



Federal Reserve Bank of Chicago

## **New Evidence on Redlining by Federal Housing Programs in the 1930s**

*Price Fishback, Jonathan Rose, Ken Snowden, and Thomas Storrs*

January 3, 2022

WP 2022-01

<https://doi.org/10.21033/wp-2022-01>

*\*Working papers are not edited, and all opinions and errors are the responsibility of the author(s). The views expressed do not necessarily reflect the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.*

# New Evidence on Redlining by Federal Housing Programs in the 1930s

Price Fishback, Jonathan Rose, Ken Snowden, and Thomas Storrs

January 3, 2022

## ABSTRACT

We show that the Federal Housing Administration (FHA), from its inception in the 1930s, did not insure mortgages in low income urban neighborhoods where the vast majority of urban Black Americans lived. The agency evaluated neighborhoods using block-level information collected by New Deal relief programs and the Census in many cities. The FHA's exclusionary pattern predates the advent of the infamous maps later made by the Home Owners' Loan Corporation (HOLC) and shows little change after the drafting of those maps. In contrast, the HOLC itself broadly loaned to such neighborhoods and to Black homeowners. We conclude that the HOLC's redlining maps had little effect on the geographic distribution of either program's mortgage market activity, and that the FHA crafted and implemented its own redlining methodology prior to the HOLC.

JEL codes: N22, G21, R38, J15

Keywords: Redlining, mortgage history

Price Fishback  
APS Professor of Economics  
Research Associate, NBER  
Department of Economics  
University of Arizona Tucson, AZ 85721  
[pfishback@eller.arizona.edu](mailto:pfishback@eller.arizona.edu)

Jonathan Rose  
Senior Economist and Economic Advisor  
Federal Reserve Bank of Chicago  
230 South LaSalle St, Chicago, IL 60604  
[jonathan.rose@chi.frb.org](mailto:jonathan.rose@chi.frb.org)

Kenneth Snowden  
Professor Emeritus  
Research Associate, NBER  
Bryan School of Business and Economics  
P.O. Box 26165  
University of North Carolina at Greensboro,  
Greensboro, NC 27402  
[snowden@uncg.edu](mailto:snowden@uncg.edu)

Thomas Storrs  
Graduate Student  
Corcoran Department of History  
University of Virginia, Charlottesville, VA  
22904  
[tbs8rt@virginia.edu](mailto:tbs8rt@virginia.edu)

Acknowledgements and Disclosures: The authors thank Dyan Arkin, Andrew Kahrl, Todd Michney and Edward Pinto for helpful comments on an earlier version. They also acknowledge the assistance of Jeff Thigpen and the staff of the Guilford County Register of Deeds. This paper reflects the views of the authors and not necessarily the views of anyone else affiliated with the Federal Reserve System or the views of the National Bureau of Economic Research.

## **Introduction**

The federal government first entered the market for residential mortgages in the 1930s with two major programs, the Home Owners' Loan Corporation (HOLC) in 1933 and the Federal Housing Administration (FHA) in 1934. Since the 1980s, scholars and journalists have linked the two programs together in one particular dimension: the practice of redlining and discrimination against Black Americans in mortgage markets. These discussions have focused on color-coded maps created by the HOLC in the late 1930s that evaluated neighborhoods in over 200 cities. Almost all African Americans in these cities and half of White residents in major cities lived in areas shaded red, the lowest rating on the HOLC maps. A substantial literature now attributes to these maps the legacy of racial inequality that grew in subsequent decades across redlined cities. The purported mechanism behind these findings is that the HOLC maps served as a major source of information for private lenders, the HOLC, and the FHA in restricting the geographic scope of their mortgage activity. (Jackson 1985, Cohen 1990, Massey and Denton 1993, Sugrue 1996, Woods 2012, Baradaran 2017, Rothstein 2017, Faber 2020, Aaronson, Hartley, and Mazumder 2021).

Here we introduce new evidence establishing marked differences in the patterns of mortgage market activity by the two programs. In addition, the evidence casts significant doubt on the idea that the HOLC maps heavily influenced the FHA's pattern of activity.

We document significant differences in the patterns of loans made by the HOLC versus those insured by the FHA, using loan-level data on the activities of each. Our first-of-its-kind data set contains over 16,000 loans, consisting of every loan made by the HOLC from 1933 to 1936 and every loan insured by the FHA from 1935 to 1940 in three municipal areas: Baltimore City, Maryland; Peoria, Illinois; and Greensboro, North Carolina. Scholars have been unable to make direct comparisons of this kind to date because the FHA destroyed records of the locations of loans it insured, but we overcome this barrier by turning to county-level repositories of historic mortgages. We geolocate each loan and assign it to a neighborhood as eventually designated by the HOLC. We also match each borrower to Census records.

The evidence shows that the HOLC refinanced loans in neighborhoods throughout each city and that the share of loans made by the HOLC to Black Americans was close to proportionate to the share of homeowners who were Black.<sup>1</sup> This pattern has basically no relationship to the HOLC's maps because the mapping program started after the HOLC had finished refinancing 90 percent of its loans (Michney 2021). In contrast, the FHA largely excluded low income urban neighborhoods where the vast majority of Black mortgage borrowers lived, and instead targeted their insurance at areas with new construction and higher valued properties. As an exception that proves the rule, we find a small number of FHA-insured loans in a rare upper income neighborhood of Baltimore that had been specifically constructed for Black owner-occupants. This neighborhood had segregation covenants barring occupancy by White homeowners, the mirror image of segregated suburban White-populated neighborhoods where the FHA otherwise insured most of its loans.

We also show that the FHA crafted and implemented its own redlining methodology prior to when the HOLC's mapmaking project began. We find the same basic exclusionary pattern in FHA-insured loans before and after the HOLC maps were produced for the three cities in our sample. Although the FHA largely avoided making loans in neighborhoods later colored red by the HOLC, it did so before the HOLC had made its maps and continued following the same pattern after the maps were drawn.<sup>2</sup> As for private lenders, we view the evidence that private lenders might have accessed the HOLC maps in the 1930s as extremely weak (Hillier 2003b, Michney 2021, National Archives undated).

We emphasize that the FHA relied heavily on sources of information besides the HOLC maps, especially city-block level data created by New Deal statistical projects in over 150 cities by the end of 1935, just after the HOLC began its city surveys. The HOLC worked hard to confine

---

<sup>1</sup> Whether there was discrimination against Black mortgage applicants by the HOLC is a separate and more difficult question that we do not tackle. While the HOLC made many loans to Black borrowers, especially in comparison to the FHA, it would not be surprising given the prevailing systemic racism in American society to find that Black applicants faced discrimination when applying to the HOLC. Indeed, some complaints of discrimination against Black Americans have been noted by Michney and Winling (2020) and Weaver (1948). We also do not investigate how the HOLC disposed of foreclosed properties, which occurred largely after the maps were completed and therefore could have been more influenced by those maps.

<sup>2</sup> In adjudging the FHA as the key actor at the federal level, we break with Jackson (1985) and subsequent scholars who followed his lead in asserting the HOLC as the pioneer. We also revive an older line of scholarship that gave the FHA primacy (Weaver 1948, Abrams 1955, Gelfand 1975.)

access to the maps to a limited number of government housing officials. At some point between 1937 and 1940, the HOLC shared 3-4 copies of the completed maps with the FHA. Given the FHA's emphasis on block level information in their own research, it seems extremely likely that they used the HOLC maps as a check of their own research or to provide information for cities where block information was not yet available. The time frame in which the FHA relied on the HOLC maps was limited because by 1942 the FHA and the general public had access to block-level information for over 340 cities. Block level information was missing for only a few cities mapped by the HOLC. FHA analysts emphasized the importance of capturing the dynamics of housing markets, whereas the HOLC maps were a static snapshot. To capture those dynamics, the FHA had access to updated information in their own loan insurance records and new block level housing market data published after each decennial census.

The contrasts between the two agencies reflect that they were distinct programs with different legislated goals. These distinctions led to substantial differences across the two programs in how they treated Black and low-income homeowners. The HOLC was a temporary program. It only refinanced existing loans that were in trouble because of the Depression and through no fault of borrowers. When the HOLC issued loans broadly throughout American cities, including to Black homeowners, it did so within the existing pattern of segregation. As a result, its relatively inclusionary lending practices did not represent a challenge to the existing system of segregation. In contrast, the FHA did not handle existing loans but rather was charged with creating a new loan insurance system that would depart from existing practices in key ways. FHA-insured loans were required to be "economically sound" while also having lower interest rates and longer durations than usually available. And the FHA was intended to have a special focus on financing new construction, which at this point in American history had rarely ever been built for occupancy by Black homeowners. The FHA responded to these mandates by restricting access to credit, though to be clear the approach it took was never without criticism.

While we view the differences between the agencies as a function of their legislative mandates interpreted through existing social norms, we also observe that both agencies had broad administrative flexibility to implement lending decisions within those parameters. Neither agency was directed by legislation to create redlining maps. Likewise, neither was given

authority or encouragement to address existing racial disparities in a serious way, and neither did. The exact way the FHA, for example, implemented its legislative mandates has never been without critique, and many lenders continued to serve borrowers and neighborhoods that the FHA viewed as ineligible. In this sense, the scope of lending activities at each agency is an empirical question that we tackle here in a unified manner for the first time.

## **Background: the FHA, the HOLC, and the historiography of redlining**

### *Establishment of each agency*

The Home Owners' Loan Act of 1933 was one of the federal government's first steps into the residential housing market. In response to a rising wave of mortgage defaults that threatened the financial soundness of both households and lenders alike, the legislation created the Home Owners' Loan Corporation to buy distressed residential mortgages from private lenders and then refinance them with the original borrowers at easier terms. The HOLC's mandate was to refinance loans from borrowers who were "in hard straits largely through no fault of their own" (FHLB 1937, p. 28). This emergency program was temporary and operated only from June 1933 to June 1936 by which time the HOLC had refinanced nearly one in five mortgaged homeowners. Over the next fifteen years it held and serviced its portfolio of nearly one million mortgage loans until it was liquidated in 1951.

One year after the HOLC was created, the Federal Housing Administration was established with the passage of the National Housing Act of 1934. The FHA had two major policy goals. First, the FHA sought to reform mortgage market practice by creating an "economically sound," publicly-sponsored system of mortgage loan insurance to replace the private mortgage guaranty industry that had grown rapidly in the 1920s and then had collapsed during the early 1930s.<sup>3</sup>

---

<sup>3</sup> The National Housing Act of 1934 required that "no mortgage shall be accepted for insurance under this section (203) unless the Administrator finds that the project with respect to which the mortgage is executed is economically sound" (U.S. Congress 1934, p. 1248). The mortgage insurance loans were established in section 203 in Title II in the Housing Act of 1934. The Act established two other housing insurance programs. Under Title I, the Act provided insurance of up to 20 percent of the value of housing renovation and modernization loans. Information on these loans was not recorded in county records and were much smaller than the housing loans. Title II section 207 included mortgage insurance for government or private corporations "formed for the purpose of providing housing for persons of low income which are regulated or restricted by law or by the Administrator as to rents, charges,

Second, the FHA aimed to revive residential construction, which had fallen by 90 percent during the Depression, by increasing the availability of high quality, insured mortgage credit that was especially attractive to new home buyers.<sup>4</sup>

The FHA's authority contrasted with HOLC's in important ways. The FHA could only insure loans written by private lenders, not write loans itself as the HOLC had. The FHA's authority was permanent, in contrast to the temporary nature of the HOLC. Ultimately, access to FHA insurance was valuable to borrowers, as the FHA required lenders to offer lower interest rates, longer terms, and lower down payments than might otherwise have been available. The federal government's initial guarantee of FHA obligations subsidized the program. By 1940 the FHA was insuring 13 percent of outstanding 1-4 family residential mortgage debt, indicating a large scale of activity over just six years.

#### *Redlining initiatives at each agency*

These two federal home mortgage programs of the 1930s had distinct missions and goals. Despite these differences, officials at both became focused on collecting information about housing markets across the country in order to assess the risks of their mortgage programs. Both agencies came to assess risks not only based on the specific attributes of the borrower and the property securing the loan, but also the potential impact that neighborhood characteristics had on the future value of the property. In placing greater emphasis on neighborhood quality, both federal programs reflected pre-Depression developments in academic thought and professional

---

capital structure, rate of terms of mortgages, return, or methods of operation" (U.S. Congress 1934, p. 1252). By the end of 1940 the FHA had insured \$3.3 billion in 1-4 family mortgages for roughly 753 thousand dwellings (68 percent were new construction) under section 203 Title II, \$1.2 billion in modernization and repair loans for 3 million dwellings under Title I, and \$127 million in loans for 33,240 rental units in 36 states for low income people under Title II Section 207 (1941, p. 8, 61, 70, 85). The missing states were ID, ME, MT, NE, NV, NH, NM, ND, UT, VT, and WY, where very few Black Americans lived. See Rose (2018) for further information on the demise of private mortgage guarantees.

<sup>4</sup> The Congressional hearings that preceded the passage of the National Housing Act contain myriad examples of the legislative intent for the FHA to revive the residential construction industry. FHA documents consistently reflect this legislative intent; for example, the FHA's 1935 annual report begins with a list of several objectives that the agency viewed itself as tasked with, and the first goal was "To expedite recovery in the building and allied industries." Finally, the February 1938 amendments to the National Housing Act permitted the FHA to insure particularly attractive loans only on new construction, with longer durations and lower down payments than otherwise allowed. A provision of this sort had been included in earlier drafts of the National Housing Act but not in the version that passed in 1934. Nevertheless, even in prior insurance operations from 1935 until the February 1938 amendments, FHA-insured loans on new construction had always tended to be approved for longer durations than other loans, in part because FHA staff viewed the longer economic life of new homes to merit longer durations.

real estate practice during the 1920s (Freund 2010, Glotzer 2020, Michney and Winling 2021). That decision was critical since the assessment of neighborhood quality on the basis of its racial composition would become the essence of and the rationale for redlining in these federal programs.

The HOLC's color-coded maps were the product of a project launched in August 1935, with the purpose of studying local mortgage markets in major American cities. This group, a part of what was known as the HOLC's Mortgage Rehabilitation Division, produced studies of over 200 cities with populations of more than 40,000 over the next five years. These studies included maps that summarized the judgments of local real estate professionals about the desirability of making loans in each neighborhood. In practice, the maps assigned the lowest rating, with a red shading, to virtually all Black neighborhoods. The evidence of the HOLC agents' discriminatory views is readily evident in how they discuss Black urban residents in the textual descriptions accompanying their neighborhood ratings. It is essential to note, though, that this project did not guide the HOLC's own lending, which had already been almost wholly completed (Michney 2021) even though many scholars have written otherwise. Instead, these maps were intended for the use of the HOLC in gauging the risks of the enormous portfolio of loans it had already accumulated, and in managing the resale of its foreclosed real estate holdings back into distressed housing markets (Hillier 2003a, Greer 2012, Michney 2021, Howell 2015, Federal Home Loan Bank Board various years).

Like the HOLC, the FHA also systematically produced ratings of urban neighborhoods in cities across the country that figured prominently its voluminous guidelines for underwriting loans that it used to determine which loans would be accepted for insurance. The early *Underwriting Manuals*, among other historic documents, provides clear evidence of the FHA's discriminatory views, for example by expressly advocating against insuring loans in areas that are racially integrated, or could become integrated.

Altogether, staff at both agencies clearly espoused views that were discriminatory, pro segregation, and amount to what today is called redlining. To be clear, segregationist and discriminatory views did not begin with the FHA or the HOLC. For example, when Homer

Hoyt—the Principal Housing Economist at the FHA—wrote in 1939 that “the gradual infiltration of other than white races tends slowly to change the character of neighborhoods” and “the presence of even one nonwhite person in a block otherwise populated by whites may initiate a period of transition” (Hoyt 1939, 54), these statements reflected Hoyt’s education at the University of Chicago and his experience in the private real estate industry. But such views had never been applied to federal residential mortgage programs, as none had existed before the Depression. Several scholars have documented the dissemination of ideas from academia and the private sector into these federal programs, including most especially techniques of mapmaking (Freund 2010, Glotzer 2020, Light 2011, Michney and Winling 2021). We complement these works by unearthing the “on the ground” results.

An important subject here is how the FHA interpreted the concept of "economically sound." The FHA took as given that another Depression-style broad downturn in real estate prices was unavoidable and focused on mitigating two risks in defining economic soundness. The first risk was deterioration of the physical structure. They counseled new building techniques and sound inspections to ensure their collateral survived with value intact through the length of the next quarter century that it must protect their insurance liability. The second risk was neighborhood change. They believed, correctly according to Akbar, Li, Shertzer, and Walsh (2019), that racial transitions hurt property values in the context of racial tensions. Their actions likely augmented the phenomenon, but the phenomenon long predated the FHA's existence, as White property owners sought to protect their property values within and outside the law by preventing Black people becoming their neighbors (Troesken and Walsh 2019, Herbin-Triant 2019, and Brooks and Rose 2013). In order to mitigate the risk to collateral values presented by racial transition, the FHA would not insure mortgages in neighborhoods potentially subject to such change.

The FHA’s practices were never without critics, and indeed other lenders continued to serve the people and neighborhoods that the FHA viewed as ineligible. The Savings and Loan industry provides an instructive and contemporary counterexample. S&Ls tended to view the FHA as a source of competition, as they had previously been the main providers of long-term amortized loans, and S&Ls tended to avoid the FHA system. Historically, S&Ls made loans to a wide swathe of Americans, both Black and White, until their demise in the late twentieth century, even

as their leaders in the 1930s shared all of the prejudices and beliefs as the FHA about property values. The S&Ls, though, charted a more flexible course that recognized the risks that a property might face in the future and adjusted terms accordingly, including down payments and durations. In this way, an "economically sound" loan could be made on virtually any property (Bodfish and Theobald 1938, p. 204). While it is difficult to know to what extent the FHA could have replicated the broad lending patterns of the S&Ls in the context of creating a new and national mortgage insurance system after the Great Depression, the bottom line is that other institutional lenders such as S&Ls continued to serve the parts of the mortgage market that the FHA excluded.

### *The impacts of the HOLC's redlining maps*

In studying the impact of redlining, much of the scholarly literature focuses on the HOLC's maps. Jackson (1980, 1985) was perhaps the first researcher to draw attention to the existence of the HOLC maps at the National Archives after they were no longer treated as classified information. Numerous scholars since Jackson have attributed a large variety of poor outcomes to the HOLC's maps, including lack of mortgage credit availability, declining property values, and disinvestment.<sup>5</sup> In recent years, researchers at the University of Richmond have made available digitized versions of the HOLC's maps, which have enabled much empirical analysis (Nelson et al., 2021).

Two challenges must be confronted in trying to identify the effects of the HOLC maps. First, the red lines drawn by the HOLC were not random but instead reflected pre-existing conditions and trends, as noted by Fishback, LaVoice, Shertzer, and Walsh (2020). Logan, Bellman, and Minca (2020) have done preliminary calculations of segregation indices for 134 cities between 1900 and 1940 at the street, enumeration, and ward level. Their results show that segregation increased substantially at each of these spatial scales in each decade between 1900 and 1930, in both the North and the South, and in cities with widely varying shares of Black residents. The

---

<sup>5</sup> For example, Cohen (1990, p. 276) argues that the HOLC's ratings contributed to the decline of property values in Chicago neighborhoods. Massey and Denton (1993, p. 51) argue that the HOLC maps resulted in mortgage funds being channeled away from redlined neighborhoods. Baradaran (2017, p. 106) argues that private lenders used the HOLC maps as models for their own maps. Rothstein (2017, p. 64) argues that the HOLC's maps had a huge impact.

trend continued between 1930 and 1940. These trends in segregation have led researchers such as Aaronson, Hartley, and Mazumder (2020) to focus on quirks in how the HOLC drew some boundaries, designed to be unrelated to pre-existing conditions or trends.

Second, the question of who had access to the HOLC maps and how they employed the maps is essential for understanding the impacts they had. Access by some outside party is necessary for the maps to have had an effect, since the HOLC's own lending had almost completely concluded by the time the maps were made.

A key focus here is whether the HOLC maps influenced the FHA's underwriting decisions, and when. Scholars have been especially interested in this question since the FHA's own maps and lending records have been destroyed. A simple timeline helps clarify events. The FHA began large scale insurance operations in early 1935. The HOLC launched its mapmaking project in September 1935, and drafted studies of different cities over the next few years. For example, the HOLC completed maps for the three cities we study in this paper in 1937 or 1938. Therefore, the initial periods from 1935 to early 1937 or 1938 are a key time for our analysis, when the FHA would have been operating without any HOLC maps to reference. When exactly the HOLC shared its maps with the FHA is unclear; a 1942 document states that the HOLC shared copies of the entire set of maps with the FHA upon completion, which might have been as early as 1937 when the first run of maps had been completed, but could refer to a later date as well (Michney 2021, Crossney and Bartlet 2005). Otherwise, the overall nature and timing of communication and coordination between the HOLC and FHA remains very unclear.<sup>6</sup>

A separate question is whether the HOLC shared its maps with private (non-government) lenders. Jackson (1985, p. 203) has stated that private lenders had access to the HOLC's maps, and many scholars have repeated this statement. But Hillier (2003b) provides many reasons to seriously doubt this claim.<sup>7</sup> Certainly, the evidence in favor of sharing with the public is far

---

<sup>6</sup> Scholars have spotted some additional smoke trails of potential coordination between the HOLC and FHA. Michney (2021) describes a memo by an FHA official in 1936 that states the two agencies were working on a plan of coordination, and a one-off request by another FHA official for a copy of the HOLC's map of Atlanta for his own personal use.

<sup>7</sup> Scholars have spotted much fainter smoke trails of how the HOLC maps might have been shared with the public. Jackson (1985) cites a survey of lenders who talk about A and B areas, but Hillier (2003a) suggests that this wording

weaker than the evidence of sharing with the FHA. In any event, the same basic timeline applies. The HOLC could not have shared a map with either the FHA or with private lenders in 1936 if the map was not drafted until 1937.

Empirical progress to date on the FHA's pattern of underwriting has been limited. Scholars have been stymied by the general lack of information on FHA insurance operations disaggregated along racial lines or within urban areas. The FHA never published data on the racial composition of its insured borrowers or the location of its loans within urban areas in its first few decades. Light (2010) notes, with a dubious tone, that loan-level data have "disappeared" from the agency's records at the National Archives. Jackson (1985) describes the agency as overall "quite secretive" about the location of its loans.

Practically no summary redlining maps from the FHA have survived either. Greer (2014) and Sagalyn (1980) state that the FHA systematically destroyed its redlining maps as the result of a lawsuit against the FHA in 1969. Only one comparable FHA summary neighborhood rating map has survived, for the city of Chicago (as re-drawn by the Chicago Housing Authority).<sup>8</sup>

---

is paraphrasing by the HOLC's own staff as they wrote up the survey results. Hillier also notes the lack of any discussion of the actual neighborhood ratings established by the HOLC in the contemporary press or by the HOLC's critics, a gap in the historical record if the ratings were in fact widely distributed, and that contrasts with clear statements that lenders knew exactly what the FHA neighborhood ratings were. Some scholars have focused on how the HOLC consulted with private real estate professionals in drafting the maps, while Hillier notes that many more lenders were not involved, and Michney (2021) provides evidence from internal HOLC correspondence about how it refrained from sharing completed maps with its consultants. The finding aid for the HOLC City Surveys at the National Archives states that "none of these maps have ever been given to private interests." The aid also describes the exact disposition of each copy of the maps that shows that they were not provided to private groups. The maps might have been shown to some private lenders by city-level HOLC administrators, but that would have been done in conflict with the HOLC's policy (National Archives, undated). Aaronson et al. (2020) encourage scholars to be open to the possibility that the HOLC's categorical denial is false, and many scholars have indeed been open to this idea but nevertheless have not found much evidence to contradict the HOLC's denial. Hillier (2003a) reports an anecdote of one lender writing to an HOLC official that "I hope to be able to 'borrow' a map from your portfolio when you are not looking during your journey in Chicago," which Hillier takes as evidence that the HOLC did in fact have a policy against sharing maps, but Aaronson et al. (2020) interpret in the opposite way, as evidence that sharing occurred. Finally, Woods (2012) has noted the promulgation of mapmaking techniques by the HOLC's parent organization, the Federal Home Loan Bank Board; but we make an important distinction here between the dissemination of mapmaking techniques versus the dissemination of the HOLC's maps themselves.

<sup>8</sup> The Mapping Segregation project has also discovered an FHA-produced map of Washington DC that seems like it could be a neighborhood rating map as well (accessed at <http://mappingsegregationdc.org/resident-sub-areas.html>). Oddly, though, this map rates neighborhoods on an 8 point scale from A to H, as opposed to the A to D scale that most FHA sources describe the agency as using, and that is used on the only other extant FHA map (of Chicago, as redrawn by the Chicago Housing Authority). In any event, no HOLC map for Washington, DC has survived, eliminating the possibility of comparing FHA and HOLC maps in that city.

Comparing the HOLC and FHA maps, about 60-80 percent of the city was given the same rating by the two agencies, depending on whether the calculation is weighted by population (Aaronson et al. 2021, Xu 2021). This provides some dim light on the differences between the two agencies, but many pressing questions remain, including what the actual distribution of lending was. Given the thinness of the existing evidence on the FHA's insurance patterns, some skeptics caution against making assertions that the FHA categorically refused to insure loans in core urban neighborhoods. For example, Pinto (2014) points out that the FHA's 1938 underwriting manual was over 500 pages long and discusses racial factors for 1¼ pages.

### **The Three City Sample of HOLC and FHA Loans**

We first describe the sample of loans examined in this paper and then use it to examine the patterns of activity for the HOLC and FHA along three lines: geography, race, and borrower characteristics.

#### *Data*

We have assembled data on individual loans made by the HOLC and insured by the FHA from county land records, which exist across the country to record the history of property ownership and establish when necessary that a property is free and clear of any mortgage liens. These records are therefore outside the reach of the FHA's shredders. The appendix details the data collection. We focus on three cities: the city of Baltimore, Maryland (which is its own county); the city of Peoria in Peoria county, Illinois; and the city of Greensboro in Guilford County, North Carolina. What these areas have in common is the ready availability of historic land records online as images, records which in most other counties must be accessed in person via microfilm at great labor cost. These cities span from large to small: Baltimore was the 7<sup>th</sup> largest US city in 1940, Peoria the 86<sup>th</sup> and Greensboro the 166<sup>th</sup>. In 1930 Black homeowners accounted for 4 percent, 1.5 percent, and 23 percent of homeowners in each area, respectively.

Altogether our data set contains over 16,000 individual loans, including 10,145 HOLC loans in Baltimore, 982 in Peoria, and 624 in Greensboro, as well as 3,540 FHA-insured loans in Baltimore City, 556 in Peoria, and 238 in Greensboro. The HOLC mortgages were made from

June 1933 to June 1936, the period of its emergency lending authority. Most of the loans were made in 1934. The FHA-insured mortgages were made from May 1935, when we find the first FHA-insured mortgages, to April 1940, an end date chosen to coincide with the 1940 census.

It is easy to confirm that we capture all of the HOLC loans that were made in these three cities, as we match the county-level loan counts published in the Federal Home Loan Bank Board's fifth annual report, although we exclude from our data set loans in Peoria and Guilford counties that are not in the cities of Peoria or Greensboro. It is more complicated to assess whether we have found all FHA-insured loans, as the FHA only published counts for "metropolitan districts," which include cities and their surrounding suburbs but not at the county level. The results are generally very good, as we capture 70 percent of the total in Baltimore, 88 percent in Greensboro, and 96 percent in Peoria. The lower percentage in Baltimore likely arises because we do not sample the suburban counties that surrounded Baltimore; indeed, the 1940 Census of Housing found that Baltimore City contained 74 percent of the 1-4 family mortgaged non-farm properties of the metropolitan district. Our focus here is on the differences across neighborhoods within core urban areas covered by the HOLC maps, so these missing loans on the periphery are not an issue.

We geolocate each loan and then place each loan into a neighborhood on the maps eventually created by the HOLC, using the digitized shapefiles provided by Nelson et al. (2021). We are able to geolocate the vast majority of loans, between 97 to 98 percent across the three cities. We cannot geolocate the remainder because the legal descriptions of the properties are too difficult to decipher.

We also match the borrowers with the 1930 census for HOLC loans, or the 1940 census for FHA-insured loans, in order to obtain characteristics of the borrowers, using the Ruggles et al. (2017) census data. For each loan, we match using as many as five pieces of information if available: the borrower's last name, first name and middle name, spouse's first name and middle name, street, and house number. We conduct this match using automated methods as a first pass, but then do a follow-up manual match, which is feasible given the size of our sample. For HOLC borrowers in the 1930 census, we find match rates of 61 percent in Baltimore, 67 percent

in Peoria, and 65 percent in Guilford. For FHA-insured loans, we find matches for 78 percent of loans in Baltimore; 76 percent in Peoria, and 66 percent in Greensboro. Missed matches have three main causes. First, borrowers may have life events between the date of the loan and the date of the census, such as relocating or passing away. As an indication of these life events occurring over time, we find a higher match rate for the FHA data in 1938 and 1939 than for FHA loans in earlier years. Second, sometimes the set of available matching information is limited. In the census, street names and house numbers are sometimes not recorded. In the land records, sometimes only the first initials or borrowers' names are given. Finally, many census transcriptions are poor. Although we manually check the results, some transcription errors are difficult to catch.

The coverage of three cities helps to ensure the generalizability of the results to HOLC and FHA practices as a whole. Some variation across cities may result from these programs' interactions with a variety of local mortgage market practices in a still highly geographically segmented mortgage market. The three cities are reasonably different; they range from large to small, are located in different regions of the country, and their population of Black residents varied in size and proportion as well. The Depression hit these cities to different degrees as well. Table 1 shows that home ownership generally dropped substantially from 1930 to 1940 for Nonwhite residents across all three cities and for White residents in Baltimore and Greensboro. The HOLC survey of Peoria notes that "Industrial Peoria stands out as the exception among depression-ridden cities. Its industries were only mildly affected by the depression and exhibited a spectacular growth since 1933."

#### *Patterns of lending: geography*

Figures 1-3 display the geographic locations of HOLC and FHA-insured loans in Baltimore, Peoria, and Greensboro, superimposed on the HOLC map of each city. Table 2 provides the numerical breakdown of loans across HOLC map grades. Note that the HOLC maps were not completed until 1937 or 1938 in these cities, so the superimposition for now is meant to convey the extent to which HOLC and FHA patterns coincided with the HOLC map, without asserting any causation or any link between the maps and the loans.

Altogether, these maps make two simple points. First, the distribution of HOLC loans underscores just how disproportionately the FHA's lending went to more outlying areas, away from Black-populated areas and concentrated instead where new construction was taking place. These areas tended to be rated A or B on the HOLC's maps.

Second, the HOLC clearly did not avoid lending in the areas to which it later gave poor grades on its maps. It made many more loans to areas eventually rated C or D compared to the FHA. Indeed, this is a point that Hillier (2003b) has previously made about the HOLC's lending in Philadelphia, and also documented for Atlanta, Detroit, Los Angeles, and Philadelphia by Michney and Winling (2020). The data here on three additional cities provide substantial reinforcement to this conclusion.

The map of FHA activity in Greensboro in Figure 3 has a feature the other figures do not: a red line that roughly bisects the city of Greensboro in half. We found this red line drawn in pencil on one map of the National Archive's FHA records collection. This red line is a surprising anomaly because the FHA appears to have systematically destroyed its records documenting whatever neighborhood ratings it used. While the National Archives contain multitudes of maps drawn by the FHA, these maps depict various bits of data, not neighborhood risk ratings. But this one map for Greensboro has a red line, with no explanation. Nevertheless, the meaning seems clear enough because nearly every FHA-insured loan was located on one side of the line.

Finally, one notable feature of FHA loans in these figures is the presence of several geographically concentrated clumps of FHA-insured loans, particularly in A and B areas. These are developments of new construction, promotion of which was an FHA goal. The FHA typically worked with developers to pre-certify that borrowers would have access to FHA insurance, based on the location, quality of the housing, and indeed also the presence of restrictive racial covenants and other factors. This focus on new construction naturally led the FHA into A-rated areas and unrated areas in particular, as a defining feature of those areas as set out by the HOLC was that they still had significant amounts of undeveloped land. In contrast, the C and D rated areas were by definition areas that were already built up and therefore new

construction in those areas would have required more razing of existing properties, and displacement of existing residents (Federal Home Loan Bank Board, various years).

*Patterns of lending: race*

Our data show that the FHA made extremely few loans to Black borrowers, while the HOLC made orders of magnitude more loans to such borrowers. We identify race by matching HOLC borrowers to the 1930 census, and borrowers with FHA-insured loans to the 1940 census.

Starting with the HOLC, we find hundreds of loans to Black homeowners in Baltimore or about 10 percent of the HOLC's borrowers in that city. In comparison, Black homeowners constituted only 4 percent of the city's homeowners as of 1930. We find slightly-less-than-proportionate patterns in the other two cities: in Peoria, Black borrowers constituted 1.5 percent of homeowners and 1.3 percent of HOLC borrowers; in Greensboro, they were 22.9 percent of homeowners and 21.5 percent of HOLC borrowers.

The racial pattern of loans is very different for the FHA. In Greensboro, we find exactly one FHA-insured loan that was made to a Black borrower, in a city with about 1,300 Black homeowners by 1940. In Peoria, the number of FHA-insured Black borrowers was zero. Although the Black population of that city was much smaller, with about 200 total "nonwhite" homeowners in 1940, the HOLC's lending to Black borrowers in Peoria is an illustrative contrast. Finally, Baltimore is somewhat different. We find 25 FHA-insured loans made to Black borrowers in Baltimore. This is larger than in the other two cities, but still a small number and pales in comparison to the hundreds of loans to Black borrowers made by the HOLC in Baltimore. We estimate the FHA reached about 2 percent of Black owner-occupants in Baltimore according to the 1940 census. In comparison, we find that about 8 percent of White owner-occupants in Baltimore received FHA loans.

We review these exceptions to the rules—Black borrowers in Baltimore who managed to get FHA loans—in order to gain insight into FHA underwriting in this period. One clue comes from their locations, which are clustered in two areas: one in the northeast where few Black people

resided at the time, and one in the center of the city, an area that was typically the only option for most Black residents until restrictive deeds that governed most of the rest of the city were declared unconstitutional in 1948.

The northeast grouping is the most telling. This group of Black FHA-insured borrowers resided in a neighborhood known as Morgan Park, near the historically Black institution Morgan College (now Morgan State University). Deciphering why the FHA may have been inclined to insure borrowers in Morgan Park is speculation, but the neighborhood may be the exception that proves the rule, insofar as it is the rare neighborhood with Black residents who would seem to satisfy FHA underwriting standards. These underwriting standards were pro-segregation and discouraged lending on typical urban properties but theoretically allowed for the possibility of lending to Black borrowers if they lived in a suburban style house in a racially stable Black neighborhood.

Morgan Park seems to satisfy this set of criteria. First, Morgan Park was not in racial transition nor was it mixed in race. Instead, Morgan Park had been developed by Morgan College starting around 1916 specifically for Black occupancy. Indeed, many new houses were built in this neighborhood in the 1920s and even in the 1930s specifically for Black occupancy. This was quite rare as almost no new construction had ever been intended by White developers for non-White residents, in Baltimore and in many other cities. It even had restrictive covenants of the sort employed by White neighborhoods nationwide, but in this instance the covenants restricted the neighborhood to Black residents only. Second, Morgan Park was fairly geographically isolated. Again, this was something that the pro-segregation FHA manual saw as desirable, as it reduced the possibility of neighboring populations gradually changing moving into a community and changing the composition of the residents. Morgan Park lay at the corner of a large tract of northeast Baltimore eventually rated B by the HOLC. It was bordered on three sides by a small stream that somewhat separated it from nearby White neighborhoods. In fact, the streets of Morgan Park were purposely built to have no connection to the streets of the only contiguous neighborhood, Lauraville, to its east. Finally, the residents of Morgan Park were generally well-off, many were faculty at the College, and so could satisfy FHA underwriting requirements on income and other such factors. Popular narratives of the neighborhood describe it as occupied by

the upper crust of Black society in Baltimore, including famous residents such as W. E. B. DuBois. Altogether this neighborhood contained a small cluster of 26 Black homeowners, 11 with FHA loans as of 1940.<sup>9</sup>

Bottom line, these exceptions to the rule in Morgan Park ultimately confirm that the FHA did follow the underwriting rules highlighted by previous researchers who did not have data on actual FHA underwriting decisions. Those underwriting rules were discriminatory and pro-segregation, which made it very difficult for Black Americans to receive FHA insurance, but not impossible, as these exceptions indicate.

The fact that the HOLC made many loans to Black Americans has been noted by previous researchers, including Hillier (2003b) who assembled a sample of HOLC loans in Philadelphia, and Michney and Winling (2020) who highlight 1940 census data. The Housing Census of 1940 shows that the nationwide share of HOLC loans in 1940 made to Black borrowers was 4.5 percent, compared to a 2.5 percent share of loans made to Black borrowers by all other lenders.

#### *Patterns of lending: borrower characteristics*

Using the data set of borrowers, we matched to the 1930 and 1940 censuses, we develop a portrait of typical HOLC and FHA borrowers and how they differed in comparison to other homeowners in our three urban areas.

Table 3 shows summary statistics on household characteristics from the censuses. A median FHA borrower was well-off, as he or she had a relatively expensive house (around the 78<sup>th</sup> percentile in 1940 of owner-occupied properties in each city) and high wage and salary income (around the 75<sup>th</sup> percentile). In addition, the large majority of FHA borrowers moved to a new house at some point after 1935.<sup>10</sup> This reflects of the FHA's increasing focus on insuring

---

<sup>9</sup> McConnell (2000), National Park Service (2001), Pietila (2010), Power (1983)

<sup>10</sup> The Census asked where each resident of a house had lived in 1935. Jenkins (1983) notes some confusion in how people responded to this question, as the options of "same house" and "same place" were sometimes confused with each other, though the latter was meant to indicate the same city or county rather than house. Nevertheless, since we find very large 40-50 percentage point differences in the rate at which FHA versus non-FHA borrowers report having lived in in a different house since 1935, we believe this confusion does not materially affect the results.

mortgages for new home construction. Finally, FHA borrowers were more likely to have been born in the US, a factor emphasized by Light (2010).

In contrast, summary statistics for HOLC borrowers are closer to city-wide averages. The median house value of HOLC borrowers was between the 53<sup>rd</sup> to 58<sup>th</sup> percentile of values in the respective cities. A similar pattern holds for occupational scores—a measure of the prestige of an occupation developed to historians to measure occupational standing in historical census before 1940 when income was not recorded. The median score for an HOLC borrower was between the 48<sup>th</sup> to 53<sup>rd</sup> percentiles for their city.

Since borrower characteristics are highly correlated with location, we also look inside neighborhoods to understand how HOLC and FHA borrowers compared to their neighbors. We estimate a linear probability model in which the outcome is a dummy variable for whether a homeowner was an HOLC or FHA borrower. The correlates include quintiles for house value and for occupational scores of the household head in both regressions. In our ordering, the fifth quintile is the top end of the distribution. In the FHA regressions for 1940, we were able to add whether the family was in a different house from where they lived five years earlier, and whether the household head was born in the U.S. A fixed effect for the page of enumeration in the census is added to the analysis. The enumeration page typically included 6 to 16 home owning families living in close proximity. Therefore, the variation used in estimating the coefficients is restricted to the values for the nearest neighbors. These were the families interviewed by the census enumerators immediately before and after the family of interest while walking these urban blocks on foot. The fixed effects effectively hold constant the rating that the HOLC or FHA eventually assigned to a given neighborhood.

Table 4 shows the results for the HOLC borrowers, and Table 5 for FHA-insured borrowers. The results, even within these small geographic areas, continue to show that homeowners were more likely to be FHA borrowers if their house prices and income were elevated, in the fourth or fifth quintiles of the distributions of those variables. The likelihood that the FHA had insured the home typically increased as the values rose to the higher quintiles. In addition, FHA borrowers tended to have moved since 1935, reflecting the FHA's focus on new construction. In contrast,

the results for the HOLC borrowers are consistent with the HOLC's mission of helping people who developed problems in paying their mortgages. Families with a wide range of occupation scores, holding constant housing value, were more likely to have HOLC loans. Likewise, families with a wide range of housing values except for in the bottom quintile, holding constant their occupation score, were also more likely to have HOLC loans. These findings are broadly similar to those of Hillier (2003b), who examines a sample of 300 HOLC loans in Philadelphia, and consistent with the analysis by Light (2010) of the FHA's map of Chicago.

To illustrate these results, we offer vignettes of one borrower each from the HOLC and FHA. In southeast Greensboro, a schoolteacher named Hazel received a \$2,300 loan from the HOLC in January 1935 to refinance the mortgage on her house on Julian Street, solidly in a neighborhood that would eventually be rated D and shaded red by the HOLC. Hazel was a Black person, as was the woman who had sold the house to Hazel in 1932, Laura, a widower who had originally purchased it in 1917. Laura had fully paid off her original mortgage in 1924 but had taken out a new loan in 1931 from a local building and loan association to raise money to get through the Depression. A year later she sold the house to Hazel to avoid defaulting on the loan. By 1940 Hazel faced the same problem, unable to afford payments on the HOLC mortgage despite its relatively liberal 15-year term and 5 percent interest rate. She lost the house via foreclosure in 1940, and the HOLC resold it to William and Ola S., who were also Black people and who financed the purchase with a new HOLC mortgage. After June 1936, the HOLC was authorized to make new loans only in the process of selling foreclosed real estate.

Meanwhile, in west Greensboro an attorney named John and his wife Pattie received a \$6,000 loan in 1938 from a North Carolina life insurance company, insured by the FHA. The loan would finance the construction of a new house on Walker Street, in a neighborhood that around that time was being shaded blue with a B rating from the HOLC. The FHA ultimately insured a cluster of nine mortgages in this growing subdivision, an area the FHA was happy to finance given its racially restrictive deeds and city sewers, both lacking on Julian Street where Hazel lived at the time. The loan carried a 20-year term and a 5 percent interest rate. The next year, John and Pattie took advantage of lower interest rates to refinance the loan into a second FHA

mortgage, for \$5,900 at 4.5 percent. The loan was made by a local mortgage company who sold the loan to a life insurance company in New York.

## **The connection between the FHA and the HOLC**

### *The influence of HOLC maps on FHA*

One of our key insights is that the FHA initiated a program of redlining before the HOLC had even made its maps. The first FHA-insured loans were recorded in each city in the spring of 1935, and the HOLC completed its maps of Baltimore, Peoria, and Greensboro in May 1937, October 1938, and June 1937 respectively.

The geographic pattern of FHA lending is fairly constant over time, providing little evidence to suggest that its underwriting changed after the publication of HOLC maps. Figure 4 displays the geographic distribution of FHA insurance from May 1935 to March 1940. Across the three cities, the key observation is that in 1935 and 1936 the FHA was already making very few loans in areas that came to be rated as D by the HOLC later in 1937 or 1938. D-area lending does drop off a bit in 1938 and 1939, but the timing at best only vaguely lines up with the production of the HOLC map if examined at a higher frequency, and the decline falls from an already very small base. In this period, the FHA lending in areas rated as C by the HOLC remained relatively flat at around 25 percent before and after the HOLC map.

Perhaps the biggest change over time evident in Figure 4 for Baltimore is the growing portion of loans made to properties in A-rated and unrated areas, which account for about 30 percent of the total volume by the end of the period. This growth could be attributed to a legislative change enacted in March 1938 allowing the FHA to insure a higher duration 25-year mortgage on newly constructed properties. This legislation was enacted with the express purpose of further encouraging new construction and orienting the FHA even more toward new construction loans. A-rated neighborhoods and unrated neighborhoods were naturally the site of new construction, as they were less developed by definition; the HOLC defined A-rated neighborhoods in part as “hot spots” that were “not yet fully built up.” Likewise, unrated neighborhoods tended to be

unrated precisely because they were sparsely populated, thus most loans in such areas would naturally be on new construction.

Taking stock, it is difficult to argue that the FHA's lending before these dates in 1937 or 1938 could have been influenced by the HOLC maps. We examined the list of names and credentials of experts who were consulted by the HOLC agent in constructing each of their city maps and area descriptions in all of the HOLC city surveys in the National Archives. In only 12 cities was an FHA employee mentioned, and in four of those the HOLC agent received data or maps already collected by the FHA.<sup>11</sup>

Meanwhile, we have direct evidence that private lenders were influenced by the FHA in the mid-1930s. Private lenders worked closely with the FHA and were very familiar with which neighborhoods the FHA was willing to insure—naturally so since this was the only way to arrange for FHA insurance coverage. This was particularly important for new developments, which were often pre-certified with the FHA as being eligible for insurance, so they could be advertised to buyers on that basis. In January 1937, one Baltimore lender noted that “the fact that a property in a given block secures a Federal Housing Administration insured mortgage gives us a gauge by which to judge mortgage loans on other properties. I know that a number of other Baltimore institutions view the matter in a similar light, so that the gauge is a common one, a yardstick which enables us all to keep our loans more in line than heretofore.” This quote comes from the house organ of the FHA, *Insured Mortgage Portfolio*, and notably was published before the HOLC map of the city. All of this suggests that the FHA had a far greater *direct* influence on the mortgage finance redlining decisions of private lenders than the HOLC likely did.

We have also examined geographic differences in the duration of FHA-insured loans, with the purpose of revisiting the finding of Light (2010) that the FHA limited durations to 10 years or less in areas that it gave “C” ratings. No such limit is relevant for FHA-rated D areas, according

---

<sup>11</sup>The list of names typically was in the section of the survey reports titled “Security Area Descriptions” in the “Explanation.” Before February 1937 they were often listed in “Security Value Map.” The information for all of the cities is spread over 157 boxes. See Federal Home Loan Bank Board (various dates).

to Light, which was the designation given to areas where the FHA would not insure any properties at any term. Strict geographic differences could allow us to reverse engineer FHA neighborhood ratings, but in the end we find no such strict differences. In Baltimore, average durations varied across neighborhoods, as for example areas that were eventually rated D by the HOLC had average durations of about 13 years in FHA-insured loans, compared to an average of 18 years in areas eventually rated C by the HOLC. But many short-duration loans in C and D areas (with durations of 12 years or less) are located right next to loans with longer durations (15-25 years). Greensboro and Peoria have very few loans with durations of 12 years or less, and no visibly strict differences in duration across neighborhoods.

As a final note, we stated above that the HOLC's map of Baltimore is dated to May 1937. The HOLC records at the National Archives contain another map of Baltimore, which was likely made in October 1936 given the date of the report that accompanied it. The map does have some substantial differences with the 1937 map. The 1937 map reached harsher judgments for many neighborhoods, consistent with what Hillier (2005) finds over three iterations of the HOLC map of Philadelphia. The existence of this earlier map is consistent with the HOLC's statement that it prioritized maps of the largest cities when work began in 1935 and 1936. The conclusions of this section are the same regardless. The FHA insured over 700 loans in Baltimore before October 1936, about 400 more between then and May 1937, and thousands after, and the geographic pattern of these loans is quite constant, even in the areas that change in rating from the October 1936 HOLC map to the May 1937 HOLC map.

#### *Sources of information used by the FHA*

On what information did the FHA rely to create risk assessments of different neighborhoods, if it was not referencing the HOLC's maps, especially before those maps existed?

One key source of information used by the FHA was a series of real property inventories (RPIs) and financial surveys of urban housing (FSUH) conducted by the federal government beginning in 1934. New Deal relief agencies had developed block level RPIs for 152 cities by the end of 1935, and 84 of those were cities where the HOLC eventually created maps (Stapp 1938). In

fact, the FHA played a lead role in revising how the surveys would be conducted going forward in 1935. After the Census Bureau published block level information in 1942 for cities with more than 50,000 people, the FHA had access to block level statistics for 345 urban areas. At that time, the HOLC had collected information in only 25 cities where the FHA did not have access to block statistics.

FHA press releases from 1934 and 1935 describe at length the FHA's extensive efforts to exploit the RPI data. The FHA published studies that showed how they used block level information extensively when evaluating areas within cities.<sup>12</sup> Hoyt (1939) later described in depth how the FHA used block level data to evaluate the structure and growth of neighborhoods using the property inventories. From this analysis, Hoyt also suggested that rents were a good proxy for neighborhood quality in the absence of property inventories (Federal Housing Administration 1939, pp. 72-78).

In our sample, the FHA would have had access to RPIs for Peoria and Greensboro at the start of its operations, as both cities had RPIs in 1934. Coincidentally, Peoria turns out to be a unique case that demonstrates the sophistication and speed of the FHA's self-generated analysis based on this information. In January 1935, the FHA published an analysis of Peoria's housing market using RPI data, totaling about 200 pages (FHA 1935). The Peoria study was a pilot project, described in the preface as an attempt to assess whether these data would be of value to the FHA in assessing "the risk rating of neighborhoods." The study's conclusions were that these data were indeed "of great value." This volume has 20 maps depicting various variables that affected neighborhood lending risk factors, and describes how the FHA has tabulated data down to the level of all 1,167 blocks in the city, which they determined was the appropriate level of aggregation for the purpose of assessing risk in mortgage lending.

---

<sup>12</sup> Significant studies focused on block-level data analysis include the 1935 and 1939 FHA volumes listed in the references. In addition, see several editions of the FHA's *Insured Mortgage Portfolio* that reference block-level data: July 1936, December 1936, June 1937, January 1938, February 1938, and Q1 1941. In addition, see the Federal Housing Administration's 1935 annual report (page 41), 1937 annual report (p. 18), 1938 annual report (p. 11), and 1939 annual report (pp. 42-43).

Even though no block level data existed for Baltimore until 1940, through that year the FHA's loan insurance activity in the city was similarly restrictive as in the other two cities where block data could be used. This suggests that FHA underwriters were using rents, as Hoyt (1939) suggested, or some other proxy to evaluate neighborhoods in their underwriting in cities without full information.

Overall, the FHA had ample access to block level information, and the FHA repeatedly wrote about how it based its neighborhood ratings on this information. This does not rule out that the FHA may have adjusted its ratings when it received copies of the HOLC's maps. We view the window in which that adjustment might have occurred to be a narrow one, though. The HOLC transmitted copies of its maps to the FHA "upon completion" but the date of that transmission is unclear, perhaps as early as 1937 (Michney 2021). When the FHA received data from the 1940 census, they likely would have relied heavily on that information instead of HOLC maps.

## **Conclusion**

This paper has used a first-of-its-kind data set of individual loans insured by the FHA or made by the HOLC in the 1930s and has presented the first direct comparison of how each agency's activities were distributed across neighborhoods within three American cities. The results show that the FHA substantially restricted its insurance to segregated suburban areas where new construction was taking place, and away from lower income core urban neighborhoods where virtually all urban Black Americans lived. We also show that the FHA crafted and implemented its own methodology for restricting the geographic distribution of its loans across neighborhoods within cities before the HOLC began its mapmaking and city survey project. The FHA's distribution of loans within the three cities was roughly the same before and after the HOLC completed its own studies of those cities.

We have focused exclusively on the early history of redlining at these federal agencies in the 1930s. In the following decades, the FHA took on an even greater role in housing markets. By the 1950s, the FHA and the VA together insured roughly half of all outstanding 1-4 family residential mortgages, continually updating their neighborhood assessments over time. The HOLC, in contrast, was dissolved in the early 1950s as its last loans were repaid or sold off, and

its maps from the late 1930s were eventually deposited at the National Archives in 1969, where they were designated as confidential. By the 1940s, the FHA was insuring mortgages in neighborhoods and suburbs that did not even exist at the time the HOLC maps were made in the 1930s. The FHA research division also actively updated their research with information from their own experience with loan insurance, and with each new census that published a new set of block level property inventories. Given that the FHA crafted and implemented its own redlining methodology before the HOLC maps were produced, and that the HOLC maps became increasingly out of date as time went on, the results of this paper cast significant doubt that the HOLC maps were used as more than supplementary information in influencing the FHA's redlining practices in the late 1930s. The HOLC maps likely had even less impact afterward.

These results suggest a significant revision is in order to the legacy attributed to the HOLC's mapping project, especially in comparison to the legacy attributed to the FHA's independent actions. The HOLC refinanced loans throughout all neighborhoods of American cities and to many Black Americans. They had completed nearly all of their refinancing before they started their City Survey mapping program. In every city report they stated that the maps and area descriptions described the opinions of leading real estate professionals, who were already using these judgments to restrict access to credit in lower-rated neighborhoods (Federal Home Loan Bank Board, various years). The HOLC actively worked to keep the maps and reports out of the hands of people outside of the government (National Archives, undated). Meanwhile the FHA directly communicated its neighborhood ratings to lenders and instructed them to avoid non-segregated neighborhoods. The FHA avoided lower income core urban neighborhoods from its first days in the 1930s, before the HOLC made its maps. When challenged in court in the 1960s, the FHA then destroyed its own records about where it had made loans and how it rated neighborhoods. Yet, many scholars and journalists attribute to the HOLC a host of poor outcomes in housing markets and in the lives of people who lived in core urban neighborhoods. The evidence presented in this paper suggests this legacy is much more accurately attributed to the FHA.

A number of studies have found that the segregation seen in the HOLC maps persisted for an extended period of time. Some have argued that this persistence was a result of the FHA and VA

using the HOLC maps to set their lending policies or by the HOLC sharing the maps with private agents, both of which we have shown are unlikely. The studies are still valuable in showing the persistence but their interpretations of the reasons for persistence need reconsideration. In the HOLC reports for each city, it is explicitly stated that the maps document the prevailing views of leading real estate professionals in the city in the late 1930s (Federal Home Loan Bank Board, various years). The studies documenting the persistence of the segregation patterns are showing a combination of how long the societal attitudes of the 1930s carried forward and the impact of perceived neighborhood boundaries.

This is not to say that the HOLC defied the existing pattern of segregation and discrimination in housing markets. Neither the HOLC nor the FHA was charged with that mission and neither embraced it. But we do take seriously the legislative direction given to each agency, in the context of existing social norms, which we view as broadly explaining the differences in financing patterns across the two. The HOLC was charged with refinancing loans that were close to foreclosure through no fault of the homeowner. With that goal, the HOLC made loans broadly across cities without defying existing norms because it only refinanced loans that already existed. In contrast, the legislation establishing the FHA required it to only finance “economically sound” loans, a very different objective than the HOLC’s. The FHA’s implementation of this mandate entailed overwhelming discrimination to core urban neighborhoods and their residents, including virtually all urban Black Americans. None of this justifies either agency’s actions looking backwards, but it highlights the way in which each agency was a product of its time. Indeed, revisions to the National Housing Act in the 1960s were essential to directing the FHA to focus its financing resources quite differently, in addition to the civil rights reforms outlawing discrimination.

Altogether, these results matter because they are critical to understanding the mechanisms through which federal redlining affected American homeowners and limited the ability of many Americans, especially potential Black homeowners, to build wealth through housing. The evidence heavily points to the FHA as the primary means of propagating these effects independently of the HOLC.

## **Appendix: data collection**

The HOLC and FHA loan data come from the land records of three counties: Baltimore City, Maryland; Peoria, Illinois; and Guilford, North Carolina.

In Baltimore City, Maryland, HOLC loans can be easily found in the alphabetical index by grantee, i.e., the HOLC. A different technique is needed for FHA loans, as the FHA is not the lender and therefore is not listed in the index. A quirk of record keeping nevertheless makes the FHA loans relatively easy to find as well. For ease of record keeping, Baltimore saved every tenth volume of its land records for transactions involving out-of-state parties. FHA loans, which involved the FHA as an out-of-state insurer, were included in these volumes. Therefore, it is only necessary to check every tenth volume to find most FHA loans, reducing the scope of the search to 50 volumes from 500 that cover the period under study from May 1935 to March 1940. That said, a small number of FHA loans were recorded in other volumes, typically at the very end of those volumes. To check for such loans, we first reviewed the grantee indexes for the FHA's most common lender counterparties to locate all of their loans, and second we systematically checked the last several loans in each of the 500 volumes. Baltimore City land records are available online at [www.mdlandrec.net](http://www.mdlandrec.net).

In Peoria, Illinois, quirks of record keeping again make both HOLC and FHA loans relatively easy to find. Most FHA loans were placed in a handful of land record books that solely consist of FHA or HOLC loans. We also systematically checked the surrounding volumes which contained a moderate number of additional loans. Peoria county's land records are available at [recorder.peoriacounty.org](http://recorder.peoriacounty.org).

In Guilford County, North Carolina, HOLC and FHA records are generally interspersed with other records. Therefore, it is necessary to systematically scan all transactions in the period under study. Guilford county land records can be viewed online at <https://www.guilfordcountync.gov/our-county/register-of-deeds>.

In all of these databases, FHA and HOLC loans are readily identifiable through their use of a common templates and references to either the National Housing Act or the HOLC.

## References

- Aaronson, Daniel, Daniel Hartley, and Bhashkar Mazumder. (2021) "The effects of the 1930s HOLC 'redlining' maps." *American Economic Journal: Policy*.
- Abrams, Charles. (1955) *Forbidden Neighbors: A Study of Prejudice in Housing*. Harper & Bros.
- Akbar, P. A., Li, S., Shertzer, A., & Walsh, R. P. (2019). "Racial segregation in housing markets and the erosion of black wealth." National Bureau of Economic Research. Working Paper No. w25805.
- Baradaran, Mehrsa. (2018) *The Color of Money*. Harvard University Press.
- Bodfish, H. Morton and A.D. Theobald (1938), *Savings and Loan Principles*, New York: Prentice Hall.
- Brooks, Richard, and Carol Rose (2013). *Saving the Neighborhood: Racially Restrictive Covenants, Law, and Social Norms*. Cambridge, MA: Harvard University Press.
- Cohen, Lizabeth. (1990) *Making a New Deal: Industrial Workers in Chicago, 1919-1939*. Cambridge University Press.
- Crossney, Kristin and David Bartlet (2005). "The Legacy of the Home Owners' Loan Corporation." *Housing Policy Debate*, 16(3/4).
- Faber, Jacob W (2020). "We Built This: Consequences of New Deal Era Intervention in America's Racial Geography." *American Sociological Review*, 85(5) 739-775.
- Federal Home Loan Bank Board (1937) *Annual Report*. US Government Printing Office.
- Federal Housing Administration. (1935) *Analysis of the Real Property Inventory and Financial Survey of Urban Housing for Peoria, Illinois*. US Government Printing Office.
- Federal Housing Administration. (1939) *The Structure and Growth of Residential Neighborhoods in American Cities*. Washington, D.C.: Government Printing Office.
- Federal Housing Administration. (1941) *Seventh Annual Report for 1940*. Washington, DC. Government Printing Office.
- Federal Home Loan Bank Board. (Various). "Security Area Description." For various cities. *Records Related to the City Survey File, 1935-40*. Entry Number 39, Record Group 195, Boxes 1 to 157. Federal Home Loan Bank Board. National Archives II in College Park Maryland. Xerox. Unpublished.
- Freund, David. (2010) *Colored property: State policy and white racial politics in suburban America*. University of Chicago Press.

Gelfand, Mark. (1975) *A Nation of Cities: The Federal Government and Urban America, 1933-1965*. Oxford University Press.

Greer, James. (2012) "The Home Owners' Loan Corporation and the Development of the Residential Security Maps." *Journal of Urban History* 39(2): 275-296.

Greer, James. (2014) "Historic Home Mortgage Redlining in Chicago." *Journal of the Illinois State Historical Society*, 107(2), pp. 204-233.

Glotzer, Paige. (2020) *How the Suburbs Were Segregated: Developers and the Business of Exclusionary Housing, 1890-1960*. Columbia University Press.

Herbin-Triant, E. A. (2019). *Threatening Property*. Columbia University Press.

Hillier, Amy E. (2003a) "Redlining and the home owners' loan corporation." *Journal of Urban History* 29(4): 394-420.

Hillier, Amy E. (2003b) "Who received loans? Home Owners' Loan Corporation lending and discrimination in Philadelphia in the 1930s." *Journal of Planning History* 2(1): 3-24.

Hillier, Amy. E. (2005) "Residential Security Maps and Neighborhood Appraisals: The Home Owners' Loan Corporation and the Case of Philadelphia." *Social Science History*, 29(2), 207-233.

Howell, Ocean. (2015) *Making the Mission: Planning and Ethnicity in San Francisco*. Chicago: University of Chicago Press.

Hoyt, Homer. (1939) *The Structure and Growth of Residential Neighborhoods in American Cities*. US Government Printing Office.

Jackson, Kenneth T. (1980) "Race, Ethnicity, and Real Estate Appraisal: The Home Owners Loan Corporation and the Federal Housing Administration." *Journal of Urban History*, 6: 419-52.

Jackson, Kenneth T. (1985) *Crabgrass Frontier: The Suburbanization of the United States*. Oxford University Press.

Jenkins, Robert. (1983) "Procedure history of the 1940 census of population and housing." Mimeo, University of Wisconsin. <https://www.census.gov/history/pdf/1940proceduralhistory-12617.pdf>

Light, Jennifer. (2010) "Nationality and neighborhood risk at the origins of FHA underwriting." *Journal of Urban History*, 36(5), pp. 634-671.

Light, Jennifer. (2011) "Discriminating Appraisals: Cartography, Computation, and Access to Federal Mortgage Insurance in the 1930s." *Technology and Culture*, 52(3), 485-522.

Logan, John, Benjamin Bellman, and Elisabeta Minca. (2020). "From Side Street to Ghetto: Understanding the Rising Levels and Changing Spatial Patterns of Segregation, 1900-1490." Unpublished working paper at Brown University Department of Sociology.

Massey, Douglas, and Nancy A. Denton. (1993) *American Apartheid: Segregation and the Making of the Underclass*. Harvard University Press.

McConnell, Roland C. (2000) *The History of Morgan Park*. Morgan Park Improvement Association.

Michney, Todd (2021). "How the City Survey's Redlining Maps Were Made: A Closer Look at HOLC's Mortgage Rehabilitation Division." *Journal of Planning History*.

Michney, Todd and LaDale Winling. (2020) "New Perspectives on New Deal Housing Policy: Explicating and Mapping HOLC Loans to African Americans." *Journal of Urban History*: 46(1), 150-180.

Michney, Todd and LaDale Winling. (2021) "The Roots of Redlining: Academic, Governmental, and Professional Networks in the Making of the New Deal Lending Regime." *Journal of American History*, 108(1), 42-69.

National Archives. Undated. "A Review of the Objectives, Achievements, Administration Operations, and Related Policies." In Finding Aid for the Home Owners' Loan Corporation City Survey Program." Record Group 195. Federal Home Loan Bank Board. National Archives II in College Park Maryland. Xerox. Unpublished.

National Park Service. (2001) Lauraville Historic District, National Register of Historic Places, Registration Form.

Nelson, Robert K., LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed July 27, 2021, <https://dsl.richmond.edu/panorama/redlining/>

Pinto, Edward. (2014) "FHA from 1934 to 1938: Lessons for Wealth Building." Presentation slides.

Pietila, Antero. (2010) *Not in My Neighborhood*. Ivan R. Dee.

Power, Garrett. (1983) "Apartheid, Baltimore Style." *Maryland Law Review*, 42: 289-328.

Rothstein, Richard. (2017). *The Color of Law: A Forgotten History of How our Government Segregated America*. New York: Liveright Publishing Corporation.

Ruggles, S., Genadek, K., Goeken, R., Grover, J., Sobek, M., 2017. Integrated public use microdata series: Version 7.0, 1930 and 1940 preliminary complete count data. Minneapolis: University of Minnesota.

Sagalyn, Lynne Beyer. (1980) "Housing on the Installment Plan: an Economic and Institutional Analysis of Contract Buying in Chicago." PhD Dissertation, University of Chicago.

Stapp, Peyton. (1938) *Urban Housing: A Summary of Real Property Inventories Conducted as Works Projects, 1934-1936*. Special Report from the Division of Social Research in the Works Progress Administration. Washington, D.C.: Government Printing Office.

Sugrue, Thomas J. (2014) *The Origins of the Urban Crisis: Race and Inequality in Postwar Detroit*. Princeton University Press.

Troesken, W., & Walsh, R. (2019). Collective Action, White Flight, and the Origins of Racial Zoning Laws. *The Journal of Law, Economics, and Organization*, 35(2), 289-318.

U.S. Congress, "An Act to encourage improvement in housing standards and conditions, to provide a system of mutual mortgage insurance and for other purposes." *United States Statutes at Large, 1934*. 73d Congress Session II, Chapter 847. June 27, 1934, pp. 1246-1265.)

Weaver, Robert. (1948) *The Negro Ghetto*. Harcourt, Brace and Company.

Woods, Louis Lee. (2012) "The Federal Home Loan Bank Board, Redlining, and the National Proliferation of Racial Lending Discrimination, 1921-1950." *Journal of Urban History*, vol 38 no. 6, pp. 1036-1059.

Xu, Wenfei. (2021). "Legacies of Institutionalized Redlining: A Comparison Between Speculative and Implemented Mortgage Risk Maps in Chicago, Illinois." *Housing Policy Debate*, 1-26.

Figure 1: Baltimore, MD  
FHA-insured loans (1935 to 1940) and HOLC loans (1933 to 1936)  
superimposed on the 1937 HOLC map

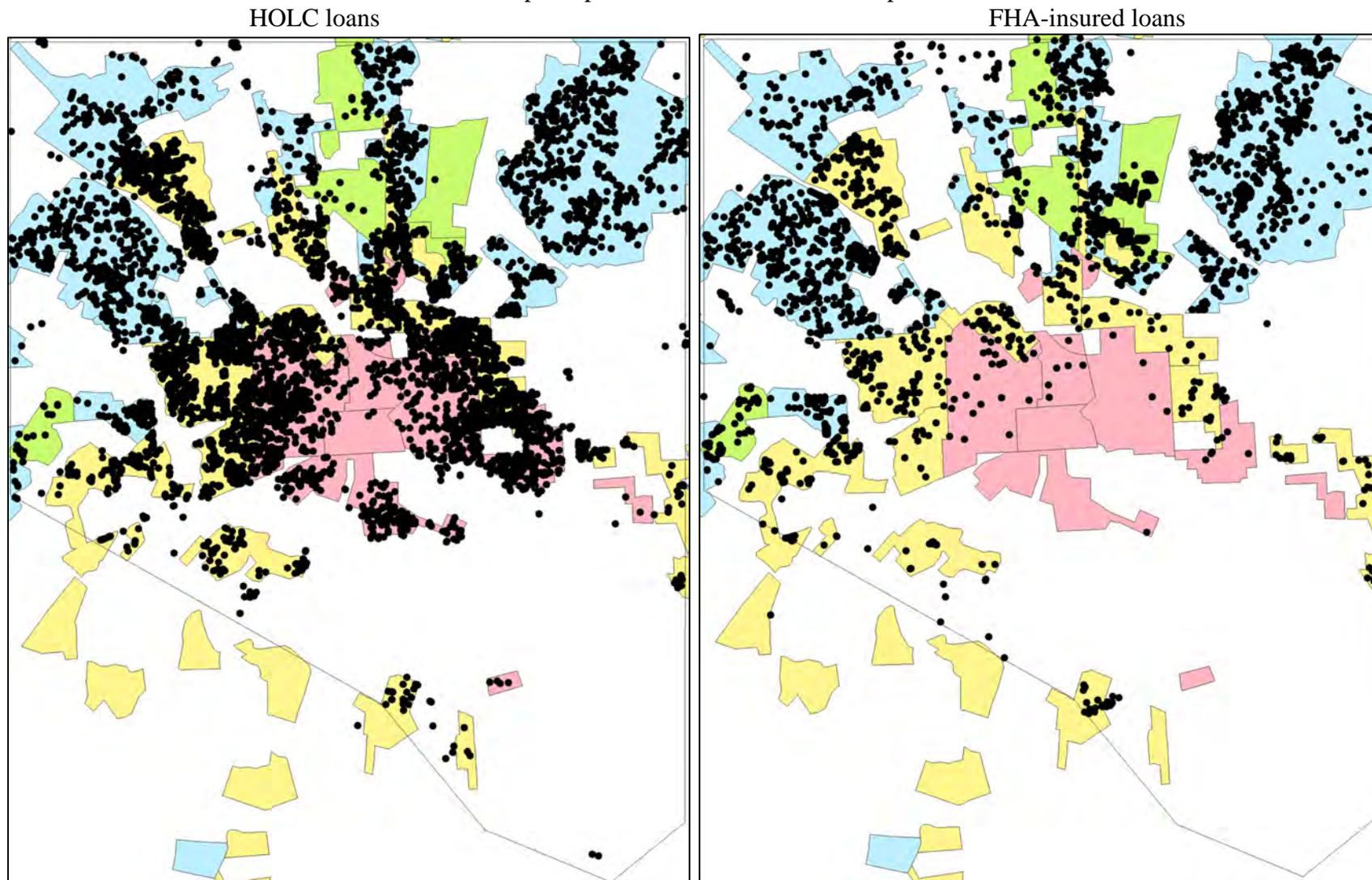
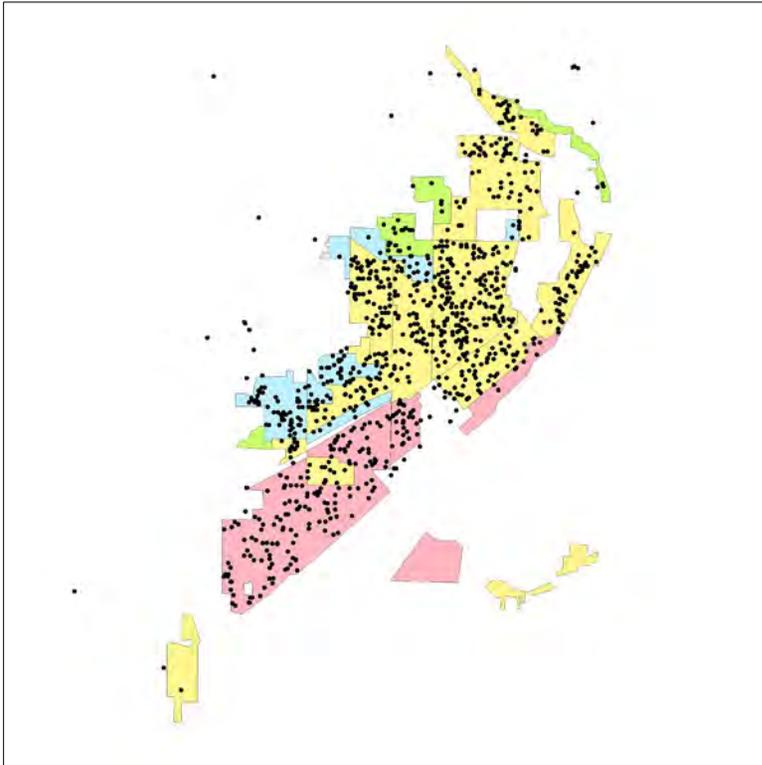


Figure 2: Peoria, IL  
FHA-insured loans (1935 to 1940) and HOLC loans (1933 to 1936)  
superimposed on the 1938 HOLC map

HOLC loans



FHA-insured loans

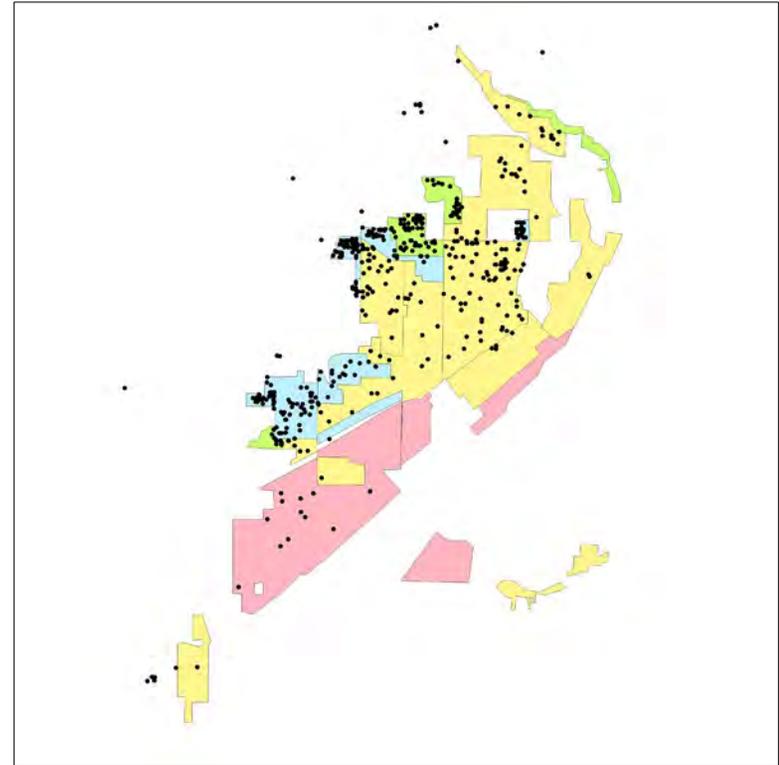
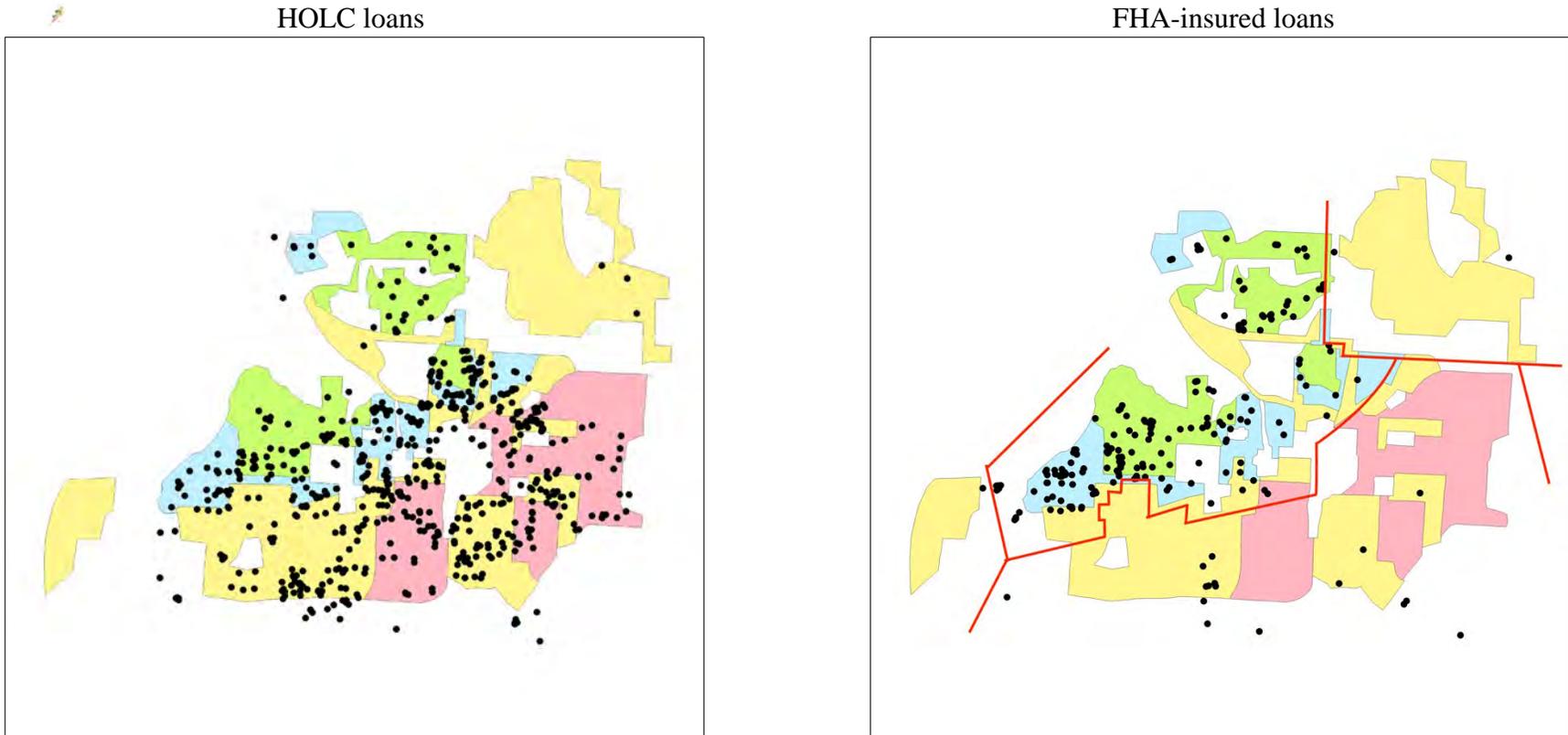


Figure 3: Greensboro, NC  
FHA-insured loans (1935 to 1940) and HOLC loans (1933 to 1936)  
superimposed on the 1937 HOLC map



In Greensboro, most of the addresses are precise to a block, as the land records allow us to identify a block but not easily an exact street address for most properties. As result, to see multiple properties at the same intersection, this figure adds very small amounts of noise to the location of such properties.

Figure 4: Distribution of FHA loan insurance across HOLC map grades over time

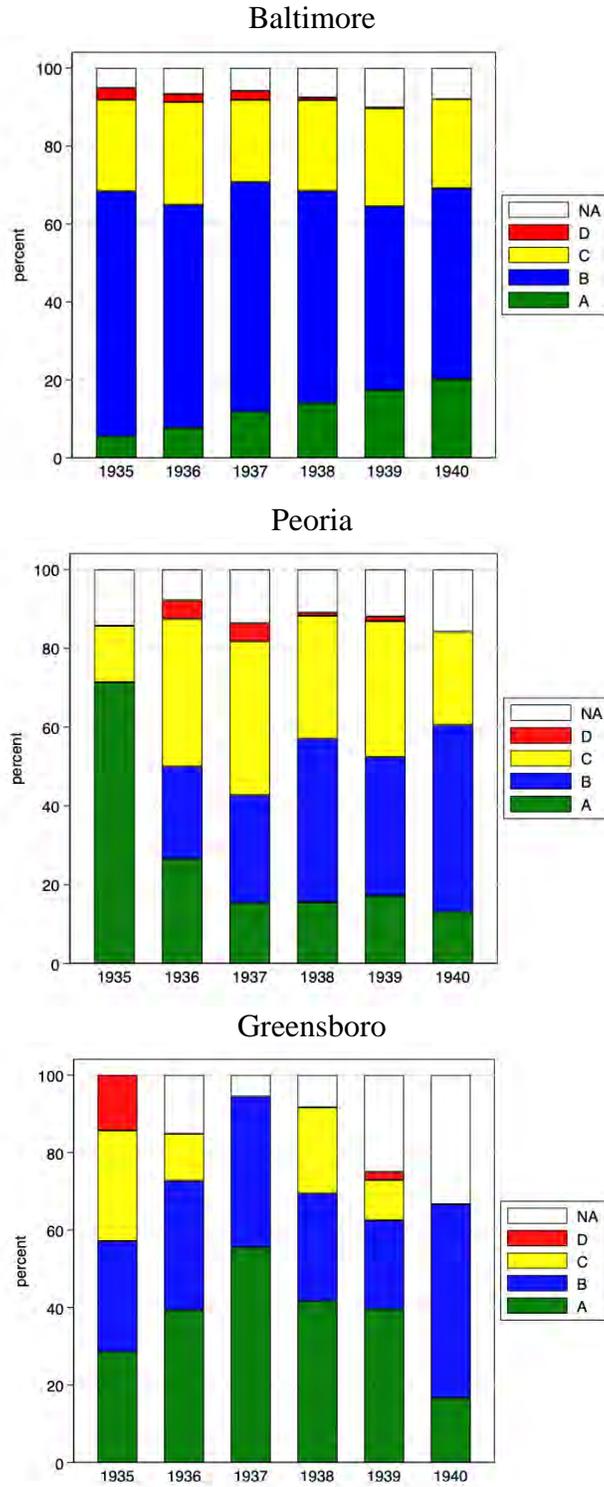


Table 1: Homeownership statistics from 1900-1940 in Baltimore, Peoria, and Greensboro

	Baltimore				Greensboro				Peoria			
	Homeownership		Own w/Mortgage		Homeownership		Own w/Mortgage		Homeownership		Own w/Mortgage	
	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite	White	Nonwhite
1900	32.4%	7.2%	25.9%	26.7%	43.5%	31.4%	25.9%	40.5%	42.5%	19.5%	39.1%	40.0%
1910	38.7%	5.7%	29.2%	23.7%	45.0%	26.3%	33.0%	29.7%	42.3%	17.1%	38.8%	50.8%
1920	53.5%	8.6%	46.0%	52.2%	49.1%	28.5%	18.6%	33.0%	46.3%	15.0%	47.6%	51.6%
1930	59.5%	11.9%			39.3%	31.9%			42.5%	24.1%		
1940	47.6%	8.4%	40.6%	42.2%	34.4%	19.4%	47.5%	29.8%	47.2%	21.8%	54.7%	48.0%
	<b>White-Nonwhite Gap</b>											
1900	25.3%		-0.9%		12.1%		-14.6%		23.0%		-0.9%	
1910	33.0%		5.5%		18.7%		3.3%		25.3%		-12.0%	
1920	44.9%		-6.1%		20.5%		-14.4%		31.3%		-4.1%	
1930	47.6%		0.0%		7.4%		0.0%		18.4%		0.0%	
1940	39.1%		-1.6%		15.0%		17.7%		25.3%		6.7%	

Table 2: FHA loan insurance was distributed disproportionately away from areas eventually redlined by the HOLC

		HOLC map grade					Total
		A	B	C	D	Unrated	
<b>Baltimore</b>	FHA-insured loans	12.8	54.5	23.9	1.6	7.4	100.0
	HOLC loans	2.3	29.9	39.9	23.2	4.7	100.0
	Population	2.3	14.5	28.3	39.1	15.7	100.0
	Home owners	4.0	22.7	33.8	23.4	16.2	100.0
<b>Peoria</b>	FHA-insured loans	18.4	34.7	34.7	2.2	10.1	100.0
	HOLC loans	2.7	11.9	60.8	19.4	5.3	100.0
	Population	2.0	7.3	46.2	34.3	10.3	100.0
	Home owners	3.3	11.1	49.5	29.8	6.2	100.0
<b>Greensboro</b>	FHA-insured loans	42.2	31.7	11.5	1.2	14.5	100.0
	HOLC loans	13.8	21.0	40.1	17.1	7.9	100.0
	Population	6.4	13.9	50.8	26.0	2.8	100.0
	Home owners	13.7	22.6	41.3	18.6	3.8	100.0

Notes: Population and homeownership figures are from 1940, estimated by placing each census enumeration district into an HOLC neighborhood, and totaling population and homeowners within each enumeration district.

Table 3: FHA-insured borrowers had more expensive houses and higher paying jobs relative to other homeowners and to HOLC borrowers

HOLC				FHA			
1930 census	HOLC mean	City mean	Percentile of HOLC median in city-wide distribution	1940 census	FHA mean	City mean	Percentile of FHA median in city-wide distribution
<u>Baltimore, MD (N=98,866)</u>				<u>Baltimore, MD (N=94,401)</u>			
Housing value	5871	5849	59	Housing value	4747	3555	78
Occ. Score	29.7	30.5	47	Income	2231	1628	74
1(Black)	0.084	0.039		1(Black)	0.009	0.036	
1(Born US)	0.780	0.767		1(Born US)	0.886	0.803	
				1(Moved last 5 yrs)	0.801	0.305	
<u>Greensboro, NC (N = 4,217)</u>				<u>Greensboro, NC (N=6,151)</u>			
Housing value	7931	7869	54	Housing value	6498	4226	78
Occ. Score	31.2	30.5	53	Income	2549	1767	75
1(Black)	0.215	0.229		1(Black)	0.007	0.145	
1(Born US)	0.971	0.977		1(Born US)	0.993	0.981	
				1(Moved last 5 yrs)	0.860	0.490	
<u>Peoria, IL (N=14,849)</u>				<u>Peoria, IL (N=13,977)</u>			
Housing value	6144	6305	54	Housing value	7024	4907	76
Occ. Score	29.7	29.8	48	Income	2208	1633	74
1(Black)	0.013	0.015		1(Black)	0	0.011	
1(Born US)	0.909	0.846		1(Born US)	0.953	0.878	
				1(Moved last 5 yrs)	0.789	0.400	

Notes: The comparison universe is restricted to homeowners, as renters do not report housing values. Race, place of birth, occupational score, and income are measured by the household head.

Table 4: Regression analysis of the correlates of HOLC borrowers

	Baltimore, MD	Greensboro, NC	Peoria, IL
1(house value in 2nd quintile)	0.00796**	-0.00741	0.0169***
	(0.00366)	(0.0195)	(0.00624)
1(house value in 3rd quintile)	0.0146***	0.00912	0.0166**
	(0.00407)	(0.0198)	(0.00687)
1(house value in 4th quintile)	0.0162***	-0.0232	0.0185**
	(0.00423)	(0.0241)	(0.00731)
1(house value in 5th quintile)	0.0258***	0.0400*	0.0145*
	(0.00471)	(0.0241)	(0.00782)
1(house value missing)	-0.00631	-0.00436	0.00287
	(0.00494)	(0.0291)	(0.0104)
1(occ score in 2nd quintile)	0.0104***	0.0124	0.00439
	(0.00350)	(0.0288)	(0.00989)
1(occ score in 3rd quintile)	-0.000146	0.0292	0.0101
	(0.00346)	(0.0194)	(0.00633)
1(occ score in 4th quintile)	-0.00833**	0.0246	-0.00119
	(0.00337)	(0.0230)	(0.00681)
1(occ score in 5th quintile)	-0.00739**	0.0242	-0.00778
	(0.00355)	(0.0210)	(0.00731)
1(occ score missing)	-0.00842***	0.00116	-0.0101*
	(0.00303)	(0.0190)	(0.00597)
Age	-0.00101***	-0.000554	-0.000622***
	(6.98e-05)	(0.000419)	(0.000142)
Constant	0.0982***	0.0928***	0.0603***
	(0.00513)	(0.0281)	(0.00966)
Enumeration sheet (Nearest Neighbors) Fixed Effect	yes	yes	yes
Observations	98,866	4,217	14,849
R-squared	0.191	0.232	0.147

Notes: The outcome variable is a dummy for an HOLC borrower. The sample is limited to homeowners in the 1930 census in each city. The method is a linear probability model.

Table 5: Regression analysis of the correlates of FHA borrowers in 1940

	Baltimore, MD	Greensboro, NC	Peoria, IL
1(house value in 2nd quintile)	0.00163	0.00482	0.000445
	(0.00213)	(0.00813)	(0.00405)
1(house value in 3rd quintile)	-0.000815	0.0140	0.00461
	(0.00245)	(0.00907)	(0.00429)
1(house value in 4th quintile)	0.00785***	0.0163*	0.0168***
	(0.00222)	(0.00970)	(0.00450)
1(house value in 5th quintile)	0.0123***	0.0275**	0.0139***
	(0.00264)	(0.0110)	(0.00508)
1(house value missing)	-0.00939*	0.00960	0.00381
	(0.00561)	(0.0187)	(0.0128)
1(income in 2nd quintile)	0.000345	-0.00623	-0.000458
	(0.00229)	(0.00872)	(0.00490)
1(income in 3rd quintile)	0.00693***	-0.000544	-0.000299
	(0.00230)	(0.00953)	(0.00474)
1(income in 4th quintile)	0.0182***	0.000874	0.0144***
	(0.00236)	(0.00974)	(0.00487)
1(income in 5th quintile)	0.0237***	0.00115	0.0105**
	(0.00237)	(0.0100)	(0.00498)
1(income missing)	0.00377*	-0.00706	0.00521
	(0.00195)	(0.00828)	(0.00409)
1(Moved since 1935)	0.0341***	0.0186***	0.0160***
	(0.00146)	(0.00556)	(0.00281)
Age	-0.000648***	-0.000508***	-0.000525***
	(4.99e-05)	(0.000197)	(0.000106)
1(Born in US)	-0.00336**	0.0450***	-0.000454
	(0.00159)	(0.0167)	(0.00375)
Constant	0.0419***	-0.0160	0.0254***
	(0.00384)	(0.0214)	(0.00832)
Enumeration sheet (Nearest Neighbors) Fixed Effect	yes	yes	yes
Observations	93,534	6,065	13,898
R-squared	0.362	0.255	0.221

Notes: The outcome variable is a dummy for an FHA-insured borrower. The sample is limited to homeowners in the 1940 census in each city. The method is a linear probability model.