

**Legacies of the Residential Security Maps:
Measuring the Persistent Effects of Redlining in Pittsburgh, Pennsylvania**

by

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In the late 1930's, the Home Owners' Loan Corporation, under the direction of the Federal Home Loan Bank Board, constructed Residential Security Maps that graded the housing markets of over 200 cities according to a variety of criteria, including some based in harsh racial, ethnic, and class prejudice. Explanations for urban development have progressed over the course of the twentieth century to reflect not only changing urban conditions but changing ideology and, simultaneously, have the capacity to create the conditions that they describe. Burgess's ecological model was influential in the 1930's and shaped real estate officials' and policy makers' notions of neighborhood quality and risk. Policymakers' approach to measuring risk with Residential Security Maps has generated much debate. Critiques to Jackson's traditional argument, that the physical maps were used by lenders to redline urban areas, have challenged the feasibility of his theory. Using primary government documents from the National Archives and various publications, I argue that the FHLBB was an influential voice in the development of neighborhood appraisal practices and in the normalization and legitimization of racialized assessments of lending risk. Also, because of the conceptualization of real estate practices, the development of similar lending maps, and the sensitivity of the HOLC to local influences and conditions, the Residential Security Maps are an appropriate way to assess urban real estate practices in the 1930's. I ground the discussion of neighborhood risk onto Pittsburgh's stratified and segregated geography of the 1930's. I developed a GIS-based framework to assess the impact of neighborhood appraisal practices on the social geography of Pittsburgh. I find that neighborhood appraisal had lasting and persistent impacts on the social geography of Pittsburgh as more positive conditions

were concentrated in green and blue areas and more negative conditions were concentrated in red and yellow areas. I discuss the implications of these findings for urban housing, the complicity debate, neighborhood development policy, and the prospects for neighborhood equality.

TABLE OF CONTENTS

PREFACE.....	XI
1.0 INTRODUCTION.....	1
2.0 TWENTIETH CENTURY EXPLANATIONS OF URBAN GROWTH.....	8
3.0 THE HOME OWNERS' LOAN CORPORATION.....	19
3.1 THE HOLC AS A LENDING INSTITUTION.....	20
3.2 THE RESIDENTIAL SECURITY MAPS	22
3.3 TRADITIONAL NARRATIVE: HOLC AS SEGREGATOR.....	28
3.4 CHALLENGES TO THE TRADITIONAL ARGUMENT.....	30
3.5 TREND TOWARDS APPRAISING NEIGHBORHOOD RISK.....	33
3.6 NEIGHBORHOOD RISK MAPPING PROGRAMS.....	48
3.7 LOCAL INFLUENCES ON THE HOLC	54
3.8 SIGNIFICANCE OF THE RESIDENTIAL SECURITY MAPS	55
3.9 PHYSICAL LEGACIES	57
4.0 PITTSBURGH'S HOUSING AND SOCIAL CONDITIONS IN THE 1930'S....	59
5.0 METHODOLOGY.....	65
5.1 DATA COLLECTION.....	66
5.2 MEASURING HISTORIC REDLINING STATUS.....	68
5.3 NEIGHBORHOOD CHARACTERISTICS AND CONDITIONS.....	73
5.3.1 1940 Variables.....	74
5.3.2 1970 to 2000 Variables	75
5.4 MEASURING LEGACIES.....	79

5.5	ASSUMPTIONS	80
6.0	THE LEGACY OF THE HOLC ON PITTSBURGH’S NEIGHBORHOODS ...	83
6.1	1940 CONDITIONS, BASED ON CENSUS DATA	84
6.2	PERSISTENT CONDITIONS FROM 1970 TO 2000.....	87
6.2.1	Descriptive Statistics.....	87
6.2.2	Population Characteristics.....	90
6.2.3	Housing Conditions	97
6.2.4	Precarious Condition of Old Units.....	101
7.0	IMPLICATIONS OF THE HOLC FOR PITTSBURGH’S COMMUNITIES .	104
7.1	LEGACIES OF THE HOLC.....	104
7.2	WHAT IS UNEXPLAINED?.....	109
7.3	DIRECTIONS FOR FUTURE RESEARCH.....	110
7.4	WAS THE GOVERNMENT COMPLICIT IN SEGREGATION?	111
7.5	CONSEQUENCES FOR URBAN HOUSING.....	112
7.6	POLICY IMPLICATIONS FOR NEIGHBORHOOD DEVELOPMENT	114
8.0	CONCLUSION.....	116
	APPENDIX A	120
	BIBLIOGRAPHY	125

LIST OF TABLES

Table 1 Homer Hoyt's Ranking of Ethnicity by Land Value.....	43
Table 2 Disparities in Housing Quality, <i>A Social Study of Pittsburgh</i> (1934)	60
Table 3 Coverage and Size of each Security Grade.....	67
Table 4 Key Variables from Selected Papers	73
Table 5 Variables from the 1940 Census and their Source.....	75
Table 6 Demographic Variables from the NCDB and their Source	77
Table 7 Housing Variables from the NCDB and their Source.....	78
Table 8 Population Characteristics by Security Grade, 1940	85
Table 9 Housing Conditions by Security Grade, 1940	86
Table 10 Descriptive Statistics for Population Variables, 1970-2000	88
Table 11 Summary of Independence Tests for Demographic Variables, 1970-2000.....	91
Table 12 Difference of Means Test of Population Change by Security Grade, 1970-2000	96
Table 13 Summary of Independence Tests for Housing Variables, 1970-2000	98
Table 14 Difference of Means Test of Old Unit Variables by Security Grade, 1970-2000	102
Table 15 Descriptive Statistics for Housing Variables, 1970-2000.....	121
Table 16 Chi-Squared: Persistently Black Tracts by Redlined Status, 1970-2000.....	122
Table 17 Fischer's Exact: Persistently High Poverty Tracts by Redlined Status, 1970-2000....	122
Table 18 Chi-Squared: Persistently High Income Tracts by Redlined Status, 1970-2000.....	122
Table 19 Fischer's Exact: Persistently Low Income Tracts by Redlined Status, 1970-2000.....	122
Table 20 Fischer's Exact: Persistently Low Occupancy Tracts by Redlined Status, 1970-2000	123

Table 21 Chi-Squared: Persistently Low Ownership Tracts by Redlined Status, 1970-2000	123
Table 22 Chi-Squared: Persistently High Ownership Tracts by Redlined Status, 1970-2000 ...	123
Table 23 Chi-Squared: Persistently High Black Ownership Tracts by Redlined Status, 1970-2000	123
Table 24 Chi-Squared: Persistently High Value Tracts by Redlined Status, 1970-2000	124

LIST OF FIGURES

Figure 1 Burgess's Ecological Model of Development, <i>The City</i> (1925)	9
Figure 2 Residential Security Map for Pittsburgh, Pennsylvania (1937)	24
Figure 3 A Portion of J. M. Brewer's Security Map of Philadelphia, PA (1934)	49
Figure 4 Security-First National Bank of Los Angeles's map, <i>FHA</i> (1938).....	51
Figure 5 Chicago Housing Authority Map of FHA Lending (1938)	53
Figure 6 A Tenement House on Bedford Court, <i>Pittsburgh Housing Commission</i> (pre-1934) ...	62
Figure 7 Single Family Homes on Berkshire Avenue in Brookline, <i>City of Pittsburgh</i> (1924)...	63
Figure 8 Digitized Residential Security Map for Pittsburgh, Pennsylvania (1937)	70
Figure 9 1940 Census Tracts Intersected with Residential Security Grades	71
Figure 10 2000 Census Tracts Intersected with Residential Security Grades	72
Figure 11 Persistently Black Tracts and Security Grade, 1970-2000	93
Figure 12 Persistently High Poverty Tracts and Security Grade, 1970-2000	94
Figure 13 Persistently High Income Tracts and Security Grade, 1970-2000	95
Figure 14 Change in Population by Security Grade, 1970-2000	97
Figure 15 Persistently High Value Tracts and Security Grade, 1970-2000.....	100
Figure 16 Tracts with Largest Loss of Old Units and Security Grade, 1970-1980	103

PREFACE

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1.0 INTRODUCTION

The Home Owner's Loan Corporation (HOLC) and the Residential Security Maps it produced have generated considerable discussion since they were first described in 1980.¹ This conversation has grown in recent years as the maps have become more publicly available; the maps have provoked the fascination of many urban scholars, activists, and historians. Each Residential Security Map colorfully described perceived investment risk in American cities in the 1930's. Those areas considered to be the highest quality investments were colored green, "second grade" areas were colored blue, yellow areas were considered to be in 'definite decline', and red areas were considered "hazardous" to investment and characterized as low class.² In many cities, the maps graded communities of color, the poor, or immigrants particularly harshly and mirrored observed patterns of urban disinvestment and lending discrimination.

A comprehensive review of the HOLC's history and an assessment of its impact on modern conditions is necessary to assess the legacy of this government agency and the role of the federal government in perpetuating urban inequality. Many have argued that the physical maps were the agent that precipitated divestment and discrimination but this claim doesn't hold up to scrutiny.³ I

¹ Kenneth T. Jackson, "Federal Subsidy and the Suburban Dream: The First Quarter-Century of Government Intervention in the Housing Market," *Historical Society of Washington, D.C.* 50 (1980): 421–51.

² Division of Research and Statistics, "Pittsburgh, PA: Confidential Survey File" (Home Owners' Loan Corporation, July 20, 1937), RG 195, National Archives, 1.

³ Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States*, (New York: Oxford University Press, 1985); Amy E. Hillier, "Redlining and the Home Owners' Loan Corporation," *Journal of Urban*

argue that the maps were shaped by the ideology of real estate professionals in both the federal government and private industry. The government normalized, legitimized, and endorsed approaches to investment and insurance that were, among many prejudices, segregationist. The Residential Security Maps were constructed by the same ideology as neighborhood appraisal techniques; this ideology, embraced by both public and private officials, led to disinvestment from the urban core.⁴ In Pittsburgh, investment practices buttressed the stark disparities in housing quality that already existed and calcified the stratification of neighborhoods. The persistence of these disparities is measurable in variables over time and reflects a city that is divided, geographically, along historic patterns of inequality. The review of the HOLC's legacy in shaping the modern geography of Pittsburgh illustrates the contribution of historic, uneven investment to modern disparities.

The City Survey Program, the effort within the HOLC that created the maps, represents an attempt to rationalize the dynamic growth and decline occurring in industrialized cities at the time. The conceptual framework motivated the actions of planners, developers, and the government and was largely a reaction to contemporary urban conditions. Urban growth was once believed to follow a 'natural ecology' that supported a ring of constant urban growth on the periphery with the cost of steady decay near the core. This model inspired a cultural perspective of urban conditions among urban policy makers who used common rhetoric to describe the "life cycle" of neighborhoods, the downward filtration of housing through a social hierarchy, and the threat of "infiltrating" lower classes. The ecological model of urban growth informed the perspective of policy makers and real estate actors and, in some ways, created the conditions it envisioned.

History 29, no. 4, (2003), 394-420; Amy E. Hillier, "Who Received Loans? Home Owners' Loan Corporation Lending and Discrimination in Philadelphia in the 1930s," *Journal of Planning History* 2, no. 1 (2003), 3-24.

⁴ Paul E. Stark, "Neighborhood Protection," *National Real Estate Journal* 38, no. 3 (1937), 25.

Subsequent theories built upon the ecological model to match the changing conditions of their time but simultaneously built urban conditions in their likeness. Once urban centers began to see some renewal, theorists considered development to be tied to return of either the wealthy (gentrification) or of capital (the rent gap). Each subsequent explanation of urban conditions was tied to the changes evident in contemporary urban spaces. By the end of the twentieth century, a political economy approach had emerged that regarded development as driven by not just capital in the present but the social history of that space and its historic relationship to capital. These theorists focused on the demographic and cultural constituencies of an area and understood historical policy interventions, such as the Residential Security Maps, to have developed the social context of spaces and the even geographies of development in urban areas.

Conventional research argues that the HOLC produced maps codifying and reinforcing disinvestment from areas of the city, particularly African American neighborhoods, and was a concrete example of the federal government's complicity in racialized housing markets.⁵ Recent research has challenged this presumption by reassessing the HOLC and their Residential Security Maps' role—finding less discriminatory lending patterns than alleged and less influential, barely-circulated maps. Yet, observed patterns of disinvestment still align with the labels and grades of the Residential Security Maps. The HOLC and Federal Home Loan Bank Board (FHLBB) were active participants in a public conversation with real estate officials that standardized and proliferated neighborhood appraisal practices; a number of large risk-mapping projects have been archived and each followed the same mapping conventions suggesting a common geographic aesthetic to mapping risk. I will show that local experts held significant power in constructing the

⁵ Jackson, *Crabgrass Frontier*; Douglas Massey and Nancy Denton, *American Apartheid* (Cambridge: Harvard University Press, 1998).; Kevin Fox Gotham, "Racialization and the State: The Housing Act of 1934 and the Creation of the Federal Housing Administration," *Sociological Perspectives* 43, no. 2 (2000): 291–317.

Residential Security Maps and each map was attuned to the local conditions of that city and codified the attitudes of local appraisers and local conditions; thus, while they are not the instigator of the real estate industry's behavior, they are an apt representation and artifact by which to evaluate the impact of those behaviors and perceptions.

Using the Residential Security Map for Pittsburgh, I developed a Geographic Information System (GIS)-based framework to assess the association between the 1937 Residential Security Map and Pittsburgh's modern social geography. The Residential Security Map was digitized, aligned with a geographic projection, and reconstructed into a shapefile. The referenced map was then intersected with census tracts. First, the map was intersected with the 1940 census tracts to better describe the variation in conditions and demographics between grades. Population weights were used to most effectively associate census counts with the overlapping Residential Security Map. Second, the map was intersected with the Neighborhood Change Database (NCDB) which standardized census tracts from 1970 to 2000. The NCDB helps identify those tracts that were persistently at the fringe of the distribution for a variety of variables. These flagged tracts were counted by their historic security grade and evaluated for independence.

I found that neighborhood characteristics are significantly more likely to occur in accord with their historic redlining status: tracts that were negatively graded retained negative effects while those that were positively graded maintained their privileged status. Immigrants and, particularly, people of color were disproportionately likely to live in areas graded either red or yellow. Both communities were segregated into some areas of the city but African Americans were restricted to a much smaller portion of neighborhoods. Home quality, home ownership, and home value increased as the grade improved; occupancy rates, crowding, and density decreased as the grade improved. The analysis shows a sharp resemblance between the historic grade and the

persistence of modern conditions. Tracts with a persistent and relatively extreme prevalence of people of color or people in poverty were both overwhelmingly more common in red and yellow areas while tracts with the consistently highest average incomes were overwhelmingly located in green and blue areas. Red and yellow areas also experienced greater, more sustained population loss. Tracts with persistent high ownership rates, including for people of color, and high average home value were far more likely to be located in green or blue areas. Red and yellow areas held all the tracts with persistently low occupancy rates. Housing built before 1940 was far more likely to be demolished, constituted a greater portion of the housing stock, and was more likely to be rented in red and yellow areas than green and blue ones. My analysis indicates that past social policies can have historic and consequential geographic effects. Moreover, prejudice and differences in power mean that the persisting effects of uneven investment continue to be experienced by the city's disadvantaged communities.

The association between the Residential Security Map and Pittsburgh's modern geography is not coincidence. The significant association, paired with the FHLBB's endorsement of neighborhood appraisal and their publishing of the methodology for the security maps, suggests that the FHLBB and HOLC influenced the enduring stratification of Pittsburgh's neighborhoods. I argue the federal government had, at least some, complicity in segregation. The association also reflects the capacity of theory, particularly models, to produce the spaces that they describe. Some theories of urban development are insufficient for describing the particular permanence of Pittsburgh's social geography. However, political economy approaches complement the development of neighborhood concepts and the persistence of compounding geographic legacies. The persistence also reflects an ineffectiveness of government interventions, in the succeeding six decades, to alter the geography of disparity that defined Pittsburgh. Amid the neoliberal political

trends that have gripped the United States and a gentrifying back-to-the-city movement, the prospects for a more equal social geography are not optimistic.⁶

In this thesis, I establish and discuss the conceptual approaches to urban development and neighborhood appraisal, ground these concepts in Pittsburgh's segregated geography of the 1930's and assess the impact of these concepts on that geography through time, and finally discuss the implications of my findings for the conceptualization of neighborhood appraisal and urban development. In Chapters 2 and 3, I establish the ability of geographic models, theoretical or practical, to have place making effects on urban space. First, I explore how twentieth century explanations of urban development conceptualized urban conditions and growth, paying particular attention to the capacity of these models to create the conditions they described. Where in Chapter 2 I engage with the larger more theoretical notions of neighborhood change, in Chapter 3 I focus the discussion towards the application of policy and ideology to specific urban spaces. I discuss how the construction of the Residential Security Maps and the conceptualization of neighborhood appraisal developed from the government's engagement with and normalization of prejudiced notions of risk and value. I also argue that the Residential Security Maps are an apt vehicle to explore the real estate industry's behavior at a specific time and place. In Chapters 4, 5, and 6, I ground the conceptualization of real estate practices in Pittsburgh's social geography to assess how real estate shaped that geography through time. To begin, I describe the highly stratified and segregated geography of Pittsburgh during the 1930's and discuss the implications of these patterns for shaping real estate ideology. Next, I describe the development of a GIS-based framework to evaluate the impact of neighborhood appraisal practices on Pittsburgh's uneven geography of

⁶ David S Hyra, "Conceptualizing the New Urban Renewal: Comparing the Past to the Present," *Urban Affairs Review* 48, no. 4 (2012) : 498–527.

development. Then I highlight the findings of this research, particularly, the significant association between persistent neighborhood characteristics and the historic redlining status of the community. In Chapter 7, I discuss the implications of an entrenched social geography for the legacy of the HOLC, the complicity debate, theories of urban development, and government policy. Finally, I summarize some of the key elements of this research and discuss the prospects for easing the geography of disparity that has defined Pittsburgh for six decades in Chapter 8.

The conceptualization of urban growth, intertwined with prejudiced ideologies about race and value, motivated the policy approaches and actions of both the government and private industry and thus produced those conceptions on actual urban geographies. The federal government—through the Federal Home Loan Bank Board and the Federal Housing Administration—normalized and professionalized neighborhood appraisal techniques that operationalized the conceptions of urban growth as government policy and thus rationalized uneven investment in American cities. Pittsburgh’s historic patterns of uneven investment contribute to modern disparities in urban space; the contemporary social geography aligns significantly with the stratified geography captured in the 1937 Residential Security Map of the city.

2.0 TWENTIETH CENTURY EXPLANATIONS OF URBAN GROWTH

The twentieth century witnessed rapid, evolving development, and decline in central cities as mass migrations, technological development, and economic changes reorganized urban space. Fundamental to the discussion of neighborhood disparities, investment, and segregation are evolving notions of what drives neighborhood change and the nature of communities that have informed both government policy and the actions of private industry; ideology has shaped approaches to urban problems over the course of the twentieth century. Urban theorists developed conceptual models that described the forces that drove change. From these conceptual models, institutions developed policy models that transformed space by imposing the conceptual models onto the city. This created a propensity for the models to construct, via policy, the very realities that they described.

In the 1920's and 1930's, many American cities, including Pittsburgh, were mature industrial centers bursting at the seams from industrial expansion and massive migration. In this period, Eastern and Southern Europeans and African Americans poured into northern industrial centers in search of economic opportunity. Many of these new migrants settled in ethnic or racial communities that were characterized by poor conditions and deteriorating housing stock near heavy manufacturing and other industrial uses that provided convenient employment. The industrial core was typified by heavy industry, commercial centers, or deteriorating housing stock. At the periphery, an abundance of undeveloped land and new transportation technology provided an escape from grim urban conditions for those who could afford it. These were the urban conditions Ernest Burgess and Robert E. Park were attempting to describe during their initial time at the University of Chicago's School of Sociology. They developed one of the earliest models of

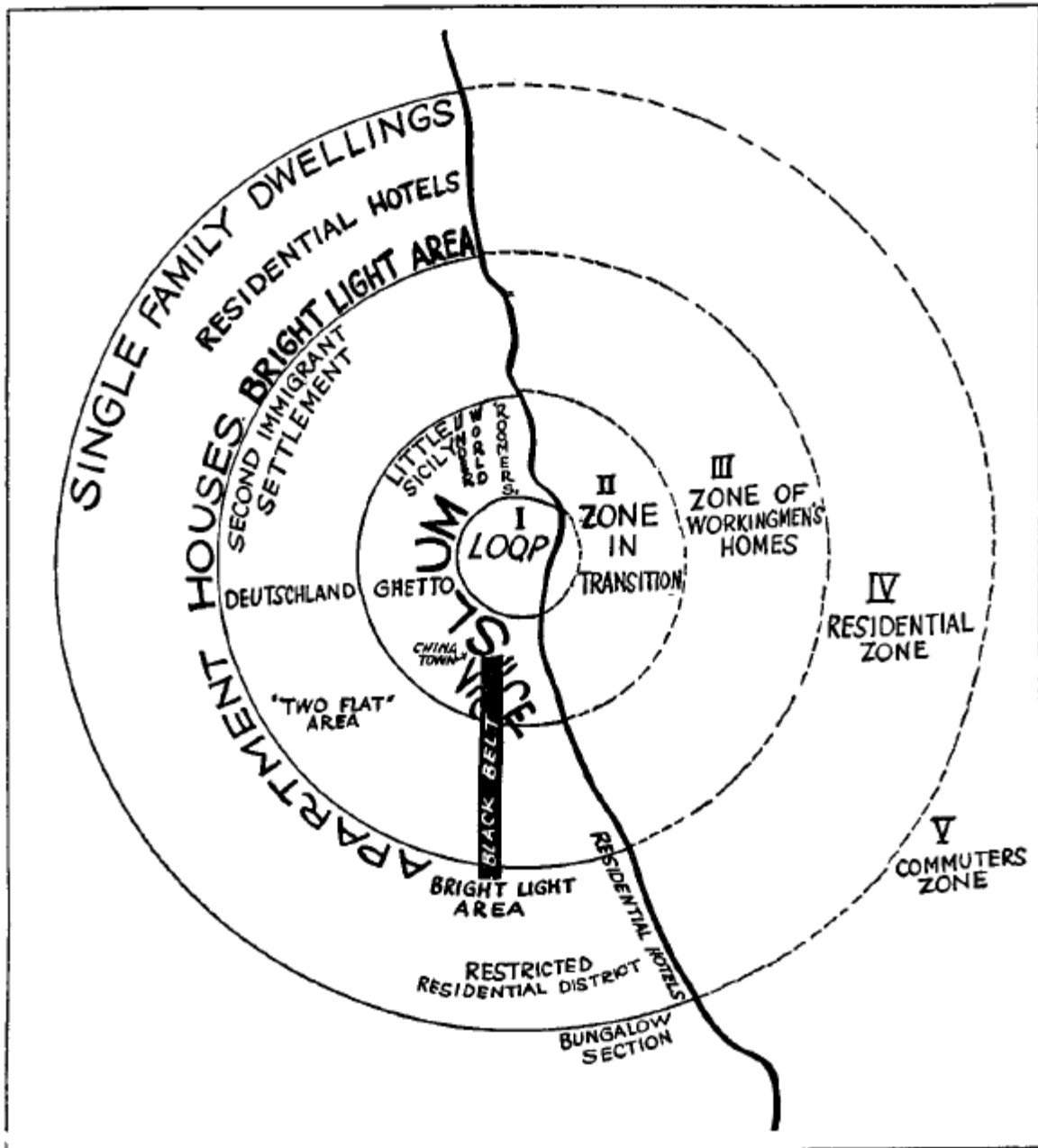


Figure 1 Burgess's Ecological Model of Development, *The City* (1925)

neighborhood transition that understood the city as a series of concentric zones (see Figure 1). Each zone represented a successive step in urban expansion. At the center of the city was a central business district which was perpetually expanding and consuming dilapidated housing from the transition zone and redeveloping the land for commercial and manufacturing uses. Communities were believed to radiate outward from the menace of industry and with increasing distance came

increasing community character. At the outer edge of the urban sphere were “high-class apartments” and “exclusive ‘restricted’ districts of single family dwellings.”⁷ The inner rings were home to Immigrant and African-American communities. New residential construction took place on the periphery and, as communities expanded beyond these units, older units would be filtered down through the various social classes. Neighborhoods followed a life cycle that began with new construction and occupation by upper economic classes and then deteriorated over time in both physical quality and perceived neighborhood character. There were some elements of morality attached to the concentric rings. The inner transition zone is typified by “slums,” the “underworld,” and “vice.” At the periphery, “bright light” areas seem to cap the expansion of immigrant communities.⁸ It is implied that one’s distance from the urban core is a reflection of moral character. While their model was certainly limited, it was an early attempt to make sense of a rapidly changing urban environment.

The ecological model had two fundamental perspectives on urban space: first, housing was a commodity that was both readily constructed and naturally declined over time. Second, housing filtered down a social hierarchy—organized by race, ethnicity, and class. The quality of the housing and the quality of the community were considered to mirror one another. The rhetoric of the ecological model is present throughout New Deal housing programs. The FHLBB, the federal Housing Administration (FHA), and the real estate industry consistently discuss “life cycles,” infiltration, blight, and invasion in their work.

This perspective continued to inform urban policy in the 1940’s and 1950’s. The emergence of a middle class from massive wealth generation after World War II combined with

⁷ Ernest W. Burgess, “The Growth of the City,” in *The City*, ed. Robert E. Park and Ernest W. Burgess (Chicago: University of Chicago Press, 1925), 48-62.

⁸ Burgess, “The Growth of the City,” 55.

the government's subsidization of suburbanization allowed many—but not all—communities to escape the deteriorating urban core. Government money was also spent on large urban renewal projects that razed deteriorating communities, replacing some of them with urban highways to ferry growing numbers of suburban commuters into the Central Business District and others with public housing developments. This dynamic, stripped of some nuance, replicated an ideology that relegated poorer communities to the declining urban core while expecting those who could afford to move to the periphery, to do so. In Pittsburgh, sprawl stretched outwards as the construction of I-79, I-279, I-76, and I-376 allowed suburban communities to easily access the city. Large urban renewal projects in the Hill District, Allegheny Center, and East Liberty displaced thousands of residents to make way for malls, parks, and arenas. In Pittsburgh, like almost every American city, government investment, motivated by a particular ideology about development, reshaped portions of the physical landscape.

By the 1960's, there was some renewed interest in urban communities. Great Society programs prioritized some urban investment in transportation and housing and elevated Housing and Urban Development to a cabinet level position.⁹ While American cities continued to suburbanize, some cities internationally began to see a resurgence in urban communities. London, for instance, experienced renewed market interest in a few neighborhoods. The phrase 'gentrification' was coined by Ruth Glass in 1964 to explain the resurgence of home values in certain London neighborhoods. Glass observed an "invasion" of middle and upper-middle class residents into formerly poor neighborhoods forcing previous residents to leave because of the inflation in home costs; when the gentry came, the prices rose. Such a phenomenon did not exist at the time Burgess developed the ecology model. Glass was reacting and describing a novel set

⁹ *John Gardner: Uncommon American* (Public Broadcasting Service, 2000).

of circumstances and in doing so added a new mechanism to the ecology model. The gentrification process which she describes recycles some of the more central urban communities back to a higher socio-economic class. Along with the demographic change came a transition in housing structure as units were subdivided to meet the growing demand: “the current social status and value of such dwellings are frequently in inverse relation to their size, and in any case enormously inflated by comparison” to the previous prices, Glass observed.¹⁰ She explained the transition of neighborhoods as a consequence of poor urban planning policies in the *Greater London Plan of 1944* that failed to account for the growth in population. According to Glass, the growth of population led to natural increases in housing demand—people were driving the selective renaissance of certain neighborhoods. Glass’s attention to individual behaviors en masse, resembled other contemporary, American approaches to systemic urban problems. For instance, the Civil Rights Act of 1968 banned discrimination in housing because of race, color, religion, or national origin. Government policy assumed that by preventing individual actions en masse, systemic problems would be alleviated.

By the 1970’s, deindustrialization had begun to erode the heavy manufacturing, industrial base that had supported many urban economies, including Pittsburgh’s. The American economy was transitioning towards a service economy with strong growth in finance and insurance. Approaches to urban spaces became driven by neoliberal notions of shrinking government services and regulation and allowing the market to determine development instead. David Ley argued in 1980 that growth in the central city was driven first by the transformation of the economy away from blue-collar work and towards white-collar work. Secondly, an increased “politicization” of

¹⁰ Ruth Glass, “Aspects of Change” in *The Gentrification Debates: A Reader*, ed. Japonica Brown-Saracino (New York: Routledge, 2010), 22.

interest groups was “challenging the formerly firm hold of the business lobby on political decision making” advancing “public interest” in opposition to “economic efficiency.”¹¹ Finally, a developing aesthetic philosophy among white-collar workers was challenging nineteenth century urban planning values of “capital and labor.”¹² These three transformations—an economic shift that inspired political and cultural shifts—are understood to have driven the urban resurgence in central business districts in post-industrial cities and particularly, for Ley, in Vancouver. Ley’s interpretation of urban reinvestment parallels Ruth Glass’s argument about gentrification: people are responsible for economic change in urban neighborhoods and their decisions, en masse, can uplift (or undermine) entire physical spaces.

By placing the onus of gentrification on the cumulative decisions of consumers, neighborhood change theorists neglected many of the agents that hold substantial power in development including governments and real estate financiers. In 1979, Neil Smith argued that capital investment spurred the movement of people. There was a cycle of investment where initial construction in urban spaces and the price included both the value of the structure itself but also the improvement in value of the land itself (the ground rent). Maintaining the value of a property is dependent on regular and substantial investment, in the form of regular minor and major repairs, but also on community-level patterns of investment. An exodus of capital from the community will occur unless stability is maintained across the neighborhood through regular investments. Yet, because investments have already raised the minimum value of ground rents, there is little incentive to maintain regular investments once minimum ground rents are relatively lower in other areas (and thus the return on investment is higher). There is a constant tension between old

¹¹ David Ley, "Liberal Ideology and the Postindustrial City," *Annals of the Association of American Geographers* 70, no. 2 (1980): 241.

¹² Ley, "Liberal Ideology and the Postindustrial City," 243.

investments that support the creation of new investments and the relative success of the newer investment that outcompetes and eventually destroys the original investment. Urban neighborhoods declined, according to this model, because of the higher returns for capital investment in suburban communities—not because of the tastes of consumers.¹³ Gentrification, similarly, occurs because of a rent gap that develops once the potential value of deteriorated communities exceeds the actual ground rents “capitalized under the present land use.”¹⁴ The conditions necessary for this process to work existed in the latter decades of the twentieth century. In some ways, the ecology model that Burgess developed explained a similar pattern. What existed in Burgess’s time—a cheaper and readily available source of green fields at the periphery—had been largely exhausted by the time Smith observed a shift in capital towards the urban core.

Smith’s article on neighborhood development incorporates power and the underlying economics that drive investment and preempt or even construct the cumulative decisions of people; yet, his work doesn’t effectively describe the influences, beyond pure financial calculations, that prioritize certain communities over others—why one undercapitalized area develops relative to another. Smith’s Marxist perspective on urban development paralleled, ironically, the neoliberal political movement as ideology, critical or political, deferred to the movement of capital as the ultimate force in development. Neoliberals celebrated the movement of capital and the reduction of government intervention that would provide less friction on the flow of capital. Urban development policy increasingly looked to capital to reorganize urban geography and encouraged

¹³ Neil Smith, "Toward a Theory of Gentrification: a Back to the City Movement by Capital, not People," *Journal of the American Planning Association* 45, no. 4 (1979): 542-544.

¹⁴ Smith, "Toward a Theory of Gentrification," 546.

investment by lowering the rent gap of redevelopment projects through tax incentives such as New Markets Tax Credits or Tax Increment Financing.¹⁵

However, uneven development persisted and it became clear that neighborhoods do not develop purely because of rent gaps; they develop or decline as various political forces, historical contexts, constituencies, and wider social inequalities interact with—and direct the flow of—capital. In 1987, David Bartelt et al, built upon Smith’s attention to capital and advanced a political economy perspective by blending three approaches to urban structure and development in their article, “Islands in the Stream.” The first leg of this perspective understands the pattern of development to reflect the investment decisions of political and economic classes. Political units, ranging from a city block to an entire metropolitan area, are in constant competition over a limited supply of financial growth such that geographic maps should be interpreted as not only “legal, political, or topographical features, but as a mosaic of competing land interests.”¹⁶ The second approach focusses on the inequality of wages between economic classes and racial groups. When groups have distinct financial power, they also have distinct consumption patterns; segregation exacerbates these divisions and “the city becomes a social arena within which the conflicts over the consumption of land are played out.”¹⁷ Finally, the third approach evaluates how the organization of the economy produces uneven development across space. Because investment is a sunk cost until it generates a return and cannot increase that return without further investment, the

¹⁵ Richard F. Dye and David F. Merriman, "The Effects of Tax Increment Financing on Economic Development," *Journal of Urban Economics* 47, no. 2 (2000): 306-328; Julia Sass Rubin, and Gregory Stankiewicz, "The New Markets Tax Credit Program: A Midcourse Assessment," *Community Development Investment Review* 1, no. 1 (2005): 1-11.

¹⁶ Harvey Molotch, "The City as a Growth Machine: Toward a Political Economy of Place," *American Journal of Sociology* (1976): 311.

¹⁷ David W. Bartelt et al., "Islands in the Stream: Neighborhoods and the Political Economy of the City" in *Neighborhood and Community Environments*, ed. Irwin Altman and Abraham Wandersman (New York: Plenum Press, 1987), 178.

funds will be directed towards the development of other locations that are not already developed (essential where the rent gap is lower) and thus the original investment's capacity is constrained. These new locations, built to maximize returns, then outcompete the original investments which, in turn, decline precipitously.¹⁸ This approach mirrors the rent-gap process described by Smith and describes the tension between urban neighborhoods and the suburbs. A political economy perspective of development emphasizes historical context, intercommunity conflict, and the organization of capital to explain development.

The spatial organization of housing, like the spatial organization of the economy, reflects the historic contexts, political conflicts, community competition and power, and previous investment. Housing's "physical permanence provides markers of the eras past and, when combined with the social, economic, and political history of a locale, provides a unique point of origin for the historical examination of communities" according to David Bartelt's 1993 piece on "Housing the 'Underclass.'"¹⁹ Modern housing patterns reflect the political economy of a neighborhood, the larger urban area, and the historic position of that community. Housing serves as both an initial investment and a source of repeated investments as it moves along a chain of owners. Mortgages, since the New Deal, are long term investments and the wisdom of the investment depends either on the ability of debtors to repay or, more often, on the ability of the house to sell and repay the remainder of the debt. If a home were to significantly depreciate in value, the profit from interest and perhaps the initial investment itself would be lost. Theoretically, if banks were to only sell mortgages for homes that would be assured to appreciate and never sell

¹⁸ David M. Harvey, "Government Policies, Financial Institutions, and Neighborhood Change in United States Cities" in *Captive Cities*, ed. M. Harloe (New York: Wiley, 1977), 124.

¹⁹ David W. Bartelt, "Housing the Underclass" in *The Underclass Debate: Views from History*, ed. Michael B. Katz (Princeton: Princeton University Press, 1993), 119.

mortgages for homes that would depreciate than capital would grow without disruption. Bartelt argues that uneven development, wrought by historic government programs, leaves legacies that continue to shape urban space; he highlights the Residential Security Maps as an attempt by regulators to protect investment by navigating lenders away from depreciating communities and towards growing ones with profound implications for communities' futures.

Ideology, explanations for urban change, and government policy have an interwoven, and generative relationship that shape urban conditions. Often, ideology and models of urban growth produce the urban conditions which they had described because they conceptualize and motivate the actions of policy makers and other influential—but nongovernmental—urban actors. Economic and political geography have the capacity to produce the reality that they conceptualize: geographic claims and models are performative.²⁰ The ecological model had a large following and conceptual imprint among urban actors in the 1930's from government bureaucrats to mortgage lenders. The Residential Security Maps, a series of localized policy models influenced by the ecological model, were an application of the conceptualization of mortgage risk by both the federal government and private industry that has been legitimized, normalized, and proliferated neighborhood appraisal techniques; this connection is discussed in Chapter 3. In Pittsburgh, neighborhood appraisal techniques, fraught with racial and class prejudice, were formed upon a largely divided social geography with wide disparities in housing quality in the 1930's. This geography is described in Chapter 4. My analysis shows that Pittsburgh's social geography is strongly associated with the Residential Security Map even decades after the map was constructed. While the physical map did not define or enforce the geography, the conceptual foundation of the

²⁰ Reuben Rose-Redwood and Michael R. Glass, "Introduction," in *Performativity, Politics, and the Production of Social Space* (New York: Routledge, 2014), 19-23.

map did: in Pittsburgh, neighborhood appraisal produced the conditions that it described; this production of space is shown in Chapter 6 and discussed further in Chapter 7.

3.0 THE HOME OWNERS' LOAN CORPORATION

Theorists' attempts to explain urban development influenced the efforts of policy makers to affect change in urban communities. Policy interventions are informed by the prevailing ideologies of experts and theorists. The Residential Security maps and neighborhood appraisal techniques that developed in the 1930's were influenced by Burgess's descriptions of urban growth; these mechanisms operationalized the ecology model into a rationale intended to guide investment practices. Those practices also had direct impacts on urban communities. Decades later, Bartelt and other theorists argued that contemporary patterns of investment are driven by the historic and social construction of space and pointed to programs, like the Residential Security Maps, that guided the investment of capital and led to legacies and disparities. The theoretical explanations of development add critical context to the subsequent history of the HOLC, the Residential Security Maps and their impact on urban space. Upon this ideological base, private and government real estate experts developed a conceptualization of neighborhood appraisal that was heavily prejudiced against minority and poor communities.

This history of the HOLC was developed from numerous published research articles and relied heavily on a range of primary government documents, including those housed at the National Archives in College Park, MD, government published journals such as the *Insured Mortgage Portfolio* and the *Federal Home Loan Bank Review*, and various security maps developed by both governmental and private institutions.

3.1 THE HOLC AS A LENDING INSTITUTION

The Home Owners' Loan Corporation was created in June 1933, by the Home Owners' Loan Act, to stabilize the freefall of the American housing market during the Great Depression. HOLC was designed to provide relief to both home owners and their creditors.²¹ Created under the supervision of the Federal Housing Loan Bank Board, The HOLC's explicit purpose was to exchange government bonds to creditors, primarily savings and loans, for delinquent mortgages giving the lenders the liquid capital they so desperately needed. The creditor and the homeowner would then enter into a new low-interest 15 year amortized mortgage allowing the homeowner a secure and manageable route out of foreclosure and towards full ownership.²² To qualify for assistance from the HOLC, a home had to already be in foreclosure and the loan could not exceed \$14,000 (in 1933 dollars) or exceed 80% of the appraised value of the house.²³ Once homeowners received the loan, funds were restricted from being put towards ownership-related expenses such as taxes, incidental costs and, significantly, maintenance.²⁴ Some 40% of those eligible for HOLC aid applied and between 1933 and 1935 the HOLC made more than a million loans and refinanced some 20% of non-farmer homes in the country.²⁵

It is important to note that while the HOLC's function stabilized the financial side of the housing market by providing lenders liquid capital and protecting the investment of homeowners by preventing foreclosure, the HOLC did not serve the infrastructure side of the housing market

²¹ Jackson, *Crabgrass Frontier*, 196.

²² Amy E. Hillier, "Residential Security Maps and Neighborhood Appraisals," *Social Science History* 29, no. 02 (2005): 207-9.

²³ C. Lowell Harriss, *History and Policies of the Home Owners Loan Corporation* (Cambridge, MA: NBER, 1951), 1.

²⁴ James Greer, "The Home Owners' Loan Corporation and the Development of the Residential Security Maps," *Journal of Urban History* 39, no. 2 (2013): 279.

²⁵ Harriss, *History and Policies of the Home Owners Loan Corporation*, 25.

and no relief was available from the HOLC towards maintenance, renovation or construction for homeowners already struggling to pay mortgage costs amid high unemployment and a Depression—while financial markets were insured, the physical conditions of homes and communities were not.²⁶ The entire apparatus that the HOLC was a member of—the FHLBB—was created to maintain the financial markets surrounding housing not maintain housing or neighborhoods themselves.²⁷

Once HOLC's two year lending period expired in 1935, the agency transitioned into the role of administering a tremendous portfolio of mortgages, helping borrowers towards solvency, and acquiring nearly 200,000 foreclosed properties.²⁸ In 1935, the FHLBB created, within HOLC, a Mortgagee Rehabilitation Unit tasked with surveying local real estate conditions, with determining the condition of the local mortgage market, and with developing detailed studies of cities to both inform the FHLBB's work and develop solutions for dysfunctional lending practices.²⁹ In fulfilling their tasks, the Mortgagee Rehabilitation Unit surveyed lenders, conditions, and markets in over 200 cities across the country—a process named the City Survey Program. For each city, the program produced a public summary file and a confidential survey file which included a Residential Security Map.

²⁶ Greer, "The Home Owners Loan Corporation," 279.

²⁷ Hillier, "Residential Security Maps," 211.

²⁸ Hariss, *History and Policies*, 1-6.

²⁹ "Minutes of the HOLC and FHLBB," August 27, 1935, RG 195, Entry 14, National Archives.

3.2 THE RESIDENTIAL SECURITY MAPS

The HOLC's administrators instructed the appraisers in each city to collect rigorous and systematic data for the maps. The instructions for data collection were included on the back side of Area Description Sheets sent to each city. These sheets required HOLC appraisers to work in conjunction with local lenders and real estate agents to collect data for individual neighborhoods within each city. Appraisers paid particular attention to the quality and condition of the homes, the demographic situation of the community such as income and occupations, "the areas ability to attract and maintain mortgage investment flows," any aspects of the neighborhood that would improve or harm the "long-term value of the homes," "the race and ethnicity" of the community, and "if zoning provisions and/or racially restrictive covenants to "protect" the character of the community were in place."³⁰ Based upon the data collected, maps would be drawn to outline the perceived quality of the housing submarket and "graphically represent the trend in desirability in neighborhoods."³¹ Each submarket would receive a color coded grade based upon its perceived value and risk ranging from green ("best") to blue ("very good") to yellow ("definitely declining") to red ("hazardous"). For example, the 1937 map of Pittsburgh is included as Figure 2.³²

HOLC described the qualitative differences between the grades in the confidential survey file. First grade areas represented "hot spots" and were developing, homogenous, well-planned sections of the city and are "synonymous with areas where good mortgage lenders with the available funds are willing to make maximum loans."³³ Second grade areas were already fully

³⁰ Greer, "The Home Owners Loan Corporation," 281.

³¹ "Pittsburgh, PA Confidential Survey File," 1.

³² Division of Research and Statistics, "Residential Security Map" (Pittsburgh, PA: Home Owners' Loan Corporation, July 20, 1937), Urban Oasis.

³³ "Pittsburgh, PA Confidential Survey File," 1.

developed but otherwise similar to first grade areas. According to the HOLC's survey file for Pittsburgh (which was written in 1937), "they are like a 1935 automobile—still good, but not what the people are buying today who can afford a new one."³⁴ Third grade areas are those that have reached a "transition" period: they are characterized by age or obsolescence, have expiring restrictive covenants, "infiltration of a lower grade population," insufficient utilities, poor maintenance of homes, or lack homogeneity.³⁵ Fourth grade areas were communities already experiencing what was threatening to occur in third grade areas and were "characterized by detrimental influences in a pronounced degree" particularly an "undesirable population."³⁶

³⁴ "Pittsburgh, PA Confidential Survey File," 1.

³⁵ "Pittsburgh, PA Confidential Survey File," 2.

³⁶ "Pittsburgh, PA Confidential Survey File," 2.

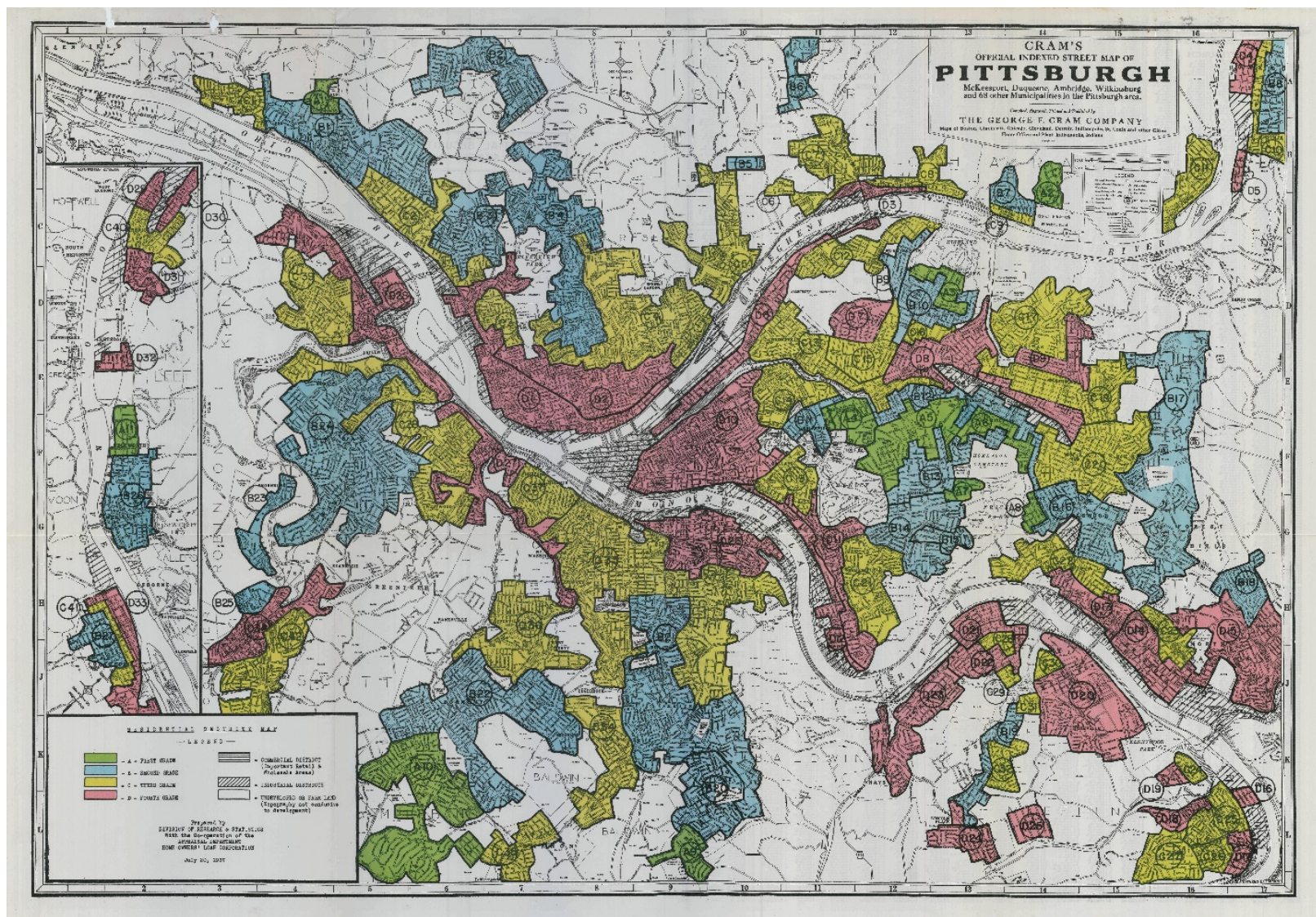


Figure 2 Residential Security Map for Pittsburgh, Pennsylvania (1937)

Appraisers for the security maps also graded the housing markets according to strict criteria and preference was given to those communities that contained homes matching the FHA's guidelines: homes should be recently constructed, well maintained, high priced, single-family homes with modern amenities such as plumbing and heating. But "with housing construction of these newest, most amenity rich, and high value homes in scarce supply since the peak of construction in 1926, few housing submarkets in the HOLC survey received high ratings."³⁷ Another criteria for rating the quality of a neighborhood was the presence of zoning or racially restrictive covenants. Absence of restrictive zoning was "considered a distinct negative feature for a housing submarket" and such protections were "prerequisites for high HOLC risk grades ("best" or "good")."³⁸ These general observations provide some insight into the preferences present in the Residential Security Maps: while the FHLBB makes clear, in the confidential file, that good loans could be made in both lower grades, there was a perceived value about the character of a neighborhood reflected in the maps' grading scale clearly biased towards FHA style housing and towards all-white communities.

Several researchers have attempted to recreate a grading rubric to understand how different factors were weighted against one another. Using available data contemporaneous to the City Survey Program and statistical modeling, researchers are able to estimate the guiding patterns behind the grade.

Amy Hillier attempted to recreate the methodology for the 1935, 1936 and 1937 Residential Security Maps of Philadelphia in her 2005 article, "Residential Security Maps and Neighborhood Appraisals in Philadelphia." Hillier found that for the final 1937 map, poorer

³⁷ Greer, "The Home Owners Loan Corporation," 281.

³⁸ Greer, "The Home Owners Loan Corporation," 282.

housing conditions were good predictors of worse risk grades—particularly value, age, and overcrowding. All of these housing conditions had greater influence than race or immigrant presence although both of those were significant indicators of lower risk grades as well. The influence of race indicates that racial prejudices, rampant throughout the real estate industry, were active in the HOLC as well and “constituted a federal endorsement of racially based appraisal standards.”³⁹

The Residential Security Maps for Philadelphia and Pittsburgh were analyzed by Kristen Crossney and David Bartelt in their 2005 article “Residential Security, Risk, and Race.” Comparing regressions for each of the maps revealed clear differences in factors determining risk between the cities, reflecting the local nuances embodied in each map. In both cities housing values and owner occupancy affected the grade significantly and the percentage of African Americans and immigrant whites were also moderately significant. In Philadelphia, the age of housing was a very significant factor but insignificant in Pittsburgh; the grades in Pittsburgh were affected by the number of units in a house while in Philadelphia that was not a factor.⁴⁰ This analysis confirms the pattern established in Hillier’s paper and reveals local influences changed the grading rubric from city to city suggesting each map is a localized portrait of the real estate environment in an individual city.

James Greer examined the correlation between risk grade and neighborhood characteristics outlined in the Area Description Sheets for twenty six cities in a 2013 paper, “The Home Owners’ Loan Corporation and the Residential Security Maps.” Greer found strong positive correlations between the risk grade and both the qualitative assessment of mortgage availability and the

³⁹ Hillier, “Residential Security Maps,” 227.

⁴⁰ Kristen Crossney and David W. Bartelt, “Residential Security, Risk and Race: The Home Owner’s Loan Corporation and Mortgage Access in Two Cities,” *Urban Geography* 26, no. 8 (2005): 724.

qualitative assessment of housing quality. Greer also found more moderate but still significant negative correlation between the risk grade and the presence of any African Americans or foreign born individuals. In a closer examination of Cleveland and St. Louis, Greer found that the presence of even a single African American family meant the neighborhood was graded either “definitely declining” or “hazardous” and in Chicago every single non-white individual lived in an area zoned “hazardous.”⁴¹ It is worth noting that many all-white neighborhoods received low grades as well; while redlined communities were not totally communities of color, communities of color were often totally redlined.

The HOLC’s appraisers considered the presence of racial or ethnic minorities as a significant threat to investment risk. Each of the three assessments of the maps confirmed the influence of race and ethnicity in determining the grade. To some extent the maps were as much a grade of the people—from the perspective of the HOLC—as they were a grade of market conditions. Given the racial bias pervasive in real estate industry, it is likely that market activity itself was a grade of the people in a community. Real estate officials throughout the industry were both vocal in their suspicion of racial and ethnic minorities and active in efforts to restrict them from certain communities; it is likely that not only was the HOLC incorporating private industry standards but employed many real estate experts who had similar mindset.⁴² Each of the three articles reveal some variance between maps for different cities and even for different years. The extent to which each map is a localized portrait of lender’s beliefs and practices, in that space, at that time, makes the maps a reflection of risk assessment techniques and the racialization of housing and lending policies.

⁴¹ Greer, “The Home Owners Loan Corporation,” 286.

⁴² David M. P. Freund, *Colored Property*, (Chicago: University of Chicago Press, 2007), 66-81.

3.3 TRADITIONAL NARRATIVE: HOLC AS SEGREGATOR

The Residential Security Maps and the HOLC have, for several decades, been identified as an influential architect of mortgage discrimination, segregation and urban housing decay. One of the earlier and oft cited criticisms of the Residential Security Maps was laid out in Kenneth Jackson's *Crabgrass Frontier* (1985) when he said the "Home Owners' Loan Corporation initiated the practice of 'red lining.'"⁴³ Jackson's larger argument asserted that the federal government was complicit in racial discrimination and the departure of whites from cities for the suburbs. To Jackson, the Residential Security Maps and the area descriptions written by HOLC appraisers were a dramatic and glaring artifact of not only the federal government's racial prejudices but its active participation in a public-private partnership that denied urban communities, particularly communities of color, access to financial services. For instance, Jackson cites a FHLBB survey of banks and saving-and-loan associations where the responses from Newark, NJ seemingly refer to the Residential Security Maps. When asked what the most desirable lending areas are, responses ranged from "A and B" to "Blue" to "FHA Only" and when asked where loans will not be made, responses ranged from "Red and most yellow" to "C and D." The responses led Jackson to conclude "obviously, private banking institutions were privy to and influenced by the government's Residential Security Maps."⁴⁴ Jackson also asserts that the HOLC influenced the FHA's appraisal methods and their insurance habits because many of the few areas given high ratings by the HOLC were on cities' periphery if not in the suburbs and FHA insurance was overwhelmingly concentrated away from urban centers.

⁴³ Jackson, *Crabgrass Frontier*, 197.

⁴⁴ Jackson, *Crabgrass Frontier*, 203.

Jackson's argument that the Residential Security Maps represent a government institutionalization of redlining and discrimination have been repeatedly cited by other urban researchers. In *American Apartheid* (1993), Douglas Massey and Nancy Denton built upon Jackson's argument and place the HOLC and the Residential Security Maps within the broader context of an extreme degree of racial segregation sanctioned by the government through housing policy. They write, the government "bureaucratized [racial standards] and applied them on an exceptional scale. It lent the power, prestige and support of the federal government to the systematic practice of racial discrimination in housing."⁴⁵ None of the authors attribute the federal government with originally racializing housing in the United States but rather assert that the government embraced the prejudices and practices of industry. They contend the maps reflect the government's sanction of those prejudices and practices. They further assert that the government, via the maps, influenced and spread redlining to the real estate industry.

In the 2000 article, "Racialization and the State," Kevin Fox Gotham further built upon Kenneth Jackson's original argument about the HOLC and redlining. The article agrees with Massey and Denton and asserts that the "effect of the mass application of the HOLC's appraisal rating system was to systematically devalue racially mixed and predominantly minority neighborhoods, thereby precluding private investment." Gotham argues that the FHA racialized housing policy but does point to another influence of the HOLC on the FHA:

"built-in clientele of the FHLB and HOLC supplied the FHA with a trained and competent staff of state managers and officials from the real estate and lending industries to guide policy making, establish appraisal guidelines, and set national standards for lending and mortgage insurance."⁴⁶

⁴⁵ Massey and Denton, *American Apartheid*, 52.

⁴⁶ Gotham, "Racialization and the State," 306.

Gotham focusses on the FHA's policies as agents of racializing housing markets but cites the HOLC as the FHA's institutional and ideological precedent. These authors advanced the traditional narrative that the federal government was complicit in both segregation and the creation of the suburbs. The narrative had a number of examples of government complicity but the HOLC maps were a visually-striking example of systematic government prejudice. Much of the narrative surrounding the HOLC originated in Kenneth Jackson's *Crabgrass Frontier*, which made reference to the maps but did not establish definitive proof that the alleged conspiracy took place.

3.4 CHALLENGES TO THE TRADITIONAL ARGUMENT

Recent research has challenged some of the fundamental tenets of the traditional narrative alleging the federal government's complicity in reinforcing segregation, particularly the role and influence of the HOLC, the traditional narrative's cornerstone. The first general questioning of the federal government's complicity overall, "Federal Policy and Postwar Urban Decline: A Case of Government Complicity?," was written by Robert Beauregard in 2001. Beauregard cites Jackson's *Crabgrass Frontier* as the source for this traditional narrative. His criticism hinges on four main points: first, that the population growth in suburbs is not matched by decline in the cities; second, the timeline of government policies does not align with the presumed consequences; third, the narrative doesn't account for broader geographic migration to the southwest; and fourth, it overly emphasizes the influence of the federal government. Beauregard did not disprove the traditional narrative so much as he challenged its proponents to respond to some fundamental assumptions in the narrative.

Inspired by the generalized challenge to the traditional narrative, later research has critically reexamined the HOLC's role. Particularly influential are Amy Hillier's four articles published between 2003 and 2005. In one of her 2003 articles, "Redlining and the Home Owners' Loan Corporation," Hillier rebuts the assertion that the HOLC initiated or spread redlining by reexamining the assumption that the maps were accessible or even distributed to lending institutions. Her review of FHLBB records found no support for this assumption and found that the maps were kept confidential and were not generally distributed until Kenneth Jackson unearthed them in 1980. She noted that researchers have not discovered these maps anywhere but the archives, yet, if the maps had been widely distributed among lenders, than HOLC's maps should have been found at various Savings and Loans' or Appraisers' offices.⁴⁷

In another article published in 2003, "Who Received Loans? Home Owners' Loan Corporation Lending and Discrimination in Philadelphia in the 1930's," Hillier examines HOLC's lending practices and found that the HOLC did not discriminate by whom or where it lent. Hillier focused on lending in Philadelphia and found HOLC lent heavily in areas it would later consider 'Hazardous' and cites authors who found similar patterns in Miami, Chicago, Memphis, and Newark.⁴⁸ The HOLC also assisted Jewish, foreign-born, and Black Philadelphians proportionately to their presence in the city.⁴⁹ Also salient is her critique of the timeline required for the HOLC as segregator narrative: the HOLC had stopped lending by the time it began its

⁴⁷ Hillier, "Redlining and the Home Owners' Loan Corporation," 399.

⁴⁸ Amy E. Hillier, "Who Received Loans?" 15.; Raymond A. Mohl, "Trouble in Paradise: Race and Housing in Miami during the New Deal Era," *Prologue* 19, (1987): 7-21. ; Lizabeth Cohen, *Making a New Deal: Industrial Workers in Chicago, 1919-1939*, (Cambridge: Cambridge University Press, 1990). ; John T. Metzger, "Social Capitalism in American Cities: Financial Institutions and Community Development" (Doctoral, Columbia University, 1999). ; Jackson, *Crabgrass Frontier*.

⁴⁹ Hillier, "Who Received Loans?" 13.

mapping program so it would have been impossible for HOLC loan agents to be influenced by the Residential Security Maps.⁵⁰

Hillier established practical deficiencies in the traditional narrative. Crossney and Bartelt built on Hillier's work in their 2005 article, "The Legacy of the Home Owners' Loan Corporation." They examined the relationship between the prevalence of mortgages reported in the 1940 census and both HOLC grade and a number of census tract characteristics in Philadelphia and Pittsburgh. Their regression model found dissimilar patterns between the two cities and between different types of lenders and a "complex interrelationship between HOLC appraisal grades, differential access to mortgages, the criteria used by different types of lenders, and the ethnic and minority composition of neighborhoods."⁵¹ The article complicates the traditional narrative's assumption that HOLC's judgements were directly mirrored by private institutions behavior.

Much of the traditional narrative's treatment of the Residential Security Maps, and the way the maps have been understood is insufficient, given Hillier's challenges to the timeline and mechanisms of HOLC's influence. Hillier's research established that the physical Residential Security Maps were not the direct cause of segregation nor were they a reference that inspired the disinvestment from urban, minority communities. Crossney and Bartelt's article added more complexity to the traditional discussion of HOLC and the lending industry. Considering the critiques that have been made of the traditional narrative, it is necessary to revisit the capacity of HOLC to have influenced the behavior of lenders and the significance of the Residential Security Maps.

⁵⁰ Hillier, "Redlining and the HOLC," 397.

⁵¹ Kristen B. Crossney and David W. Bartelt, "Legacy of the Home Owners' Loan Corporation," *Housing Policy Debate* 16, no. 3 and 4 (2005): 567.

Despite the criticism of the traditional narrative, the Residential Security Maps are still an excellent source of information about real estate practices and housing markets in specific cities at the time they were drawn. I argue that the Residential Security Maps are an appropriate artifact by which to assess the real estate practices in a given city. First, the Residential Security Maps were constructed amid a public conversation between the government and private industry about how to appraise neighborhood risk and the FHLBB published the methodology for developing the maps themselves. Second, the Residential Security Maps are similar to other archived projects in style, grading content, and mapping conventions suggesting that mapping programs did occur across the country; common stylistic criteria about how develop a map existed in the zeitgeist. Third, the HOLC was heavily influenced by local practices and the maps thus were a localized reflection of real estate appraisal and conceptual redlining among lenders within that specific city. Finally, I argue that the Residential Security Map can be used to estimate lenders habits in a city because of the particular context in which the maps were constructed.

3.5 TREND TOWARDS APPRAISING NEIGHBORHOOD RISK

National professional thinkers, at this time, believed that best practices—conceived at the national level—should be implemented in local contexts to align lower levels of government with modern, ‘scientific’ ideologies. In the 1920’s, Progressives trained in emerging social sciences, attempted to consolidate Allegheny County’s municipalities to modernize local governments towards the national ideologies.⁵² Similarly, FHLBB officials, elevated by their position in the government,

⁵² Michael R. Glass, “Metropolitan Reform in Allegheny County: The Local Failure of National Urban Reform Advocacy, 1920-1929,” *Journal of Urban History* 37, no. 1 (2011): 108-9.

understood themselves as professional role models for a struggling real estate industry and as educators to local lenders about modern developments and ideal practice. By the time, HOLC transitioned towards the City Survey Program, they had become the largest holder of mortgages in the nation.⁵³ The FHLBB felt obligated to share HOLC's experience as education for other lenders.⁵⁴ Further, the FHLBB viewed itself as a leader of the real estate industry towards modern, 'scientific' approaches to lending. The governor of the FHLBB, James Twohy, said in a speech to mortgage lenders that the FHLBB was meant "not to follow but to lead the industry."⁵⁵ The mindset of government officials as on the forefront of modern ideology and thus educators of the real estate industry explains the FHLBB's purpose for sharing neighborhood appraisal techniques in the ensuing discussion.

The FHLBB's impression of itself as a leader and its assessment of the real estate industry's particular weaknesses informed the development of the Residential Security Maps. In October 1934, John H. Fahey, the Chairman of the FHLBB, published a vision for the federal government's emerging role in the housing market. Recently created New Deal agencies, mostly under the auspice of the FHLBB, were intended to reorganize the industry to eliminate inefficiencies that had jeopardized the financial solvency of American homeowners, mortgage lenders, and even the economy overall. Fahey describes a number of inadequacies that plagued private industry at the time—ranging from the poor organization of financial institutions to poor lending practices based upon poor information and appraisal—but could be fixed through federal intervention and regulation. Under the direction of Chairman Fahey, the FHLBB would, among other steps, help

⁵³ Harriss, *History and Policies*, 12.

⁵⁴ "Minutes of the HOLC and FHLBB," August 27, 1935, RG 195, Entry 14, National Archives.

⁵⁵ James Twohy, "Speech before the New York State League of Savings and Loan Associations," (National Archives, RG 195, Entry 1, Box 13), December 14, 1939.

establish “uniform standards of operation for all home-financing institutions” and “improve the quality of appraisals.”⁵⁶ The FHLBB’s conception of itself as a solution to the particular problems of the real estate industry precipitated its advancement and publishing of neighborhood appraisal standards as a guide for industry practice. The HOLC had been mandated to rescue hundreds of thousands of loans that were in default and from its experience it was clear that the national home-financing apparatus was in crisis.⁵⁷ The FHLBB and the HOLC adopted what were understood to be the most advanced and scientific approaches to appraisal at the time. The context that these agencies were working within and motivation to correct a system in shambles perhaps made the development of the Residential Security Maps inevitable; they were a manifestation of the particular ideological context of urban growth, racial hierarchies, and lending practices that existed in the 1930’s.

The FHLBB and HOLC’s interest in assessing mortgage risk by the neighborhood—the impetus for the Residential Security Maps—paralleled a conceptual trend among real estate financiers, both private and public, lauding the importance of understanding risk and developing measurement techniques. Both government agencies and real estate trade associations published articles outlining the production or value of residential security maps in their institutional journals in the 1930’s. The journals resemble an echo chamber where ideas, techniques, and similar language were circulated, cited, and shared among real estate groups and federal institutions. Trade journals were keenly aware of the appraisal practices of federal agencies, particularly the FHA, and would often describe federal practices, or even directly copy federal policy, into their publications. Racial and class prejudices were routinely present in these articles either explicitly

⁵⁶ John H. Fahey, “The Government’s Program for the Organization of the Nation’s Home-Financing System,” *Federal Home Loan Bank Review* 1 (October 1934): 13–14.

⁵⁷ Fahey, “The Government’s Program,” 2.

or implicitly referenced via the vague threat of “adverse influences;” enough articles, and even the FHA, directly describe African Americans and the poor as “adverse influences” that it is reasonably inferred what is meant when similar language is used; enough articles also describe “adverse influences” as a large factor in the locational risk of a mortgage that the rationale for the technique to be fundamentally tied to these prejudices.

In 1932, Frederick Babcock, a Chicago realtor and the future deputy administrator FHA and director of the Underwriting Division, wrote *The Valuation of Real Estate*. In his book, Babcock established neighborhood appraisal as a critical aspect of lending, arguing that the “future history of a property is conditioned by the trend of development of the district and city within which the property lies.”⁵⁸ Babcock ties the value of a property to the condition and character of the properties around it. Later in the book, Babcock elaborates on what he saw as a significant indicator neighborhood trend:

“most of the variations and differences between people are slight and value declines are, as a result, gradual. But there is one difference in people, namely race, which can result in a very rapid decline. Usually such declines can be partially avoided by segregation and this device has always been in common usage in the South where white and negro populations have been separated.”⁵⁹

The concept of measuring a property’s risk or value by the trends of a neighborhood was, from its earliest roots, tied to racial prejudice; while Babcock does not describe a map to determine risk, his assertion is inherently geographic and thus able to be mapped.

In 1935, Babcock was working to develop the *Underwriting Manual* for the FHA and wrote an article titled “The Determination of Mortgage Risk” for the *Journal of the American Institute of Real Estate Appraisers*. In the article, Babcock details the rationale for the outline of the

⁵⁸ Frederick Babcock, *The Valuation of Real Estate* (McGraw-Hill, 1932), 49.

⁵⁹ Babcock, *Valuation of Real Estate*, 91.

Underwriting Manual and the fractional categories of risk, including “The Neighborhood,” that compose risk to a lender. He comments that while it would be embarrassing for the FHA to grade cities relative to one another, grading neighborhoods poses no such risk. The article also mentions how the final appraisal grade is calculated and then assigned a category based on its apparent risk ranging from ‘A’ the least risky to ‘D’ the most risky. The FHA would insure mortgages categorized ‘C’ or higher but would summarily reject ‘D’ grades.⁶⁰

In 1935, the National Association of Real Estate Boards wrote in the *National Real Estate Journal* describing the 1935 FHA *Underwriting Manual* that was being published at that time and encourages readers to anticipate receiving a copy; the national association was going to put 1,000 copies in the mail. This article also published the categories for appraising risk including the weights attached to different criteria within each overall category. The two criteria given the greatest weight towards determining the neighborhood’s risk are its stability (a quarter of the total risk grade) and “protection from adverse influences” (a fifth of the total grade).⁶¹ The FHA also published articles describing their methods in their public journal *Insured Mortgage Portfolio*.⁶² These public discussions of the FHA’s *Underwriting Manual* reveal not only the public discussion of government policies but the circulation of a common appraisal language between the government and private industry who understood themselves to be partners.

The FHA first published its *Underwriting Manual* in 1935 and published a revised version in 1936. The manual codified the criteria for a mortgage to qualify for FHA insurance thus served

⁶⁰ Frederick M. Babcock, “The Determination of Mortgage Risk,” *The Journal of the American Institute of Real Estate Appraisers of the National Association of Real Estate Boards* 3 (1935): 822.

⁶¹ National Association of Real Estate Boards “New Manual Gives FHA Method of Rating Mortgage Risks” p. 26

⁶² Kenneth C. Beede, “Advances in FHA Mortgage Risk Rating,” *Insured Mortgage Portfolio* 2, no. 9 (March 1938): 10–21; James S. Taylor, “City Growth and Real Estate Cycles,” *Insured Mortgage Portfolio* 2, no. 1 (July 1937): 10–25; L. Elden Smith, “Measuring the Neighborhood Risk,” *Insured Mortgage Portfolio* 2, no. 8 (February 1938): 10–23; “Where Is Mortgage Research Leading,” *Insured Mortgage Portfolio* 2, no. 7 (January 1938): 15–24.

a template for lenders in deciding which borrowers could participate in the housing market. The criteria for assessing the riskiness of a mortgage included not just an assessment of the borrower's ability to repay the loan but also a rating of the neighborhood. Some criteria assessed the infrastructure of the neighborhood such as "adequacy of transportation", presence of cultural or civic centers and the quality of the utilities but other criteria assessed the demographics of the neighborhood and reflected a significant bias towards high income whites. The manual reinforces that the value of an individual property is determined by the properties and people around it; value, the manual insists, would be negatively affected by "a decline, or danger of decline, of the desirability of the neighborhood through the influx of people of lower living standards" or a "lack of appropriate and adequate deed restrictions and effective provisions for the enforcement thereof."⁶³ In case there is any ambiguity about the people or deed restrictions the manual refers to, the manual later encourages underwriters to diligently investigate the geography of the neighborhood, "usually the protection against adverse influences afforded by these means include prevention of the infiltration of business and industrial uses, lower- class occupancy, and inharmonious racial groups. A location close to a public park or area of similar nature is usually well protected from infiltration of business and lower social occupancy coming from that direction."⁶⁴ In the previous paragraph, the manual describes racially restrictive covenants as "more apt than a zoning ordinance in providing protection from adverse influences."⁶⁵ While the FHA's *Underwriting Manual* does not describe a mapping regime, the concept of appraising a single property by the surrounding properties—along with harsh racial and social class prejudices—was codified into its insurance procedures.

⁶³ Federal Housing Administration, *Underwriting Manual*, 1936, Part 1, Section 3, Paragraph 306(2).

⁶⁴ *Underwriting Manual*, Part 2, Section 2, Paragraph 229.

⁶⁵ *Underwriting Manual*, Part 2, Section 2, Paragraph 228.

Starting in 1934, the *Federal Home Loan Bank Review* was distributed to member savings and loan institutions by the FHLBB to provide a record of its activities.⁶⁶ Over several years, the FHLBB consistently argued for the real estate industry to develop more rigorous, scientific procedures for appraisals, particularly by measuring the risk a neighborhood imposed on an investment. In 1935, the Board published “A Practical Technic for Making a Real Property Survey” to impress upon real estate financiers the necessity of developing property survey maps for their cities similar to the project recently published by the Works Progress Administration. The Board further describes a regimen for producing such maps by collecting block level data of housing units including their construction, age, repair, and modernity, and data of the occupants including age, race, number, vacancies, ownership, mortgage status, and rent rates, and a corresponding map of land uses. It was advised that the block level data be further tabulated and analyzed for different levels of economic activity.⁶⁷ This is also the exact same regimen that was used to develop the City Survey Program and Residential Security Maps that same year.

Also in 1935, the FHLBB began publishing a series of articles, “Neighborhood Standards as They Affect Investment Risk,” outlining and describing ten specific neighborhood risk factors on an investment; these factors were intended to aid lenders in making “intelligent and constructive judgement on neighborhoods.”⁶⁸ The eighth risk factor of a neighborhood, according to the FHLBB, are the absence or the inadequacy of legal protections such as zoning or deed restrictions in a neighborhood. The ninth factor is the demographic composition of the neighborhood and its “racial trends.”⁶⁹ The FHLBB was publishing and legitimatizing the same racial biases as the FHA

⁶⁶ Hillier, “Residential Security Maps,” 212.

⁶⁷ “A Practical Technic for Making a Real Property Survey,” *Federal Home Loan Bank Review* 2 (1935): 45–46.

⁶⁸ “Neighborhood Standards as They Affect Investment Risk,” *Federal Home Loan Bank Review* 1 (August 1935): 404.

⁶⁹ “Neighborhood Standards as They Affect Investment Risk,” 405.

and normalizing the widely accepted prejudices of the broader real estate industry. These biases were inherent in the appraisal of neighborhood risk and woven into both a lender's geographic conception of their city and the construction of property surveys—each a consequence of the FHLBB's published articles.

In 1936, the FHLBB published more detailed instructions for developing “Security Maps for the Analysis of Mortgage Lending Areas.” The article outlined particular criteria to estimate investment risk and referred lenders to the aforementioned “Neighborhood Standards” series. Building on the regimen described in “A Practical Technic for Making a Real Property Survey,” the FHLBB describes a grading system with four, color coded categories (the same as seen in the Residential Security Maps). “A” grades are reserved for those neighborhoods with brand new construction and well-functioning real estate markets. “B” grades are neighborhoods that would have been consider “A” ten to fifteen years prior; however, when they are “infiltrated by a less desirable class of people” and begin “definitely declining” and should be reclassified as a “C.” “C” areas are typified by “lower grade” population and homes begin to rapidly depreciate. Finally, “D” areas generally include all old portions of a city and slum areas. Each grade reflects the safety of an investment by the bank and “there are certain “D” areas, especially the slum areas, in which a good mortgage man would probably not consider any loans at all.”⁷⁰ The FHLBB provided lending institutions with all of the instruction necessary to make security maps—identical in concept and process to the Residential Security Maps—to guide mortgage decision making towards certain neighborhoods and away from others.

⁷⁰ “Security Maps for the Analysis of Mortgage Lending Areas,” *Federal Home Loan Bank Review* 2 (August 1936): 390-391.

The FHA published *The Structure and Growth of Residential Neighborhoods in American Cities*, written by Homer Hoyt, in 1939. The book attempts to systematically examine the character of neighborhoods, the dynamics that create development or decay, and develop mapping procedures to evaluate neighborhoods with the larger intended goal of informing home financing policy.⁷¹ Hoyt's approach to measure the character of neighborhoods by overlaying layers of data on to maps of city blocks. He describes a detailed system of how an appraiser ought to organize the map and where to get the publicly available data necessary to fill in the blocks. Eight criteria are identified as sufficient measures of a neighborhoods character ranging from owner occupancy to building conditions to building ages and finally to the percentage of persons "of a race other than white."⁷² Based upon the map, appraisers were believed to have sufficient information to understand the risk and future direction of a city block and its neighborhood. After describing the map, Hoyt elaborates on the relevance of each of the eight criteria and his discussion of race and neighborhoods largely advocates for segregation as morally and financially important: "It is in the twilight zone, where members of different races live together that racial mixtures tend to have a depressing effect upon land values—and therefore, upon rents."⁷³ In this federally funded study, racial prejudices are explicitly professed and are intertwined into the described approach to mapping neighborhood value and risk.

Prejudices against racial and ethnic minorities were commonly taken as a scientific fact among appraisers at this time. Often these prejudices took shape among a dynamic hierarchy that reflected the differing social status and economic power among different groups and had been

⁷¹ Homer Hoyt, *The Structure and Growth of American Cities* (Washington, D.C.: Federal Housing Administration, 1939), iii.

⁷² Hoyt, *Structure and Growth*, 28.

⁷³ Hoyt, *Structure and Growth*, 62.

embedded into real estate thought for some time. In 1933, Homer Hoyt received his Ph.D. in Economics from the University of Chicago. He studied at the university during the same period that Ernest Burgess and Robert Park were developing their studies of urban growth. Hoyt's dissertation, *One Hundred Years of Land Value in Chicago*, described the changing economy of land and development in Chicago from 1830 to 1933. A section of his book was devoted to the particular impact of different ethnic groups on land value and Hoyt treats the variation in rents as a reflection of the variation in desirability—and in literal value—among different racial and ethnic communities; Hoyt's conception of the ethnicity-value hierarchy is reproduced in Table 1. What is curious about Hoyt's discussion of the relationship between ethnicity and value is how transparent his cognitive dissonance is. On one hand, Hoyt acknowledges that such comparisons “may not be reasonable,” are not scientifically based, and capture other determining inequalities and yet he simultaneously attributes—as if fact—race and ethnicity as a direct, determining factor in standards of living, land value, and neighborhood quality.⁷⁴ Hoyt's conception of this racial hierarchy not only reflects beliefs that were common among appraisers but informs the development of FHA policy during his time as a government appraiser. One may read Hoyt's account and try to argue that he and other lenders weren't so much actively discriminating as they were conforming to prejudices ubiquitous among consumers. Yet, wrapped up in a lender's deference to the social norms is a comfort and even endorsement of that domination. There are clear beneficiaries from such compliance—native, affluent white populations—whose privilege comes at the expense of racial, ethnic, and religious minorities. The bank's actions, regardless of their motivation, become yet another structural barrier to equality.

⁷⁴ Homer Hoyt, *100 Years of Land Value: The Relationship of the Growth of Chicago to the Rise in Its Land Values, 1830-1933* (Chicago: University of Chicago Press, 1933) 314-16.

<i>Ranking by Benefit to Land Values</i>
1. <i>English, Germans, Scotch, Irish, Scandinavians</i>
2. <i>North Italians</i>
3. <i>Bohemians or Czechoslovakians</i>
4. <i>Poles</i>
5. <i>Lithuanians</i>
6. <i>Greeks</i>
7. <i>Russian Jews of the Lower Class</i>
8. <i>South Italians</i>
9. <i>Negroes</i>
10. <i>Mexicans</i>

Table 1 Homer Hoyt's Ranking of Ethnicity by Land Value

The concept of mapping neighborhood risk for the purpose of appraising individual properties was popularized concurrently in the real estate appraisal industry as it was in the government; the concept spread throughout the industry by articles circulating in national association publications such as the *National Real Estate Journal*, the *Review of the Society of Residential Appraisers*, and the *Journal of the American Institute of Real Estate Appraisers*.

In 1937, Paul Stark, President of the National Association of Real Estate Board, lauded, in the article “Neighborhood Protection,” published in the *National Real Estate Journal*, neighborhood appraisal’s popularity as “a new general recognition of a fundamental truth, the realization of the importance of neighborhood factors as affecting the value of the individual piece of real estate” and “has become the central axiom for the real estate appraiser and one that has permeated the whole technique of appraisal.”⁷⁵ This commendation, from an executive position such as the President of the national association, reflects how widespread the concept and practice had been adopted within the industry by 1937. Further in the article, Stark describes an extension of this concept: a statute where groups of property owners could cooperatively create a neighborhood plan and “shut out adverse use” in order to “protect and enforce the character of that

⁷⁵ Stark, “Neighborhood Protection,” 25.

neighborhood" and to bring blighted areas back into productive use. While the article does not specifically refer to poor residents or people of color as adverse uses, contemporary writing by government officials and other real estate leaders explicitly do and it is reasonable to understand the implied meaning. The proposal would essentially give neighborhood protection groups urban planning credentials to zone and restrict development above and beyond restrictive covenants already in place at the time. The FHLBB endorsed NAREB's proposal in two installments of "Neighborhood Standards as they Affect Investment Risk," writing, "neighborhood protective and improvement districts merits the closest study by all those who have a financial interest in blighted areas."⁷⁶ Experts in government and private trade organizations were paying attention to each other's work and cooperating towards a common goal: mitigating investment risk. It was a cooperative gesture for the FHLBB to publish and spread NAREB's work in their own trade journal. The perceived threat of the poor and people of color to the financial security of investments had elicited a deep response from both private industry and the government.

The influence of the federal government's policies and conceptual approach to neighborhood risk is apparent in articles published in the *Review of the Society of Residential Appraisers*. In 1938, E. D. Keefer, a Miami realtor, published a slightly revised version of the FHA's risk-rating method, highlighting the appraisal of neighborhood risk, in his article "Risk Rating Homes."⁷⁷ Louis Pratt cited the FHA's *Underwriting Manual* in his 1937 article "Appraising Fractional Parts of Residential Property" describing neighborhood appraisal as a critical component of appraising a property accurately.⁷⁸ These articles reveal that neighborhood

⁷⁶ FHLBB "Neighborhood Standards as They Affect Investment Risk" Jan 1936 p.131, Feb 1936 p. 168

⁷⁷ E. D. Keefer, "Risk Rating Homes," *Society of Residential Appraisers* 4 (January 1938): 3–5.

⁷⁸ Louis M. Pratt, "Appraising Fractional Parts of a Real Estate Property," *Society of Residential Appraisers* 3 (March 1937): 10–13.

appraisal programs, developed by the government, were permeating the zeitgeist of real estate finance, and that the government, in this case the FHA, was seen as a leader in developing these techniques. Government policies were elevating, normalizing, and professionalizing neighborhood appraisal techniques. Private officials were paying close attention to the minute details of government policy.

New Deal agencies and reforms had given real estate officials cause to pay close attention to the actions of the federal government, which was asserting unprecedented influence into the mortgage finance industry. From the 1930's onward, mortgage finance would be transformed towards long-term, amortized, low interest, high loan to value ratio, and, most significantly, federally-insured loan products.⁷⁹ The HOLC was the first federal intervention to introduce such standards and the agency applied them to the foreclosed loans that it refinanced. The HOLC established a precedent for the changes that would follow.⁸⁰ A year after the creation of the HOLC, Congress created the FHA. The agency expanded the expected characteristics of the modern mortgage and was empowered to insure mortgages from private lenders; mortgages and lenders that met particular standards.⁸¹ The FHA created a variety of exacting criteria for a loan to qualify for insurance including specific provisions for neighborhood appraisal—those outlined in the *Underwriting Manual* and republished in some of the trade journals. Yet, by increasing the loan period and the loan to value ratio, the federal government significantly increased the risk involved in mortgage lending and thus increased the need for assurances on the long-term value of that property. The FHA attempted to offset this risk by providing insurance but the mindset of lenders

⁷⁹ Greer, "The Home Owners Loan Corporation," 278.

⁸⁰ Guy Stuart, *Discriminating Risk: The U.S. Mortgage Lending Industry in the Twentieth Century* (Ithaca: Cornell University Press, 2003), 24.

⁸¹ Stuart, *Discriminating Risk*, 25.

and appraisers had to incorporate the elevated risk nonetheless. Lenders became wary of making loans that would not be insured and thus had to pay even more attention to the standards outlined by the FHLBB and, particularly, the FHA.⁸²

The transformation of the lending market to long-term loan packages fundamentally altered the stakes of mortgage lending and thus the approach of appraisal experts. Prejudiced notions of race and risk were widely held among the real estate industry prior to the advent of the HOLC and the FHA; yet, the elevated risk of long-term mortgages amplified the perceived threat of minority communities to investment security.⁸³ It is not just that the government's intervention and advice caught the attention of the private industry: the government's intervention and transformation of the lending market necessitated—in the minds of government officials, appraisers, and lenders—a greater vigilance towards changing urban conditions and precipitated lending policies, in the vein of the Residential Security Maps, that steered investment away from perceived threats such as Immigrants, African Americans, and the poor. What accompanied the introduction of long-term loan packages was a new construction of risk that emphasized not just the merits of an individual application but the character of the surrounding neighborhood in both the present and long into the future.

The City Survey Program and the Residential Security Maps were conceived and developed amid a trend in real estate appraisal and finance of estimating neighborhood risk and mapping the perceived risk. Government agencies, mainly the FHLBB and the FHA, and trade associations wrote extensively about neighborhood risk and techniques to appraise that risk in institutional journals during the 1930's. A conversation among partners began to develop as

⁸² Greer, "The Home Owners Loan Corporation," 279.

⁸³ Freund, *Colored Property*, 66-81.

articles circulated within this pool of experts. Private industry was keenly aware of government's actions, even the minutia of policy—republishing sections of government documents and discussing the latest government position. Private industry viewed the government as a leader; New Deal programs like the HOLC and FHA were asserting unprecedented government influence in the real estate industry at that time and transforming the way mortgage finance functioned. The government was not the origin of neighborhood appraisal but was on the forefront of its advancement. Explicit in each of these journals, government and industry alike, are prejudiced descriptions of the risk people of color and the poor pose to investment security. These racialized and otherwise prejudiced conceptions of risk to investment, and even to the perceived neighborhood quality, were normalized and printed by the FHLBB; neighborhood appraisal techniques, developed in the 1930's, established the conceptual foundation for discriminatory lending practices that existed in cities nationwide for decades. Discrimination in federal housing initiatives was not banned until the early 1960's and it was not until a consent decree in 1976 that the Society of Real Estate Appraisers and the American Institute of Real Estate Appraisers struck racist language from their training materials.⁸⁴ Banks have also been found to be practicing redlining well beyond the passage of the Community Reinvestment Act in 1978.⁸⁵

⁸⁴ Stuart, *Discriminating Risk*, 66.

⁸⁵ Bill Dedman, "Atlanta Blacks Losing in Home Loans Scramble: Banks Favor White Areas by 5-1 Margins," *The Atlanta Journal-Constitution*, May 1, 1988, sec. A.

3.6 NEIGHBORHOOD RISK MAPPING PROGRAMS

The neighborhood appraisal concept circulating among the real estate industry and federal government led to several risk mapping projects each created within a few years of the development of the HOLC's maps. Some mapping projects are discussed in the literature in passing; for instance, Hillier (2003) cites other researchers discussing dozens of municipal 'redlining maps' in Miami.⁸⁶

In 1934, J.M. Brewer, owner of a real estate information company Property Services, Inc. that catered to local lenders and brokers, developed a highly detailed map of Philadelphia's real estate market describing 'location ratings' of neighborhood quality, the prevailing age of homes in a given block, real estate prices, industrial and commercial zones, and color coded zones showing the density of Jewish, Italian, and 'Colored' residents. Heavily Jewish areas received ratings ranging from 'B' (Upper middle class) to 'D' (Lower or working class), Italian areas ranged from 'C' (Middle class) to 'DE' (a blend of lower class and decadent), and 'Colored' areas overwhelming either rated 'D' or 'E' (decadent) with a handful of 'C' blocks. The map also had a scaled shading system to reveal the prevalence of a community in those blocks. Jewish blocks were shaded blue, Italian blocks were green, and 'Colored' blocks were red. A portion of the southern section is included as an example (see Figure 3). Brewer was formerly the chief appraiser for Metropolitan Life Insurance Company, among the largest lenders in Philadelphia at the time, and would eventually serve as a map consultant for the 1937 Residential Security Map of Philadelphia.⁸⁷

⁸⁶ Raymond A. Mohl, Blog, *H-Urban*, (April 14, 1999), <http://www2.h-net.msu.edu/~urban/>.

⁸⁷ J. M. Brewer, "J. M. Brewer Survey of Phila" (Philadelphia, PA, 1934), Free Library of Philadelphia.

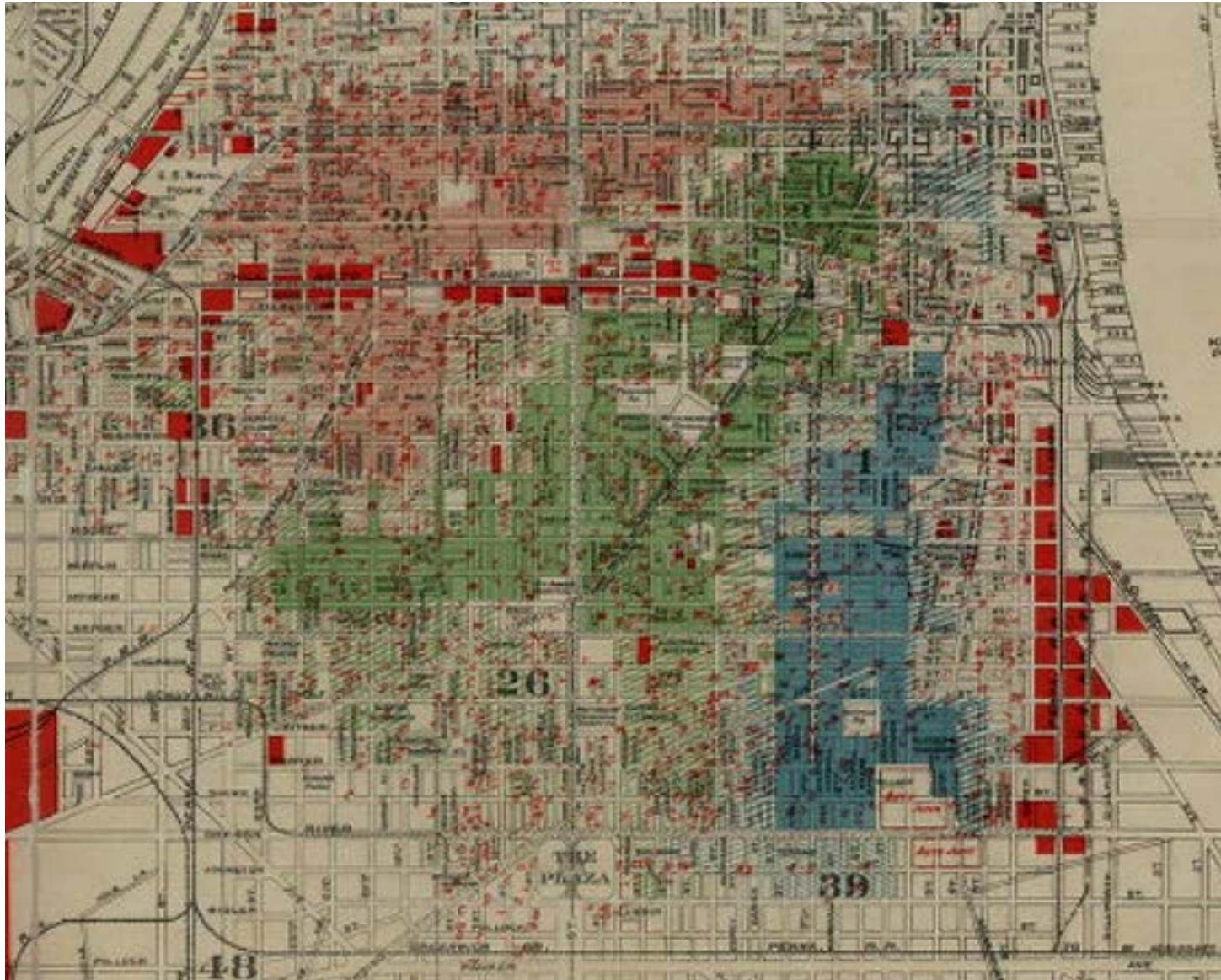


Figure 3 A Portion of J. M. Brewer's Security Map of Philadelphia, PA (1934)

The FHA published the mapping program developed by the Security First National Bank of Los Angeles in 1938, in their journal *Insured Mortgage Portfolio*. The article, written by a researcher for the bank L. Elden Smith, applies the rhetoric and reasoning of the Burgess ecological model to assessing neighborhood “life cycles” and mortgage risk. A neighborhood’s stage in its life is a direct indication of its mortgage risk according to Smith. The map of Los Angeles represents the stage of development from infancy as a subdivision, the lightest, to total decline, the darkest. If one were to substitute HOLC’s labels with Security-First’s labels, this map would be identical to a Residential Security Map and they are each constructed with the same ideology. A scan of the map is provided on the next page (see Figure 4). The bank used the map to guide its lending decisions although understood that the maps was just a starting point. Neighborhoods at the end of the life cycle is largely marked by “the incursion of inharmonious racial elements” and lenders must “follow racial movements with considerable care.”⁸⁸ Neighborhood appraisal, as it has been repeatedly shown, was imbedded with racial prejudice and was given the endorsement and legitimacy of the federal government. This particular article was published by FHA but, as has been shown, the articles published in FHLBB’s trade journal include the same material. The government’s work had a significant influence; Smith acknowledges the role of the government in developing neighborhood appraisal, which he notes originated in the time since the depression, (and the creation of FHLBB, HOLC, and FHA), and considers the government “a pioneer in placing emphasis on the neighborhood influence.”⁸⁹ To Smith, the security map developed by Security-First National Bank was an extension of the governments’ ideology.

⁸⁸ Smith, “Measuring the Neighborhood Risk,” 22.

⁸⁹ Smith, “Measuring the Neighborhood Risk,” 9.

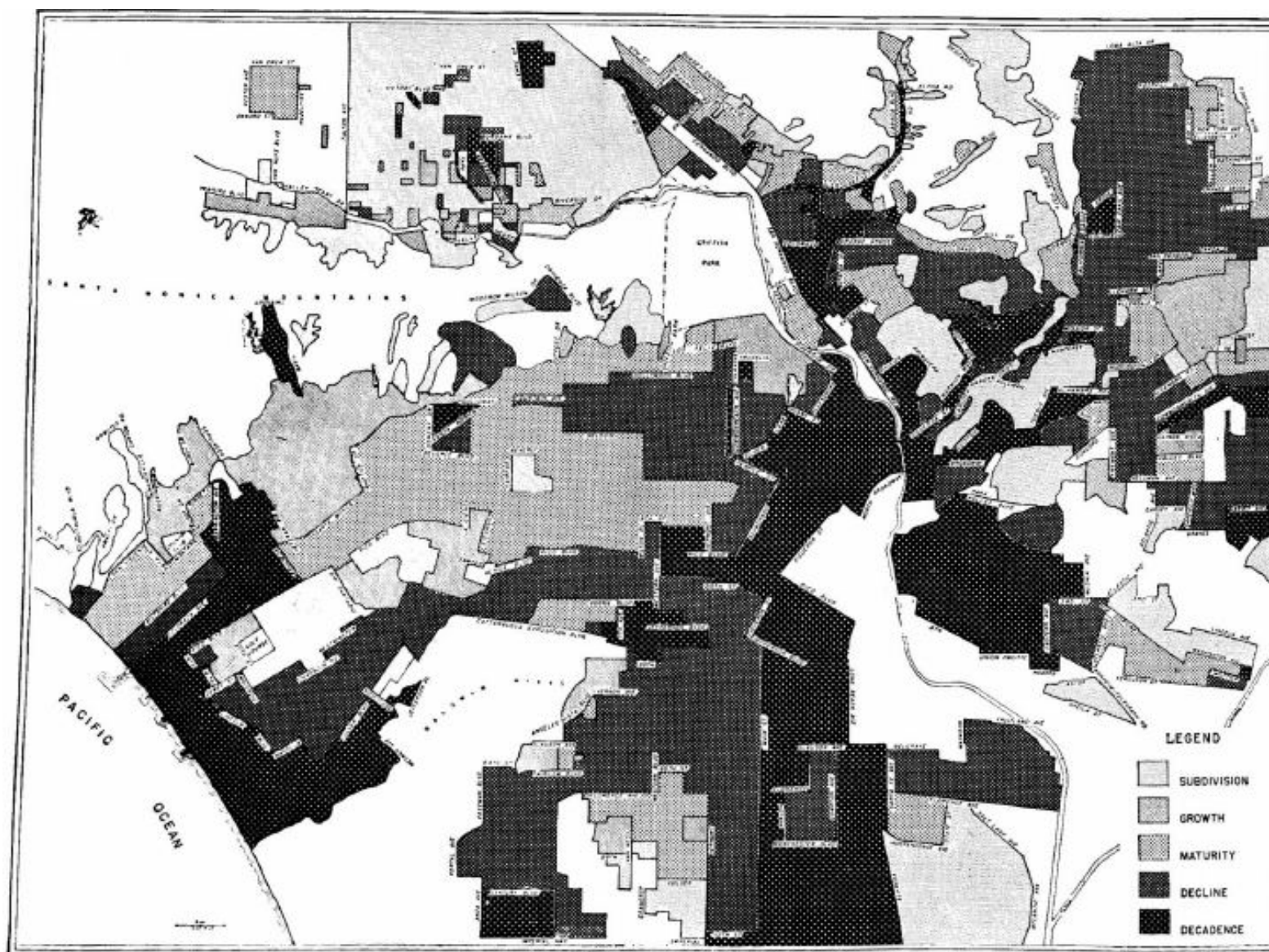


Figure 4 Security-First National Bank of Los Angeles's map, *FHA* (1938)

The Chicago Housing Authority drew a map (see Figure 5) in 1938 representing “mortgage risk district established by the Federal Housing Administration” that divided Chicago into four districts representing risk and graded from ‘A’ to ‘D.’⁹⁰ ‘Class A’, the highest grade represented areas where the FHA “will insure long term mortgages,” ‘Class B’ areas would only receive insurance on “mortgages of 20 years or less,” ‘Class C’ for 10 years or less, and “F.H.A. will not insure mortgages in Class ‘D’ Districts.” About a quarter of Chicago appears to be rated ‘Class D’ with each grade level above less area than the grade below it. The lightest areas of the map are considered the best zones and the grading is scaled towards the darkest areas that represent the worst zones—perhaps, an implicit performance of the author’s racial ideology. While the map was not drawn by the FHA itself and the Chicago Housing Authority may have been inaccurate, it represents a bleak picture of perceived risk in Chicago and appears to downgrade Chicago significantly compared to the HOLC’s security map in 1939.⁹¹ Even those areas that would have been considered ‘B’ or ‘C’ were only available for shorter term mortgage insurance, limiting financing options for the vast majority of Chicago. These mapping projects reflect a wider prevalence of physical security maps beyond the City Survey Program. A high degree of similarity exists between each of these maps and the HOLC’s including style, overlay and grading conventions indicating that there were common aesthetic expectations for how a security map should look. The similarities suggest that developing security maps was a common endeavor.

⁹⁰ Chicago Housing Authority, “Mortgage Risk Calculated by District” (Chicago, IL: Chicago Housing Authority, 1938), University of Chicago Library Map Collection.

⁹¹ Division of Research and Statistics, “Residential Security Map” (Chicago, IL: Home Owners’ Loan Corporation, April 1940), Urban Oasis.

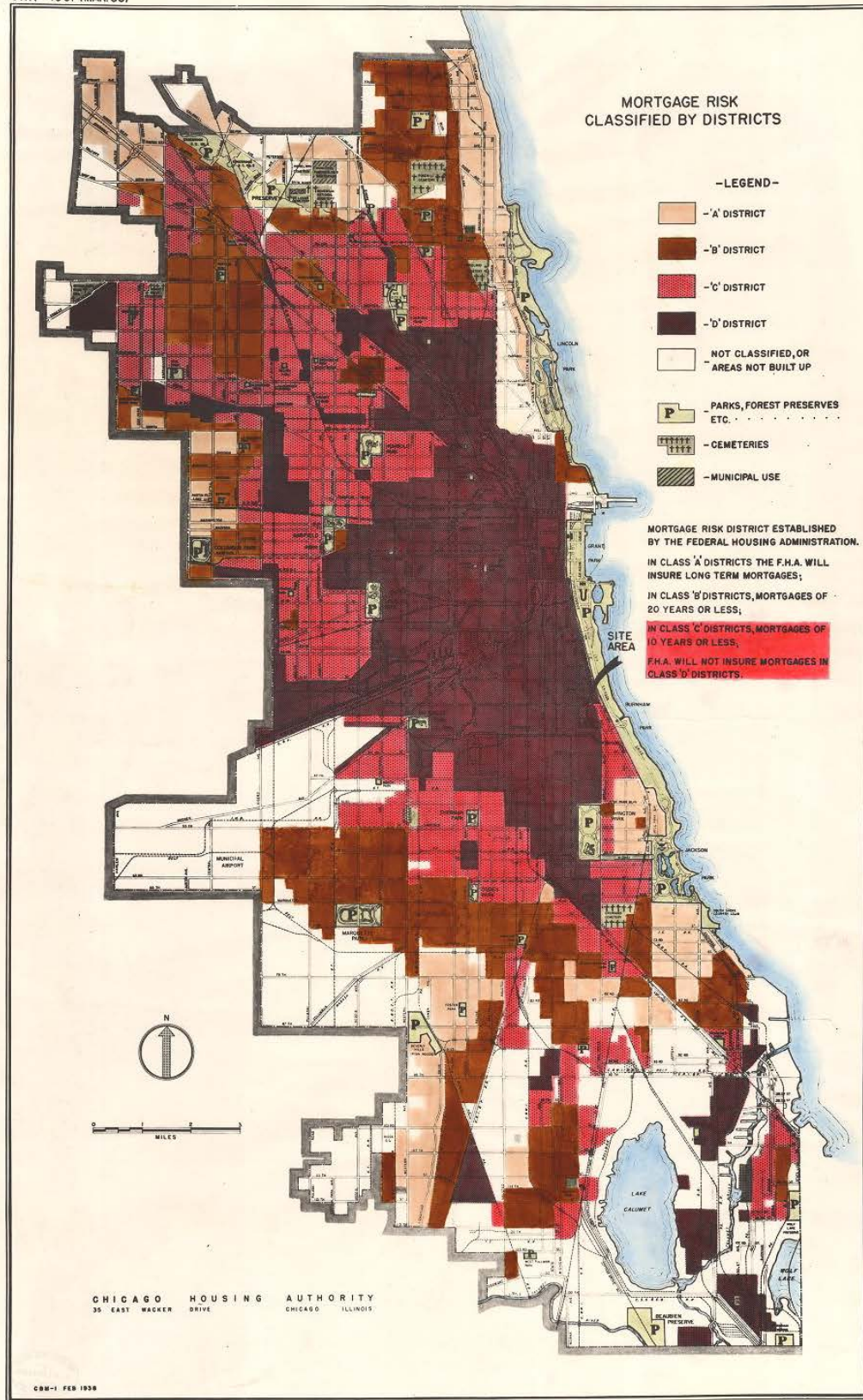


Figure 5 Chicago Housing Authority Map of FHA Lending (1938)

3.7 LOCAL INFLUENCES ON THE HOLC

A consistent theme often lost in the literature amid the details of the HOLC is its reliance upon local real estate industry actors to administer the HOLC's mission. In order to complete the original task of refinancing and then servicing loans, state and district offices would contract out appraisals and legal proceedings to local appraisers and attorneys on a fee-for-service basis. In 1937, the HOLC had contract agreements with a large number of local officials including about 5,000 appraisers and inspectors, about 15,000 brokers in some capacity and about 8,000 attorneys to administer the HOLC's operation across the country. In total, the HOLC contracted with about 28,000 local real estate officials compared with a total salaried staff of 14,246.⁹² The weight of local, contracted labor compared to salaried staff reflects the power of local experts to shape the administration of the HOLC. Regional offices also relied on local brokers to sell the properties that the HOLC would end up foreclosing upon. In at least several instances these foreclosure sales would reinforce segregation as "these brokers, in turn, followed local practices in their work for the HOLC" and HOLC's hands off policy "was in effect an endorsement of segregation and racial discrimination."⁹³

The Residential Security Maps, in particular, were influenced by local experts. When the FHLBB decided that the City Survey Program was necessary, part of the reason they chose HOLC, instead of another agency under their umbrella, was because of the HOLC's experience working with local real estate conditions and actors.⁹⁴ The Mortgagee Rehabilitation Committee, specifically assigned its field agents to collect the data with the assistance of local realtors and

⁹² Harriss, *History and Policies of the HOLC*, 146.

⁹³ Hillier, "Who received Loans?" 19.

⁹⁴ "Minutes of the HOLC and FHLBB," August 27, 1935, RG 195, Entry 14, National Archives.

lenders. The surveys field agents were tasked to conduct required interviews and consultations with local housing and real estate experts. All of this information was incorporated into the map.⁹⁵ Local brokers and appraisers were also involved with drawing the maps, although the literature disagrees as to the degree of their involvement. In Miami, HOLC's appraisals "reflected bias of local appraisers" whose home neighborhoods were given the highest ratings.⁹⁶ There is also evidence that the FHLBB chose to keep the maps confidential because of agreements with local consultants who contributed information on the condition that they would not be published.⁹⁷ Finally, Greer found that one of the strongest positive correlates with the risk grade was the qualitative assessments done by field agents—drawn from their interviews with local lenders—of how well the lending market functioned in the neighborhood.⁹⁸ Not only was HOLC's administration strongly dependent on and influenced by local agents but its Residential Security Maps would come to embody the influences of local practices as well; this is consistent with Crossney and Bartelt's finding that the maps were attuned to local practices.⁹⁹

3.8 SIGNIFICANCE OF THE RESIDENTIAL SECURITY MAPS

The Residential Security Maps were a product of the real estate ideology at that time. Experts in the industry, private and public alike, advocated an appraisal approach that judged the creditworthiness of an individual by their surrounding neighbors. Biases against neighborhoods,

⁹⁵ Hillier, "Residential Security Maps," 214.

⁹⁶ Mohl, *Trouble in Paradise: Race and Housing in Miami During the New Deal Era*, 1987.

⁹⁷ Hillier, "Redlining and the HOLC," 399.

⁹⁸ Greer, "*The Home Owners Loan Corporation*," 275-296.

⁹⁹ Crossney and Bartelt, "Residential Security, Risk and Race," 724.

social classes and race permeated both the industry and neighborhood appraisal. Trade journals, published by private and public institutions, fostered a conversation among banks and regulators that not only espoused the conceptual framework of risk mapping but provided specific criteria, data sources, and styles. The government saw itself as a leader in neighborhood appraisal and real estate officials looked to the government's work for examples. Private industry did not need access to the specific Residential Security Maps because mapping techniques were available in these trade journals and even published directly by the FHLBB. Further, lenders did not need physical maps to redline: conceptual, mental maps constructed from the same biases against people of color and certain housing markets would produce the same effect. Real estate is fundamentally geographic; appraisers and financiers understood where black and poor communities existed in their city, where industrial facilities were located, and how many loans they financed in a given neighborhood. Local lenders were able to make lending decisions based on this knowledge, which was also framed by the national conceptual conversation.

The Residential Security Maps are the best drawn and best preserved example of risk mapping, yet, are but one mapping project amid many. Government records had to be preserved; private institutions' records did not. Local actors had a significant role in shaping the HOLC and the City Survey Program. The Residential Security maps, from conception to construction, embody the real estate industry's practices and beliefs in the 1930's. It is no longer arguable that the physical maps were directly the precipitator of redlining and urban divestment; instead, these maps should be understood as an artifact, a reflection of the industry, and an imperfect vehicle by which it is possible to evaluate the consequences of the risk mapping concept and the prejudices pervasive throughout the industry at the time.

3.9 PHYSICAL LEGACIES

Appraisal of neighborhood risk and subsequent redlining are often discussed in terms of the financial cost to the communities where banks refused to lend and the FHA refused to insure, prompting general divestment and decline. The financial legacies of divestment from urban centers are well deserving of attention, yet oft neglected are the physical legacies of these systems—the impact on the structural and social geography of a city. The risk categories did reflect, to some extent, the communities most vulnerable to decline—those with the oldest housing stock, least functioning real estate markets, and most underserved populations. Compounded in with the risk maps and divestment, was an already fragile and dire situation facing these neighborhoods.

The Great Depression paralyzed the real estate market in the United States with unprecedented unemployment, many bank closures, and a substantial number of foreclosures.¹⁰⁰ Residential construction had peaked in 1925 and, in the early 1930's, construction of new units was at an “extreme low;” further, existing homes were “badly deteriorated through unwillingness or inability to keep it in repair.”¹⁰¹ A 1933 Census of housing conditions in sixty four cities revealed that about eighteen percent of housing units, vacant or occupied, were in need of major repairs or demolition. Further, 58,747 of the homes in the study were reported in bad enough condition to be unsuitable for occupation and yet 41,891 of these homes were occupied.¹⁰² While the HOLC was able to provide relief for homes in foreclosure, the funds provided by the HOLC were restricted from being used for repairs.¹⁰³ A homeowner or landlord, already struggling to

¹⁰⁰ Lawrence N. Bloomberg, “The Role of the Federal Government in Urban Housing,” *The American Economic Review* 41, no. 2 (May 1951): 589.

¹⁰¹ Bloomberg, “Role of the Federal Government in Urban Housing,” 590.

¹⁰² Nathan H. Engle, “Housing Conditions in America,” *Journal of the American Statistical Association* 30, no. 189 (1935): 293.

¹⁰³ Greer, “*The Home Owners Loan Corporation*,” 279.

make mortgage payments amid the Great Depression, could not reasonably be assumed to have spent any significant sum on necessary long term repairs. It is likely that while the financial health of the owner and lender were preserved, the physical quality of the home continued to decline.

Government housing policy hastened the decline of these sections of the city. Both the FHA and the FHLBB showed preference against old and poorly constructed homes and discouraged lenders, through policy and official publications, from making investments in these sections of town.¹⁰⁴ In addition to advantages given to newly constructed homes, FHA requirements on indoor plumbing and modern amenities such as refrigeration structurally excluded the many urban American homes that lacked those features from receiving insurance.¹⁰⁵ In fact, “much of the housing built before the advent of mortgage insurance in 1934 was rendered difficult if not impossible to finance using mortgages that could meet the rigid and inflexible provisions of the act and the requirements of FHA appraisal standards.”¹⁰⁶ The FHA and FHLBB placed the most value in new, green-field construction on the city’s periphery—homes built for professional, white families—at the expense of old, already decaying, urban neighborhoods relegating them to least valued groups of society—the working class and people of color.

In Chapter 4, I describe the local conditions in Pittsburgh, the segregation of various communities, and the significant disparities in neighborhood quality that comprised a stratified geography. It is upon this uneven geography that neighborhood appraisal practices, in Pittsburgh, in the 1930’s, shaped patterns of investment.

¹⁰⁴ “Security Maps for Analysis of Mortgage Lending Areas,” 391.

¹⁰⁵ Engle, “Housing Conditions in America,” 290.

¹⁰⁶ Greer, “*The Home Owners Loan Corporation*,” 279.

4.0 PITTSBURGH'S HOUSING AND SOCIAL CONDITIONS IN THE 1930'S

At the time the City Survey Program was assessing Pittsburgh, the city was the tenth largest in the United States and the center of one of the largest industrial centers in the country. The 1930 census counted 669,817 residents in Pittsburgh, 75.4% of whom were 'native white' and 8.3% were African American.¹⁰⁷ Employment in Pittsburgh was largely driven by heavy industry, 42.55% of men in Pittsburgh worked in manufacturing and mechanical industries.¹⁰⁸ Parity existed between racial groups in manufacturing by comparing overall employment. Yet, there were staunch barriers to employment in other industries: Blacks disproportionately worked in domestic and personal service (42.5%) compared to foreign-born whites (14.8%) and native whites (9.3%). In the trade industry, Blacks (5.4%) were underrepresented compared to either foreign-born whites (17.5%) or native born whites (18.3%). Clerical occupations largely employed native whites (18.9%) and were far less available to either Blacks (2.3%) or foreign-born whites (3.8%).¹⁰⁹ Economic divisions in the city mirrored divisions in other aspects of the city, including housing.

Allegheny County and Pittsburgh had a range of housing conditions throughout the county with pockets of blight and pockets of luxury. In 1935, Allegheny County had an owner-occupancy rate of 43.5% and a vacancy rate of 6.9%. Housing units were generally in good condition but a significant portion of housing units were in need of major repairs (17.9%), lacked bathing facilities (30.9%), an indoor toilet (20.1%), or furnace-type heating (44.1%).¹¹⁰ Insufficient housing was

¹⁰⁷ "Pittsburgh, PA Confidential Summary File," 1.

¹⁰⁸ Joe W. Trotter and Jared N. Day, *Race and Renaissance: African Americans in Pittsburgh since World War II* (Pittsburgh: University of Pittsburgh Press, 2010), 206.

¹⁰⁹ Trotter and Day, *Race and Renaissance*, 206.

¹¹⁰ Philip Klein, *A Social Study of Pittsburgh*, (New York: Columbia University Press, 1938), 200-205.

concentrated into a few sections of the city. A 1934 survey of housing in the City of Pittsburgh differentiated “dark spots” (Downtown, the Hill District, Lawrenceville, South Side, Manchester) from “bright spots” (Shadyside, Highland Park, Beechview, Squirrel Hill, Point Breeze) and found a wide gap in housing conditions between the two groups (see Table 2).¹¹¹ The “dark spots” lagged significantly behind in upgrades and amenities that by that time were nearly ubiquitous in other areas of the city.

<i>Percentage of Units Without:</i>	<i>Dark Spots</i>	<i>Bright Spots</i>	<i>City of Pittsburgh</i>
<i>an Indoor Toilet</i>	24.8	1.6	12.1
<i>Gas or Electric Lighting</i>	8.8	0.5	3.6
<i>Furnace-Type Heating</i>	84.3	12.9	50.2

Table 2 Disparities in Housing Quality, *A Social Study of Pittsburgh* (1934)

“Blighted” sections of housing existed throughout the city but were most concentrated near industrial centers; generally these areas were home to immigrants, people of color and the poor. Conditions in all of these areas were grim, to say the least. A 1928 survey of housing conditions, administered by the then newly created Pittsburgh Housing Authority, found “dirt, disorder, and dilapidation ... in practically every neglected district,” a host of unsanitary apartments including some inside butcher shops and stables, and extensive overcrowding. Further the survey found that “neglect by the owner of his responsibility for the condition of his property is frequently the cause of unfit living conditions.”¹¹² These neighborhoods were inhospitable and yet home to a good portion of Pittsburgh’s working class.

While housing conditions were rough for much of Pittsburgh, people of color faced even more limited housing options. In the mid 1930’s, 45% of African Americans in Pittsburgh lived in the Hill District and an additional 25% lived in East Liberty and Homewood. People of color

¹¹¹ Klein, *A Social Study*, 205.

¹¹² Pittsburgh Housing Association, “Housing in Pittsburgh” (Pittsburgh: Pittsburgh Housing Authority, 1930).

largely lived in blighted sections of town and their homes were “more concentrated at the lowest standards recorded.”¹¹³ In Pittsburgh, a number of barriers prevented African Americans from living in better conditions but in the 1920’s “new zoning laws reinforced the racially segregated housing market and made it increasingly difficult for blacks to inhabit structures defined as ‘fit for human habitation.’”¹¹⁴ Many aspects of life in Pittsburgh were segregated to some degree. Banks and insurance companies had segregated offices and offered limited and restricted service to Blacks compared to what was available to whites.¹¹⁵

The deep divisions in housing driven by class, ethnicity, and race were readily apparent to the appraisers and real estate experts who assessed Pittsburgh’s housing submarkets for the City Survey Program. These divisions did not inspire fundamental questions of inequality within the appraisers’ minds but confirmed preconceived notions of neighborhood structure—part of the natural ‘ecology’ of a city as theorized by Ernest Burgess. Wrapped in to the assessment of neighborhoods were not only biases against minority groups but also observations of the divisions in housing quality and neighborhoods that paralleled the divisions of class, race, and ethnicity.¹¹⁶ Because of the way these divisions had already constructed the divides in housing, even if HOLC appraisers had drawn a map that only graded housing quality, the map would have disproportionately labeled immigrant, black, and poor communities as hazardous. Of course, it is well documented that the appraisers were grading the population as well as the housing but it is important to appreciate that so many of these factors were already woven together. The City Survey Program was not a housing improvement program nor was it a community revitalization agenda—

¹¹³ Klein, *A Social Study*, 273.

¹¹⁴ Trotter and Day, *Race and Renaissance*, 13.

¹¹⁵ Trotter and Day, *Race and Renaissance*, 15.

¹¹⁶ This racialization of risk and creditworthiness is further discussed in Gotham, “Racialization and the State” and Crossney and Bartelt “Legacies of the HOLC” and “Residential Security, Risk, and Race”

the City Survey Program was an attempt by federal officials to map the investment security of different neighborhoods. A map constructed under that rationale would, of course, grade sections of dilapidated housing as hazardous.

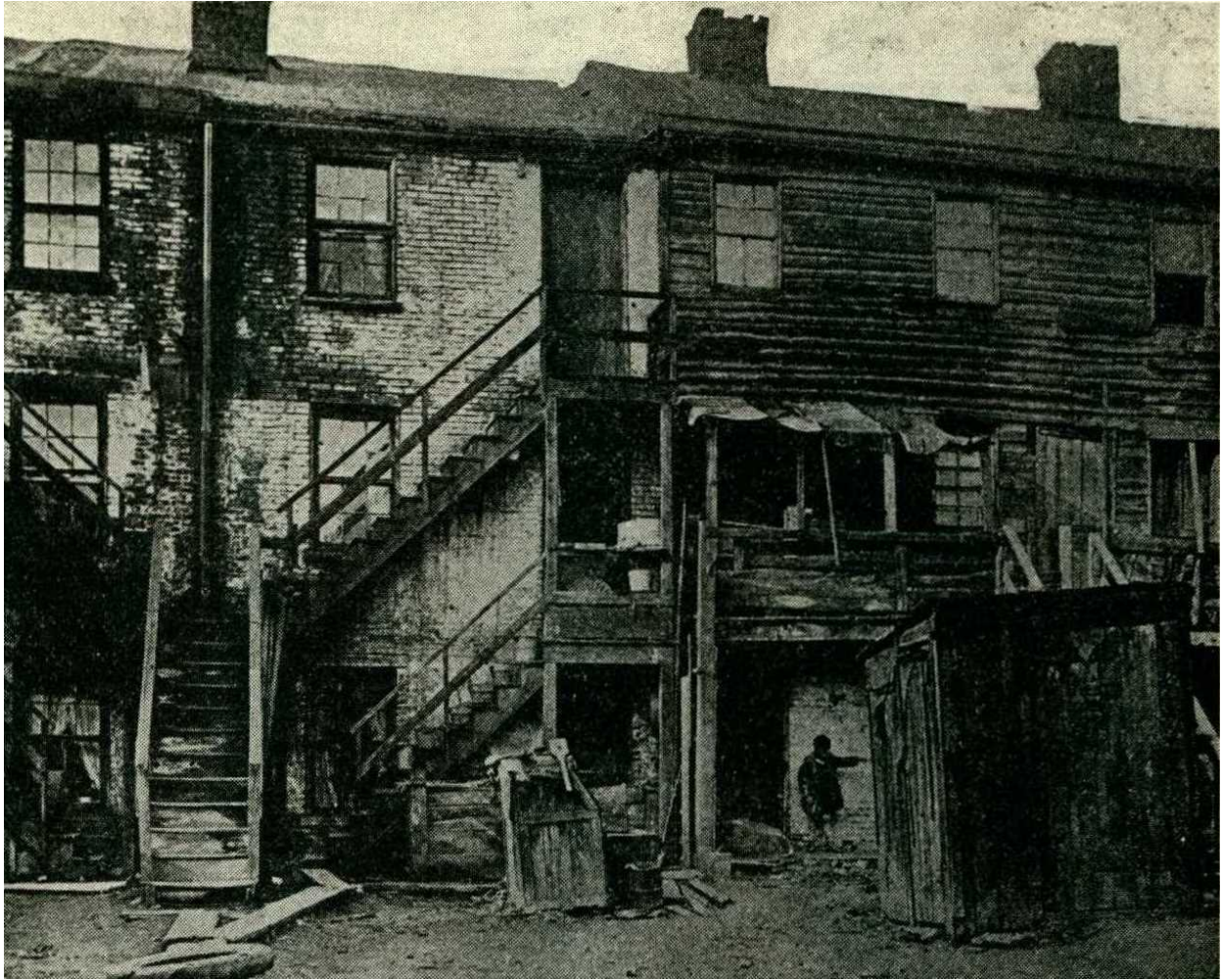


Figure 6 A Tenement House on Bedford Court, *Pittsburgh Housing Commission* (pre-1934)

To give an extreme example, without being reductive but still giving some perspective, consider the two photos. The first (Figure 6), is a tenement that was occupied by ten families who shared a single outdoor source of water.¹¹⁷ These row homes were located on Bedford Court in the Hill District in the early 1930's. This area would be labeled "Hazardous." The second picture

¹¹⁷ Pittsburgh Housing Commission, *A Tenement House on Bedford Court*, Photograph, pre-1934.

(Figure 7) is of three single family homes on Berkshire Avenue in Brookline in 1924.¹¹⁸ Each home has their own yard and they are not only aesthetically appealing but seem to be very well constructed. This area would be considered “best” and be outlined green or “first grade.”



Figure 7 Single Family Homes on Berkshire Avenue in Brookline, *City of Pittsburgh* (1924)

The Pittsburgh Residential Security Map was published on July 20, 1937, along with a summary file of the city’s real estate market. The security map itself was drawn upon a 1935 Cram Company street map of Pittsburgh. The summary file credits twelve local property management brokers and three local realtors with helping to develop the map and grade each of the

¹¹⁸ City of Pittsburgh, *Berkshire Avenue*, Photograph, October 7, 1924, Historic Pittsburgh.

submarkets.¹¹⁹ In 1937, the most recent and intense home construction was in Squirrel Hill, Homewood, Swissvale, Bellvue, Ben Avon, Dormont, and Mt. Lebanon, areas that would receive first grade ratings.¹²⁰ Pittsburgh had fairly stable neighborhood structure; the HOLC summary file notes, in an almost impressed tone, that despite the significant presence of African Americans and first-generation immigrants “almost no neighborhoods are being affected by infiltration of less desirable races” and there has not been “real changes in neighborhood character.”¹²¹ A desirable notion for appraisers and lenders of that time, the statement reflects a static quality to Pittsburgh’s segregation and disparities.

Urban actors in Pittsburgh, from HOLC appraisers to local lenders, operated in a highly stratified city with deep disparities and segregation. Uncritical surveys of these conditions simultaneously founded and confirmed neighborhood appraisers’ assumptions and prejudices about different communities’ relationship to neighborhood quality, investment safety, and their intrinsic value. The federal government’s leadership and participation in the development of neighborhood appraisal, conceptually and methodologically, normalized and legitimized its growth into a standard practice. The HOLC applied this ideology to the Residential Security Maps while lenders applied the same ideology in their real estate practices. The Residential Security Maps represent this ideology and, as that same ideology got applied to urban spaces by private lenders, even by those who never saw the physical map, the maps’ description of space was reproduced; the differential access to mortgages inspired by the ideology maintained stratification.

¹¹⁹ W. A. Stoehr, Ralph George, J. R. Willison, Gerald A. Born, J. C. Gilson, H. H. McCulloch, Jae C. Kuhn, T. K. Haselbarth, Griffin & Co., J. J. McKenna, A. Fahey, J. C. R. Kelly, W. S. Klenna, H. O. Hornberger, John Hare

¹²⁰ Pittsburgh, PA Confidential Survey File “Real Estate Situation”

¹²¹ Pittsburgh, PA Confidential Survey File “Real Estate Situation”

5.0 METHODOLOGY

Much of the research about the Residential Security Maps has focused on either their construction or how well the maps correspond to the lending habits of the HOLC or other financiers. Several researchers have attempted to reconstruct the logic behind the grades using correlation and regression.¹²² Others have used foreclosure statistics, HOLC loan documents, or 1940 Census data about mortgages prevalence to measure the impact of HOLC lending on housing finance and the influence of the Residential Security Maps on other lenders.¹²³ I was unable to find any research that examined the legacies of the Residential Security Maps beyond the immediate context in which they were constructed. Given the propensity for conceptualizations of space to create the conditions that were described and the abundant literature produced by the FHLBB describing the process of mapping neighborhood appraisal, it is important to assess the legacy of the Residential Security Maps in a broader scope. I developed a Geographic Information System (GIS) based framework to assess the association between the 1937 Residential Security Map of Pittsburgh and the city's modern social geography.

The cumulative effects of neighborhood appraisal and ensuing financial divestment from certain neighborhoods would theoretically have negative impacts on these spaces. This would concentrate disadvantage and create inequalities between communities that would compound over

¹²² Greer (2012) "The Home Owners' Loan Corporation and the Development of the Residential Security Maps"; Hillier (2005) "Residential Security Maps and Neighborhood Appraisals"; Crossney and Bartelt (2005) "Residential Security, Risk, and Race"

¹²³ Hillier (2003) "Spatial Analysis of Historical Redlining"; Hillier (2003) "Redlining and the Home Owners' Loan Corporation"; Crossney and Bartelt (2005) "The Legacy of the Home Owners' Loan Corporation"; John F Brennan, "The Impact of Depression-Era Homeowners' Loan Corporation Lending in Greater Cleveland, Ohio," *Urban Geography* 36, no. 1 (2015): 1–28.

time. Do communities that were historically blocked from investment—those categorized as yellow or red—have persistent inequalities compared to communities that had secured and continued investment over time—those categorized as blue or green? And specifically, to what extent is the 1937 Residential Security Map reflected by the modern social geography of Pittsburgh? Did the conceptualization of Pittsburgh neighborhoods produce the conditions and divisions in modern Pittsburgh that the appraisers originally observed in the 1930's?

To analyze the legacies of redlining, census tract data was attached to the residential security grades to assess not only the impact of the practice but also establish who was affected in 1940 and in more modern Pittsburgh. My analysis begins by expanding on the historical work done in Pittsburgh. Crossney and Bartelt, in “Residential Security, Risk and Race,” developed a model of the factors that influenced the Pittsburgh map, but it is important to understand not just how the map was made but how different communities and conditions were graded. Demographic data from the Neighborhood Change Database (NCDB) was then used to analyze the association between the 1937 map and the persistence of a number of neighborhood characteristics in Pittsburgh's modern social geography. Using standardized censuses, tracts that have persistently covered the poorest residents or the most struggling housing markets—those with repeated concentrated disadvantages—were identified and compared to the Residential Security Map.

5.1 DATA COLLECTION

The Residential Security Maps are an artifact that give access to the conventional approaches of real estate appraisal in the 1930's and to the local influences that make each urban market unique. The 1937 map of Pittsburgh was obtained from Urban Oasis: a site that hosts archives of the

Residential Security Maps online in partnership with John Hopkins University, University of Maryland, and University of Richmond.¹²⁴ The map is focused on Pittsburgh but also includes some surrounding suburbs including portions of Mt. Lebanon, Braddock, Verona and Ross Township. The map categorized the housing submarkets of the Pittsburgh area from ‘First Grade’ (green) to ‘Fourth Grade’ (red). The map also outlined industrial areas, the commercial district, and spaces without housing. Overall, the map grades 44,700 acres of residential areas. This is a little bit larger than the City of Pittsburgh (37,000 acres) and about a tenth the size of Allegheny County (477,000 acres). As shown in Table 3, yellow, blue, and red represented the largest portions of the city and only a few pockets received green grades.

<i>Grade</i>	<i>Acreage</i>	<i>Percent</i>
<i>Green</i>	2,773	6.2%
<i>Blue</i>	14,051	31.4%
<i>Yellow</i>	16,233	36.3%
<i>Red</i>	11,645	26.1%

Table 3 Coverage and Size of each Security Grade

To evaluate legacies, we must first have some context of how communities rated red, yellow, blue, or green differed from one another when the maps were drawn. The 1940 Census provides the closest demographic descriptions of Pittsburgh to the 1937 map. The National Historical Geographic Information System (NHGIS), published by the University of Minnesota, provides access to the 1940 Census data tables and to a reconstructed census tract shapefile.¹²⁵ NHGIS researchers reconstructed the tract maps using common lines with the 2000 TIGER map and drew new lines to uniquely fit the original 1940 map as needed. The researchers have updated their data tables drawn along the 2008 tract geography but recommend that the 2000 data tables

¹²⁴ Division of Research and Statistics, “Residential Security Map” (Pittsburgh, PA: Home Owners’ Loan Corporation, July 20, 1937), Urban Oasis.

¹²⁵ Minnesota Population Center. National Historical Geographic Information System: Version 11.0 [Database]. Minneapolis: University of Minnesota. 2016. <http://doi.org/10.18128/D050.V11.0>.

be used along with other 2000 census information. In 1940, there were 491 tracts covering the county.

To make comparisons between censuses and thus evaluate persistence over time, it is critical to have tracts conform to common boundaries. The Neighborhood Change Database standardizes tracts into 2000 census tract boundaries, allowing observations to be made from 1970 through to 2000.¹²⁶ The data was attributed into 2000 tract boundaries by assigning 1990 blocks to 2000 tracts, making the 1990 data relatively straightforward to convert. 1970 and 1980 data were first assigned to 1990 blocks and then apportioned to 2000 tracts. 1970, 1980, and 1990 data had to be normalized to the 2000 tracts: count data for population and housing units was adjusted using a weighted sum and median data was adjusted using a weighted average.¹²⁷ There were 416 census tracts covering Allegheny County in 2000.

5.2 MEASURING HISTORIC REDLINING STATUS

Measuring and evaluating the historic redlining status of an area requires relating data from the scan of the Residential Security Map to two distinct census tract geographies—a process only possible through the construction of a geographic information system. First the information from the map must be extracted into a reconstructed shapefile. Because the Residential Security Map was overlaid upon a 1935 street map of the city, a shapefile of modern street centerlines, published

¹²⁶ Peter A. Tatian, *CensusCD Neighborhood Change Database (NCDB): 1970-2000 Tract Data: Data Users' Guide: Short Form Release*, Urban Institute, in collaboration with GeoLytics, 2002.

¹²⁷ Geolytics, “Appendix J,” 2002.

by Allegheny County, could be used to associate the digital image with geographic references.¹²⁸ Once referenced, a digital shapefile could be drawn upon the digital image (see Figure 8). The Residential Security Map now exists in a common file type with the 1940 and 2000 census tract shapefiles; all were projected into the 1983 North American Datum State Plane System on Pennsylvania's southern plate.

Even though the files all existed in a common projection system, the boundaries for the tract maps do not align with the boundaries of the security grades, nor are entire tracts always contained by the grades. Drawing conclusions is not possible without relating the shapefiles over common areas. The grades shapefile was then intersected with the tracts shapefile to create subtracts. The number of subtracts was larger than the original number of tracts because a single tract might be covered by several different grades. After the intersection, there were 648 subtracts for the 1940 census and 514 subtracts for the 2000 census. The intersected tract maps are visible in Figures 9 and 10, respectively.

Because portions of some tracts cover only a portion of the size of the original tracts, population weights were constructed that adjusted count variables proportionately to the coverage of subtracts. To improve the accuracy of the population weights, large empty spaces in the city were erased from the tract shapefiles prior to intersecting them with the grade shapefile. The five 2010 Census Tracts that covered Schenley Park, Frick Park, Highland Park, Allegheny Cemetery, and Riverview Park were used because they were intentionally drawn to capture empty space, covered both the parks and the cemetery and were drawn by a common author.¹²⁹

¹²⁸ Allegheny County Division of Computer Services Geographic Information Systems Group, "Allegheny County – Street Centerlines 201608," <http://www.pasda.psu.edu/uci/DataSummary.aspx?dataset=1224>, 2016.

¹²⁹ U.S. Census Bureau, "2010 TIGER/Line Shapefiles," 2010 Decennial Census.

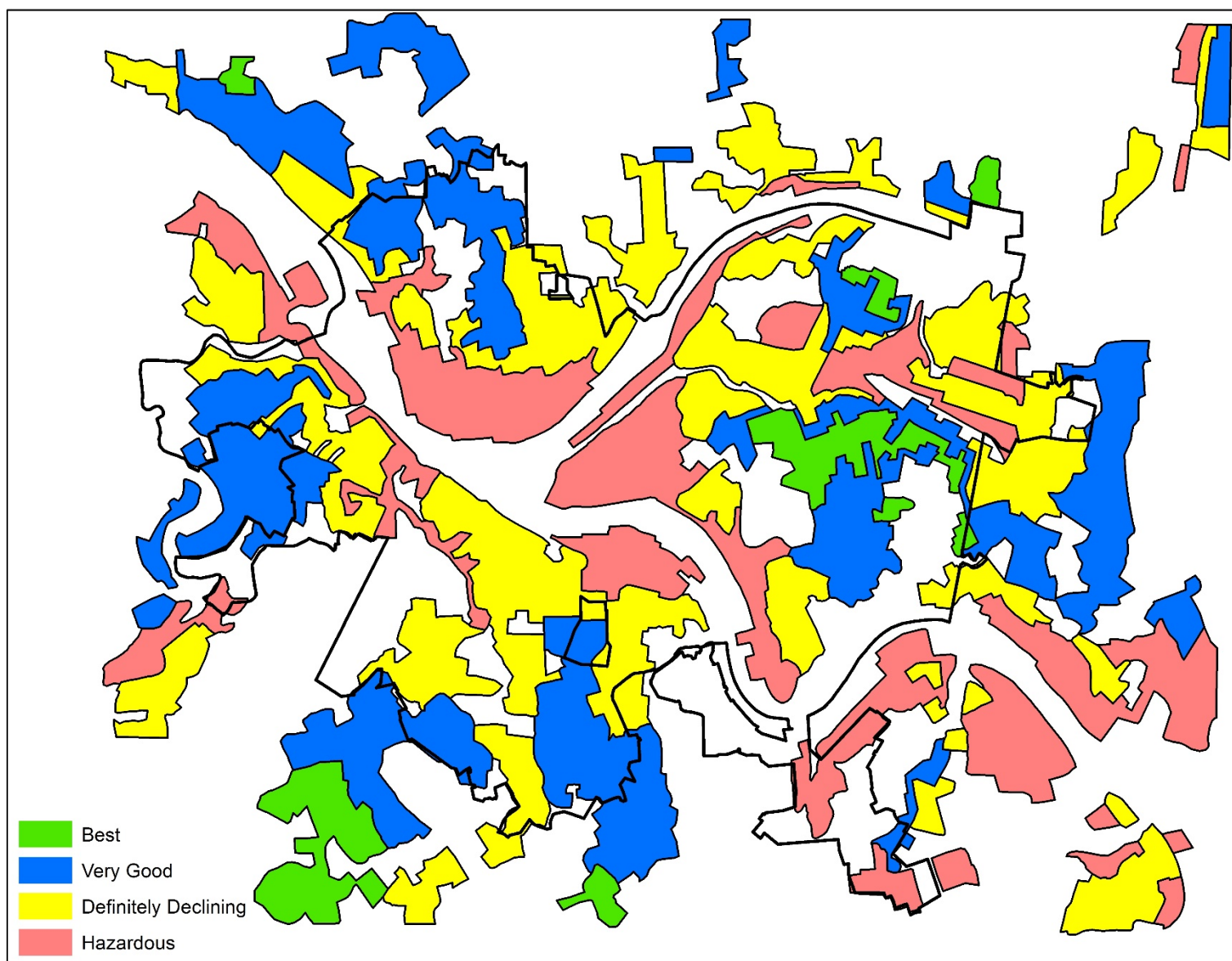


Figure 8 Digitized Residential Security Map for Pittsburgh, Pennsylvania (1937)

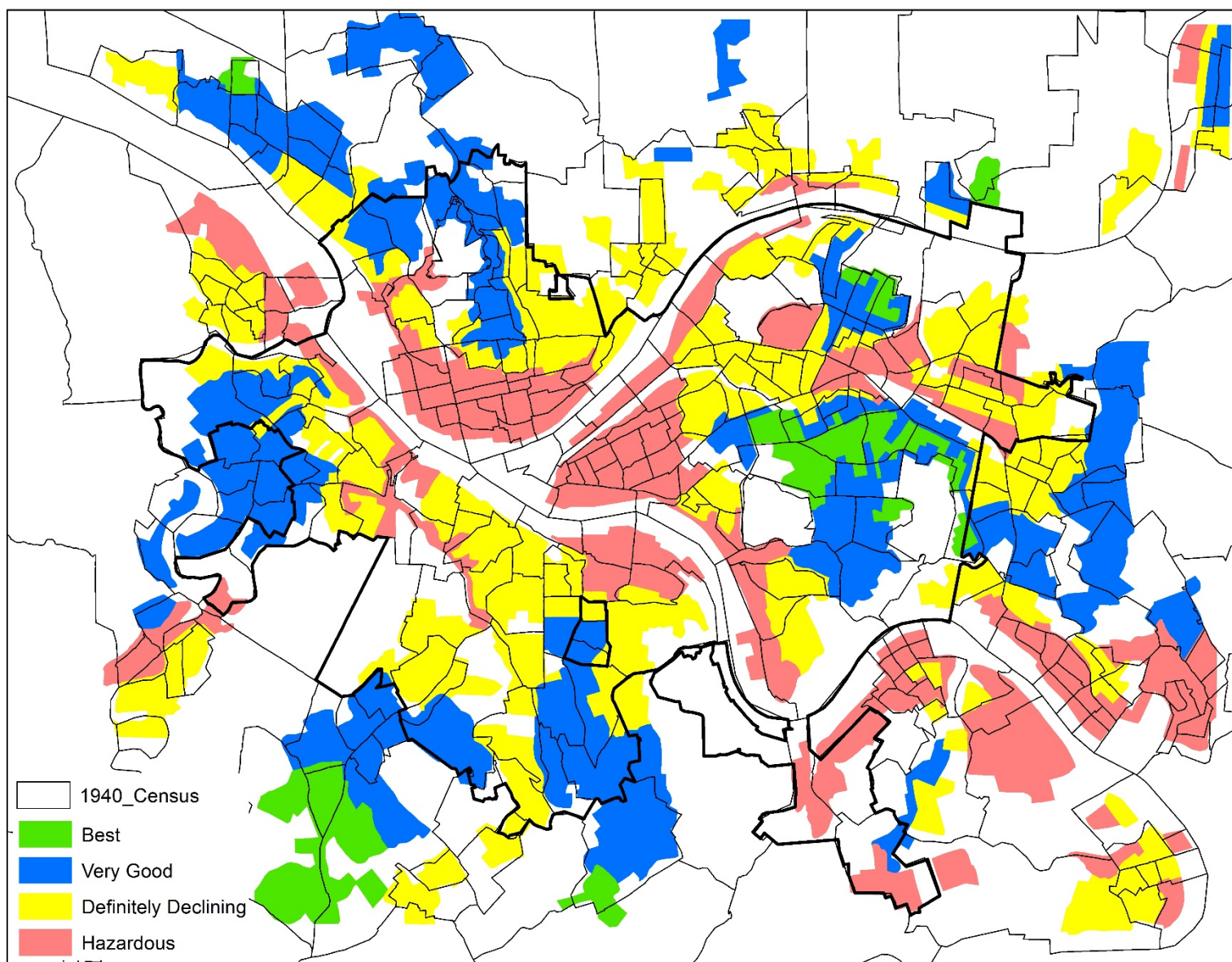


Figure 9 1940 Census Tracts Intersected with Residential Security Grades

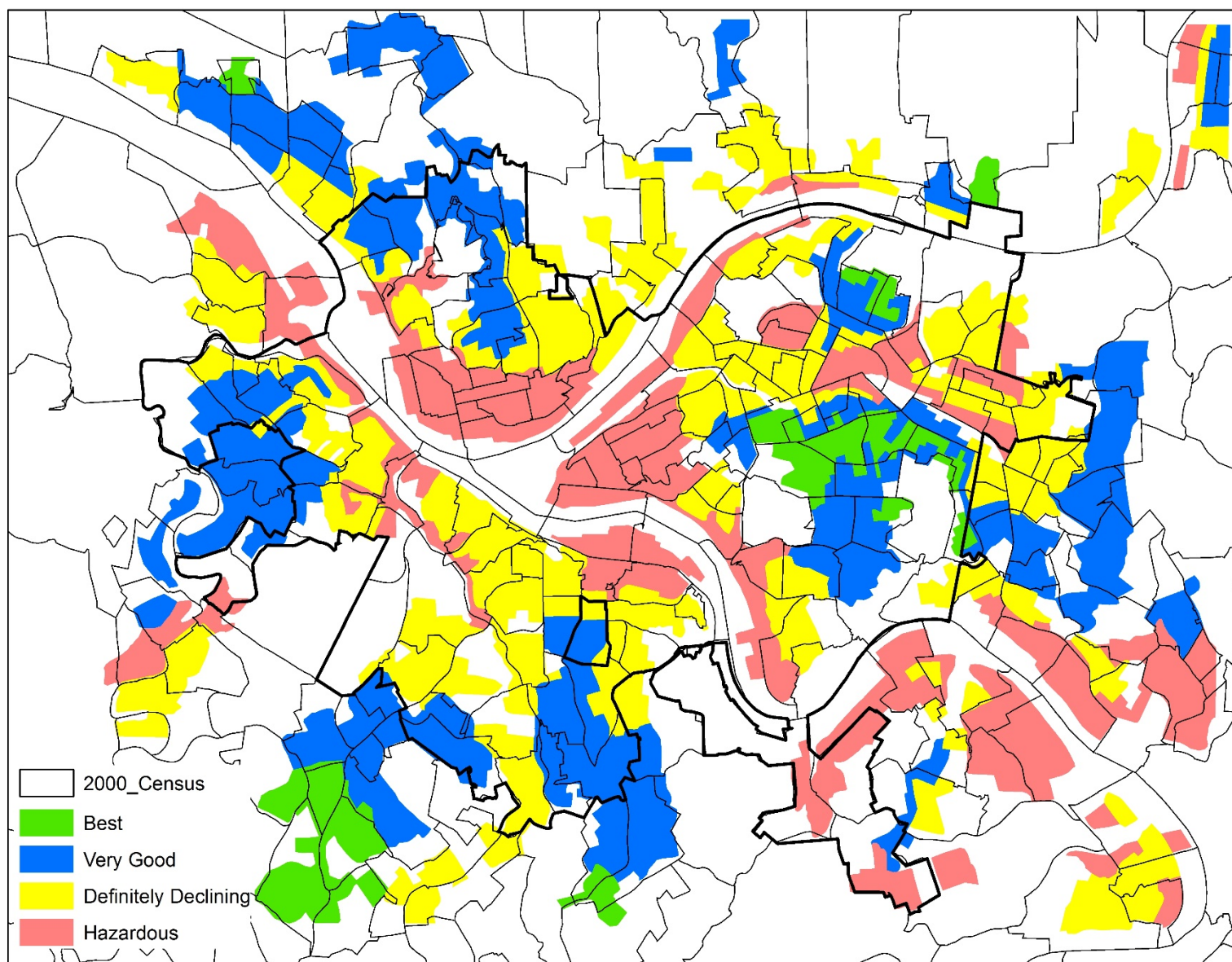


Figure 10 2000 Census Tracts Intersected with Residential Security Grades

5.3 NEIGHBORHOOD CHARACTERISTICS AND CONDITIONS

Previous research has relied on a variety of population and housing measures, largely from the 1940 Census, for their analysis. A summary of a few prominent papers including the variables that were used and for what purpose is shown in Table 4. All of the authors included some measurement of housing value, owner occupancy rate, housing age, and the presence of Black and immigrant communities. The variables that were used in previous research guided many of the decisions of which variables to include in my analysis.

	<i>Hillier (2005)</i>	<i>Crossney And Bartelt (2005) “Residential Security, Risk And Race”</i>	<i>Greer (2012)</i>	<i>Crossney And Bartelt (2005) “Legacies Of The Holc”</i>	<i>Brennan (2015)</i>
<i>Purpose</i>	Determinants of Grade	Determinants of Grade	Determinants of Grade	Mortgage Distribution	Mortgage Distribution
<i>Mortgage availability</i>			Yes		Yes
<i>Housing value</i>	Median	Median	Average	Median	Median
<i>Owner occupancy rate</i>	Yes	Yes	Yes	Yes	Yes
<i>Housing quality</i>	Yes		Yes		Yes
<i>Housing age</i>	Median	Percent pre- 1920	Average	Percent pre- 1920	Median
<i>Rent</i>		Median		Median	
<i>Single Units or Duplexes</i>		Yes		Yes	
<i>Black</i>	Percent	Percent	Dummy	Percent	Percent
<i>Immigrant</i>	Percent	Percent	Dummy	Percent	Percent by ethnicity
<i>Crowding</i>	Yes				
<i>Income</i>			Yes		

Table 4 Key Variables from Selected Papers

5.3.1 1940 Variables

Contemporary neighborhood conditions are partially determined by their history. To assess historic legacies present in modern communities, I first determined how communities that received a green or blue grade compared to those communities that received a yellow or red grade. The 1940 Census was used to measure neighborhood conditions in each category. Although the 1940 Census lacks the breadth of questions included in modern censuses, the data that is available provides valuable context for how these graded areas compared when they were originally drawn. Each of these counts was weighted, by the coverage of the intersected tract relative to the original tract size, and then aggregated to the overall grade. The first variables considered are the counts of total, native white, immigrant, and black population to assess how many people were affected by each grade and if people of color were more likely than other groups to be in red and yellow grades.

Next, several housing variables are considered including occupancy rate, ownership rate, average value, abandonment and building condition. These variables allows a snapshot of housing conditions to be compared grade by grade. Abandoned units are vacant units that are neither for rent nor for sale and thus vacant for an extended time period. The crowding variable was calculated by dividing the total weighted number of people by the total weighted number of housing units. To bolster the measurement of crowding, the population density of each grade was calculated by dividing the total number of persons in the grade by the overall acreage. Crowding and density give a better perspective of how communities are structured. The average value of homes in each of the grades was calculated by first multiplying the median value of a tract by the weighted number of housing units in that tract then dividing the weighted aggregate value by the total of number of units in the grade overall and finally summing the values of the tracts for each of the grades. All of the variables from the 1940 census are drawn from individual categories and none

of them were recalculated unless otherwise stated, aside from the proportional weight based upon coverage. The 1940 variables used are summarized in Table 5.

<i>Variable</i>	<i>Calculation</i>
Total Population	as given
Black Population	as given
Native White Population	as given
Immigrant Population	sum of foreign born white male and female populations
Crowding	total population divided by total housing units
Density	total population divided by acreage of tract
Occupancy Rate	occupied units divided by total housing units
Poor Condition	units in need of major repairs divided by total housing units
Owner Occupancy Rate	owner occupied units divided by occupied housing units
Abandonment Rate	vacant units not for sale or rent divided by total housing units
Average Value	median value aggregated by total reporting housing units

Table 5 Variables from the 1940 Census and their Source

5.3.2 1970 to 2000 Variables

The lingering effects of redlining were assessed by comparing standardized census data prepared by the NCDB. The analysis used two related yet distinct groups of variables: demographic (who is living in these communities?) and physical (what is the built environment like in these communities?). The demographic variables are largely percentages based upon the total population; housing variables are also largely percentages but they are based upon the total housing units. Redlining had the simultaneous geographic impact on those who live in the graded areas and on what was built there.

The demographic measures used were total population, the total black population, average income, and percent poverty. Total population is measured consistently over time and is used to

judge if redlined communities were less stable and more susceptible to citywide population declines than the communities that were labeled green or blue. Population decline is calculated by the percent change from 1970 to each of the other three census years. By basing each of the three measures of population decline in 1970, it is possible to evaluate the cumulative population loss along a consistent benchmark. Measuring the percent change across each decade would have produced results based upon a shifting position and would have been more difficult to draw meaningful conclusions.

Because the presence of people of color was a factor in determining the original grades, it is important to assess whether Black Pittsburghers remain segregated into red and yellow areas or if they are now equally likely to live in blue and green areas. The relationship between modern segregation and historic neighborhood appraisal is measured using the percentage of Black people in the tract. Because neighborhood appraisal and ensuing disinvestment blocked redlined communities from accessing traditional avenues of accumulating wealth and because economic class was a factor included in neighborhood appraisal, I included the poverty rate and average income of tracts to assess whether historic patterns of economic segregation have persisted geographically in modern Pittsburgh. Average income was used because it was reported in each of the four censuses and median income was not reported in the 1970 Census. Each of the four demographic measures were proportions and thus did not need to be weighted by the coverage of the tract—multiplying both the dividend and divisor by the same amount has no impact on the quotient. These decisions are summarized in Table 6.

<i>Variable</i>	<i>Calculation</i>
Percent Change in Population 1970-1980; 1970-1990; 1990-2000	total population for 1980, 1990, and 2000 subtracted by 1970 total population and then divided by 1970 total population
Percent Black in 1970, 1980, 1990, 2000	Black population divided by the total population in each respective year
Poverty Rate in 1970, 1980, 1990, 2000	as given
Average Income in 1970, 1980, 1990, 2000	as given

Table 6 Demographic Variables from the NCDB and their Source

The housing measures used were occupancy rate, home ownership rate, black home ownership rate, abandonment rate, and average value. Additionally, I focused on the impact of historic neighborhood appraisal on units built before 1940 by assessing the demolition and prevalence of the old units between 1970 and 1980. Previous research has measured home ownership, home value, and home age and I included each of these variables in my analysis. The occupancy rate is calculated as the portion of occupied units out of all housing units. The abandonment rate is calculated as the portion of vacant units that are neither for sale nor for rent out of all housing units. These two variables provide some indication of the demand for housing in a community; vacancy and abandonment would, theoretically, be higher in communities where fewer people are interest in living, there are more delinquent property owners, and, perhaps, less stability. Occupancy rate and abandonment rate were both percentages and thus were not weighted by coverage. Each decision about housing variables from the NCDB are summarized in Table 7.

I measured ownership in the community because it was a factor in determining the grades, has been used in previous research about the maps, and is directly related to community's access to mortgage funds. The ownership rate was calculated as the portion of owner-occupied units out of the total number of occupied units in the community. Neighborhood appraisal, redlining, and mortgage discrimination prevented people of color from accessing traditional mortgage funds. To

estimate the degree to which historic neighborhood appraisal impacted modern home ownership among African Americans, I divided the number of Black-owner-occupied units by the total number of Black-occupied units. Previous research has also assessed the value of homes. I calculated the average value of home in a tract by dividing the aggregate value of specified units, which was reported in each census, by the total number of specified units in the tract. Ownership rates and average value are proportions and were not weighted according to coverage.

<i>Variable</i>	<i>Calculation</i>
Occupancy Rate in 1970, 1980, 1990, 2000	occupied housing units divided by total housing units in each respective year
Abandonment Rate in 1970, 1980, 1990, 2000	vacant units not for rent or for sale divided by total housing units in each respective year
Home Ownership Rate in 1970, 1980, 1990, 2000	owner occupied units divided by occupied housing units in each respective year
Black Home Ownership Rate in 1970, 1980, 1990, 2000	Black owner occupied units divided by Black occupied housing units in each respective year
Average Value in 1970, 1980, 1990, 2000	aggregate value of specified housing units divided by total specified housing units in each respective year
Total Housing Units Built Before 1940 in 1970	housing units built before 1940 weighted by tract coverage and aggregated by grade in 1970
Percentage Of Old Units in 1970 and 1980	housing units built before 1940 divided by the total number of housing units in 1970 and 1980
Rental Rate in 1970	renter occupied units divided by occupied housing units in 1970
Old Unit Rental Rate in 1970	renter occupied housing units built before 1940 divided by the total number of housing units built before 1940

Table 7 Housing Variables from the NCDB and their Source

Finally, I measured the presence of units built before 1970 and 1980. I only compared 1970 to 1980 in order to isolate a generation of homes and see how historic disinvestment impacted the oldest housing units over the course of that decade. First, I weighted the number of units built before 1940 in 1970 according to census tract coverage then aggregated the number of old units by security grade. I compare the total number of housing units in 1940 to the total number of housing units in 1970 that were built before 1940 to assess whether red and yellow areas experience more demolitions—a reflection of both deteriorated housing conditions from lack maintenance

and disinvestment and of exposure to urban renewal projects. Then I assess the prevalence of old units, those built before 1940, among all housing units in 1970. Next, I assess the relationship between security grade and demolition of old units between 1970 and 1980 to measure the impact of historic disinvestment on building conditions. Again, I assess the prevalence of old units by security grade, this time in 1980. The prevalence of old units in 1970 and 1980 is a reflection of both the character of housing and investment in new construction by grade. Finally, I will assess the use of these older units, by historic grade, by calculating the rental rate for old units. If old units are more likely to be owner occupied, it is, perhaps, more likely that they are well maintained as well. However, if old units are more likely to be passed down to renters, who are more transient and not responsible for the condition of the unit, it is, perhaps, more likely that the units are less maintained and in worse condition. The number of units built before 1940 will be weighted by coverage in 1970 for the comparison, in aggregate terms, to the 1940 Census. However, the other variables, which are percentages, are not weighted.

5.4 MEASURING LEGACIES

To assess the impact of neighborhood appraisal on Pittsburgh's modern social geography, I focused on the spaces that persistently exhibited similar neighborhood conditions. Most of the 1970 to 2000 variables in my analysis were scaled within their respective census year by subtracting the mean from each observation and dividing by the standard deviation. The mean and standard deviation were determined from the sample of tracts that received a grade, excluding duplicate tracts to prevent weighting and unwanted skew. Comparing tracts within each census controls for movement in the distribution between censuses because the scale is relative to the

distribution of the variable for that year. Further, assessing the distribution of tracts within a census means that it is not necessary to adjust dollar amounts for inflation because the dollar values are only being directly compared within a given year. This scaling indicates the relative position of a tract within that census's distribution. Variables were flagged if they are more than a standard deviation from the mean in each of the four census years and thus are persistently extreme towards one end of the distribution. Frequency tables were constructed to associate these persistent tracts with the residential security grade that they received in 1937. Chi-squared tests or Fischer's exact tests were used to test the independence of the persistence of a variable and the historic appraisal of that space. A few cases, those that evaluate change over time, were not measured by persistence; instead, population decline and the assessment of units built before 1940 were compared by historic redlining status using a difference of means test.

5.5 ASSUMPTIONS

This analysis relies on four assumptions: two methodological ones about using census data and two conceptual ones about the ability to measure historical effects. The first assumption is standard within spatial analysis relying on field data: populations are evenly distributed across the census tract. There are clear violations to this—census tracts cover parks, streets, businesses, and rivers—but it is a necessary assumption to work with census data. Perhaps it is likely that at a more granular level, like a block, there are many deviations from the tract—a disproportionate number of rental units because of a high-rise or an absence of people altogether because of a park—which are smoothed over in the aggregate. Perhaps, given other information, it would be reasonable to assume that in a 1940 tract, that was 95% covered by the HOLC map, the population would be

entirely living in the graded area. Yet, these decisions are impossible to make correctly for the entire map of Pittsburgh; it is necessary to assume that the population is evenly distributed and distribute population proportionately to the coverage of each intersecting tract.

A second assumption relates to how the NCDB standardizes census tracts into common boundaries. This requires a tremendous number of assumptions and calculations that perhaps deviate from reality but are, nonetheless, the most reasonable procedure.¹³⁰ For instance, in a few tracts, the number of units built before 1940 marginally increased from 1970 to 1980. In the process of realigning the older census to the 2000 tracts, some counts were inevitably misappropriated. While these deviations are incorrect in a few instances, the deviations are even among the overall population of adjusted tracts.

Fundamental to any assessment of historical legacies is a presumption that historic dynamics can be detected in contemporary statistics. A common fallacy generally, but particularly applicable to contemporary discussions of racism, is that historical practices do not shape future conditions. In their piece, “What is Racial Domination?” Desmond and Emirbayer challenge this “ahistorical fallacy.” They write, “today’s society is directed, constructed, and molded by—indeed grafted onto—the past.”¹³¹ While the statement applies broadly, it is particularly poignant in considering the geographic and historic foundation of Pittsburgh’s divisions and the neighborhood appraisal practices developed in the 1930’s but practiced into the present. Several studies have shown the effects of historic practices in modern contexts. Patrick Sharkey’s book, *Stuck in Place*, examines how racial inequality has been persistent and even has been inherited by younger

¹³⁰ John R. Logan, Zengwang Xu, and Brian J. Stults, “Interpolating US decennial census tract data from as early as 1970 to 2010: A longitudinal tract database,” *The Professional Geographer* 66, no. 3 (2014): 412-420.;

¹³¹ Matthew Desmond and Mustafa Emirbayer, “What Is Racial Domination,” *Du Bois Review* 6, no. 2 (2009): 335–55.

generations of African Americans. Sharkey argues that urban neighborhood conditions for African-American families in the 1960's, typified by segregation and concentrated disadvantage, created gaps in a variety of statistical measures, such as wealth, that are inherited generationally.¹³² Historic effects can even have psychological repercussions; Mindy Fullilove's study of Pittsburgh's Hill District, *Root Shock*, found psychological and community scars, precipitated by the destruction of the Lower Hill District and displacement of thousands, decades after the events themselves.¹³³

Finally, my research rests on the assumption that the lending industry impacted a large enough portion of homes for their neighborhood appraisal practices to have had a widespread and determining effect. The private housing market would have likely affected, in some capacity, the vast majority of housing units. By the early 1960's, the Housing Authority of the City of Pittsburgh had constructed only 7,011 units.¹³⁴ This was a minute amount compared to the 189,000 units in the City of Pittsburgh overall in 1970. The overwhelming portion of units supplied by the private market, combined with a citywide ownership rate of roughly 49% in 1970, suggests that mortgage lenders had tremendous opportunity to employ neighborhood appraisal and thus shape housing conditions in Pittsburgh.¹³⁵

¹³² Patrick Sharkey, *Stuck in Place* (Chicago: Chicago University Press, 2013).

¹³³ Mindy T. Fullilove, *Root Shock: How Tearing Up City Neighborhoods Hurts America, and What We Can Do About It* (One World/Ballantine Books, 2004).

¹³⁴ Trotter and Day, *Race and Renaissance*, 74-75, 216.

¹³⁵ Tatian, *NCDB*, 2002.

6.0 THE LEGACY OF THE HOLC ON PITTSBURGH'S NEIGHBORHOODS

To assess HOLC's impact on Pittsburgh's neighborhoods, it is necessary to examine neighborhood characteristics at the time the maps were made and in more modern Pittsburgh. My analysis first examines how conditions varied by grade to develop a broader sense of what distinguished one grade from another. Next, I examine conditions in modern Pittsburgh by assessing the persistence of a number of variables across time and the relationship between persistence and the security grade. I begin by discussing patterns and changes across time in the distribution of variables. Then, I assess the relationship between demographic variables and security grade, finding that red and yellow areas were more likely to have persistent poverty, Black populations, and population loss while green and blue areas were most likely to have the highest average incomes. Next, I assess the relationship between housing conditions and security grade: tracts that persistently have the highest levels of homeownership—regardless of the race of the home owner—and the highest home values were concentrated into green and blue areas. Finally, I assess the presence of old units by security grade and find that red and yellow areas had a greater portion of old units demolished, had older housing stocks, more renters, and more renters housed in old units. The association between persistent conditions in modern Pittsburgh and the historic appraisal of those areas reflects a permanence to Pittsburgh's social geography and the impact of conceptualized appraisal on Pittsburgh.

6.1 1940 CONDITIONS, BASED ON CENSUS DATA

Assessing the legacies of the Residential Security Maps requires understanding the different significance of the security map categories. Amid the conversation about the maps' disproportionate impact on communities of color, it is important to understand who was affected by each security category. It is equally important to keep in mind that these numbers are estimates of who was affected based upon the security category coverage of a census tract. Additionally, the numbers are aggregated for each category.

The Pittsburgh Residential Security Map disproportionately included people of color and immigrants in lower categories, particularly in “Hazardous” areas (see Table 8). More people lived in red or yellow areas than in blue and green areas meaning that the population is generally skewed towards the lower categories. To control for the skew, it is important to understand the number of people as a share of that category’s population. For instance, immigrants were slightly more likely to live in red areas because, while they were roughly twelve percent of the overall population, they were fourteen percent of the population in red areas. Immigrants were slightly underrepresented in the green and blue grades as well but not to a significant degree. However, people of color lived disproportionately in red areas. People of color were twice as likely to live in a red area as they should have been. Yet they were two times less likely to live in a yellow area and five times less likely to live in either a blue or green area. Overall, more than three out of four people of color lived in area considered “Hazardous” and nineteen out of twenty lived in an area considered either “Hazardous” or “Declining.” As research has consistently found for other cities, Pittsburgh’s Residential Security Map disproportionately affected people of color. Yes, many native white workers were impacted as well—redlining was a wider practice than being exclusively racist—but, unlike for white communities, a significant majority of people of color experienced redlining.

	<i>Red</i>	<i>Yellow</i>	<i>Blue</i>	<i>Green</i>	<i>All Grades</i>
<i>Total Population</i>	303,013	307,141	182,507	27,958	820,619
<i>Black Pop.</i>	50,270	12,339	2,536	442	65,587
<i>Black Share</i>	16.6%	4.0%	1.4%	1.6%	8.0%
<i>Total White Pop.</i>	252,606	294,732	179,977	27,512	754,827
<i>Immigrant Pop.</i>	43,533	36,496	17,102	2,745	99,875
<i>Immigrant Share</i>	14.4%	11.9%	9.4%	9.8%	12.2%
<i>Native White Pop.</i>	209,073	258,235	162,875	24,767	654,952
<i>Native White Share</i>	69.0%	84.1%	89.2%	88.6%	79.8%
<i>Percent of Total Pop.</i>	36.9%	37.4%	22.2%	3.4%	100%
<i>Percent of Blacks</i>	76.7%	18.8%	3.9%	0.7%	100%
<i>Percent of Whites</i>	33.5%	39.1%	23.8%	3.6%	100%
<i>Percent of Immigrants</i>	43.6%	36.9%	17.1%	2.7%	100%

Table 8 Population Characteristics by Security Grade, 1940

Housing conditions ranged across grades with better conditions in green areas and worse conditions in red areas. Across all grades, there were high levels of unit occupancy that decreased marginally as the grade improved. As Table 9 shows, the city-wide average for occupancy was 97.5% which was weighted upwards by the greater of number of housing units in red and yellow areas. Occupancy rates were lowest for green areas where 94.6% of units were occupied. Overall, occupancy was high across the city. Similarly, crowding, as measured by the number of people per housing unit, is even across the grades. It slightly decreases across the grades from 3.8 people per unit in red areas to 3.5 people per unit in green areas. While the average number of people in a housing unit was steady across the grades, the density of people changed significantly from grade to grade. People in red areas were living in communities more than twice as dense as those living in either blue or green areas. Abandonment was consistently low (less than 1%) across the four grades. The consistency of these three variables suggests a steady demand for homes across the four grades. Owner occupancy increased as the grade improved, rising from 24.5% in red areas to 36.5% in yellow areas and about 43% in blue and green areas. The average value of homes differed dramatically between grades. The average value of homes in red and yellow areas were \$2,677

and \$3,951, respectively, compared to \$6,631 in the blue grade and \$11,356 in the green. While the 1940 census didn't measure income, the more than four-fold increase in average home value from red to green combined with the about nineteen-point increase in home ownership suggests that income and wealth increased as the grade improved. Further, poor condition units, those indicated as in need of major repairs, were most prevalent in red areas. The prevalence of these units decreased steadily as the grade level increased with about 2.5% of units in green areas in poor condition. This is another indication of financial status because those with enough money would presumably be more easily able to maintain their home. The Residential Security Map's grading criteria captured the divides in Pittsburgh's geography. Grades ranged according to the appraisers opinion of the population and the quality of housing in Pittsburgh.

	<i>Red</i>	<i>Yellow</i>	<i>Blue</i>	<i>Green</i>	<i>All Colors</i>
<i>Occupancy Rate</i>	98.0%	97.9%	96.9%	94.7%	97.5%
<i>Poor Condition</i>	14.2%	8.7%	5.5%	2.4%	9.7%
<i>Abandonment Rate</i>	0.1%	0.2%	0.3%	0.7%	0.2%
<i>Owner Occupancy</i>	24.5%	36.6%	43.6%	43.2%	34.1%
<i>Average Value (in 1939 Dollars)</i>	2,677	3,951	6,631	11,356	4,384
<i>Crowding Rate (Pop. per Unit)</i>	3.80	3.75	3.54	3.51	3.71
<i>Density (Pop. per Acre)</i>	26.02	18.92	12.99	10.08	18.36

Table 9 Housing Conditions by Security Grade, 1940

6.2 PERSISTENT CONDITIONS FROM 1970 TO 2000

6.2.1 Descriptive Statistics

Pittsburgh experienced change in a variety of characteristics from 1970 to 2000 as large scale patterns such as deindustrialization and suburbanization shaped the economy and social organization of the region. The distribution curves for population loss became more negative as the gap between 1970 and the comparison year increased as is shown in Table 10. The minimum value decreased as the gap increased as did the means and medians. Each of these distributions was distorted by extreme positive outliers: a handful of tracts had significant gains in population for each year including the largest growth in tract population of more than 400%. This long positive tail elevates the skewness and kurtosis figures even though a large majority of tracts (83% in 1980, 88% in 1990, and 90% in 2000) had not seen an increase in population from 1970. This general trend matches the outmigration from the cities towards outer ring suburbs and out of the region. The percent of the population that was Black increased over time and the distribution curves shifted positively yet there remained a large portion of tracts with few Black people especially considering that by 2000, 23.8% of those living in these tracts were Black. This reflects the high level of residential segregation within the Pittsburgh region. Residential segregation did decrease each decade from 1970 and 2000 which is reflected by the rising measures of central tendency but also the declining levels of kurtosis as the density of the distribution became more even.

In each decade, poverty was concentrated in a few tracts. Each distribution has a large positive tail and many of the tracts are concentrated at relatively low levels of poverty. From 1970 to 1990, the kurtosis measured fairly high and increased marginally with time but dropped a fair amount by 2000. From 1970 to 1990, the mean and maximum value increased similarly yet the

kurtosis increased only slightly suggesting that while poverty levels were rising the geographic dispersion of poverty remained proportional. In 2000, however, the maximum value and kurtosis dropped yet the mean increased suggesting that poverty became more dispersed throughout the city. The income figures are not adjusted for inflation so it is meaningless to compare the means and medians directly across decades. Yet, it is important to note that each distribution was positively skewed for each decade meaning that a few tracts had the highest incomes.

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Standard Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
'70 to '00 Percent Change in Pop.	-0.2536	-0.2989	-0.9103	4.0743	0.3782	6.9228	72.877
'70 to '90 Percent Change in Pop.	-0.2030	-0.2514	-0.7674	4.28	0.3603	8.1593	96.512
'70 to '80 Percent Change in Pop.	-0.1076	-0.1572	-0.6977	4.4819	0.3810	8.3476	92.326
'70 Percent Black	0.1275	0.0139	0	0.9865	0.2453	2.2552	6.9624
'80 Percent Black	0.1643	0.0230	0	0.9918	0.2817	1.8620	5.0886
'90 Percent Black	0.1911	0.0338	0	0.9907	0.2978	1.6156	4.2037
'00 Percent Black	0.2345	0.0706	0	0.9819	0.3099	1.3156	3.2191
'70 Poverty Rate	0.1161	0.0870	0	0.5082	0.0964	1.8851	6.6818
'80 Poverty Rate	0.1279	0.0904	0.0034	0.6404	0.1185	1.9098	6.8115
'90 Poverty Rate	0.1668	0.1122	0	0.8539	0.1600	1.9142	6.9958
'00 Poverty Rate	0.1697	0.1229	0	0.7009	0.1420	1.5453	5.2161
'70 Avg. Income	11,618	10,304	4,000.9	39,212	4,949.6	2.6636	12.367
'80 Avg. Income	22,986	21,015	6,862.9	89,612	9,738.9	2.5791	13.756
'90 Avg. Income	39,776	34,537	0	195,210	22,807	2.7689	14.930
'00 Avg. Income	56,263	48,498	0	302,850	33,906	3.1757	18.592

Table 10 Descriptive Statistics for Population Variables, 1970-2000

The descriptive statistics calculated for housing from 1970 to 2000 are listed in Table 15 in Appendix A. Occupancy rates in the study area decreased over time. This makes sense given

the significant population loss in the region over the same time period. From 1970 to 2000, occupancy rates fluctuated which suggests that some parts of the city lost more occupants, or that some areas of the city didn't lose as many housing units despite population loss. Conversely, abandonment increased in the city. In 1970, abandonment in the city was concentrated in small pockets of the city judging by how low the mean and median were and how heavy the positive tail was according to the skewness and the kurtosis. By 1980 and 1990, abandonment occurred more generally in the city as the mean, median, and maximum value increased and yet the kurtosis and skewness dropped significantly. In 2000, while the maximum value was far larger than it had been previously, the impact of the outlier was far less pronounced than it had been in 1970 because abandonment was more generally occurring than in 1970. Abandonment became more common but it did not become a general pattern across the city, the minimum value was within a standard deviation of the mean for each decade suggesting that even while abandonment became less pocketed with time a large portion of the variance was driven by those areas that were affected by abandonment.

Ownership maintained a similar distribution from decade to decade but there was a wide, consistent variance across the city of ownership rates in each decade. The ownership rate for Black people was calculated out of the number of housing units occupied primarily by a Black person, thus the sample size of tracts is significantly lower than for the other variables because of residential segregation in 1970. As time went on the number of tracts in the sample increased to 240 out of the 262 total tracts. As the number of tracts increased, the mean and median dropped perhaps suggesting that the way many people of color gained access to a portion of these tracts was by renting homes rather than buying them. As with income, it is difficult to draw meaningful comparisons between the distributions of the average values of owner occupied homes because the

figures are unadjusted for inflation. The number of tracts in the sample is slightly less than 262 because several tracts in the study area did not have a specified owner occupant which is a subset of responses. About 30,000 units that were built before 1940 were demolished between 1970 and 1980. A few tracts were excluded for this analysis.¹³⁶ The distribution of the demolition rate was negatively skewed with many tracts losing very few units but some tracts losing a large portion. The distribution of the percentage of units built before 1940 shifted slightly negatively from 1970 to 1980.

6.2.2 Population Characteristics

The 1937 HOLC map's grading patterns are associated with persistent neighborhood demographic characteristics from 1970 to 2000. Yellow or red areas had a disproportionate number of tracts with persistently large proportions of people of color. Redlined areas had 46 persistent tracts compared to 6 persistent tracts in blue or green areas. Persistent tracts were those that were at the extreme end—beyond a standard deviation from the mean—in each of the four census years. This relationship failed a chi-squared test of independence (p-value=0.000). The results of the independence tests for demographic variables are summarized in Table 11. The full frequency tables for each test are provided in Appendix A. Like when the maps were originally drawn, many disproportionately Black communities are in historically redlined areas. Figure 11 shows that there are three main clusters of tracts that were persistently Black: one in the North Side in the Manchester area, another centered in the Hill District, and a third in ranging from Larimer to

¹³⁶ The NCDB relies on a series of weights to assign count data from the 1970 and 1980 Censuses to 1990 census blocks (see Appendix J of the NCDB). As with any weighted estimate, there is a degree of risk that data will be misappropriated. Roughly 1% of housing units built before 1940 recorded in the 1970 Census were shown as increases in the 1980 Census. Tracts showing an increase were excluded from the analysis.

Homewood. Each of these clusters are largely covered by red areas with some portion of yellow area as well. There were no tracts that were persistently white. Because the standard deviation included the range between the mean and the minimum, tracts were flagged if they were in the upper 90% of the distribution for percent white. No tracts were in the upper 90% of the distribution for all four censuses.

<i>Variable</i>	<i>Relationship</i>	<i>p-value</i>
<i>Persistently Black</i>	Concentrated in red/yellow	0.000
<i>Persistently High Poverty</i>	Concentrated in red/yellow	0.001
<i>Persistently High Income</i>	Concentrated in green/blue	0.000
<i>Persistently Low Income</i>	Proportionate, small sample	0.502

Table 11 Summary of Independence Tests for Demographic Variables, 1970-2000

Tracts with persistently high levels of poverty were also associated with the yellow or red areas of the map. Of the 26 tracts with persistently and relatively high levels of poverty, 24 tracts were in yellow or red areas. The relationship between the grade and tracts with persistently high poverty had a statistically significant association (p-value=0.001). Tracts with persistently high poverty are those that had poverty rates a standard deviation above the mean for each of the four census years. There is a cluster of persistently poor tracts in the Hill District (see Figure 12). Conversely, tracts with persistently high average incomes were associated with blue and green areas; 32 such tracts were in blue or green areas compared with 10 such tracts in red or yellow areas. The relationship between income and grade was statistically significant (p-value=0.000). Tracts were considered to have persistently high incomes if their average income was beyond a standard deviation from the mean in each of the four census years. There were only two areas with persistently high incomes from 1970 to 2000 in Pittsburgh—Downtown and Squirrel Hill—the remainder of tracts were in the suburbs (see Figure 13). Urban renewal programs and public private partnerships from the 1950's redeveloped the 'Golden Triangle' in Downtown replacing the

deterioration observed by the appraisers of the 1930's into a functioning affluent community. While those tracts that had consistently higher incomes than the rest of the city were concentrated in blue or green areas, the few tracts that consistently had the lowest incomes were spread proportionately across the grades. Only nine tracts had persistent low incomes and seven of those were in redlined areas.

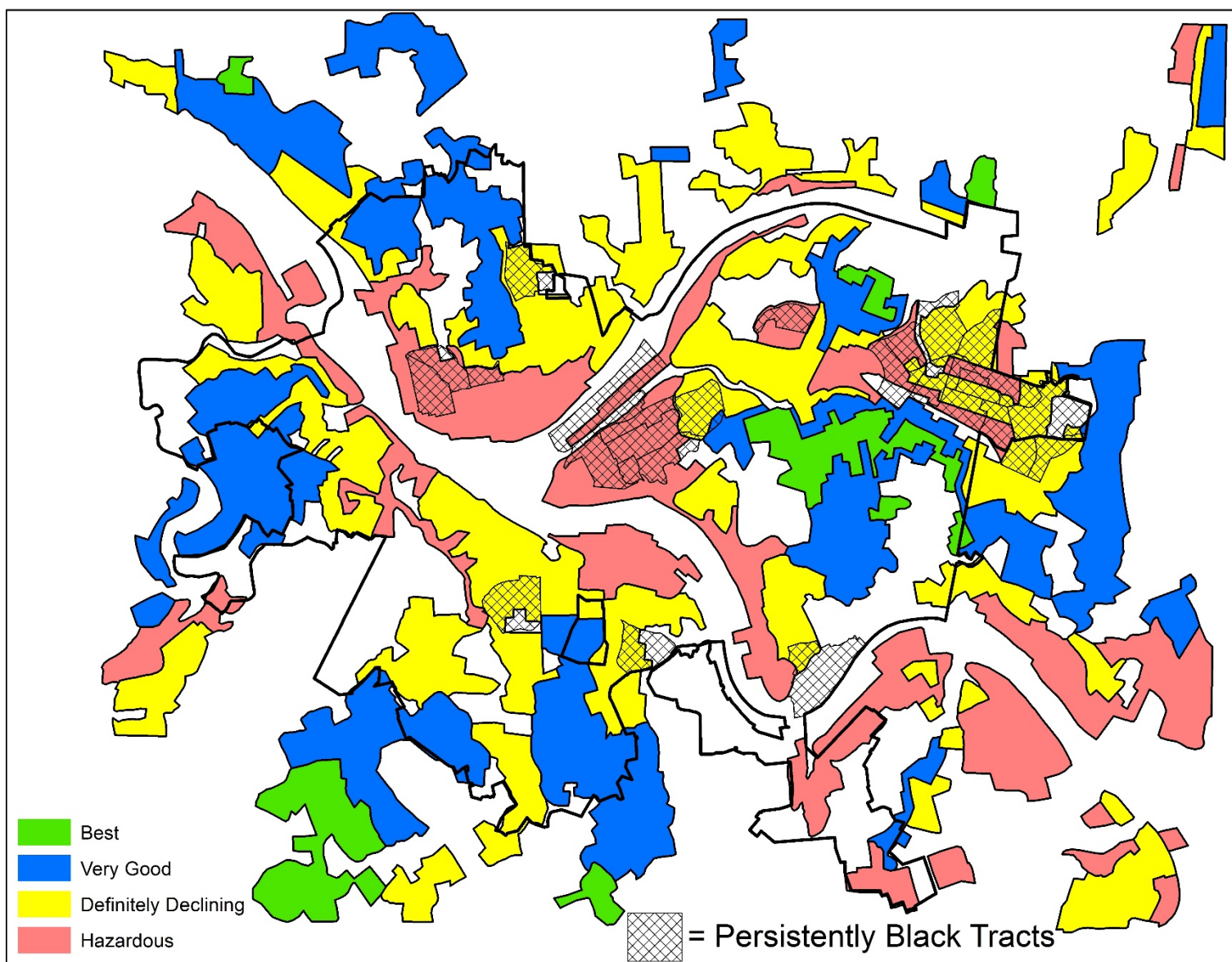


Figure 11 Persistently Black Tracts and Security Grade, 1970-2000

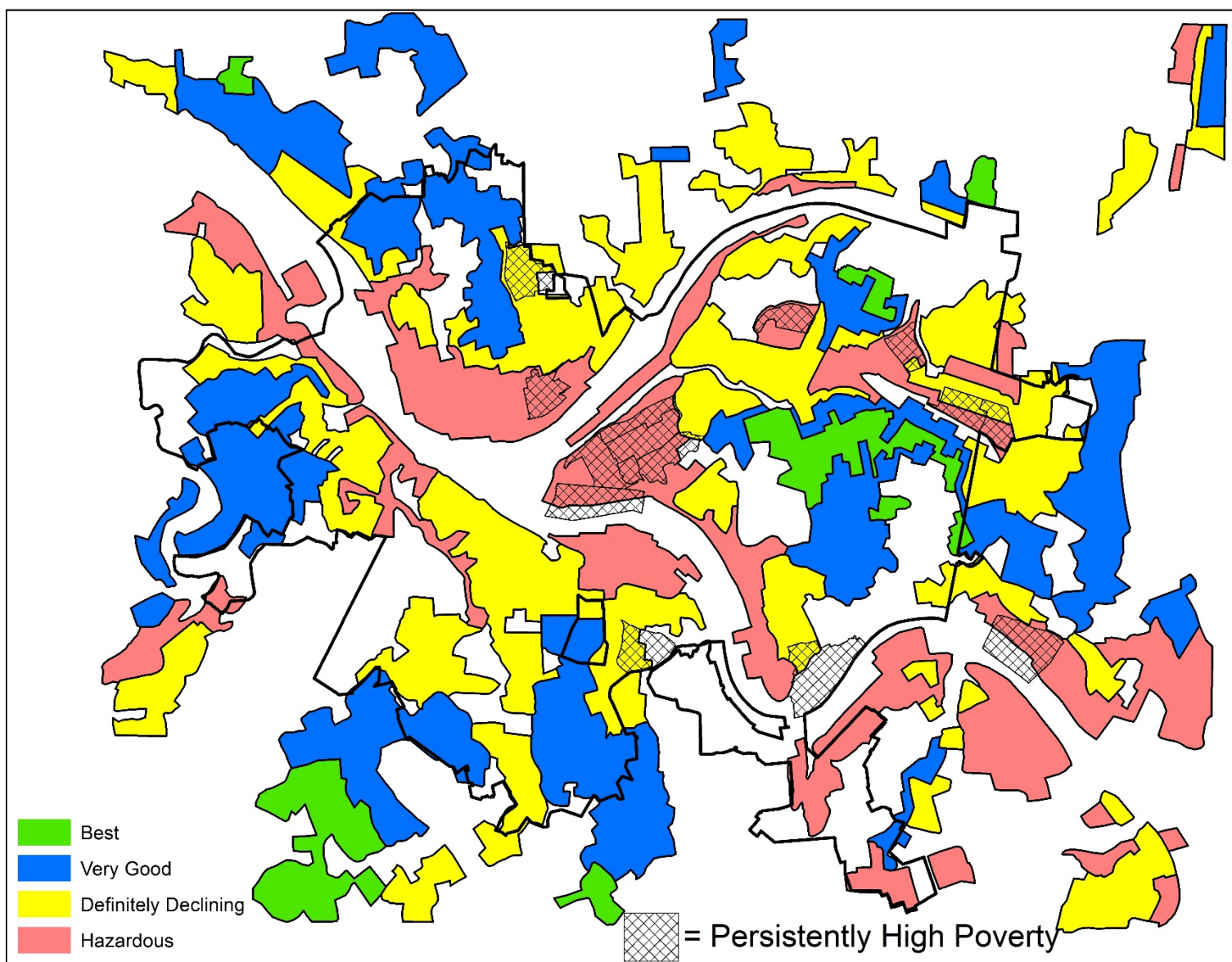


Figure 12 Persistently High Poverty Tracts and Security Grade, 1970-2000

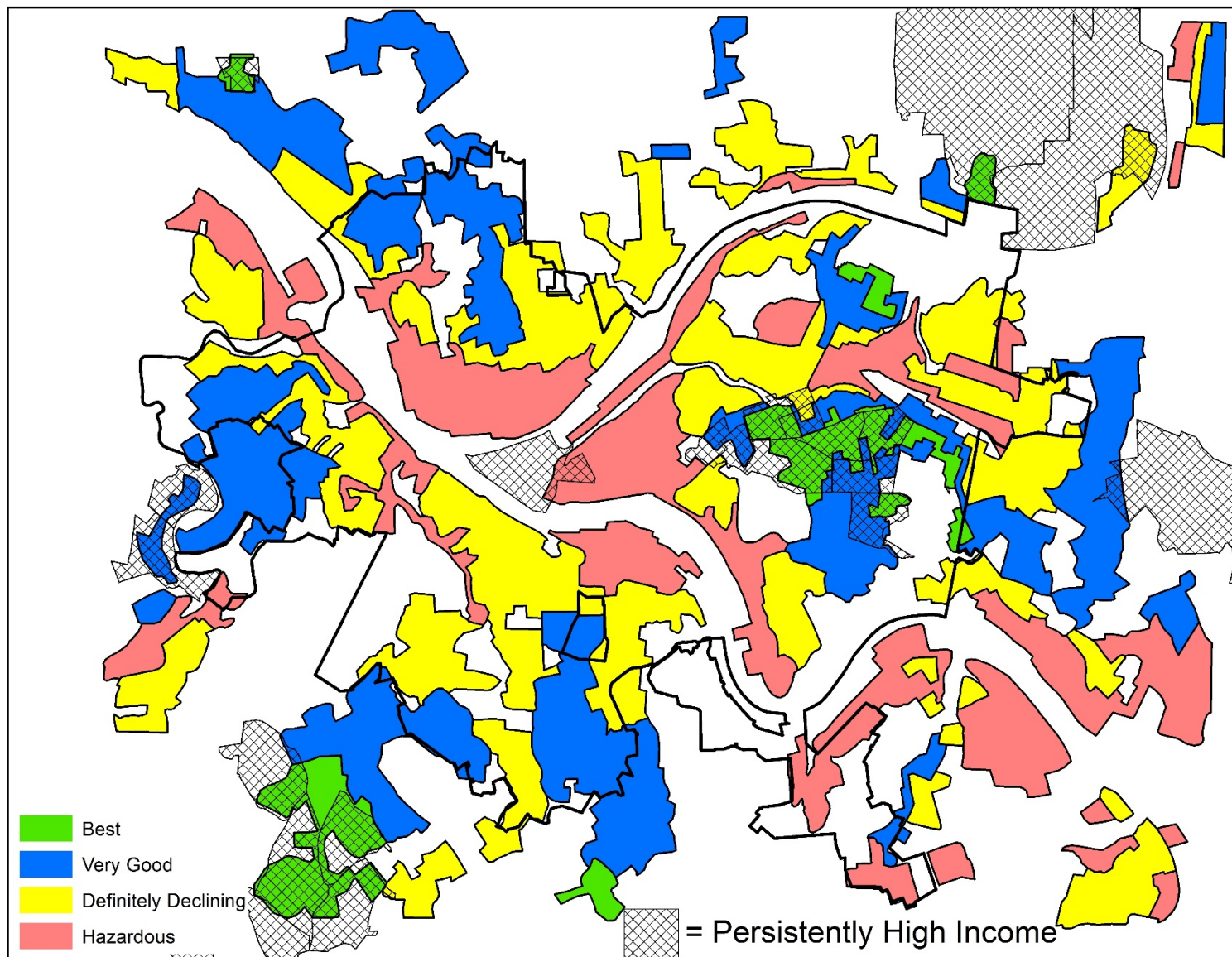


Figure 13 Persistently High Income Tracts and Security Grade, 1970-2000

The association between persistent neighborhood characteristics and the Residential Security Map are important findings. Housing markets in Pittsburgh that were historically considered to be the least valuable and most dangerous for investment, partially because they were home to people of color and the poor, are still more likely to be home to the same populations. Tracts that are selected are consistently more extreme than the rest of the distribution in each of four consecutive censuses. Conditions in these tracts are persistent and their alignment with the Residential Security Map suggests the characteristics have changed only marginally since 1937.

<i>Percent Change 1970 to</i>	<i>Mean (Red, Yellow)</i>	<i>95% CI</i>		<i>Mean (Green, Blue)</i>	<i>95% CI</i>		<i>P- value</i>
1980	-0.1229	-0.1639	-0.0819	-0.0820	-0.1354	-0.0285	0.1182
1990	-0.2291	-0.2670	-0.1913	-0.1513	-0.2045	-0.0981	0.0088
2000	-0.2896	-0.3267	-0.2505	-0.1970	-0.2498	-0.1442	0.0028

Table 12 Difference of Means Test of Population Change by Security Grade, 1970-2000

While the entire region experienced population loss from 1950 to 2000, different areas experienced the outmigration differently. In the third consecutive, and single largest, decade of population loss, the graded regions did not lose population at statistically distinct rates. Yet, the long-term population loss between 1970 and 1990 and 1970 and 2000 was more pronounced in redlined communities than in blue or green areas (see Table 12). This is, perhaps, largely driven by the mill communities that were in red and yellow areas. These areas were largely working class and largely dependent on the mills for work. When the steel industry collapsed in 1982-83, these communities were particularly affected. Neighborhoods in green and blue areas were home to more professionals who were more tied to the administrative, education, medical, and financial jobs that were more consistent in Pittsburgh. The graph of population change over time shows how red and yellow tracts lost population at similar rates but green tracts have had consistent population over time (see Figure 14). In 1970, blue, yellow, and red areas lost population at a somewhat

similar rate but by 1980, blue areas lost population at a slower rate than yellow or red areas which kept losing population similarly. Communities that had been historically redlined were more vulnerable to sustained population loss than communities that had not been.

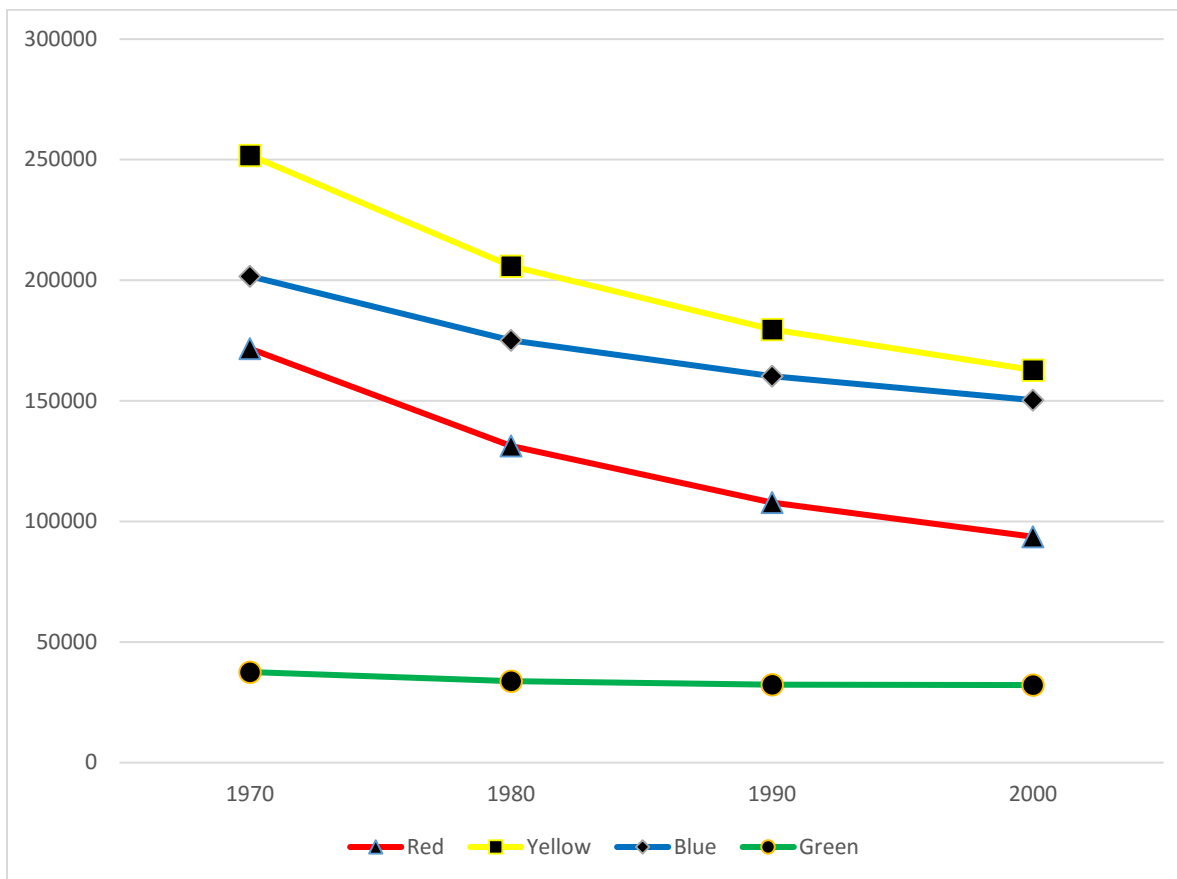


Figure 14 Change in Population by Security Grade, 1970-2000

6.2.3 Housing Conditions

Housing patterns, consistent from 1970 to 2000, were associated with the grading patterns of the 1937 Residential Security Map. Communities with consistently low occupancy rates (and thus higher vacancy rates) were disproportionately located in redlined communities (p-value=0.006). The summary of results from housing tests of independence is provided in Table 13. The full frequency tables for each of these tests are provided in Appendix A. While only a few tracts were

consistently at the lower tail of the distribution, they were exclusively located in redlined communities. While 13 places out of 514 does not represent a significant occurrence, the pattern between redlined and non-redlined communities is stark. At the other end of occupancy spectrum, there were no tracts which were consistently beyond a standard deviation from the rest of the tracts; this is not surprising given how the distributions are concentrated towards the maximum. Also, only one tract had consistently high levels of abandonment over the three decades. Vacancy and abandonment generally were not persistently associated with grade but the presence of low occupancy areas exclusively in redlined areas is a noteworthy finding.

<i>Variable</i>	<i>Relationship</i>	<i>p-value</i>
<i>Persistent Low Occupancy</i>	Exclusively in red/yellow	0.006
<i>Persistent Low Ownership</i>	Proportionately frequent	0.204
<i>Persistent High Ownership</i>	Disproportionately in green/blue	0.002
<i>Persistent High Black Ownership</i>	Disproportionately in green/blue	0.001
<i>Persistent High Value</i>	Concentrated in green/blue	0.000

Table 13 Summary of Independence Tests for Housing Variables, 1970-2000

Home ownership, an indicator of community stability, was associated with the parts of the Pittsburgh that were graded either green or blue. Areas with consistently large portions of renters were evenly distributed across grades; there was not a significant association between grade and communities of largely renters (p-value=0.204). Of the 51 tracts that persistently had large portions of units occupied by home owners, a disproportionate amount of those tracts were located in first and second grade areas. Given the difference in sample sizes, an independent variable would occur roughly twice as frequently in redlined areas than in not redlined areas. Tracts with persistent high home ownership occurred more often in tracts that were not redlined and the chi-squared test of independence confirms an association between the historic redlining status of a tract and the large prevalence of homeowners (p-value=0.002). Further, tracts that had persistent large portions of Black homeowners were disproportionately located in green and blue areas: the association is

statistically significant ($p\text{-value}=0.001$). Tracts with large portions of rental units were proportionately spread across the grades; there was not a statistically significant association between the historic grade and tracts with traditions of rental units ($p\text{-value}=0.204$). No tracts had rental rates for Black that were persistently below a standard deviation from the mean. That is not surprising considering the significant shift in the distribution of Black homeownership over time.

Communities in Pittsburgh that have consistently had average home values higher than the rest of the city are disproportionately located in areas that were not redlined. Of the 55 tracts that had persistently valuable homes, 41 were in either green or blue areas. The relationship between home value and the history of redlining was statistically significant ($p\text{-value}=0.000$). Similarly, to the tracts with persistently the highest incomes, tracts with the highest average value were either clustered in North Oakland, Shadyside, and Squirrel Hill or were in the suburbs (see Figure 15). On the other side of this relationship, no tracts had average home values at the bottom end of the distribution in all four censuses.

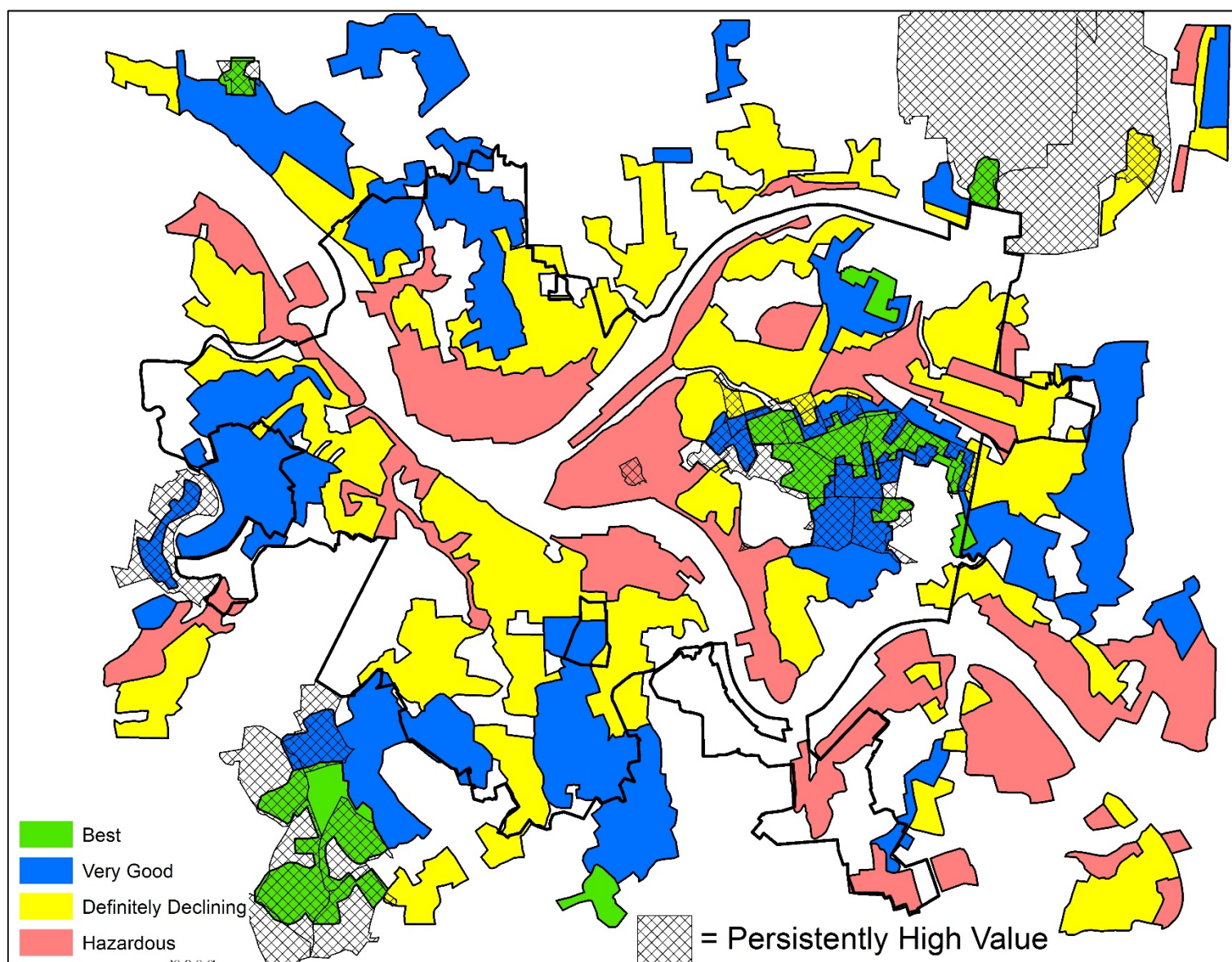


Figure 15 Persistently High Value Tracts and Security Grade, 1970-2000

Housing patterns were most persistent in the historically green and blue areas of the city. These communities had more stable, positive conditions over the forty-year period than the rest of the city and were consistently in the upper portion of the distribution of housing conditions in the city. Areas of the city that were historically graded as the best real estate markets continue to have significant traditions of high home ownership, including for people of color, and the highest housing values. The relationship between these markets and their historic grade are all significant.

6.2.4 Precarious Condition of Old Units

Housing units have enough permanence to physically reflect the economic and social context of a neighborhood over time. Disinvestment leaves physical legacies on the built as well as social geography. Housing units in redlined areas were far more likely to be demolished between 1940 and 1970 than units that were not redlined: 45,712 units were demolished in redlined areas, a 28.28% decrease, compared to the 2,674 units in areas that were not redlined, a 4.49% reduction. As Figure 16 shows, the tracts that lost the most units were scattered throughout the city aside from two small clusters—the North Shore/Strip District and from East Liberty to Homewood along Penn. Despite the significant reduction of housing units in redlined areas, old units were still more prevalent in red and yellow areas than in blue and green areas. In 1970, on average, 67.5% of units in red and yellow areas were built before 1940 compared to 57.9% of units in blue and green areas. As shown in Table 14, the difference in means is statistically significant (p-value=0.000). Between 1970 and 1980, more homes were demolished; through 1980, redlined areas continued to have old homes demolished at higher rates than areas that were not redlined. The difference in demolition rates between grades is statistically significant (p-value=0.0150). Yet, again in 1980, like 1970, redlined areas had significantly greater portions of their housing stock built before 1940 (70.6%

compared to 56.9%). The disparities in the housing stock reflect disparities in investment and stability between grades. Homes that were denied investment and could not be maintained would become uninhabitable and then be demolished. Redlined areas were also more likely to have urban renewal or public housing developments that razed sections of neighborhoods and this destruction possibly drove a large portion of the demolition.

	<i>Mean (Red, Yellow)</i>	<i>95% CI</i>		<i>Mean (Green, Blue)</i>	<i>95% CI</i>		<i>p-value</i>
'70 Percent Old Units	0.6748	0.6483	0.7013	0.5787	0.5438	0.6136	0.0000
Demolition Rate '70-'80	-0.1171	-0.0857	-0.1485	-0.0585	-0.0152	-0.1017	0.0150
'80 Percent Old Units	0.7064	0.6724	0.7404	0.5685	0.5297	0.6073	0.0000
'70 Rental Rate	0.4339	0.4134	0.4606	0.3826	0.3494	0.4159	0.0040
'70 Old Unit Rental Rate	0.7032	0.6781	0.7283	0.5992	0.5642	0.6341	0.0000

Table 14 Difference of Means Test of Old Unit Variables by Security Grade, 1970-2000

In 1970, red and yellow tracts had greater portions of rental units than green and blue tracts accommodating a less financially stable and perhaps more transient population (p-value=0.0040). Renters, regardless of the grade their neighborhood received, were likely to be living in a home built prior 1940; the average portion, across all grades, of renters living in units built before 1940 was 66.7%. Yet, older structures were even more likely to be rented in areas that were redlined than those that were not (p-value=0.0000). Those who could not afford a home, or would not be sold one, were more likely to live in the oldest, and perhaps lower quality, housing in all grades but particularly in redlined areas. The Residential Security Map resembles patterns of disinvestment and demolition decades after it was made.

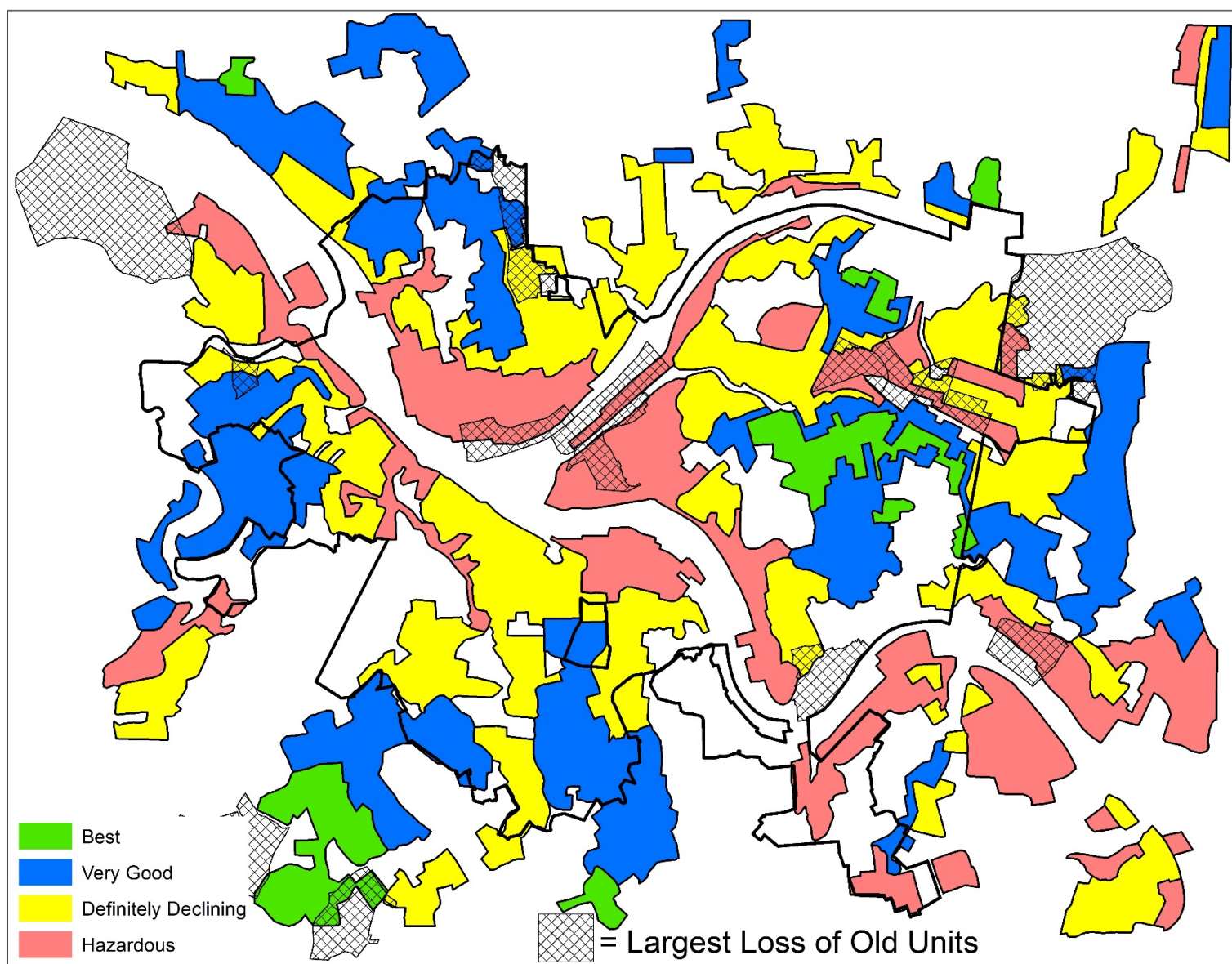


Figure 16 Tracts with Largest Loss of Old Units and Security Grade, 1970-1980

7.0 IMPLICATIONS OF THE HOLC FOR PITTSBURGH'S COMMUNITIES

7.1 LEGACIES OF THE HOLC

My assessment of Pittsburgh's social and physical geography in 1940 confirms much of what is understood about the Residential Security Maps. The maps outlined districts with comparable housing quality and then ranked them. African-American communities were disproportionately included in red areas. The areas that received the lower grades also included sections of housing in the poorest condition and least value. The higher grades were more stable with much larger portions of homeownership. The wealth already established in green and blue areas in 1937 was likely preserved and augmented from the open access to investment that neighborhood appraisal concepts provided. Red areas were those that already received the least investment; they had the lowest quality homes and the most underserved populations. As time progressed, red and yellow areas experienced a disproportionate number of demolitions, an indication of the prolonged deterioration and disinvestment from these communities.

From 1970 to 2000, Pittsburgh's social geography resembled the 1937 map in profound ways and many of the historic disparities between grades persisted. Tracts that had the largest portions of Blacks were still strongly associated with red and yellow grades. These grades also included areas with the greatest concentrations of poverty. Conversely, high income communities were significantly associated with the first and second grades. This dynamic, one that has persisted

for three decades in modern Pittsburgh, was constructed in the 1930's. The security maps did not only physically differentiate neighborhoods but reflected a conceptual framework inherent to neighborhood appraisal. The conceptual dynamic that differentiated green and blue areas, wealthy areas, from red and yellow ones, which were poorer, existed whether someone saw the map or not.

The housing patterns of modern Pittsburgh also align with the Residential Security Map. Judging by the concentration of high levels of home ownership and the most valuable homes in green and blue areas, sections of modern Pittsburgh that likely have the highest quality homes, are the most stable, and are the most valued held the same status in 1937. The status of these communities, relative to their peers, was forged in the early 20th century and reinforced by the 1930's. The continued access to investment and the demand for these communities relative to other areas of Pittsburgh, maintained the value of homes through time. Average home values in blue and green areas were much higher than other parts of the city in 1940 and the same is true in modern Pittsburgh.

The persistence of Pittsburgh's social geography and its alignment with the Residential Security Map is notable and suggest that many of the city's neighborhoods are consistent in both their character and relationship to one another; the historic hierarchy of neighborhood status still exists in modern Pittsburgh. The entrenchment of largely Black or largely poor tracts in places that had been devalued and, at least at one time, had the lowest quality homes is remarkable. While the debate about the influence of the HOLC maps is important, the extent to which Pittsburgh's social geography has been maintained and still resembles the Residential Security Map, even after six decades, is a significant finding in and of itself. The fact that population patterns and stratification of the 1930's are still present in modern Pittsburgh—despite a host of other macro- and meso-

policies and trends over a sixty year period—suggests an alarming permanence to some neighborhood conditions and disparities which have not been addressed.

Neighborhoods that were graded either first or second grade have preserved their status over time. Contrary to the position taken by Burgess, Babcock, Hoyt, and the FHLBB, housing did not necessarily follow a standard depreciation with time and filtration through lower economic classes. Communities that benefitted from sustained investment and market interest over time maintained their prime position in the housing market. These communities still receive a disproportionate volume of lending in 2015: seven neighborhoods (Squirrel Hill North and South, Shadyside, Point Breeze, Highland Park, Brookline, and South Side Flats) received fifty percent of the total mortgage dollars lent in the city.¹³⁷ Six of these communities were graded either green or blue and the seventh, South Side Flats, has had a tremendous amount of investment since the redevelopment of the former Jones and Laughlin steel mill site. The upper tier of housing communities, those with the highest home ownership and value, has persisted from the 1937 to 1970, through to 2000, and even to 2015.

The traditional narrative about redlining and the neighborhood equality fits this pattern: as mortgage lenders generally ceased activity in redlined communities, opportunities for homeownership disappeared and those who could afford to move did. Disproportionate levels of poverty and a concentration of people of color already existed in these communities but became entrenched and persistent through time. Other communities were consistently understood by lenders to be sound investments and these housing markets functioned with sustained demand and mortgage access over time. Those who could afford a home—or would be sold to—could live in

¹³⁷ Rachel Rue, *21st Annual Mortgage Lending Study*, (Pittsburgh: Pittsburgh Community Reinvestment Group, 2015), 13.

these communities and generate wealth. The status of these communities became defined over time and manifested in an entrenched and persistent gap. But, the practices of the private industry and the trajectories of various neighborhoods are not the primary concern of this paper. The fundamental question is what was the influence of the FHLBB and the HOLC?

What is known is that the FHLBB, via the HOLC, developed their own application of neighborhood appraisal while in conversation with the numerous government agencies, trade associations, and real estate experts about neighborhood appraisal practice. The FHLBB published their methods in their journal, *Federal Home Loan Bank Review*, which was sent to each of its partner lending institutions, a network they amassed while helping HOLC to refinance a fifth of the homes in the entire country. The FHLBB undertook an effort to assess the housing markets of over two hundred cities—the City Survey Program. The FHLBB relied on local advisors to survey submarkets within the city and compiled two reports, a public summary file and a confidential internal file that included the residential security map. The public file was circulated to banks while the confidential file was only sent to government agencies and the HOLC district offices.

A liberal interpretation would argue that the FHLBB and HOLC did influence lenders towards neighborhood appraisal and the development of redlining maps. The FHLBB's normalization, legitimatization and proliferation of neighborhood appraisal methods hastened the divestment from areas commonly understood to be dangerous—those outlined in red or yellow on the map. The FHLBB was not an instigator, insofar, as they did not introduce racial and class biases into the real estate industry but the FHLBB was a partner in that normalized prejudice in lending, developed their own security mapping application and published the methodology of that system in their trade journal, widely circulated to partner banking institutions. New Deal housing programs, like the FHLBB and the HOLC, were asserting unprecedented federal authority on the

housing market due to the Great Depression. Lenders were certainly paying attention to the actions of the federal government: when the FHLBB—which had helped rescue many of these lenders just a few years prior—endorsed a novel technique to insure safety of mortgage investments, a banking product that had just been revolutionized, mortgage lenders listened to the FHLBB. They developed residential security maps of their community, either physical or conceptual, and made lending decisions accordingly. Under this framework, the Residential Security Map is either a prototype or a cousin to the maps that lenders developed in their offices or in their minds.

A conservative interpretation of the HOLC would argue that the lenders did not pay attention to the advice of the FHLBB. Yes, the lenders were operating in a changing housing market but they ignored the government's advocacy. Many of the neighborhood appraisal practices that the HOLC would adopt and further develop originated within the industry and were practiced by the industry regardless of the government's actions or endorsement. The conservative would consider the map to be an assessment of a city at a given point in time, created with a certain rubric that was similar to the ideas circulating among the industry yet in no way representative of industry's behavior.

My assessment of the legacy of the HOLC confirms a significant association between numerous neighborhood characteristics and the historic grading of the Residential Security Map. Both the number of characteristics that were persistent through time and the significant association between those patterns and the Residential Security Map reflect a relationship between Pittsburgh's modern social geography and the Residential Security Map that is not accidental; the FHLBB's endorsement and legitimatization of the biased neighborhood appraisal standards helped to maintain differential access to lending in Pittsburgh. This differential access entrenched

neighborhood conditions and preserved a stratification of neighborhoods, resulting in a persistent gap.

7.2 WHAT IS UNEXPLAINED?

The Residential Security Maps are an artifact of neighborhood appraisal techniques in the 1930's that were pioneered by the FHLBB, FHA, and private industry. It is clear that the conceptualization of neighborhood ideology has had persistent effects that have maintained the historic stratification and segregation of the 1930's into modern Pittsburgh; there is a significant association between the application of ideology in the map of Pittsburgh and the modern social geography of the city. It is reasonable that differential access to investment would reproduce disparities, yet, one would expect that after some time, larger forces would begin to have effects that would change the map and the association would diminish. Even if lenders continued to behave similarly, they would be behaving per the shifting social geography. As urban renewal and public housing displaced thousands and suburbanization, deindustrialization and other large-scale changes reorganized the city, theoretically, the geography would change yet Pittsburgh's did not. What is not understood, but is critical to this question, is what forces maintained this geography even beyond the Community Reinvestment Act in 1977—which meant to differential access to mortgages and correct the imbalance in lending. The GIS-based framework that I developed can only assess the relationship between the Residential Security Map and more modern neighborhood conditions and cannot evaluate and compare the factors that may have maintained the stratification.

7.3 DIRECTIONS FOR FUTURE RESEARCH

The Geographic Information System created for this analysis is an appropriate basis and starting point for further research. One pressing question that this project raises is what happened to Pittsburgh communities between 1940 and 1970? Another project could fill in the gap between the map's construction and the NCDB which begins in 1970. Allegheny County had been entirely covered by Census tracts from 1940 onwards and each Census could be standardized and normalized to more thoroughly track Pittsburgh communities through time. Another open question concerns the complicity of other government programs in segregation and other neighborhood inequalities. Data from the Pittsburgh Housing Authority, the URA, and other government agencies could be added to the GIS to explore how developments affected different places in the city and, particularly, to assess how government programs worked in conjunction or in conflict with one another. It would also be useful to assess some of the assumptions of this project. For instance, mortgage data is stored in the County Recorder's office. This data exists, at least, after the passage of the Home Mortgage Disclosure Act of 1975. Digitizing and geo-referencing this data could assess the degree to which redlining practices in the 1970's and 1980's resembled the Residential Security grades from 1937. Additionally, the City of Pittsburgh and Allegheny County are making government data much more available through the Western Pennsylvania Regional Data Clearinghouse. A project could assess whether other measures of housing quality—demolitions, code violations, house fires—resemble the Residential Security Map; what are some unexpected but nonetheless revealing relationships? Lastly, the Residential Security Maps have recently been georeferenced and published online. This project could be expanded to other cities to assess whether the Residential Security Maps are similarly representative of modern conditions in those cities.

7.4 WAS THE GOVERNMENT COMPLICIT IN SEGREGATION?

The modern debate in urban studies over the legacy of the Residential Security Maps, and by extension the HOLC, the FHLBB, and the federal government, is founded in Kenneth Jackson's contention that the Residential Security Maps (and the federal government) were complicit in the segregation of American cities. Amy Hillier provided the sharpest contradiction of this argument, highlighting fundamental flaws about the timeline and feasibility of such a massive conspiracy and argued that the HOLC was, with some notable exceptions, an equal lender. According to my research, the HOLC itself was not complicit. However, The FHLBB published the City Survey Program's methodology and advocated neighborhood appraisal methods that explicitly warned about the danger African Americans and the poor posed to investment security. The FHLBB normalized and legitimized appraisal methods that certainly supported segregation; stable, integrated communities could not develop if the presence of a few people of color represented the precipitous decline of the community in the eyes of lenders.

The racial prejudices that were woven into neighborhood appraisal ideology have persisted and influenced lending decisions for decades, even beyond the Civil Rights Act of 1968 and the Community Reinvestment Act of 1977.¹³⁸ The Residential Security Maps, the City Survey Program and the HOLC were primarily concerned with housing in the older, urban cores of American cities. The complicity debate involves a much broader range of government programs involving the subsidization of suburbanization, urban renewal, and public housing, among others. The Residential Security Maps are an aspect of the broader debate, although, the FHLBB's

¹³⁸ Dedman, "Atlanta Blacks Losing in Home Loans Scramble," A1.

participation in neighborhood appraisal represents a degree of complicity and is perhaps indicative of participation in other segregationist systems.

In Pittsburgh, communities with persistently large portions of African-American residents were significantly more likely to have been historically devalued by appraisers. The conceptualization of these spaces, developed by neighborhood appraisal techniques, among both financiers and the general public, reinforce prejudices, discrimination, and segregation. These spaces, being historically redlined, are more likely to have greater prevalence of renters and housing units, reflecting, perhaps, less stable communities and lower-quality, outdated homes. Because neighborhood appraisal suppressed the economic value of African-American communities, whiter communities had both greater capacity to generate wealth and priority access to investment. Persistent African-American communities in Pittsburgh, facing negative conceptualizations of space, less stable communities, and uneven access to wealth, likely remain encumbered by the legacies of the neighborhood appraisal as advocated by the federal government.

7.5 CONSEQUENCES FOR URBAN HOUSING

The ecological model influenced the stasis of Pittsburgh's social geography because it informed the conceptualization of Pittsburgh's neighborhoods in the 1930's. The City Survey Program's perspective on neighborhood development was highly influenced by the descriptions of the ecology model and operationalized the descriptions as criteria for measuring investment security. The rationale for assigning security grades developed from estimating their neighborhoods stage in its life cycle. Young, developing neighborhoods were given the highest marks while red and yellow areas were those that were considered to have reached an irredeemable stage in their life,

their nadir. The appraisers also drew on the ecology model's rhetoric of filtering, infiltration and invasion of different populations and land uses. The HOLC was not an intervention for urban neighborhoods but one for housing markets; real estate ideology of the time held that neighborhood decline was the inevitable and even natural progression of housing. Yet, the conceptualization of neighborhood appraisal fostered and maintained consistency. Pittsburgh's experience of persistent neighborhood disparities illustrates the capacity of models and ideology to produce and maintain the conditions that they describe.

Most of the twentieth century explanations that were discussed do not account for the ideological construction of space and seem to have limited applicability to Pittsburgh's entrenched conditions. Ecological development, gentrification, and the rent gap each present a dynamic progression of neighborhood investment that either deteriorates steadily or is renewed by the movement of either people or capital. These models explain other phenomenon in the city since the 1930's. The ecology model and the rent gap model do explain the larger economic changes that surround Pittsburgh; both models provide explanations for the expansion of investment and suburbanization surrounding the city. The rent gap model explains the loss of manufacturing jobs as heavy industry made capital investments elsewhere and moved production facilities out of the city. The gentrification and the rent gap model can certainly explain changes in Pittsburgh neighborhoods since 2000, namely South Side Flats, Lawrenceville, and East Liberty. Yet none of these three models explain Pittsburgh's stasis.

The most applicable theory to Pittsburgh's experience is the political economy approach. Bartelt's argument that the social history of a space drives development patterns resonates with the maintained hierarchy of Pittsburgh's neighborhoods. A handful of neighborhoods which historically benefitted from access to investment still have the highest average incomes, rates of

home ownership, and average home values and continue to receive a disproportionate volume of mortgages.¹³⁹ These communities continue to embody historic conceptions of value and status that were reflected in their green and blue grades. Communities with greater constituencies of poor or Black residents are aligned with those places that were considered of the lowest value and were historically home to communities of immigrants and people of color. The association between historic and modern conditions supports a notion that social histories can drive investment.

7.6 POLICY IMPLICATIONS FOR NEIGHBORHOOD DEVELOPMENT

The New Deal was the beginning of an interventionist, egalitarian moment in American politics. But, the HOLC, as a lender, was not created with a populist, egalitarian agenda: it was designed as a market intervention. To correct a contracted housing market, the government introduced funds for lenders and stable mortgages for borrowers—a win-win. The FHLBB began the City Survey Program to help administer these loans and assess the market conditions of American cities. The FHLBB joined a conversation about neighborhood appraisal that legitimized divestment from poor and Black communities and maintained investment in wealthier, whiter areas. The gap and the stratification among urban neighborhoods became entrenched over time. Despite six decades of macro-level changes and government interventions, large and small, Pittsburgh remains a segregated and divided city with deep social histories in each of its communities.

¹³⁹ Rue, *Annual Mortgage Lending Study*, 13.

Today, the United States is in a neoliberal political moment that values a transfer from government intervention to even greater market determination.¹⁴⁰ Urban geographic disparities, shaped by the government interventions during a previous, and more egalitarian, phase of political thought, have only been maintained. In his work, *The Neoliberal City*, Jason Hackworth conceptualizes that in the 1980's and 1990's capital was reorganized away from manufacturing and suburbanization industries and had "switched into finance, insurance, and real estate."¹⁴¹ This reorganization is coupled with reinvestment in cities and disinvestment from inner suburban communities. Government investment has historically been a significant contributor to urban economic growth and development by providing direction or structure to the subsequent capital investment and growth.¹⁴² As neoliberal policies cut social services—undermining the capacity of underserved communities—and create tax incentives for development, investment is likely to be more motivated to capitalize rent gaps that exist in poor communities. Urban communities are likely to be more vulnerable to gentrification and displacement as capital, with a renewed urban interest, exploits a geography of uneven development.¹⁴³

¹⁴⁰ Jason Hackworth, *The Neoliberal City: Governance, Ideology, and Development in American Urbanism* (Ithaca: Cornell University Press, 2007), 9.

¹⁴¹ Hackworth, *The Neoliberal City*, 96.

¹⁴² Bennett Harrison and Amy K. Glasmeier, "Response: Why Business Alone Won't Redevelop the Inner City: A Friendly Critique of Michael Porter's Approach to Urban Revitalization," *Economic Development Quarterly* 11, no. 28 (1997): 28–38.

¹⁴³ Smith, "Toward a Theory of Gentrification," 546.

8.0 CONCLUSION

The FHLBB created the City Survey Program, which was administered by HOLC, to assess the condition of the housing market in over 200 cities. Assessors in each city talked to lenders, surveyed neighborhoods and collected data about the broader region and economy. They compiled their findings into a public summary file and a confidential internal file that included a Residential Security Map. The Residential Security Map was constructed from Area Description Sheets which graded not only the housing and market conditions but the quality of the population according to harsh and prejudiced criteria. The FHLBB's interest in grading neighborhood quality and investment security occurred amid a conceptualization of neighborhood appraisal among real estate experts, driven by both private industry and the government. The FHLBB was an active, vocal participant in that conversation, publishing the methodology of the Residential Security Maps in their trade journal. In this way, even though the maps themselves were not public, they were a contribution to the development of neighborhood appraisal. Local experts had a strong degree of influence and each map weighted factors differently from city to city. The maps are an apt reflection of localized thinking and practices in the time and space they were created. The Residential Security Maps are useful artifacts to explore the local real estate industry of a given city in the late 1930's.

To assess the legacies of the real estate industry's conceptualization of Pittsburgh, I used a GIS-based analysis to measure the association between modern neighborhood conditions and the 1937 Residential Security Map for Pittsburgh. The map was first digitally reconstructed and then intersected with the 1940 and 2000 censuses. The 1940 Census was an appropriate proxy to assess the grading of the 1937 map and evaluate how grades compared to one another on a range of

demographic and housing characteristics. The Neighborhood Change Database, which standardized the 1970, 1980, and 1990 census tracts to the 2000 census tract map, was used to observe long term persistence of a range of variables in a constant space. Demographic variables, such as race, poverty, and income, and housing variables, such as ownership, occupancy, and value, were assessed. Tracts that were beyond a standard deviation from the mean of the distribution in each year were flagged and, if flagged in all four years, were considered to represent persistence. These tracts were then tabulated by their historic residential security grade and statistical tests were performed to assess the relationship between persistence and the grade. Additional assessments of redlining's impact on units built prior to 1940 explored differences in the housing stock between grades.

My assessment of the 1940 Census confirmed that the Residential Security Maps disproportionately included immigrant and Black communities in red grades. Additionally, communities that received lower grades had more renters, lower-value homes, worse quality structures, and more crowding. The Residential Security Map outlined stark divisions between neighborhoods in Pittsburgh and categorized the stratification by grade. In contemporary Pittsburgh, tracts with persistent communities of color and those with high poverty were overwhelmingly located in red and yellow grades while tracts with the highest incomes were in green and blue areas. The persistence of racial and economic segregation in Pittsburgh and its alignment with areas that have a history, and perhaps modern reality, of disinvestment is an alarming finding. Housing characteristics were also sharply associated with grade as those tracts with the highest ownership rates, ownership rates among people of color, and average home values were concentrated in areas that had graded green and blue. Also, tracts that were graded red and yellow had far more homes demolished between 1940 and 1970 and between 1970 and 1980 and

yet still had greater portions of their housing stock built before 1940 than green and blue areas. Further, there were more renters, on average, and old homes were more likely to be rented in red and yellow areas than green and blue areas. Green and blue areas benefitted from historic investment and continue to be more stable communities with likely better quality homes.

The FHLBB and HOLC normalized and legitimized neighborhood appraisal techniques that understood African Americans and the poor as threats to investment. The HOLC applied these techniques in the construction of the Residential Security Maps. Many have argued that the physical maps were the guide that precipitated divestment and discrimination but this claim doesn't hold up to scrutiny.¹⁴⁴ However, the maps are an appropriate reflection of real estate ideology in the 1930's, which rationalized discrimination and precipitated disinvestment from certain urban communities.¹⁴⁵ In Pittsburgh, investment practices buttressed the stark disparities in housing quality that already existed and calcified the stratification of neighborhoods—real estate ideology produced the conditions it described. The persistence of disparities is measurable in variables over time and reflects a city that is divided, geographically, along historic patterns of inequality. Historic, uneven investment, supported by the federal government constructed disparities in modern Pittsburgh.

Pittsburgh's transition from a largely industrial economy to one oriented around education, medicine, and technology has unequal promise for Pittsburghers split by education, race, and class. In an eight year period, the Pittsburgh area lost 120,000 manufacturing jobs and half of those were in basic steel.¹⁴⁶ The shock of the transition left many in Pittsburgh, but particularly African

¹⁴⁴ Jackson, *Crabgrass Frontier*; Hiller, "Who Received Loans?"; Hillier, "Redlining and the HOLC."; Crossney and Bartelt "Residential Security, Risk, and Race" and "Legacies of the HOLC."

¹⁴⁵ Stark, "Neighborhood Protection."

¹⁴⁶ Trotter and Day, *Race and Renaissance*, 142, 146.

Americans, unemployed and unprepared for the new economy. The renewal and recent economic growth in Pittsburgh is concentrated among some of the population; the economic gap between white and African-American households expanded from 1999 to 2011—median income for whites grew by 36.5% compared to 8.5% growth for African Americans.¹⁴⁷ This divergence is occurring upon an already stratified and divided geography. The concentration of jobs, investment and development in only a few areas of the city is likely to further reinforce the divisions between more impoverished, Blacker communities and wealthier, whiter ones.¹⁴⁸

The persistence of Pittsburgh's social geography over the course of six decades, the entrenched divides between communities, and the pessimistic prospects of widening gaps in the future is a disturbing indication of inequality in the city. The pattern is likely to be sustained—it has already endured for so long—but it is not just. While numerous interventions—Section 8 vouchers and the Community Reinvestment Act among others—have attempted to change these patterns, they have been ineffective. Policies that aggressively and effectively integrate neighborhoods, deconcentrate wealth without displacing the poor, ensure long-term affordable housing, and involve those left out of economic growth in the new economy are needed to disrupt the geography of disparity that continues to define Pittsburgh, lest it define the city for another six decades.

¹⁴⁷ Mallach, Alan, "The Uncoupling of the Economic City Increasing Spatial and Economic Polarization in American Older Industrial Cities," *Urban Affairs Review* (2014): 459.

¹⁴⁸ Mallach, "Uncoupling of the Economic City," 465.

APPENDIX A

ADDITIONAL TABLES

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Standard Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
'70 Occupancy	262	0.9574	0.9699	0.7982	1	0.0388	-1.928	6.958
'80 Occupancy	262	0.9395	0.9541	0.5556	1	0.0509	-2.808	16.39
'90 Occupancy	262	0.9197	0.9355	0.5913	1	0.0568	-1.817	8.614
'00 Occupancy	262	0.8942	0.9246	0.2189	1	0.0923	-2.654	14.99
'70 Abandoned	262	0.0072	0.0036	0	0.1547	0.0132	6.657	66.66
'80 Abandoned	262	0.0230	0.0124	0	0.2222	0.0340	3.327	17.36
'90 Abandoned	262	0.0307	0.0187	0	0.1808	0.0308	1.744	6.606
'00 Abandoned	262	0.0498	0.0242	0	0.6865	0.0715	4.155	29.55
'70 Ownership	262	0.5939	0.6135	0.0839	1	0.2223	-0.3689	2.507
'80 Ownership	262	0.5648	0.5966	0	0.9769	0.2291	-0.4220	2.471
'90 Ownership	262	0.5580	0.5943	0	1	0.2269	-0.3502	2.461
'00 Ownership	262	0.5389	0.5533	0	1	0.2317	-0.2275	2.466
'70 Black Ownership	118	0.7311	0.8358	0.0930	1	0.2979	-0.5372	1.818
'80 Black Ownership	206	0.5865	0.6029	0	1	0.3746	-0.2249	1.560
'90 Black Ownership	214	0.3869	0.3282	0	1	0.3375	0.5488	2.099
'00 Black Ownership	240	0.3831	0.3433	0	1	0.3132	0.5905	2.400
'70 Avg. Value	258	16,660	14,640	5,755	49,060	7,949	1.686	5.862
'80 Avg. Value	260	41,960	37,000	9,750	176,200	23,280	2.112	9.085
'90 Avg. Value	259	60,610	47,710	15,170	340,800	45,180	2.951	14.17
'00 Avg. Value	259	89,370	69,080	20,000	491,200	66,590	2.800	12.96
'70 Percent Old Units	262	0.6339	0.6979	0.0122	0.9902	0.2575	-0.6773	2.292
Percent Loss Old Units '70 to '80	208	0.1943	0.1622	0	0.8809	0.1399	1.547	6.525
'80 Percent Old Units	224	0.5716	0.6185	0.0048	0.9933	0.2647	-0.4134	1.989
'70' Old Unit Rental Rate	254	0.6635	0.7359	0	1	0.2457	-0.8984	2.896

Table 15 Descriptive Statistics for Housing Variables, 1970-2000

Redlined	Persistently Black		Total
	0	1	
N	177	6	183
Y	285	46	331
Total	462	52	514

Pearson chi2(1) = 14.6127 Pr = 0.000

Table 16 Chi-Squared: Persistently Black Tracts by Redlined Status, 1970-2000

Redlined	Persistently High Poverty		Total
	0	1	
N	181	2	183
Y	307	24	331
Total	488	26	514

Fisher's exact = 0.001
1-sided Fisher's exact = 0.001

Table 17 Fischer's Exact: Persistently High Poverty Tracts by Redlined Status, 1970-2000

Redlined	Persistently High Incomes		Total
	0	1	
N	151	32	183
Y	321	10	331
Total	472	42	514

Pearson chi2(1) = 32.8624 Pr = 0.000

Table 18 Chi-Squared: Persistently High Income Tracts by Redlined Status, 1970-2000

Redlined	Persistently Low Incomes		Total
	0	1	
N	181	2	183
Y	324	7	331
Total	505	9	514

Fisher's exact = 0.502
1-sided Fisher's exact = 0.321

Table 19 Fischer's Exact: Persistently Low Income Tracts by Redlined Status, 1970-2000

Redlined	Persistent Low Occupancy		Total
	0	1	
N	183	0	183
Y	318	13	331
Total	501	13	514

Fisher's exact = 0.006
 1-sided Fisher's exact = 0.003

Table 20 Fischer's Exact: Persistently Low Occupancy Tracts by Redlined Status, 1970-2000

Redlined	Persistent Low Ownership		Total
	0	1	
N	168	15	183
Y	292	39	331
Total	460	54	514

Pearson chi2(1) = 1.6116 Pr = 0.204

Table 21 Chi-Squared: Persistently Low Ownership Tracts by Redlined Status, 1970-2000

Redlined	Persistent High Ownership		Total
	0	1	
N	155	28	183
Y	308	23	331
Total	463	51	514

Pearson chi2(1) = 9.1973 Pr = 0.002

Table 22 Chi-Squared: Persistently High Ownership Tracts by Redlined Status, 1970-2000

Redlined	Persistent High Black Ownership		Total
	0	1	
N	151	32	183
Y	306	25	331
Total	457	57	514

Pearson chi2(1) = 11.7938 Pr = 0.001

Table 23 Chi-Squared: Persistently High Black Ownership Tracts by Redlined Status, 1970-2000

Redlined	Persistent High Value		Total
	0	1	
N	142	41	183
Y	317	14	331
Total	459	55	514

Pearson chi2(1) = 40.7384 Pr = 0.000

Table 24 Chi-Squared: Persistently High Value Tracts by Redlined Status, 1970-2000

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