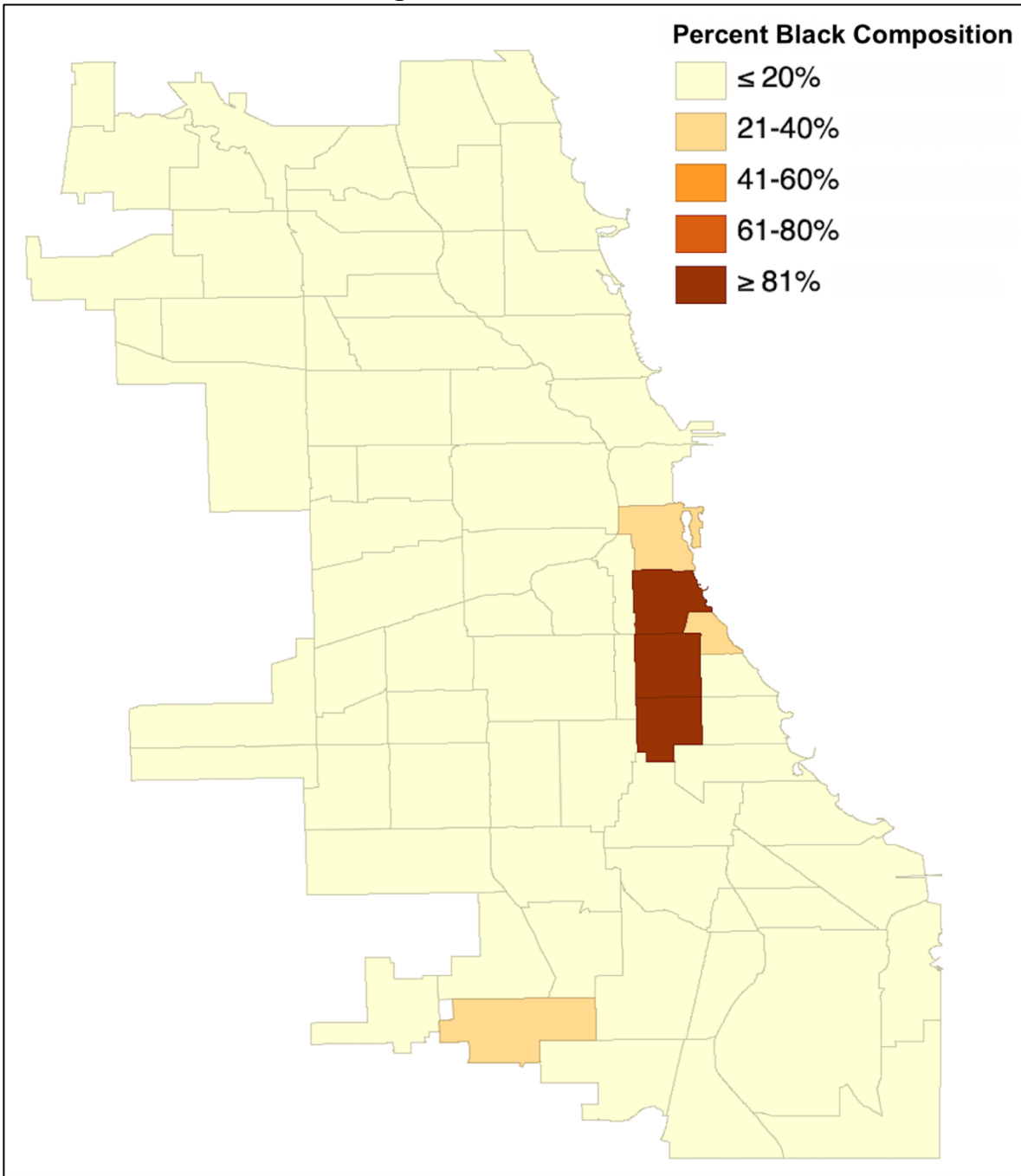
Visualizations

Distribution of Residents in Chicago, January 1934



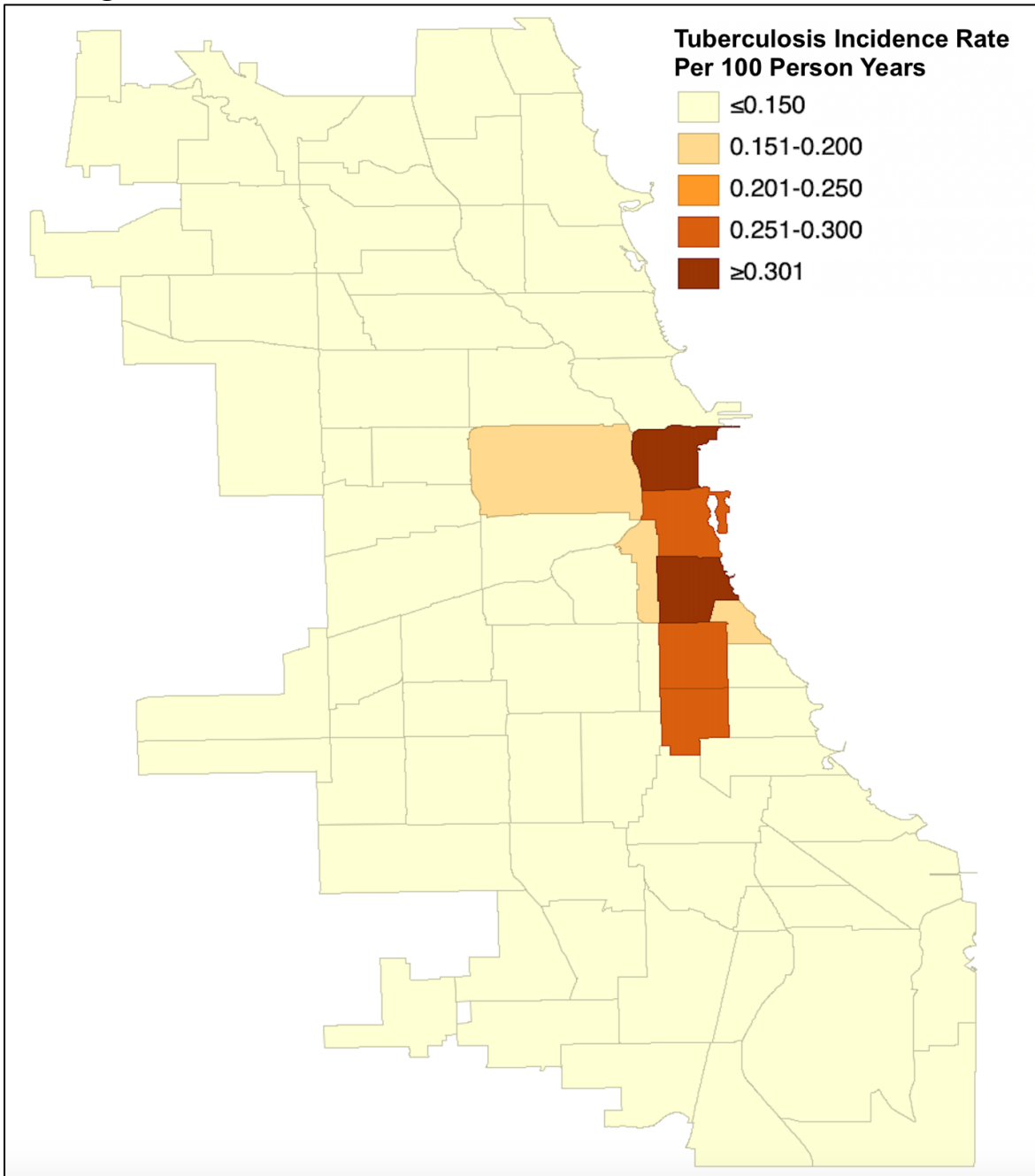
**Figure 2:** This map illustrates the population distribution of Chicago in January of 1934. All values represented are representative of the total population. The majority of the city's population lived on the north and northwest sides of the city, with Black Belt being relatively low in population when compared to the rest of the city.

### Chicago's Black Belt, 1933-1934



*Figure 3: This map illustrates Chicago's Black Belt based on the percent composition of the neighborhoods. Of all Chicago neighborhoods, the three Black Belt neighborhoods are the only enclaves with majority Black residents.*

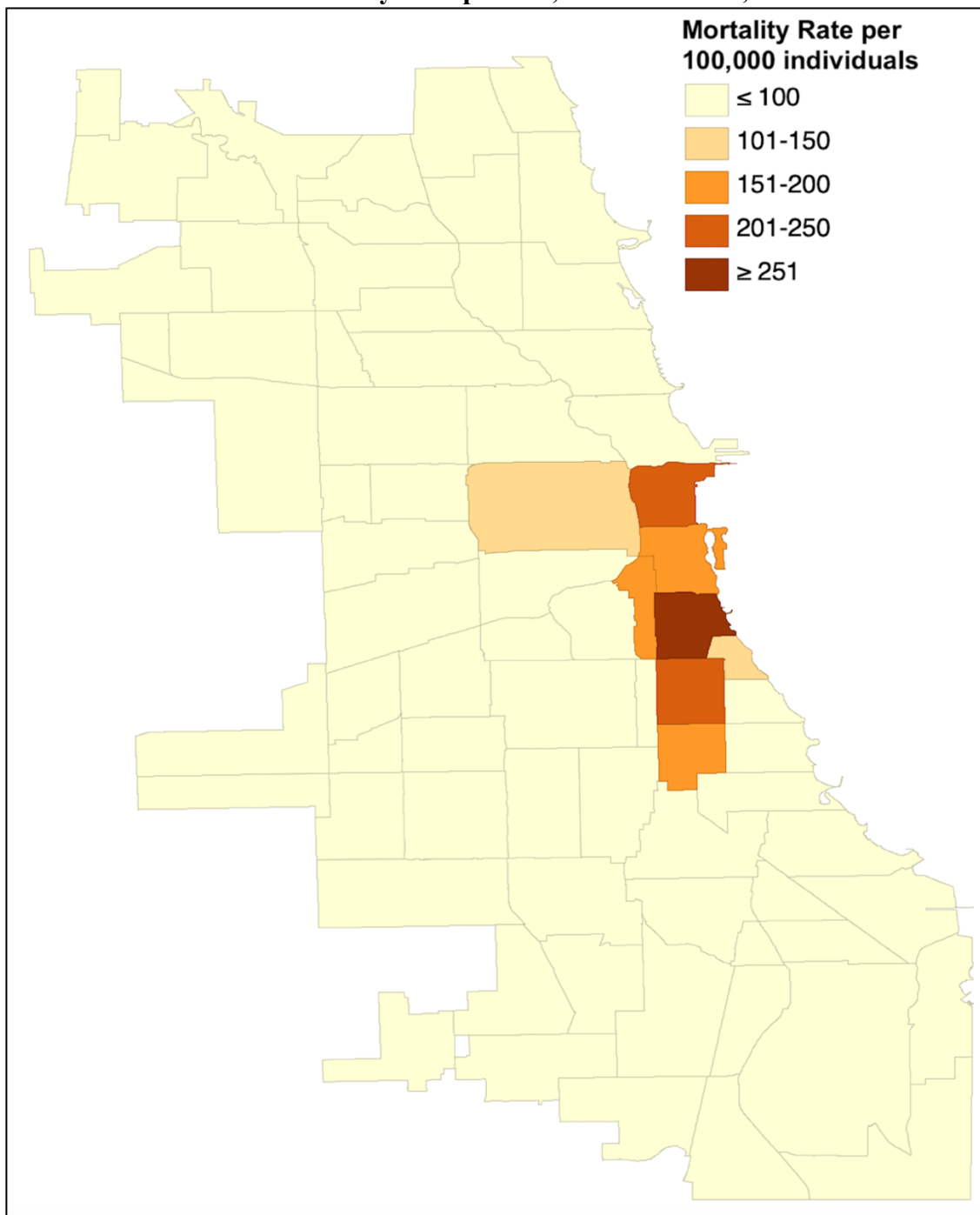
### Neighborhood Tuberculosis Incidence Rate Per 100 Person Years, 1933-1934



**Figure 4:** This map illustrates the cumulative incidence rate of tuberculosis throughout Chicago over a two-year period from 1933-1934. Black Belt neighborhoods account for high incident tuberculosis rates. Additionally, the Loop neighborhood showed a high incidence rate, although very few people lived in the Loop (3,530), so the data represent few cases.<sup>146</sup>

<sup>146</sup> Ibid., 24.

### Tuberculosis Mortality Rate per 100,000 Individuals, 1933-1934



**Figure 5:** This map illustrates the neighborhood-wide mortality rates per 100,000 from tuberculosis. Mortality rates in the Black Belt were higher than the majority of the city. In addition to the Black Belt, though, mortality rates in the Near South Side and Loop neighborhoods were noticeably high. These rates apply to very small populations though (7,844 and 3,530, respectively).<sup>147</sup>

<sup>147</sup> Ibid.

Looking at the four maps, it is evident that living in the city's Black Belt was a strong risk factor for tuberculosis infection and mortality during 1933 and 1934. **Figure 2** was created to illustrate the distribution of Chicago's total population during this specified time period. From these data, the largest urban populations in Chicago were on the north and west sides of the city, with the city's South Side and the Black Belt being proportionally less populous. While there were fewer residents, the within-housing unit crowding that these residents experienced was much higher. It could be expected that tuberculosis incidence and mortality would be more prevalent in the most populated regions of the city, given its communicability. However, this is not the case. **Figure 3** was created to illustrate the Black Belt. There are a few pockets of Chicago with appreciable Black populations, though these neighborhoods are not nearly as Black-inhabited as the city's three Black Belt neighborhoods. **Figures 4** and **5** were created to illustrate the tuberculosis burden on Black Chicago. While there is certainly some variation by neighborhood, the Black Belt was among the city's most affected neighborhoods in both of these disease metrics.

The next subsection will follow a statistical analysis of tuberculosis in the city to quantify the degrees to which the risks of tuberculosis contraction varied between Black and White neighborhoods. To accomplish this, incidence rates, relative risks and 95% confidence intervals are calculated to show a relationship between the incidence of communicable disease and the housing, economic, and healthcare conditions of the Black Belt with strong precision.



*Data Analysis*

**Black Belt and City of Chicago Tuberculosis Data, 1933-1934**

Neighborhood	Total Population	Black Population	Percent Distribution of Black Chicago	Incident tuberculosis cases (1933-1934)	Tuberculosis Deaths (1933 – 1934)	Death rate per 100,000	Percent Distribution of Cases
City of Chicago	3,258,528	236,305	100%	11,066	3,825	58.7	100%
Douglas	45,947	41,643	17.62%	728	361	392.8	6.58%
Grand Boulevard	88,741	85,100	36.01%	901	411	231.6	8.14%
Washington Park	44,872	42,502	17.99%	481	138	153.8	4.35%

*Table 2: Demographic information of Chicago’s three Black Belt neighborhoods. Incident tuberculosis cases and tuberculosis deaths were extrapolated from the provided annual average of these metrics for 1933-1934. Total Population, Black Population, Percent Distribution of Black Chicago, Death Rate per 100,000, and percent distribution of cases were all calculated by the Chicago Tuberculosis Institute.<sup>148</sup>*

This table quantifies incident tuberculosis cases and instances of tuberculosis deaths throughout the city and in Chicago’s three Black Belt neighborhoods. Additionally, the death rate per 100,000 individuals and percent distribution of cases are provided. Notably, the death rate for tuberculosis is markedly higher in Chicago’s Black Belt neighborhoods when compared to the rest of the city of Chicago. These data in **Table 2** will be used to calculate incidence rate and relative risk.

*Incidence*

To calculate incidence rate of Black Chicago neighborhoods against the rest of the city, the number of new cases of tuberculosis (incident tuberculosis cases) and the number of persons at risk of contracting tuberculosis (total population) are obtained from **Table 2**. Incidence is calculated by dividing the total number of new cases in a population by the total population at risk over a specified time period. Prevalent cases from 1930-1932 were estimated and removed from the total population since they were no longer at risk of incident disease. These values were

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<sup>148</sup> Ibid., 24-27.

estimated to be 1,197 (Douglas), 1,482 (Grand Boulevard), and 791 (Washington Park). The percent distribution of cases from **Table 2** was multiplied by the total tuberculosis cases from 1930-1932 (6,118, 6,219, 5,865 respectively) to best estimate the prevalent cases in each Black Belt neighborhood.<sup>149</sup> This estimation assumes an unchanging distribution from 1930 to 1933, which is likely inaccurate. This estimation may not fully reflect the neighborhood-wide percent distribution, as these data were only available from 1933-1934. The duration of the study was two years, and correspondingly the value for person-years used in this calculation is 2. Figures in the numerator of the following equations are the incident tuberculosis cases in the Black Belt and city of Chicago susceptible to contagion, respectively. Additionally, the denominator of the following equations are the total populations of the Black Belt and city of Chicago, respectively. These calculations were used to create **Figure 4: Neighborhood Tuberculosis Incidence Rate Per Person-Years, 1933-1934**. The final calculations for incidence were multiplied by 100,000 to provide an incidence rate per 100,000 individuals that is more ascertainable than considering mortality rate per individual person-year.

$$\text{Incidence (Black Belt)} = \frac{(728 + 901 + 481)}{(44,750 + 87,259 + 44,081)(2)} = 0.005991$$

**Equation 1:** *Incidence of Tuberculosis in Chicago’s Black Belt from 1933 to 1934. Multiplying the final calculated value (0.005991) by 100,000 gives a value of 599.1 incident tuberculosis cases per 100,000 persons in the Black Belt. See Appendix A for formula for incidence rate. Prevalent tuberculosis cases were subtracted from the denominator.*

$$\text{Incidence (Rest of Chicago)} = \frac{(11,066 - 2,110)}{(3,078,968 - 14,731)(2)} = 0.001461$$

**Equation 2:** *Incidence of Tuberculosis in the 72 other Chicago neighborhoods, excluding the city’s Black Belt. Multiplying the final calculated value (0.001461) by 100,000 gives a value of 146.1 incident tuberculosis cases per 100,000 persons in the non-Black Belt. The 14,731 prevalent cases of tuberculosis from 1930-1932 outside of the Black Belt were subtracted from the denominator.*

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<sup>149</sup> Ibid., 23-27.

These two calculations are indicative of the differences between Chicago’s majority Black neighborhoods and the rest of the city. These data show how the incident tuberculosis rate in 3 neighborhoods was much higher than the incident tuberculosis rate for the outside 72 community areas. While the rest of Chicago showed higher crude tuberculosis cases, the frequency of tuberculosis infection in the Black Belt was demonstrably higher than any surrounding area.

*Relative Risk*

Relative risk is calculated by dividing the incidence of the exposed population by the incidence of the unexposed population. To calculate relative risk, exposure parameters must be defined. In analyzing tuberculosis in Black Chicago, the exposure category will be residence in the Black Belt, whereas the non-exposed category will be the rest of Chicago. Prevalent cases were again subtracted from the [Disease –] category in both the exposed and unexposed groups. Below are tables used to calculate relative risk.

**Risk Calculations for Tuberculosis in Chicago, 1933-1934**

	Disease +	Disease –	Totals
Exposed	2,110	176,089	178,199
Not Exposed	8,956	3,064,618	3,073,574

*Table 3: The above table compiles tuberculosis cases in Table 3.*

$\text{Relative Risk of Tuberculosis Infection for Black Belt Residents} = \frac{\frac{2,110}{178,199}}{\frac{8,956}{3,073,574}} = 4.064$
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*Equation 3: Relative Risk calculation for Chicago’s Black Belt. The formula for Relative Risk may be found in Appendix A.*

With exposure parameters established as Black Belt residence, the above calculation suggests that residents living in the Black Belt are 4.064 times more likely to contract tuberculosis than those that live outside of the Black Belt. These data are illustrative of the public health

landscape that afflicted Black Chicago during the 1930s in comparison to their non-Black counterparts.

*95% Confidence Interval, Relative Risk*

To demonstrate precision in calculations, a 95% confidence interval assessing relative risk will qualify the degree of calculations above that express the relationship between the living in the Black Belt and relative risk of tuberculosis.

$$\begin{aligned}
 A. \text{ 95\% CI } \ln(4.064) &= \ln(4.064) \pm 1.96 \sqrt{\frac{\frac{176,089}{2,110}}{178,199} + \frac{\frac{3,064,618}{8,956}}{3,073,574}} \\
 B. \text{ 95\% CI (RR)} &= \left( e^{\ln(4.064) - 1.96 \sqrt{\frac{\frac{176,089}{2,110}}{178,199} + \frac{\frac{3,064,618}{8,956}}{3,073,574}}}, e^{\ln(4.064) + 1.96 \sqrt{\frac{\frac{176,089}{2,110}}{178,199} + \frac{\frac{3,064,618}{8,956}}{3,073,574}}} \right) \\
 &= (3.877, 4.260)
 \end{aligned}$$

**Equations 4,5:** Calculations substantiating the 95% Confidence interval of relative risk of tuberculosis in Black Belt neighborhoods.<sup>150</sup> The formula for calculating this 95% Confidence Interval may be found in Appendix A. The relative risk calculation (4.064) falls within the 95% confidence interval of (3.877, 4.260).

This statistical analysis substantiates the claims that tuberculosis fell hardest on the city’s Black population. By using these metrics and approaching the city’s structural racism in its housing and healthcare practice through an epidemiological lens, it is evident that the city’s tuberculosis cases were correlative but not necessarily by chance. It was the culmination of risk factors associated with Black Belt residency that resulted in an appreciably high relative risk calculation.

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<sup>150</sup> “Confidence Intervals,” Boston University School of Public Health, *B. Confidence Intervals for the Risk Ratio (Relative Risk)*, Boston University, 17 Oct. 2017, [https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/bs704\\_confidence\\_intervals/bs704\\_confidence\\_intervals8.html](https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/bs704_confidence_intervals/bs704_confidence_intervals8.html).

As the twentieth century marched on through the 1930s, the codification of redlining ensured that structural racism that afflicted Black Chicago would persist for decades. The conclusion to this paper will briefly introduce redlining and critically examine its origins that are rooted in the housing inequality that fell on Black Chicago.

## **Beyond the Black Belt: Redlining in Chicago**

Healthcare access and outcomes were incredibly unequal in Chicago during the 1930s. Black residents faced the constant uphill struggle for equality in a racially divided Chicago, and their tuberculosis and communicable disease health outcomes reflect the economic and housing inequality that was so pervasive in the Black Belt during this time. By looking at Tuberculosis figures and data, it is abundantly clear that the burden of the disease was most significant for Black Chicago. The difficulty of attaining good quality housing led to environments that were conducive to transmissible respiratory disease, and escaping poor health outcomes for Black Chicago was nearly impossible due to the rigidity of urban housing practices. Ultimately, the confinement of Chicago's Black population within the borders of the Black Belt is what segregated citywide health outcomes. From the late nineteenth century through the great depression and the 1930s, these housing practices were overwhelmingly an extralegal practice. Property owners and lending institutions deliberately limited housing options to Black Chicagoans, and of the housing occupied by Black residents, the poor conditions and substandard living situations were illustrative of the struggle to thrive in a city as a Black American during the time period. The race riots and interracial conflict associated with Black mobility during the interwar period reflects the strong anti-Black sentiments of white Chicago. These beliefs manifested in structural inequalities in housing and healthcare access.

Despite the Black struggle for survival and equal housing rights, it only grew worse for Black Chicago. Though these racial housing practices were informal, urban structural racism made them even less flexible during the 1930s. In 1934, the practice of redlining was codified in Chicago – the same year as the case study of tuberculosis.

## *Redlining*

Redlining is a structurally racist housing policy that makes the spatial discrimination against urban residents legal, and it is largely regarded as the result of legislation that was intended to separate Black from white Americans.<sup>151,152</sup> This is similar to the housing trends that plagued Black Chicago during the early decades of Black migration into the city. The Black Belt grew dense in population, and the three Black Belt neighborhoods almost immediately became overcrowded. During the decades preceding the tuberculosis outbreaks in 1933-1934, Black residents were barred from moving into the contested neighborhoods and other neighborhoods of Black opposition because of the racial discrimination. To ensure Black Americans remained confined to the Black Belt, iniquitous rental covenants and overt racial acts of violence barred mobility out of the Black Belt.

Redlining was codified in 1934 by the Federal Housing Administration (FHA), and its codification was significant because it legally allowed the FHA to refuse to insure mortgages on these redlined neighborhoods that were decided to be high-risk investments.<sup>153</sup> Given that one of the main roles of the FHA was to insure mortgages for residents that rely on bank loans, this practice was particularly discriminatory to the large proportion of the population who could not buy homes outright. As mentioned earlier, the majority of the Black Belt's residents were limited to renting housing because of Black financial instability during the interwar period. Redlining and the FHA's refusal to insure property investments in majority-Black neighborhoods reduced the already limited opportunities for Black property ownership.

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<sup>151</sup> Yves Zenou et al., "Racial Discrimination and Redlining in Cities," *Journal of Urban Economics* 48, no. 2 (2000): 260–85, <https://doi.org/10.1006/juec.1999.2166>.

<sup>152</sup> D. R. Williams et al., "Racial Residential Segregation: A Fundamental Cause of Racial Disparities in Health," *Public health reports* (Washington, D.C. : 1974), Association of Schools of Public Health, 2001. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1497358/>.

<sup>153</sup> "A 'Forgotten History' of How the U.S. Government Segregated America," Terry Gross, NPR, May 3, 2017. <https://www.npr.org/2017/05/03/526655831/a-forgotten-history-of-how-the-u-s-government-segregated-america>.

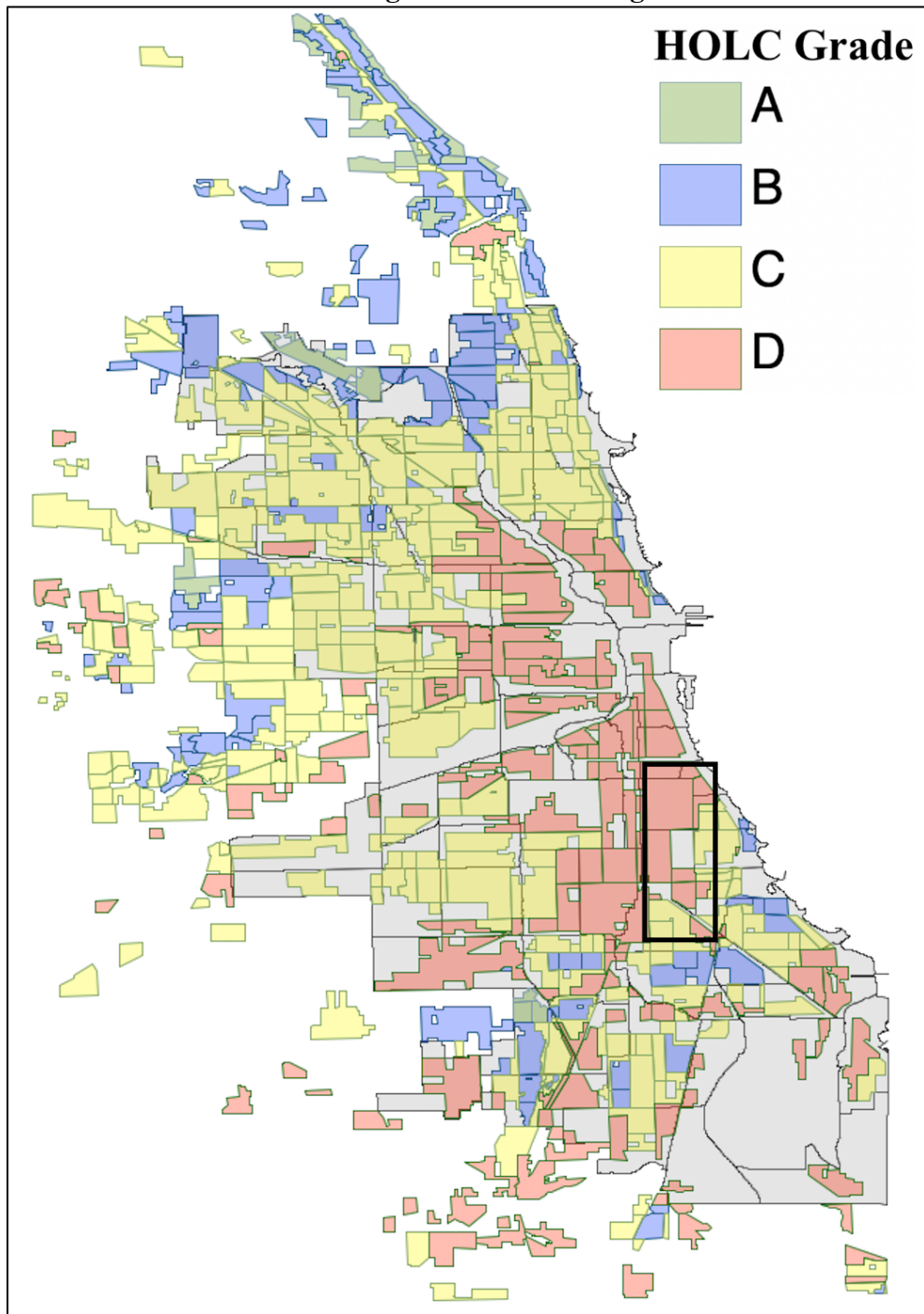
Throughout Chicago, these discriminatory policies were broken down to a tiered classification system in which predominantly Black neighborhoods were rated ‘D’ (red), as opposed to the predominantly white neighborhoods that were given an ‘A’ (green) rating by the Home Owners’ Loan Corporation (HOLC), a government organization that was given the responsibility for grouping these redlined neighborhoods together for FHA review. By classifying predominantly Black neighborhoods as ‘D’-rated investments, the HOLC empowered the FHA to make these race-based housing decisions.<sup>154</sup> In addition to these ‘A’ and ‘D’ classifications, the HOLC and FHA made ‘B’ and ‘C’ classifications that reflected the proportionate income and racial demographics of these selected regions.

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<sup>154</sup> “Mapping Inequality,” R. Nelson et al., Digital Scholarship Lab. University of Richmond, 2022. <https://dsl.richmond.edu/panorama/redlining>.



### Redlining Districts in Chicago



**Figure 6:** Redlining map of Chicago, overlaid against the 75 Chicago neighborhoods of the 1930s. The Black Belt is identified by a black rectangle. HOLC 'D' regions extend out of the Black Belt, though they are localized around neighborhoods with appreciable Black or immigrant populations. Redlining shapefiles were obtained from the University of Richmond Digital Scholarship Lab.<sup>155</sup>

<sup>155</sup> Nelson, R..

The HOLC described the ‘A’ regions as the city’s hot spots where good mortgage lenders are most willing to make loans up to 75-80% of appraisal. The ‘B’ regions will have mortgage lenders extending their loans up to 65% of the initial property appraisal. Chicago’s ‘C’ regions lent to a much more conservative lending approach, and finally the HOLC recommended that mortgage lenders refuse to make loans in the city’s ‘D’ regions.<sup>156</sup> While many of these assumptions may be made based on the socioeconomic standing of the residents, an analysis of the HOLC’s documentation reveals their racial bias, limiting the ability of Black Belt neighborhoods to see increased investment in properties.

### *Regional Classification of Neighborhoods in Chicago*

Green ‘A’ regions were often considered to be the best, most optimal residential communities throughout the city. Remarks made by the HOLC include descriptions of high general reputation and its first-class continued development that is attractive to a “good class homeowner.”<sup>157</sup> One of the main defining features that differentiated Black Chicago from white Chicago were the standards of housing that residents experienced in Black neighborhoods. In ‘A’ neighborhoods, the HOLC noted that properties are often well built, and the future of the area is steadily improving. In the A29 region of Chicago, the HOLC notes that there were 0 Black residents in this enclave, and the percentage of foreign-born families is 0%.<sup>158</sup> Furthermore, this ‘A’ neighborhood had not experienced any population shifting or infiltration, suggesting that the neighborhood was considered unlikely to be inhabited by Black residents in the future.<sup>159</sup> These neighborhood demographic analyses indicate to the FHA that these properties are not risky investments, largely because there is minimal Black residency in its buildings. The A29

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<sup>156</sup> Ibid.

<sup>157</sup> Ibid.

<sup>158</sup> Ibid.

<sup>159</sup> Ibid.

neighborhood described in this example is Sauganash, and it is bordered to the northwest by more ‘A’ graded development in Edgebrook. These communities are situated far away from the city center and extend housing opportunities to wealthy residents.<sup>160</sup>

Slightly lower in quality, the ‘B’ districts are a step down from the HOLC’s ‘A’ neighborhoods, though the HOLC considered them to still be desirable.<sup>161</sup> However, these ‘B’ rated neighborhoods share many similarities with the HOLC’s elite A neighborhoods in that there are very few, if any, Black residents. These neighborhoods are often occupied by white-collar workers, and these regions experience very little foreign-born immigration within their district. An example of a ‘B’ district is the B83 region, located to the west of downtown.<sup>162</sup> A specified Chicago neighborhood, Hermosa experienced very little tuberculosis incidence or mortality during the years of the case study. Hermosa is neighborhood 16 in **Figure 1**. Looking to **Figure 2**, Hermosa is not a very populated neighborhood that rented almost exclusively to the city’s upper class. Given the socioeconomic standing of its residents, it is unsurprising to see that Hermosa experienced minimal negative tuberculosis-related health outcomes as their residents experienced less-crowded living conditions and overall better health and healthcare access to improve individual burdens of disease. Furthermore, because of the low population of the neighborhood, tuberculosis infection was much less likely from neighborhood sources.

Chicago’s ‘C’ neighborhoods continue the trend away from Chicago’s elite neighborhoods, often inhabited by working class families.<sup>163</sup> These neighborhoods are classified by their relative declining desirability, general appearance, and possible shifting occupancy – the HOLC considered their state to be in decline. In Chicago’s C151 region, the HOLC identified West

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<sup>160</sup> Ibid.

<sup>161</sup> Ibid.

<sup>162</sup> Ibid.

<sup>163</sup> Ibid.

Garfield Park as a neighborhood slowly becoming less desirable to occupy by Chicago's white residents. Additionally, this neighborhood experienced a rising Italian population, which was likely the cause for its 'C' designation for the FHA.<sup>164</sup> Given that this neighborhood wasn't occupied exclusively by fair-skinned white Chicagoans, these neighborhoods were dubbed as less desirable and thus a riskier investment. Nevertheless, 'C' regions had almost no Black residency within their confines.

Finally, the HOLC's 'D' regions encompassed the city's Black residents almost exclusively, and they were classified as hazardous regions of the city. In their redlining designation, the city's Black Belt was the D74 region. This area was described as a "blighted area," and the housing project was home to high percentages of Black families.<sup>165</sup> Regarding the possible risks to housing insurance that these 'D' regions conferred, the HOLC claimed that "this venture has the realtors guessing as to what the ultimate result will be when so many of this race are drawn into this section from the already [Black]-blighted district."<sup>166</sup> These descriptions of Chicago's Black Belt clearly carry racially-charged language that deliberately belittles the lived experience of the city's Black residents. This attitude is reflected in their description of Black access to greenspace, writing that "with approximately 6,500 [Black] people moving into this district, it is evident they cannot be closed in; they must have an outlet; and the problem of keeping park and water frontage close by reasonably free of them will be difficult to surmount."<sup>167</sup> This is another example of the racial language that was used during the 1930s, and the HOLC's description of this neighborhood is littered with anti-Black rhetoric that was designed to deter neighborhood investment in these 'D' regions. These regions generally were marked by "Black infiltration" and

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<sup>164</sup> Ibid.

<sup>165</sup> Ibid.

<sup>166</sup> Ibid.

<sup>167</sup> Ibid.

a shifting Black environment, and the socioeconomic standing of the region's residents were exclusively laborers or on Chicago's monetary relief program.<sup>168</sup>

These risk factors 'D' ratings are similar to the risk factors that enabled the spread of tuberculosis from 1933-1934. The housing inadequacies were described by the HOLC, arguing that "instead of demolishing or rehabilitating some of these properties, it might be better to dispose of them than increase vacant property which has little value today."<sup>169</sup> The attitude towards these housing areas was not optimistic. Instead, the HOLC believed that the tenement homes that would house the majority of the city's Black residents ought to be demolished because of their low property value. These descriptions were not present in any region that did not have an appreciable Black population, and the HOLC reports suggest an apathetic approach to public housing infrastructure that would continue to fail the city's Black population for decades to come.

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As Chicago grew from the Great Migration, Black residents moved into the city at unprecedented volumes. The first few decades of the twentieth century saw a rise in employment opportunities and an expanding economic landscape for Black residents, though this reality did not last for long. In the years following World War I, Black Americans experienced economic turbulence, and the housing options and healthcare available to the city's Black residents reflected this economic inequality. The overcrowding and poor infrastructure in which Chicago's Black residents lived were the conditions that allowed tuberculosis to established itself as one of the leading causes of death for Black Chicago. During the 1930s, tuberculosis in Black Chicago separated the Black Belt from the rest of the city, and these negative socioeconomic determinants

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<sup>168</sup> Ibid.

<sup>169</sup> Ibid.

of health shaped the health outcomes of the south side of the city. The shared origins in discriminatory practices of redlining and of the high burden of tuberculosis in Chicago's Black Belt show how Black residents were positioned at the intersection of poor housing, health, and inequality.

## Appendix A: Equations and Tables

$$\text{Incidence Rate} = \frac{\# \text{ New Cases of Tuberculosis in Specified Population}}{\# \text{ Persons at Risk of Contracting Tuberculosis} \times \text{Person Years}}$$

**Equation 6:** Formula for calculating incidence rate in a specified population over time.<sup>170</sup>

### Risk Calculations in a Cohort Study

	Disease +	Disease –	Totals
Exposed	A	B	A + B
Not Exposed	C	D	C + D

**Table 4:** The above table provides the variables required to calculate relative risk in a

$$\text{Relative Risk} = \frac{\frac{A}{A+B}}{\frac{C}{C+D}}$$

**Equation 7:** Formula for calculating relative risk of exposure in a certain population.<sup>171</sup>

$$A. \text{ 95\% CI } \ln(\text{Relative Risk}) = \ln(RR) \pm z \sqrt{\frac{\frac{B}{A}}{A+B} + \frac{\frac{D}{C}}{C+D}}$$

$$K = z \sqrt{\frac{\frac{B}{A}}{A+B} + \frac{\frac{D}{C}}{C+D}}$$

$$B. \text{ 95\% CI (Relative Risk) } = (e^{(\ln(RR)-K)}, e^{(\ln(RR)+K)})$$

**Equations 8,9:** Formula for calculating the 95% confidence interval of a relative risk;  $z = 1.96$ .<sup>172</sup>

<sup>170</sup> Celentano, David D., et al. *Gordis Epidemiology*. 6th ed., Elsevier, 2019.

<sup>171</sup> Ibid.

<sup>172</sup> Boston University School of Public Health.

## Appendix B

Neighborhood	Neighborhood Population	Black Population	Percent Black Composition	1933-1934 Incident TB Cases	1933-1934 TB Incidence Rate	Total Mortality from TB	1933-1934 TB Mortality Rate per 100,000	% Distribution of TB Cases	1930-1932 Prevalent TB Cases
City of Chicago	3258528	236305	7.252	11066	0.1708	3825	58.7	100.000	18202.00
Albany Park	55822	43	0.077	104	0.0467	28	23.3	0.940	171.07
Archer Heights	8170	0	0.000	25	0.0769	21	91.8	0.226	41.12
Armour Square	20629	3536	17.141	136	0.1666	57	160	1.229	223.70
Ashburn	605	0	0.000	1	0.0414	23	82.6	0.009	1.64
Auburn Gresham	58546	30	0.051	87	0.0372	41	31.6	0.786	143.10
Austín	128971	118	0.091	215	0.0418	82	36.4	1.943	353.64
Avalon Park	9803	0	0.000	18	0.0460	94	66.3	0.163	29.61
Avondale	47335	5	0.011	130	0.0690	113	41.2	1.175	213.83
Belmont Cragin	62937	9	0.014	187	0.0746	5	27	1.690	307.59
Beverly	14429	53	0.367	12	0.0208	10	17.3	0.108	19.74
Bridgeport	48250	6	0.012	170	0.0886	15	67.4	1.536	279.63
Brighton Park	45654	64	0.140	127	0.0699	4	42.7	1.148	208.90
Burnside	3383	0	0.000	7	0.0519	12	14.8	0.063	11.51
Calumet Heights	6965	4	0.057	16	0.0576	26	21.5	0.145	26.32
Chatham	36938	14	0.038	69	0.0468	62	25.7	0.624	113.50
Chicago Lawn	48128	15	0.031	83	0.0432	43	24.9	0.750	136.52
Clearing	5392	1	0.019	16	0.0745	11	37.1	0.145	26.32
Douglas	45947	41643	90.633	728	0.4067	6	392.8	6.579	1197.46
Dunning	21518	5	0.023	75	0.0876	34	25.6	0.678	123.36
East Garfield Park	58583	2040	3.482	149	0.0639	25	46.1	1.346	245.08
East Side	15839	4	0.025	41	0.0650	39	50.5	0.371	67.44
Edison Park	5644	2	0.035	27	0.1205	107	44.3	0.244	44.41
Englewood	85391	1273	1.491	244	0.0718	50	37.5	2.205	401.35
Forest Glen	4549	0	0.000	6	0.0330	215	44	0.054	9.87
Fuller Park	13595	1139	8.378	41	0.0758	94	77.2	0.371	67.44
Gage Park	30850	2	0.006	56	0.0455	32	25.9	0.506	92.11
Garfield Ridge	6098	1	0.016	18	0.0742	54	82	0.163	29.61
Grand Boulevard	88741	85100	95.897	901	0.2581	388	231.6	8.142	1482.02
Greater Grand Crossing	57935	218	0.376	93	0.0402	64	31.9	0.840	152.97
Hegewisch	6995	1	0.014	15	0.0538	61	35.7	0.136	24.67
Hermosa	23605	9	0.038	78	0.0831	70	53	0.705	128.30
Humboldt Park	78033	46	0.059	192	0.0618	16	32	1.735	315.81
Hyde Park	43258	420	0.971	85	0.0493	27	22	0.768	139.81
Irving Park	65963	22	0.033	148	0.0563	66	32.6	1.337	243.44
Jefferson Park	21133	8	0.038	77	0.0916	361	35.5	0.696	126.65
Kenwood	24324	128	0.526	52	0.0536	29	22.6	0.470	85.53
Lakeview	112195	137	0.122	247	0.0552	21	36.5	2.232	406.28
Lincoln Park	90319	107	0.118	242	0.0673	411	52	2.187	398.06
Lincoln Square	45644	11	0.024	73	0.0401	11	25.2	0.660	120.07
Logan Square	108238	23	0.021	402	0.0934	138	49.4	3.633	661.23
Loop	3530	54	1.530	55	0.3998	19	226.6	0.497	90.47
Lower West Side	58467	9	0.015	217	0.0934	79	59.9	1.961	356.93
McKinley Park	20536	4	0.019	67	0.0820	38	75.5	0.605	110.21
Montclare	8931	5	0.056	28	0.0788	19	33.6	0.253	46.06
Morgan Park	13949	5166	37.035	35	0.0630	13	57.4	0.316	57.57



Mt. Greenwood	3731	0	0.000	10	0.0673	83	13.4	0.090	16.45
North Center	46946	24	0.051	93	0.0497	1	43.7	0.840	152.97
North Lawndale	103263	275	0.266	224	0.0544	3	31	2.024	368.45
Near North Side	73462	4103	5.585	354	0.1214	24	76.9	3.199	582.28
Near South Side	7844	2134	27.206	89	0.2891	4	172.1	0.804	146.39
Near West Side	140760	24196	17.190	985	0.1770	11	137.8	8.901	1620.19
New City	82075	78	0.095	278	0.0852	16	56.7	2.512	457.27
North Park	11497	37	0.322	13	0.0283	16	52.2	0.117	21.38
Norwood Park	15350	1	0.007	37	0.0605	1	32.6	0.334	60.86
Oakland	12679	4320	34.072	86	0.1715	5	114.4	0.777	141.46
Portage Park	65365	22	0.034	178	0.0684	10	47.4	1.609	292.78
Pullman	6218	2	0.032	7	0.0282	15	32.2	0.063	11.51
Riverdale	1298	7	0.539	4	0.0774	39	38.5	0.036	6.58
Rogers Park	58687	94	0.160	81	0.0346	31	23.9	0.732	133.23
Roseland	43416	1439	3.314	62	0.0358	65	27.6	0.560	101.98
South Chicago	53498	844	1.578	165	0.0775	93	77.6	1.491	271.40
South Deering	7777	4	0.051	23	0.0743	3	70.7	0.208	37.83
South Lawndale	75298	1146	1.522	190	0.0633	16	40.5	1.717	312.52
South Shore	76186	142	0.186	110	0.0362	4	24.9	0.994	180.93
Uptown	122931	524	0.426	210	0.0428	10	23.2	1.898	345.42
West Elsdon	2915	0	0.000	8	0.0689	24	51.5	0.072	13.16
West Englewood	63320	2154	3.402	120	0.0475	47	37.1	1.084	197.38
West Garfield Park	46650	21	0.045	73	0.0392	64	34.3	0.660	120.07
West Lawn	9385	2	0.021	11	0.0294	37	53.3	0.099	18.09
West Pullman	27380	101	0.369	51	0.0467	1	29.2	0.461	83.89
Washington Heights	19784	65	0.329	32	0.0405	37	22.7	0.289	52.64
Washington Park	44872	42502	94.718	481	0.2728	5	153.8	4.347	791.18
West Ridge	42932	45	0.105	40	0.0233	9	24.5	0.361	65.79
West Town	171273	775	0.452	812	0.1195	1	62.8	7.338	1335.62
Woodlawn	59969	9773	16.297	212	0.0889	16	65.9	1.916	348.71

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