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Income Gains and the Geography of the US Homeownership Boom, 1940–1960

William J. Collins and Gregory T. Niemesh

3.1 Introduction

Between 1940 and 1960, workers' earnings surged in the United States, with median annual real wage and salary income nearly doubling and with widespread gains across the age and income distributions.[1] Over the same decades, there was an unprecedented rise in the rate of homeownership, by more than 20 percentage points, by far the largest gains of the 20th century. The coincidence of these changes is clear and readily observed in aggregate data, and extensive bodies of literature in economics study each trend. But empirical evidence on the strength of the causal link running from changes in income to changes in homeownership is thin relative to the importance of this era in shaping the trajectory and geography of American economic development.

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1. The sample is restricted to men who worked at least 17 weeks in the prior year, who reported being wage and salary workers, and who earned wage and salary income of more than $100 in 1939 dollars (Ruggles et al. 2021, 2023).

In this chapter, we focus on the hypothesis that the widespread and sustained increase in the level of income allowed more people to afford and select into owner-occupied housing than in previous generations. In doing so, we turn our attention from the causes of midcentury income changes, a focus of much prior research, to one potentially important ramification—the boom in homeownership. Many things happened between 1940 and 1960 that could confound efforts to measure the strength of the connection between the era's income and homeownership gains. We take advantage of the fact that although gains in income and ownership were widely shared, they were not evenly spread over space. Differential changes in income and ownership across localities are the basis of our ordinary least squares (OLS) and IV measurement strategies.

We find that at the local level—defined by groups of adjacent and similar counties—the rise in homeownership was strongly correlated with changes in income. This relationship is evident and similar in magnitude even when conditioning on a rich set of prewar local characteristics, regional trends, and wartime shocks.[2] Between 1940 and 1960, a 10 log-point difference in the increase in average real wages for nonfarm male workers was associated with a 2- to 3-percentage-point difference in homeownership gains. Although we are cautious about adopting a strongly causal interpretation of the OLS coefficient estimates, this approach can account for many potential confounders, and we test the robustness of the baseline results at length. If taken at face value, the OLS estimates would attribute approximately half the gains in ownership from 1940 to 1960 to gains in income.

It appears that the baseline results are not driven by the sorting of households by income across localities, given that adding ("bad") controls for post-1940 changes in population characteristics does not greatly alter the key point estimate. Moreover, we conclude that the results are not attributable to geographic variation in shocks from the wartime economy because the estimated coefficient of interest is similar whether or not the regression includes the value of wartime contracts per capita, controls for local age structure in 1940 (a proxy for draft-eligible men), and state-level military mobilization rates. Although the baseline results are robust from many perspectives when using the full national sample, we do find some evidence of heterogeneity when we split the sample by region and locality size, with larger point estimates in larger localities (above the 75th percentile) and in the Northeast, especially relative to the West.

To complement the OLS results, we develop an instrumental variable approach following Borusyak et al. (2022). This relies on a shift-share instrument that interacts 1940 shares of local workers at each percentile of the

2. We focus on men's earnings here because changes in women's labor force participation between 1940 and 1960 may complicate the interpretation of changes in observed wages at the local level. We do not focus on household income because household formation is endogenous to changes in labor and housing markets.

national wage distribution and post-1940 changes in wages at each percentile. This approach yields smaller but still strongly positive coefficient estimates linking income and homeownership gains, such that about one-third of the ownership gains would be attributed to changes in income.

Our findings contribute to several strands of literature. Studies of midcentury changes in wages tend to focus on uncovering the sources of the decline in income inequality.[3] Studies of the homeownership boom, on the other hand, tend to focus on changes in mortgage markets, including the expanding use of long-term self-amortizing mortgages and the GI Bill's support for World War II and Korean War veterans (see, e.g., Chambers et al. 2014; Fetter 2013; Grebler et al. 1956; Klaman 1961; Saulnier et al. 1958;). The likely importance of rising income is widely acknowledged in this literature, but consideration of the effects of income gains tends to fall into the background as institutional change and policy interventions take center stage. Our findings clarify the connection between post-1940 labor market gains, a period of widely shared and rapid improvements, and the unprecedented surge in homeownership. In characterizing the potential connection, Fetter (2014, 344) emphasizes the dearth of research "that attempts to isolate quasi-experimental variation in income for the purpose of estimating its causal relationship with homeownership at either the beginning or end of the period." We attempt to develop evidence in that direction, and in doing so, bring the role of income gains back into the forefront of discussions of the American homeownership boom.

The findings also provide a partial view of changes in the composition of Americans' wealth. Homeownership is one of the few census variables that provides a long-run view of a major component of wealth in nationally representative samples (Collins and Margo 2001, 2003). Throughout the 20th century, equity in housing has been the most important component of the median household's wealth. In 1960, in the Survey of Consumer Finances sample (University of Michigan, ICPSR 7440), relatively few households owned stocks or savings bonds, but most had at least some home equity. Home equity, in turn, reflects the ownership rate, the value of what is owned conditional on being an owner, and the debt-equity ratio. In this chapter, we focus on the first component, and specifically on how large changes in income supported large gains in ownership—the first step in building home equity—during the post-Depression decades.

This chapter is also closely related to the economic history of suburbanization (Baum-Snow 2007; Boustan and Margo 2013; Jackson 1985, Margo 1992). Much of the new, post-1940 owner-occupied housing came in the form of single-family housing units that were located outside of central

3. Contributing factors include wartime labor market conditions and wage setting polices, the shifting supply of well-educated workers, and labor market institutions such as the rise of unions. See Miller (1958), Goldin and Margo (1992), Juhn (1999), Goldin and Katz (2008), Jaworski and Niemesh (2018), Collins and Niemesh (2019), and Collins and Callaway (2018).

cities. Our main analysis is conducted using broad geographic areas as the units of analysis (groups of counties), with the idea of capturing spillovers within localities and avoiding results driven largely by city-to-suburb sorting by higher-income households.[4] Nonetheless, new housing in suburban areas was, in practice, an important mechanism through which ownership gains occurred. In turn, suburbanization shaped American economic geography, culture, and politics in profound ways. From this perspective, homeownership per se is just one of many potential ramifications of the midcentury change in income and its distribution.[5] We encourage additional explorations of how midcentury labor market gains translated into other forms of social and economic change.

3.2 Background and Context

3.2.1 Changes in Wages and Homeownership, 1940–1960

We begin by establishing some important facts about changes in earned income in the mid-20th century. As in previous studies in this literature, we are somewhat constrained by the available data. The 1940 census of population was the first to inquire about wage and salary income in the previous year, but it omitted self-employment income. For comparability, we focus on the wage and salary component of earnings in both the 1940 and 1960 censuses, restricting the samples to men, ages 18 to 64, who reported being wage and salary workers at the time of the census. We omit 1950 because that year's microdata sample does not report homeownership status, which limits its usefulness in our analyses.

Figure 3.1 plots the distributions of real weekly wages reported in the 1940 and 1960 censuses, for samples of nonfarm men.[6] The strong rightward shift is obvious, with median wages rising from $23.53 to $46.72. In a longer time series, which pertains to manufacturing workers, the real weekly wage gains from 1940 to 1960 stand out as historically large, much larger than the gains registered over the 20-year spans from 1920 to 1940 or from 1960 to 1980.[7]

4. The 1960 census microdata do not reveal suburban status for a large number of observations, and so our place-based regression analysis does not attempt to parse out this distinction.

5. For instance, income gains may be connected to the baby boom (Easterlin 1961), and it is plausible that economic prosperity and lower inequality influenced American politics and policymaking.

6. The 1940 and 1960 censuses inquired about income in the previous calendar year, referencing 1939 and 1959. We focus on men because their consistently high rates of labor force participation throughout this period makes interpreting their earnings more straightforward, albeit with the caveat about missing self-employed workers who might be differentially selected over time. We do not focus on household income because household formation is endogenous to changes in labor and housing markets.

7. These calculations are based on data from Margo (2006, series Ba4362) for nominal wages and Lindert (2006, series Cc1) for a consumer price index. The ratio of real earnings in 1960 vs. 1940 is 1.7, whereas the ratios for 1940 vs. 1920 and 1980 vs. 1960 are 1.37 and 1.16, respectively.

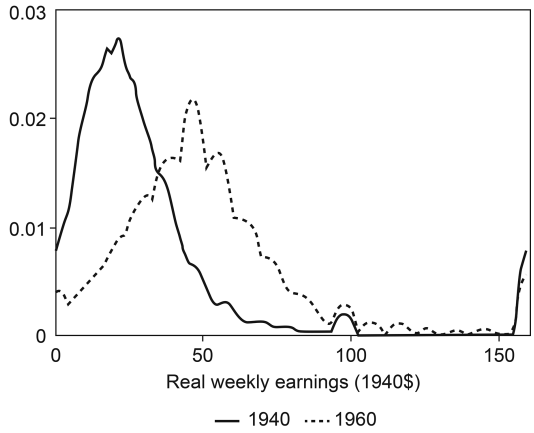

Figure 3.1 Change in real earnings distribution between 1940 and 1960

Note: The earnings sample includes men not residing or working on a farm and reporting wage and salary employment in the reference week, age 18 to 64 years who reported positive wage and salary income in the year prior to the census, worked more than 39 weeks, and earned more than half the minimum wage at a full-time basis (weekly wages of $6 in 1940 and $9.52 in 1960). Earnings in 1960 are deflated using the CPI.

Source: Earnings data from decennial census microdata provided Ruggles et al. (2021) and Ruggles et al. (2023), Integrated public use microdata series, 1940 complete count (100 percent), and 1960 5 percent sample.

Figure 3.2, which is also based on samples of microdata from the 1940 and 1960 censuses, shows that these wage gains were widely shared. All regions experienced sizable increases in wages, as did all education groups, racial categories, and broad occupational groups. At the same time, inequality fell in what Goldin and Margo (1992) termed the "Great Compression." This narrowing is reflected in figure 3.2 in the relatively large gains that accrued to laborers, southern residents, and nonwhite workers.

Figure 3.3 graphs the changes in real earnings relative to age. The key insight from this figure is that income gains after 1940 were large throughout the age distribution. This is important because the literature on midcentury ownership gains emphasizes the sizable increase in ownership for younger households, especially in their 30s. This is often presented as evidence that changes in mortgage markets facilitated access to credit early in the life cycle, and we agree that such innovations must be an important part of the story. But the pattern is also consistent with changes in young men's income having a direct effect on demand for owner-occupied housing and, thus, for the financial instruments that enabled their increased ownership.

Figure 3.4 shows that the midcentury surge in real income was accompanied by an unprecedented jump in homeownership rates (Collins and Margo 2001, 2011). We present ownership series for all men (18–64), male heads of household, and all heads of household including women (Ruggles et al.

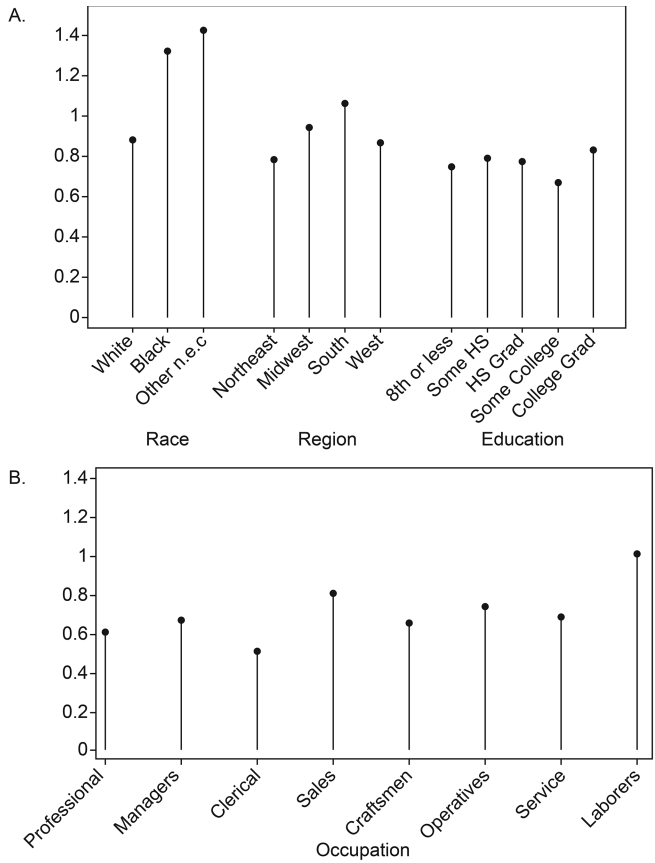

Figure 3.2 Percentage gains in real wages between 1940 and 1960 by groups

Note: Graphs show the percentage gains (1 = 100 percent) in real weekly earnings. The earnings sample includes men not residing or working on a farm and reporting wage and salary employment in the reference week, age 18 to 64 years who reported positive wage and salary income in the year prior to the census, worked more than 39 weeks, and earned more than half the minimum wage at a full-time basis (weekly wages of $6 in 1940 and $9.52 in 1960). Earnings in 1960 are deflated using the CPI.

Source: Earnings data from decennial census microdata provided Ruggles et al. (2021) and Ruggles et al. (2023), Integrated public use microdata series, 1940 complete count (100 percent), and 1960 5 percent sample.

2023). We code an observation as "owner" if he was recorded as the head of household and resided in owner-occupied housing.[8] Prior to 1960, the series for all household heads is nearly identical to the series for male household

8. There is some room for error here in that census data do not record exactly who owns the home. We assume that the head and/or spouse do.

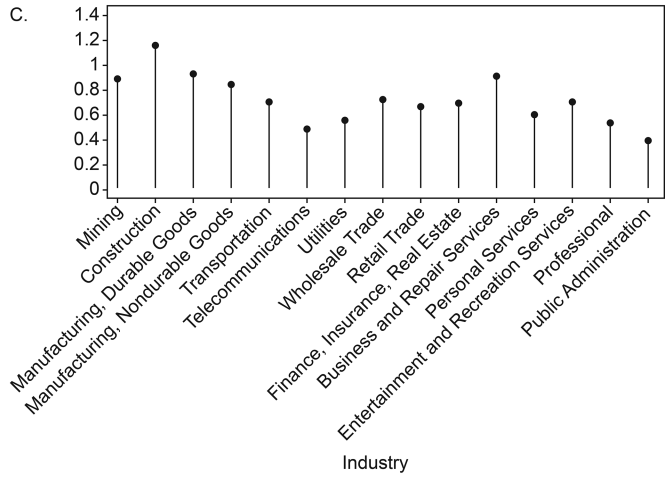

Figure 3.2 (cont.)

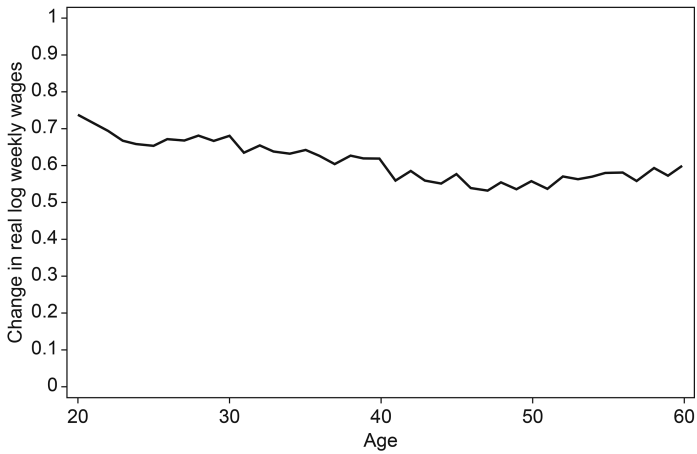

Figure 3.3 Changes in real earnings relative to age

Note: The earnings sample includes men not residing or working on a farm and reporting wage and salary employment in the reference week, age 18 to 64 years who reported positive wage and salary income in the year prior to the census, worked more than 39 weeks, and earned more than half the minimum wage at a full-time basis (weekly wages of $6 in 1940 and $9.52 in 1960). Earnings in 1960 are deflated using the CPI.

Source: Earnings data from decennial census microdata provided Ruggles et al. (2021) and Ruggles et al. (2023), Integrated public use microdata series, 1940 complete count (100 percent), and 1960 5 percent sample.

Figure 3.4 National homeownership rates, 1900–2000

Note: The sample for "All men" includes men age 18 to 64; "Male heads" includes only male household heads (18–64); "All heads" includes female heads, as well. We define homeownership if the head or spouse of the head reports residing in owner-occupied housing. Adult-male non-household heads are recorded as renting.

Source: 1900 through 2000 IPUMS 1 percent census samples provided by Ruggles et al. (2023).

heads.[9] The series for "all men" is of particular interest because many adult men did not form independent households—some lived with parents or other family members, others as boarders or in group quarters. This shift of perspective is important, as the ownership rate for all men is at least 10 percentage points lower than for the series for all heads or male heads.[10]

The aggregate homeownership rates depicted in figure 3.4 were flat from the turn of the 20th century to 1930, before dipping slightly during the Great Depression. The sudden and sustained increase in the 1940s and 1950s—by more than 20 percentage points for all heads and by even more for all men—is striking in retrospect. As with income, large increases in ownership occurred in all regions and for all racial groups. Ownership gains were espe-

9. Census enumerators recorded men as household heads in the majority of cases up to 1960 (nearly 90 percent of heads ages 18–64 years old). Among female heads up to 1960, a large share were widows, who were more likely to own homes than other female heads. Before 1970, enumerators were instructed to list men as the heads of married households: https://usa.ipums.org/usa-action/variables/RELATE#comparability_section.

10. This gap is somewhat smaller if the sample is restricted to the 25–64 age range, but it is still large (e.g., slightly under 10 percentage points in 1940 and 1960).

Figure 3.5 Ownership gains throughout the income distribution, 1940–1960

Note: The sample includes men not residing or working on a farm and reporting wage and salary employment in the reference week, age 18 to 64 years who reported positive wage and salary income in the year prior to the census, worked more than 39 weeks, and earned more than half the minimum wage at a full-time basis (weekly wages of $6 in 1940 and $9.52 in 1960).

Source: Earnings data from decennial census microdata provided Ruggles et al. (2021) and Ruggles et al. (2023), Integrated public use microdata series, 1940 complete count (100 percent), and 1960 5 percent sample.

cially pronounced among younger households, who entered homeownership earlier in the life cycle than in the previous generation (Fetter 2014). Not only did most American household heads reside in owner-occupied housing in 1960 for the first time since at least 1870, but the lion's share of the entire increase in homeownership that occurred in the 20th century happened between 1940 and 1960.[11]

Finally, figure 3.5 shows that the increase in homeownership between 1940 and 1960 was spread throughout the income distribution. Gains were smaller at the bottom than at the middle and top of the income distribution, but they were sizable by historical standards throughout the distribution.

We acknowledge that our reliance on census data limits our ability to distinguish between the wartime and postwar periods. By spanning 1940 to 1960, our analyses combine periods with quite different labor and housing market conditions. During the war, labor markets were tight and wages increased, but housing construction was limited due to the resource demands

11. The 1870 census reports the value of real estate wealth. In the 1870 1 percent IPUMS sample, assigning "ownership" status to all household heads in with greater than zero real property yields an ownership rate of about 48 percent.

for supporting the war effort. That said, it is likely that income gains and savings accrued during the war carried over into strong demand for new, owner-occupied housing when residential construction resumed in earnest after the war.[12] Thus, combining the war and postwar periods, as we do in this chapter, may obscure the timing of change and distinctions between the periods, but may capture empirical connections that could be missed by analyzing the periods as separate eras.

3.2.2 Income and Tenure Decisions in Midcentury Context

The cross-sectional correlation of income and nonfarm homeownership is strongly positive in the United States, and it has been so for a long time. This is difficult to see directly in pre-1940 data due to the lack of nationally representative income data, but in 1920, for instance, a linear regression of homeownership on occupational status (*occscore*) for white men, ages 18–64, who did not live on a farm or hold an agricultural occupation reveals a strongly positive relationship. A 10 log-point increase in *occscore* (roughly 1 standard deviation) was associated with a 5-percentage-point increase in ownership.[13] Comparable regressions reveal similar (1940) or somewhat stronger (1960) positive relationships in later years.

Although these cross-sectional patterns are clear in the data, it is not self-evident from a theoretical perspective that households with higher income would be more likely than others to choose to own their home rather than rent it. In a life cycle context, homeownership typically occurs after leaving the parents' home and acquiring enough savings to purchase a home outright or, more likely, to provide a down payment in conjunction with a mortgage to be paid out of future earnings.[14] Higher and more stable income makes it more feasible to establish an independent household, accumulate savings, qualify for credit, and acquire property ownership if so desired.[15] An optimally diversified asset portfolio may include real estate. It is, however, possible to invest in real estate without living in one's own property. This additional step—choosing to live inside one's own property and "rent to oneself"—may reflect principal–agent considerations, as described by Henderson and Ioannides (1983) and Glaeser and Shapiro (2003). Because

12. See Fetter (2016) for an examination of wartime increases in ownership driven by conversions from rental to owner-occupied units. See Brunet (2019) on how wartime savings may have led to postwar housing investment.

13. The sample is restricted to men who are in the labor force and have occupation scores above zero. The correlation is strong for Black men too, but the IPUMS *occscore* variable is not a good proxy for Black men's earnings within occupations. *Occscore* is an IPUMS variable that is available for all years and that is derived from the 1950 census; its value equals the median annual income of workers holding a particular occupation.

14. Inheritance would be another channel and would not require the accumulation of savings.

15. Along these lines, Grebler et al. point out that "the number of social units who may demand separate dwelling space is not solely a function of the distribution by age and marital status of the population but is also a function of prevailing economic conditions and social attitudes" (1956, 80).

renters are less likely to care for a property conscientiously and do not internalize the full costs of utilization and "wear and tear," owners might find it advantageous to live in the property themselves. Other potential motivations for ownership might come from "pride of ownership," a form of consumption that is more readily indulged at higher income levels, or perhaps tax incentives associated with itemized deductions of mortgage interest and the treatment of capital gains (Aaron 1972; Fetter 2013, app. 2; Poterba 1992; Rosen and Rosen 1980).

The connection between income and ownership is mediated by housing markets, which on the supply side include builders, financial institutions, and government agencies. The context within which housing markets functioned changed over time, especially in the wake of the Great Depression (Fishback et al. 2013; Klaman 1961). Starting in the 1930s, the federal government influenced nonfarm mortgage markets through agencies such as the Home Owners Loan Corporation (HOLC) and Federal Housing Administration (FHA), the first of which refinanced distressed mortgages during the Depression and the second of which began insuring mortgages.[16] Mortgages that entailed longer-term, self-amortizing loans and low down payments became more prevalent, even in the "conventional" (uninsured) segment of the market (Grebler et al. 1956, 257–60; Rose and Snowden 2013). In the postwar period, Veterans Administration (VA) loans provided even more generous terms to large cohorts of veterans (Fetter 2013).

Another consequence, and indeed a primary goal, of the FHA is that builders were encouraged to undertake new construction projects, often at large scale (Saulnier et al. 1958, 336–48).[17] This may have increased the elasticity of housing supply and lowered costs for home buyers relative to a counterfactual without federal involvement. Among other channels, Saulnier et al. emphasize that, "by giving the builder assurance that the mortgages he generates will (provided all standards of construction, land use, credit, etc. are satisfied) be insured, and thus virtually guaranteeing the financing . . . this system encourages the planning and construction of very large developments" (1958, 348). Since many new developments were located outside city centers, there is likely a strong connection between these institutional changes and the pace and extent of suburban growth. In addition, Grebler et al. claim, "The automobile . . . has been the main initiator of the recent era of suburban sprawl with its emphasis on the single family house" (1956, 8), implying that exogenous changes in transportation technology and endogenous changes in car ownership and road construction likely reinforced the shift toward the construction of a type of hous-

16. Snowden (2014) reviews the NBER's extensive research program on residential capital formation in this period, including major contributions such as Harriss (1951), Grebler et al. (1956), Klaman (1961), Saulnier et al. (1958), and several others.

17. We thank Ken Snowden for pointing this out in conversation.

ing—single-family detached—that has typically been owner occupied in the United States.

The influence of the federal policies mentioned here is commonly at the forefront of discussions of the rise in homeownership after 1940, which is understandable since they were direct manifestations of specific policy decisions. However, contemporaries understood that such policy effects are not easily separated from the effects of rising income. As Grebler (1953, 20) observed: "It would be rash to assume that all the new construction financed by FHA and VA loans represents additional volume that would not have been produced without those aids . . . for the two facilities operated largely in a period of rising or high incomes conducive to an expanding demand for new residential construction. It would be equally rash to deduce that these programs had no influence on the volume of residential construction." As Fetter (2014) emphasizes, income gains and changes in access to credit were likely complementary in this period. Higher income not only increased demand for housing directly, perhaps especially for owner occupancy, but also increased the likelihood of qualifying for credit in an era where lower down payments entailed higher loan-to-value ratios.

3.2.3 The Housing Stock in 1960

How did the housing stock evolve in the wake of the income and institutional changes discussed above? New housing unit starts had fallen to historic lows during the Great Depression before recovering in the later 1930s and then plunging again during World War II (National Bureau of Economic Research, macrohistory database). The postwar years entailed a much more robust era of home building, and of course this timing coincided with the homeownership boom we study in this chapter.[18]

The 1960 census microdata are particularly helpful in seeing the midcentury housing stock because for each household it includes information on tenure status, location, and the building's age (Ruggles et al. 2023). Table 3.1 splits all households into one of four groups depending on tenure (own or rent) and the age of the housing unit (built before 1940 or later). A large share of the owner-occupied housing stock in 1960 was relatively new. Among home-owning households in 1960, approximately 50 percent resided in units that had been built since 1940 (i.e., of the 62 percent of heads who owned homes, half were in units built since 1940). Among renters, the share in new housing units was much lower, at approximately 29 percent. Focusing on the newer housing, units built after 1940 were disproportionately owner occupied, such that 73 percent of all households residing in newer units were owners (31 of 42).

18. In addition, Fetter (2016) shows that many housing units were converted from rental to owner-occupancy during World War II. These conversions occurred inside the scope of our 1940 to 1960 investigation, and they will be reflected in observed homeownership levels, but they cannot be separately identified in our analysis.

Table 3.1 **Age of housing stock and tenure in 1960**

	Rent	Own	Total
Old stock	14,210,660	16,312,220	30,522,880
	26.9	30.9	57.8
New stock	5,941,440	16,382,580	22,324,020
	11.2	31.0	42.2
Total	20,152,100	32,694,800	52,846,900
	38.1	61.9	100.0

Note: "Old stock" refers to housing units built before 1940. "New stock" was built in 1940 or later. This is based on the IPUMS variable "builtyr." The sample includes all household heads and omits group quarters. Interior cells with percentages show the distribution of households over four tenure and housing unit age cells and sum to 100. Household weights are used.
Source: 1960 5 percent IPUMS sample (Ruggles et al. 2023).

An important and related trend is that much, though certainly not all, of the new building took place in suburban and nonmetro areas where ownership rates were high. Among households identified as residing in central cities in 1960, the overall ownership rate was only 43 percent, and only 15 percent of all central-city households owned new housing units.[19] For those identified as residing in metro areas but not central cities (henceforth "suburbs"), the ownership rate was 72 percent, and 45 percent of all suburban households owned new housing units. Although much of the housing literature on this era is centered on metropolitan areas, it is important to acknowledge that a large share of the housing stock at midcentury was located outside of metropolitan areas. Ownership rates were nearly as high in nonmetro areas (67 percent) as in suburbs, but only 29 percent of all nonmetro households owned newer housing in 1960. Sorting the data differently indicates that approximately 40 percent of new housing units (built after 1940) were in suburbs, 40 percent were in nonmetro areas, and 21 percent were in central cities.

3.2.4 Counterfactual for Motivation

The econometric analysis in the next section attempts to shed light on the role of income gains in driving the homeownership boom. For the sake of motivation, we start with a simple Blinder-Oaxaca decomposition to clarify the potentially large role of income gains in driving the rise of homeownership. We base the decomposition on the empirical relationship between income and ownership in the 1960 data; implicitly, this approach "bakes in" mortgage market reforms, tax policies, and everything else that is embedded in 1960's cross-sectional data.

19. These tabulations pertain to households for which the year built and metro *and* central city status are reported (*builtyr* > 0 and *builtyr* < 5 and *metro* > 0 and *metro* < 4). Unfortunately, approximately 22 percent of households with known building age reside in areas for which metro/central city status is not definitive.

We begin with a dataset of all men, ages 18–64, who were wage and salary workers, in the labor force, worked at least 27 weeks in the previous year, and earned more than $100 (in 1939 dollars). "Owners" in this framework are men who resided in owner-occupied housing and were identified as the head of household. Those who resided in owner-occupied housing but were not the head of household are coded as "nonowners" along with all those who resided in rental units. The idea is that all such men had the potential for forming a household and entering into ownership—they were in a sense "at risk" of ownership.

Ownership (0–1) is regressed on a quartic in real wage and salary income (expressed in 1939 dollars), an indicator variable for real income above $5,000 (the topcode value in 1939), and a quartic in age in the 1960 sample.[20] Given these parameter estimates, differences in real income between the 1940 and 1960 samples may "account for" 15 percentage points of the change in ownership out of a total of 28. This suggests a counterfactual ownership rate of 39 percent in 1960 (with no income gains) compared to an actual rate of 54 percent. This is roughly consistent with Chevan (1989), despite using different census datasets and decomposition methods. Like any such decomposition, this perspective is not causal, does not take account of general equilibrium effects, and depends on which year's coefficients are chosen. Even so, the magnitude of the difference between the actual and counterfactual ownership rate helps to motivate a closer examination of how labor market changes and income gains after 1940 may have contributed to the homeownership boom.

3.3 Data and Empirical Approach

Our analysis builds on micro-level census of population data from 1940 and 1960. Because the 1940 census recorded wage and salary income only, we focus on samples of nonfarm men between the ages of 18 to 64 who reported being wage and salary workers.[21] The census homeownership question per-

20. The population in 1960, even within the 18–64 range, was slightly older than in 1940. Age differences account for about 2 percentage points of the change in ownership. Because 1940's relationship between ownership and income is flatter than in 1960, a decomposition would attribute less explanatory power to changes in income if using coefficients for 1940 (about half as much). We use 1960's coefficients since they reflect important changes in mortgage and housing markets. The decomposition was undertaken with 1 percent samples from 1940 and 1960 (Ruggles et al. 2021) and was implemented using Stata's *oaxaca* command (Jann 2008).

21. Calculating weekly income involves dividing the annual income from wage and salary work by the total number of weeks worked. However, it is important to note that the 1940 census did not report self-employment income or capital income, and to maintain consistency, we do not include these sources of income in 1960. Weeks worked is recorded as a continuous value in 1940 (*wkswork1*). In 1960, weeks worked is recorded as an interval value (*wkswork2*), which we convert to the midpoint of the interval. Our analysis is limited to males aged 18 to 64 who were employed for at least 40 weeks in the previous year and reported positive wage and salary earnings of more than half of the implied weekly minimum wage. This approach focuses on individuals who worked most of the year, allowing us to characterize the local weekly wage

tains to whether the housing unit in which a person resides is owner occupied, but it does not specify who actually owned the unit. We assume that the household head owns the unit. Therefore, as described earlier, we coded men who lived with relatives and were not household heads as "nonowners." We coded men who lived in owner-occupied housing and were household heads as "owners," although in principle it is possible that another household member owned the unit.

We aggregate the micro-level data to local-level measures of ownership rates, income levels, and other local observables, and then we analyze variation in changes in ownership rates at the local level. In 1940, each household's "state economic area" (SEA) is identified in the microdata. A state economic area is a set of contiguous counties with similar economic and demographic characteristics, as determined and discussed in Bogue (1951). In 1960's microdata, SEA is not directly reported, and the dataset's mini-PUMAs do not map seamlessly to counties or SEAs. We assigned households to SEAs with the assistance of a crosswalk provided by IPUMS staff and, when necessary, using fractional weights as in Autor and Dorn (2013).[22]

Gains in homeownership and earnings across SEAs mirror those at the national level. Table 3.2 reports summary statistics for our main variables and controls. From 1940 to 1960, the mean change in homeownership from 1940 to 1960 across SEAs was 28 percentage points, with meaningful variation across SEAs with a range from 7 to 48 and a standard deviation of 5 percentage points. Likewise, the mean change in real log weekly earnings had a range of 34 to 98 log points and a standard deviation of 8 log points over the same period. The potential for gains in homeownership, as measured by the 1940 homeownership rate, also varied across SEAs. The mean homeownership rate was 32 percent with a standard deviation of 7 percent.

Figures 3.6 and 3.7, which map local income and ownership gains respectively, show that the national-level aggregates (figs. 3.1–3.4) mask a great deal of variation across space. This geographic variation is central to our identification strategy. In our regression framework, described in detail shortly, local fixed effects are differenced out by design, as are national-level changes that affect places similarly. Spillovers across households within localities will be

structure and omitting those whose computed weekly earnings are implausibly low. It is also worth noting that topcoding of annual wage and salary income affects a small percentage of men in each census year. We multiply topcoded values by 1.4 in each year, following Goldin and Margo (1992). We further limit the sample to observations not residing on a farm or working in a farm occupation (IPUMS variables: *farm* = 2, and *occ1950* equal to 100, 123, and 810–840.)

22. Each observation in a mini-Public Use Micro Area (PUMA) is probabilistically allocated to an SEA based on the fraction of the population in a mini-PUMA that maps into an SEA. For example, suppose a mini-PUMA is evenly split over two SEAs. In that case, each observation in the mini-PUMA is weighted by one-half in the first SEA and by one-half in the second SEA. Out of 2,765 mini-PUMAs in the 1960 sample, 1,873 (68 percent) are contained within a single SEA, 654 (24 percent) are split over two SEAs, 198 (7 percent) are split over three SEAs, and 40 (1 percent) are split over four SEAs. For more details, see the supplemental appendix to Collins and Niemesh (2013).

Table 3.2 Summary statistics

	Mean	S.D.	Min.	Max.
Change in homeownership (1940–60) (in p.p.)	0.28	0.05	0.07	0.48
Change in real log weekly earnings (1940–60)	0.63	0.08	0.34	0.98
Percent urban 1940	0.42	0.24	0.0	1.0
Homeownership rate in 1940	0.32	0.07	0.13	0.52
Change in homeownership (1930–40) (in p.p.)	0.015	0.045	–0.16	0.24
Change in homeownership (1920–30) (in p.p.)	0.023	0.036	–0.09	0.12
Change in homeownership (1910–20) (in p.p.)	0.021	0.026	–0.08	0.10
Median log weekly earnings in 1940	3.01	0.25	2.45	3.56
Log 90–10 weekly earnings gap in 1940	1.42	0.18	0.90	1.84
Share of men that are HS grads	0.25	0.05	0.11	0.39
Observations	467			

Note: Unweighted summary statistics over SEAs. All variables are constructed on a sample of nonfarm male workers age 18–64. Household heads and spouses are considered homeowners if the head reports owning the home. Other adult male members of the home are coded as renting.

Source: Median log weekly earnings, log 90–10 weekly earnings gap in 1940, and share of men that are high school grads and above are from Collins and Niemesh (2019). All other variables are derived from the 1910–40 complete-count (Ruggles et al. 2021) and 1960 5 percent IPUMS samples as described in the text and provided by Ruggles et al. (2023).

reflected in the conditional correlation. For instance, suppose there are positive spillovers through a "keeping up with the Joneses" channel or through scale economies in building new housing developments; if so, income gains to some households might increase observed ownership rates both directly (for those households) and indirectly (through spillovers to others). Finally, by aggregating to the local level over a relatively long span of time, we might achieve a clearer view of changes in earnings while still retaining a sizable number of cross-sectional units for comparison. Individual-level reports of earnings—even if accurate for a given year—might be a noisy indicator of a household's economic resources or "permanent income" (Reid 1962).

3.3.1 Regression Framework

We begin by investigating whether places with differential increases in average real wages had differential increases in homeownership between 1940 and 1960, conditional on region (or state) and observable economic characteristics. The identifying assumption for a causal interpretation is that, conditional on observables, places with different gains in wages after 1940 would have had similar trends in homeownership were it not for those differential changes in wages. There are reasons to be skeptical of this assumption in any nonexperimental setting, and so we interpret the conditional correlation between ownership and income with caution, explore robustness and sensitivity to additional covariates, and finally present an instrumental variable approach.

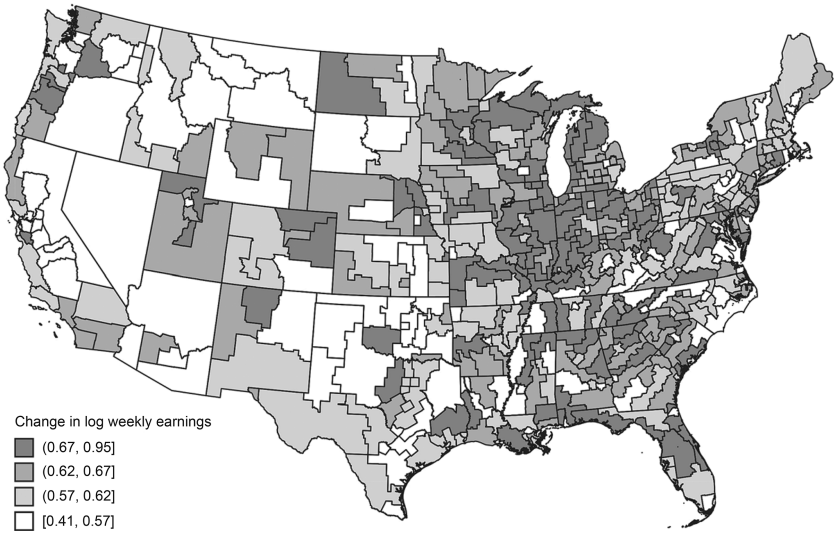

Figure 3.6 SEA-level changes in log average earnings, 1940–1960

Note: This map displays the geographic variation in the gains in log average weekly earnings between 1940 and 1960 across State Economic Areas (SEAs).

Source: SEA-level average log weekly earnings are derived from the 1940 complete-count (Ruggles et al. 2021) and 1960 5 percent (Ruggles et al. 2023) IPUMS census samples as described in the text.

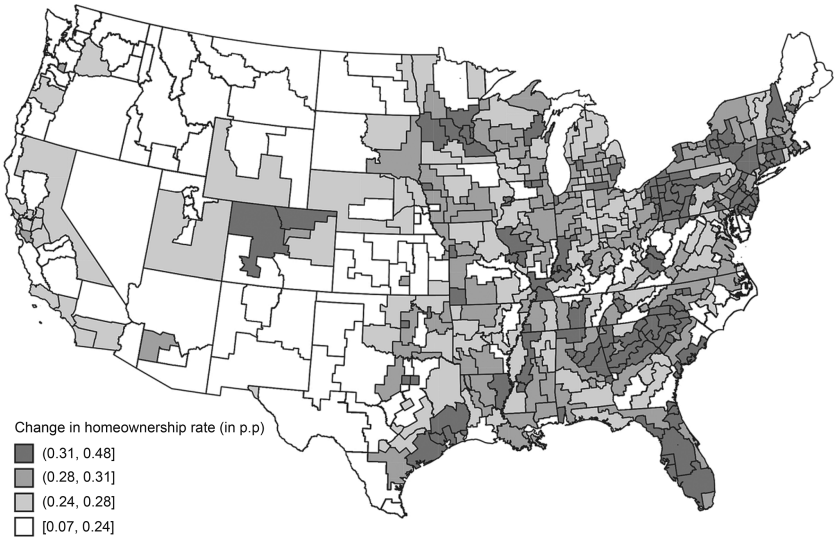

Figure 3.7 SEA-level changes in homeownership, 1940–1960

Note: This map displays the geographic variation in the gains in homeownership rates between 1940 and 1960 across State Economic Areas (SEAs).

Source: Homeownership rates are derived from the 1940 complete-count (Ruggles et al. 2021) and 1960 5 percent (Ruggles et al. 2023) IPUMS census samples as described in the text.

We estimate the following baseline regression equation spanning the 1940 to 1960 period:

$$\Delta O_i = \alpha + \beta \Delta W_i + \gamma_r + X_i \Gamma + e_i,$$

where ΔO_i is the change in the local ownership rate, ΔW_i is the change in log average weekly wages, γ_r is a vector of region or state fixed effects, and X_i is a vector of prewar local characteristics including the 1940 homeownership rate, urban and foreign-born population shares, and a set of nine age bins. Thus, places with differences in prewar observables are allowed to have differential changes in ownership rates after 1940. Subsequent regressions expand X_i to include changes in the homeownership rate before 1940; the median level and 90–10 dispersion of weekly wages reported in 1940; the 1940 share of high-school graduates, wartime shocks to the local economy (war contracts per capita and mobilization rates), and more. We find that estimates of β change relatively little as we change the specification.

Local productivity shocks, exogenous human capital gains, or local institutional changes (e.g., unionization) that raised local wages might have led to increased demand for owner-occupied housing, along the lines described earlier. If this demand shift was met by an elastic supply of owner-occupied housing, perhaps encouraged by midcentury policy support for new construction and vast suburban areas awaiting development, then the cross-place change-in-income and change-in-ownership correlation would reflect a causal mechanism, at least in part.

If, however, unobserved shocks to local ownership were correlated with changes in local average wages, then the correlation would be confounded and difficult to interpret. Consider, for instance, a hypothetical exogenous shock to a local consumer amenity that is especially attractive to high-income households.[23] In this case, we might see a correlation between ownership changes and income changes due to the in-migration of households that happen to have a relatively high demand for owner-occupied housing. It is difficult to rule out such scenarios. Our use of groups of counties as the unit of analysis should limit the scope for movement from central cities to nearby suburbs to drive results. And we do investigate whether β is sensitive to including contemporaneous (1940–60) controls, including local population growth and sample composition changes, that would be consistent with such a channel being open and driving the estimates of β.[24] This mechanism does not appear to underpin our baseline findings.

23. Our example in the text supposes an amenity that is especially attractive to higher-income households, leading to income-specific sorting and rising local ownership. However, in a Rosen-Roback framework, a new consumer amenity would raise land values and reduce wages. This could lower local homeownership if new construction skews to higher-density, multifamily construction.

24. We are mindful that these may be "bad controls" and interpret results accordingly.

3.4 Results and Interpretation

3.4.1 Baseline Results

Estimates of β are reported in table 3.3. Each column presents an estimate from a separate regression of the change in the homeownership rate on the change in log average weekly earnings between 1940 and 1960. All regressions cluster standard errors at the state level. The first column shows the raw positive correlation between ΔO_i and ΔW_i. A 10-log-point (0.10) increase in the change in average income is associated with a 2.02-percentage-point increase in the change in homeownership.

The strong positive association remains in specifications with an extensive set of control variables that allow for differential trends in ownership according to prewar observables. Column 2 adds census region fixed effects, as both the changes in homeownership and weekly wage gains were uneven across regions, as seen in the maps discussed earlier. Column 3 adds the 1940 homeownership rate, a set of age bins, and the urban and foreign-born population shares. Localities with high ownership rates in 1940 would have less room for growth in ownership than others (though the highest rates in 1940 were just above 50 percent). The prewar age structure is relevant for two reasons: First, it is well known that changes in ownership rates after 1940 were largest for relatively young household heads (e.g., in their 30s); second, likelihood of service in World War II and, therefore, eligibility for postwar GI Bill support was also closely associated with birth year. We view this as our baseline specification, which is parsimonious while allowing for differences in key prewar economic characteristics. Estimates of β are robust to these additional control variables and remain statistically significant at the 1 percent level.

The magnitude of the β estimate is sizable: a 1-standard-deviation increase in ΔW_i (0.08) is associated with a 1.8-percentage-point increase in homeownership, equivalent to 6 percent of the mean increase in the homeownership rate over the 1940s and 50s. All areas experienced sizable increases in log real weekly earnings, and the mean change to 1960 (0.63) dwarfs the standard deviation of the change. Evaluated at the mean change in weekly earnings, the baseline estimates imply an increase in homeownership of 14 percentage points, approximately 51 percent of the actual mean increase in ΔO_i.

The OLS results are stable across the remaining specifications in table 3.3 and remain statistically significant. In each column we add variables to the baseline regression to account for differences across places that might have affected post-1940 homeownership gains and been correlated with average wage gains. Column 4's specification adds two variables to characterize the 1940 local wage structure: median log earnings and the 90–10 log earnings differential. It also includes the share of the sample that had completed high

Table 3.3 Baseline OLS results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Change in real log weekly earnings (40–60)	0.202***	0.196***	0.226***	0.275***	0.278***	0.240***	0.259***
	(0.048)	(0.047)	(0.040)	(0.042)	(0.045)	(0.042)	(0.037)
Percent urban 1940			0.060***	0.018	0.015	0.008	0.004
			(0.014)	(0.016)	(0.017)	(0.017)	(0.021)
Homeownership rate, 1940			–0.249***	–0.326***	–0.350***	–0.371***	–0.369***
			(0.061)	(0.055)	(0.063)	(0.077)	(0.061)
Share sample foreign-born, 1940			–0.088	–0.127	–0.116	–0.223	–0.049
			(0.068)	(0.073)	(0.077)	(0.129)	(0.076)
Median log weekly earnings, 1940				0.084***	0.081***	0.117***	0.064**
				(0.019)	(0.018)	(0.024)	(0.021)
Log 90–10 weekly earnings gap, 1940				–0.036	–0.034	–0.044	0.006
				(0.018)	(0.019)	(0.024)	(0.017)
Percent males HS grads				–0.080	–0.076	–0.161	0.007
				(0.080)	(0.084)	(0.096)	(0.083)
Change in homeownership rate, 1930–40					0.036	–0.114	–0.024
					(0.104)	(0.111)	(0.107)
Change in homeownership rate, 1920–30					–0.024	–0.029	0.088
					(0.139)	(0.134)	(0.106)
Change in homeownership rate, 1910–20					0.174*	0.122	0.238***
					(0.075)	(0.099)	(0.063)
Per capita WWII contracts (1,000s 1940$)							0.371
							(1.265)

State WWII mobilization rate							–0.022 (0.146)
Region fixed effects		X	X	X	X		X
State fixed effects						X	
Age controls			X	X	X	X	X
1940 industry mix controls							X
Observations	467	467	467	467	467	467	466
R^2	0.10	0.28	0.44	0.50	0.51	0.65	0.58
Oster- δ			6.7	6.4	5.6	2.7	4.4
Mean change in homeownership (in p.p.)	0.28						0.28

Note: ***$p < 0.01$. **$p < 0.05$. *$p < 0.1$. Each column in the table is from a separate regression of change-in-homeownership variable on the change-in-earnings. The top row reports the estimated coefficient (β) on the change-in-earnings variable. Standard errors are clustered at the state level. Column 1 includes no controls. Region fixed effects are added in column 2. Our base specification, column 3, adds controls for the share foreign-born, share urban, initial level of homeownership, and a set of six age category controls, all measured in 1940. Column 4 adds the initial 1940 median earnings, the log 90–10 gap in earnings, and the share of the sample that graduated high school. Pretrends in the change in homeownership are included in column 5. State fixed effects replace region fixed effects in column 6. Finally, column 7 includes controls for wartime shocks: World War II contract spending per capita, state-level mobilization rates, and a set of six industry mix controls. We lose one SEA observation in column 7 because Washington, DC, did not report a war mobilization rate. The Oster-δ statistic reports the degree of selection on unobservables relative to the observables that would be required to explain away the coefficient of interest. The Oster-δ statistic is calculated using a maximum R^2 of $1.3 \times R^2$ in the fully controlled regression in column 6, as suggested in Oster (2019).

Source: Median log weekly earnings, log 90–10 weekly earnings gap in 1940, and share of men that are high school grads and above are from Collins and Niemesh (2019). Per capita war expenditure is calculated with data from Haines and ICPSR (2010). War mobilization is from Acemoglu et al. (2004). All other variables are derived from the 1910–40 complete-count (Ruggles et al. 2021) and 1960 5 percent IPUMS samples as described in the text and provided by Ruggles et al. (2023).

school or more. This addresses the concern that places with different initial levels of income, inequality, or human capital might have been poised for different post-1940 gains in homeownership and, coincidentally, different changes in earnings. In column 5, we add variables for pre-1940 changes in homeownership rates over the three previous decades (1910–20, 1920–30, and 1930–40) to allow for different trajectories in ownership. Column 6 replaces the region-level fixed effects with state fixed effects. This substantially narrows the geographic scope for confounding shocks and trends by basing identification on within-state variation rather than within-region. The results are similar to those in the baseline regression. In sum, conditional on wide range of prewar observables and regional or state indicators, the correlation between local wage gains and local homeownership gains is sizable.

Finally, column 7 adds variables to see whether events or policies related to World War II might be driving the baseline results. The variables include mobilization of men into the armed forces at the state level, local labor market shocks from war contract spending per capita, and a set of control variables for shares of local workers in nine industry categories to capture the prewar local industry composition. Wartime mobilization required the movement of millions of men into the armed forces and drew many women into the labor market. At the same time, federal expenditures on manufactured goods to support the war effort shocked local economies, and federal subsidies attempted to expand housing stocks to better accommodate workers in key industries. The extent of mobilization and war production varied considerably across locations in ways that might have affected trends in income and homeownership. In a sense, these are "bad controls" because local wartime shocks might have driven the differential post-1940 income gains that we seek to evaluate; if so, such regressions would reveal whether the conditional correlations described above largely reflect the wartime economy's lasting effect on homeownership via income.[25] In practice, the estimates of β are quite stable, and the coefficients on the wartime variables are statistically insignificant. (Later in the chapter, we discuss the correlation between local veterans in 1960 and homeownership rates.)

The stability in the coefficient of interest across columns is informative only to the extent that selection on the observables that we capture is informative about selection on the remaining unobservables. For reference, we report the Oster δ statistic to provide evidence of robustness with respect to the unobservables (Oster 2019). From this perspective, selection on unobservables would need to be 2.7 to 6.7 times larger than the selection on

25. Because the regressions already control for local prewar age structure, some of the war's direct effects on homeownership via GI Bill eligibility may already be accounted for.

observables to drive the estimate of β to zero, increasing our confidence in the positive OLS results.[26]

3.4.2 Additional Robustness: Changes in Variable Definitions, Estimation, and Sample

The gains in homeownership associated with increases in average weekly earnings documented above may be sensitive to the choice of specification or underlying samples. We address a number of these concerns in table 3.4 and show that the baseline results are robust. Column 1 reprints the baseline coefficient from column 3 of table 3.3 for reference. Column 2 uses weighted least squares (WLS) with 1940 SEA observation counts as weights. The coefficient estimate of 0.327 is 45 percent larger than our baseline estimate of 0.226, suggesting some unmodeled heterogeneity (Solon et al. 2015), which we explore later in the chapter. In column 3, the estimate of β from a median regression (0.224) is indistinguishable from the baseline estimate, suggesting that the baseline OLS result is not driven by extreme values.

In column 4 we drop all SEAs in California and New York, coastal states with some of the largest and densest population centers, where perhaps the supply of housing was less elastic than elsewhere. Dropping the two states does not substantially alter the coefficient estimate.

Next, in column 5, we use the change in log annual earnings rather than the change in log weekly earnings as the key independent variable. One might argue that annual income is more relevant for an individual's homeownership decision; however, the change in weekly earnings may better capture the local productivity or distributional shocks leading to increased lifetime income and homeownership. Using the annual income measure yields an estimate of β (0.229), which is similar to our baseline estimate.

The baseline regressions limit the sample to nonfarm observations. This is due to the difficulty of assessing farmer and farm laborer income, especially in 1940, and to the literature's traditional distinction between the nonfarm housing market and the market for farms. The results are robust to changing this restriction, as shown in column 6, where we include men residing or working on a farm as long as they satisfy the other sample selection criteria (including being wage and salary workers) in the calculation of both the local homeownership and change-in-earnings variables.

The period we study was one of pronounced changes in the relative income of Black Americans (Maloney 1994; Margo 1995), as well as large gains in Black homeownership despite their increased concentration in central cities (Collins and Margo 2001, 2011). Moreover, changes in income and ownership in the South stand out in the maps shown earlier. We defer a

26. We calculate the Oster-δ statistic using a maximum R^2 of $1.3 \times R^2$ in the fully controlled regression in table 3.3 column 5, as suggested in Oster (2019).

Table 3.4 **Robustness to changes in specification and sample restrictions**

	Base (1)	Weighted (2)	Median regression (3)	Drop CA & NY (4)	Log annual earnings (5)	Full sample (6)	White nonfarm (7)
Change in real log weekly earnings, 1940–60	0.226***	0.327***	0.224***	0.237***		0.224***	0.227***
	(0.0396)	(0.0833)	(0.0388)	(0.0406)		(0.0360)	(0.0442)
Change in real log annual earnings, 1940–60					0.229***		
					(0.0373)		
Observations	467	467	467	433	467	467	467
R^2	0.440	0.437	0.427	0.452	0.446	0.411	0.468

Note: ***$p < 0.01$. **$p < 0.05$. *$p < 0.1$. Each entry represents the estimated coefficient (β) on the change-in-earnings variable from a separate regression of change-in-homeownership variable on the change-in-earnings variable. All regressions include the same controls as the base specification from column 3 of table 3.3: census region fixed effects, the share foreign-born, share urban, initial level of homeownership, and a set of six age category controls, all measured in 1940. Standard errors are clustered at the state-level. Column 1 reprints the baseline result from column 3 of table 3.3. Column 2 estimates the regression with weighted least squares where weights are the number of observations in the sample in 1940 for each SEA. Column 3 reports an estimate of β from a median regression. All SEAs in California and New York are dropped from the sample in column 4. The change in real log annual earnings replaces the variable of interest (change in real log weekly earnings) in column 5. Restrictions on the sample are relaxed in column 6 to include men residing or working on farms. Column 7 tightens the sample restriction to include only white nonfarm men.

Source: Median log weekly earnings, log 90–10 weekly earnings gap in 1940, and share of men that are high school grads and above are from Collins and Niemesh (2019). All other variables are derived from the 1940 complete-count (Ruggles et al. 2021) and 1960 5 percent IPUMS census samples as described in the text and provided by Ruggles et al. (2023).

deeper examination of local-level Black–White differences in homeownership to future research. For now, to see whether our baseline results hinge on changes in income and homeownership among Black men, we estimate the baseline regression based on variables derived from a sample of White men (column 7). Again, the coefficient estimates are indistinguishable from the baseline.

3.4.3 Extensions: Contemporaneous Variables

The cross-place conditional correlation of ΔO_i and ΔW_i may represent a causal relationship. However, the interpretation is not straightforward since it could work through multiple channels with different implications, such as the differential sorting of high-income households into certain SEAs. This would tend to drive a positive estimate of β, assuming that the relative supply of owner-occupied housing would adjust by 1960.[27] This mechanism is causal, in a sense, because changes in local income drive changes in owner-occupancy. But the correlation would ultimately reflect changes in local population composition rather than intrinsic changes in local wages. We do not know of a nationally representative dataset that would allow us to recover income-specific migration patterns across SEAs over this period. However, we can observe how local population characteristics changed between 1940 and 1960 and whether the OLS estimates are sensitive to the inclusion of such variables.

We incorporate three measures of changing local characteristics to gauge the potential importance of such sorting in response to unobservable local shocks: the change in the share of the sample that has completed high school or more, the change in the log of population between 1940 and 1960, and the veteran share of the sample in 1960. The first captures the idea that people with higher levels of productivity may have sorted into certain locations and driven ownership gains there. The second captures the idea that unobserved local shocks should affect total population through migration. The third captures the idea that men were positively selected into the military (Bound and Turner 2002), and then surviving veterans benefited from policies designed to support their homeownership through the GI Bill (Fetter 2013); thus, differential shares of veterans might be associated with differential changes in income and homeownership.

Table 3.5 reports results from including these measures as controls in the base specification. Column 2 adds the change in the share of the sample that is a high school grad or above. The estimate for β remains similar to the baseline result in column 1, suggesting a limited role for differential sorting based on education and human capital driving the baseline results. Column

27. Movement from central cities to suburbs in the same SEA would be "within locality" in our framework and would not drive estimates of β. Our identifying variation is from differential changes in average income and ownership across SEAs.

Table 3.5 Sensitivity to potential endogenous sorting

	(1)	(2)	(3)	(4)	(5)
Change in real log weekly earnings, 1940–60	0.226***	0.242***	0.226***	0.196***	0.211***
	(0.040)	(0.042)	(0.040)	(0.038)	(0.040)
Change in share HS and above, 1940–60		–0.107			–0.074
		(0.054)			(0.050)
Change in log population, 1940–60			0.000		–0.005
			(0.010)		(0.009)
Share veteran in 1960 sample				0.415***	0.414***
				(0.056)	(0.055)
Observations	467	467	467	467	467
R^2	0.44	0.44	0.44	0.52	0.52

Note: ***$p < 0.01$. **$p < 0.05$. *$p < 0.1$. Each column in the table is from a separate regression of change-in-homeownership on change-in-earnings. The top row reports the estimated coefficient (β) on the change-in-earnings variable. All regressions include the same controls as the base specification from column 3 of table 3.3: census region fixed effects, the share foreign born, share urban, initial level of homeownership, and a set of six age category controls, all measured in 1940. Standard errors are clustered at the state-level. Column 1 reprints the baseline result from column 3 of table 3.3. Column 2 adds the change in the share of the sample that graduated high school from 1940–60. Column 3 includes the change in log population from 1940–60 as a control. Column 4 includes the share of the sample in 1960 made up by veterans. Finally, column 5 includes all of the three previously discussed variables jointly.

Sources: The change in share high school and above and change in log population are from Collins and Niemesh (2019). All other variables are derived from the 1940 complete-count (Ruggles et al. 2021) and 1960 5 percent IPUMS census samples as described in the text and provided by Ruggles et al. (2023).

3 includes population growth; again, the estimate of β is unchanged from the baseline. Column 4 includes the share of the 1960 sample that is a veteran in each SEA. The estimate of β is reduced somewhat to 0.196 and remains statistically significant. The coefficient on the veterans variable (0.415, s.e. 0.056) is positive as we would expect—areas where veterans made up a higher share of the population had higher homeownership rates in 1960. We include all three contemporaneous variables simultaneously in column 5. The coefficient estimate for β is slightly smaller than the baseline, but it is similar in magnitude and remains statistically significant. Taken together, the evidence does not suggest that differential changes in sample composition due to sorting drive the baseline regression results.

3.4.4 Heterogeneity

We investigate whether the impact of ΔW_i on ΔO_i depended on characteristics that varied across locations. Table 3.6 presents results from running separate OLS regressions on split samples. Columns 1 and 2 of panel A divide the sample into SEAs that are below or above the 75th percentile in initial 1940 population. As alluded to above in the discussion about weighting, we find suggestive evidence that the effect of increases in income is larger in areas with more population. This is consistent with the idea that scale

Table 3.6 **Heterogeneous effects**

	Panel A: Heterogeneity by population and initial 1940 earnings			
	<75th percentile population (1)	≥75th percentile population (2)	<75 percentile earnings (3)	≥75th percentile earnings (4)
Change in real log weekly earnings (40–60)	0.222***	0.335**	0.226***	0.455***
	(0.037)	(0.104)	(0.042)	(0.121)
Observations	351	116	351	116
R^2	0.47	0.48	0.45	0.60
	Panel B: Heterogeneity by region			
	Northeast (5)	Midwest (6)	South (7)	West (8)
Change in real log weekly earnings (40–60)	0.356***	0.248***	0.246**	0.116
	(0.041)	(0.046)	(0.065)	(0.084)
Observations	68	146	186	67
R^2	0.63	0.33	0.40	0.27

Note: ***$p < 0.01$. **$p < 0.05$. *$p < 0.1$. Each entry represents the estimated coefficient (β) on the change-in-earnings variable from a separate regression of change-in-homeownership variable on the change-in-earnings variable. All regressions include the same controls as the base specification from column 3 of table 3.3: the share foreign-born, share urban, initial level of homeownership, and a set of six age category controls, all measured in 1940. All regressions in panel A include census region fixed effects. Standard errors are clustered at the state level. Columns 1 and 2 of panel A split the sample into SEAs with below and above the 75th percentile of population (in reality we use the sample size in 1940 as a proxy for population). Columns 3 and 4 of panel A split the sample into SEAs with below and above the 75th percentile of the 1940 earnings distribution. Panel B reports estimates from separate regressions by census region.

Source: Median log weekly earnings, log 90–10 weekly earnings gap in 1940, and share of men that are high school grads and above are from Collins and Niemesh (2019). All other variables are derived from the 1940 complete-count and 1960 5 percent IPUMS census samples as described in the text and provided by Ruggles et al. (2023).

effects in the construction of housing may have played a role in translating the midcentury gains in income into increased homeownership rates. In a regression on the pooled sample, the estimated coefficient on the interaction of ΔW_i with an indicator for population at or above the 75th percentile is 0.149 (s.e. = 0.117) with a p-value of 0.211.[28]

Columns 3 and 4 of panel A split the sample into below and above the 75th percentile of the 1940 average weekly earnings distribution across SEAs. Here, we find suggestive evidence that the subset of SEAs above the 75th percentile of initial wages experienced larger increases in homeownership for a given increase in average earnings. Again, the difference in the OLS

28. We include only the main effects of control variables, not the interactions with group indicators, in this case for population at or above the 75th percentile.

estimates of β across columns is sizable but only marginally significant. In a pooled regression, the estimated coefficient on the interaction of ΔW_i with an indicator for average earnings at or above the 75th percentile is 0.179 (s.e. = 0.135) with a *p*-value of 0.193.

Finally, the estimated impact of changes-in-earnings also varies across census regions. Panel B of Table 3.6 reports results from regressions on separate samples by census region. The effect of a 10-log-point differential increase in the change in log weekly earnings was largest in the Northeast region at a 3.6-percentage-point increase in the homeownership rate, followed by the Midwest and the South at 2.4 percentage points. The West had the smallest estimated effect at 1.2 percentage points.[29] It is not clear to us, from the data we have assembled, why the relationship appears weaker in the West than elsewhere. Apart from the large cities of the Pacific coast, the West was relatively sparsely settled in 1940, and it is possible that this limited positive spillovers within localities, but this is speculation on our part. A deeper dive into regional heterogeneity is beyond the bounds of this chapter but may illuminate regional differences in economic development and provide a more nuanced understanding of the midcentury homeownership boom.[30]

3.4.5 Instrumental Variable Approach

Concerns about bias may remain despite the robustness of the OLS regressions, the limited room for unobservables suggested by analysis using Oster's δ, and the lack of direct evidence that cross-SEA sorting drives the estimates. Next, we complement the OLS results reported in the previous section with a shift-share IV (SSIV) strategy. The type of bias this strategy addresses is from an unobserved *local* shock that influences both local earnings gains and local homeownership rates. For example, bias from endogenous sorting might remain in the OLS estimates from a shock that causes differential migration patterns by income level, such as a positive consumer or productive amenity shock to high-earning households. Alternatively, reverse causality could drive the association in OLS through sorting. Areas with potential for rapid homeownership gains coming out of the Depression era housing crisis might have drawn in more high-earning migrants.[31] Our IV strategy limits the potential for endogenous sorting to affect estimates of β by fixing the local shares of men over income percentiles at the 1940 earnings distribution.

The basic idea is that some local labor markets were more exposed than

29. In regressions on a combined full sample, the estimated effect of change-in-earnings in the West is statistically different from the Northeast at the 1 percent confidence level, and the Midwest at the 10 percent confidence level. The *p*-value of the difference between the Northeast and the Midwest is 0.122, and between the Northeast and the South is 0.128.

30. Chapter 14 in Grebler et al. (1956) provides a discussion of regional differences in mortgage debt.

31. Reverse causality would have to occur within region, as our main specifications include a set of region indicators that capture any differential trends across regions.

others to national shocks specific to different parts of the earnings distribution due to their preexisting composition of workers in terms of their location in the national earnings distribution. These national-level shocks are plausibly unrelated to unobservable local shocks. By interacting the 1940 local shares of workers across the national earnings distribution with the exogenous national shifts in earnings at each percentile of the distribution, we create a potential instrument for average earnings changes for local labor markets.[32] Specifically, we construct the instrument Z_i as a weighted average of 1940–60 changes in earnings at the national level by earnings percentile (G_j), where the weights (s_{ij}) are local sample shares across earnings percentiles measured from the full-count 1940 census data:

$$Z_i = \sum_{j=1}^{J} s_{ij} \times G_j .$$

The identifying assumption is that the instrument is orthogonal to omitted local characteristics that are correlated with changes in homeownership, which occurs when either the shares or the shocks, or both, are exogenous. In our setting, the local earnings percentile shares, though lagged, might capture a local labor market's exposure to any number of shocks. Thus, we follow the approach of Borusyak et al. (2022) and assume the income-percentile shocks are as good as randomly assigned to provide identification in our use of the SSIV.[33] Adão et al. (2019) show that standard geographic clustering of standard errors may lead to overrejection in significance tests in applications using shift-share instruments. We address this issue by estimating standard errors with a shock-level regression as suggested by Borusyak et al. (2022). Specifically, we regress the shock-level change-in-homeownership on the shock-level change-in-earnings instrumented with the national growth in earnings for individual earnings percentiles.

32. Boustan et al. (2013) developed this strategy interacting changes in income across a set of income bins at the national level with the initial local composition of households across the income bins. They calculate a predicted change in a Gini coefficient, whereas we create a standard shift-share IV predicting the change in average earnings.

33. Borusyak et al. (2022, 182) show that orthogonality between a shift-share instrument and an unobserved shock in the residual in our local labor market regression is equivalent to orthogonality between our national earnings percentile shocks and an unobservable from a shock-level regression. This shock-level unobservable "captures the average unobserved determinants of the original outcome among observations most exposed to a given shock." Thus, an SSIV regression at the local labor market level only identifies the causal impact of changes in average earnings on changes in homeownership at the local-local if and only if the shock-level unobservable is uncorrelated with the national earnings percentile shocks. Moreover, they provide an equivalence result that the standard SSIV regression coefficients are numerically equivalent to those from an IV regression estimated at the level of the shocks, in our case earnings percentiles. We obtain shock-level aggregates for each earnings percentile, by first averaging the change-in-homeownership and change-in-earnings variables, as well as all controls in the baseline specification. The dataset now consists of an observation for each earnings percentile. The SSIV regression coefficients can be recovered from a regression at the percentile shock-level of the change-in-homeownership on change-in-earnings instrumented by the national changes in earnings for that earnings percentile.

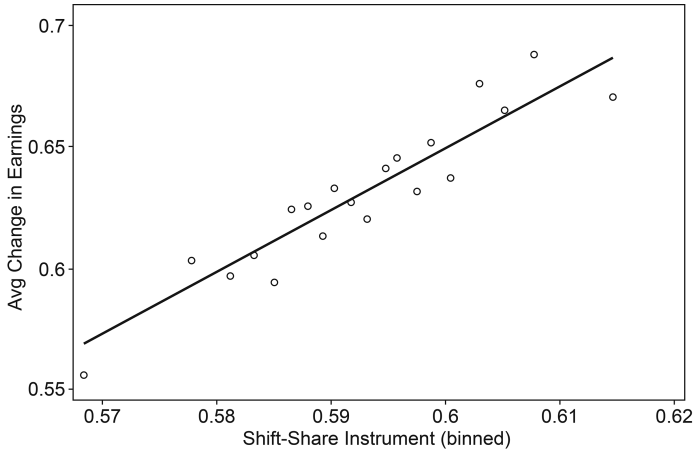

Figure 3.8 First stage on change in average earnings

Note: This binned scatterplot shows the relationship between the actual change in average log weekly earnings between 1940–1960 across State Economic Areas (ΔW_i) and the instrument—the predicted change in average log weekly earnings using the 1940 SEA earnings percentile composition and the national-level changes in earnings by percentile (Z_i). Both variables have been residualized on the controls in the baseline specification (column 3 of table 3.2): region fixed effects, a set of six age category controls, the share foreign-born, the share urban, and the initial 1940 homeownership rate.

Source: 1940 complete-count (Ruggles et al. 2021) and 1960 5 percent (Ruggles et al. 2023) IPUMS census samples as described in the text.

The shift-share instrument shows relevance and is strongly associated with the local changes-in-earnings variable. Figure 3.8 shows a binned scatterplot of the relationship between ΔW_i and Z_i, where both variables have been residualized on census region fixed effects and the set of controls in the baseline OLS regression specification. The average change-in-earnings within a bin increases along the *y*-axis and the *x*-axis plots the value of the predicted change in average earnings (shift-share IV). The estimated slope of the regression line suggests that a 1-log-point increase in the predicted change in average earnings is associated with a 2.51-log-point increase in the actual change in average earnings. The estimated coefficient is reported in column 1 of table 3.7. The first-stage *F*-statistic is 92.0.[34]

The SSIV estimates of β are positive and statistically significant, although smaller in magnitude than our baseline estimates. Column 3 of table 3.7 reports the SSIV coefficient, which suggests that a 10-log-point increase in the change-in-earnings variable causes a 1.7-percentage-point increase in homeownership at the local level. While somewhat smaller than

34. The first-stage *F*-statistic comes from squaring the *t*-statistic (9.59 × 9.59 = 92.0) from an earnings percentile shock-level regression of the log change-in-earnings on the shift-share IV instrumented with the national growth in earnings for the specific earnings percentile as suggested in Borusyak et al. (2022).

Table 3.7 **Shift-share IV estimates of effect of change-in-average-earnings on change-in-homeownership**

	First stage (1)	Reduced form (2)	Shift-share IV (3)
Coefficient	2.51***	0.441***	0.175**
	(0.262)	(0.149)	(0.071)
No. of SEAs	467	467	467
No. of percentiles	79	84	84
SSIV first stage *F*-statistic	92.0		

Note: This table reports a shift-share IV analysis of changes in homeownership rates on local changes in average earnings, instrumented with the predicted change in average log weekly earnings using the 1940 SEA earnings percentile composition and the national-level changes in earnings by percentile (Z_i). Exposure robust standard errors are estimated using the shock-level regressions from Borusyak et al. (2022). The number of observations used in the SEA-level regional regressions is 467. The number of earnings percentiles used in the equivalent percentile shock-level regressions is 84. Column 1 reports the first-stage results, where the *F*-statistic comes from squaring the *t*-statistic (9.59 × 9.59 = 92.9) from an earnings percentile shock-level regression of the log change-in-earnings on the shift-share IV instrumented with the national growth in earnings for the specific earnings percentile. Column 2 reports results from a reduced form regression. The shift-share IV estimates of the coefficient (β) on the change-in-earnings variable are reported in column 3. All regressions include the same controls as the base specification from column 3 of table 3.3: census region fixed effects, the share foreign-born, share urban, initial level of homeownership, and a set of six age category controls, all measured in 1940.

Sources: Median log weekly earnings, log 90–10 weekly earnings gap in 1940, and share of men that are high school grads and above are from Collins and Niemesh (2019). All other variables are derived from the 1940 complete-count (Ruggles et al. 2021) and 1960 5 percent IPUMS census samples as described in the text and provided by Ruggles et al. (2023).

the OLS estimates, the SSIV estimates of β remain economically important: a 1-standard-deviation increase in ΔW_i (0.08) is associated with a 1.36-percentage-point increase in homeownership. Evaluated at the mean change in weekly earnings (0.63), the baseline estimates imply an increase in homeownership of 10.7 percentage points, approximately 38 percent of the actual mean increase in ΔO_i.

There are various reasons estimates from OLS and SSIV may differ, including measurement error in the change-in-earnings variable and the presence of a small amount of endogenous sorting. However, one should exercise caution when attempting to attribute this difference to specific causes, especially in the presence of suggestive evidence of heterogeneity in effects that require a local average treatment effect (LATE) interpretation of the SSIV estimates.

3.5 Conclusions

In retrospect, the mid-20th century's widely shared gains in income supported a boom in homeownership and, more broadly, a sense that a new "middle class" was enjoying a wave of post-Depression, postwar prosperity.

In this chapter, we assess the role of post-1940 income gains in driving the unprecedented boom in homeownership alongside institutional and policy innovations in housing and mortgage finance. We do so by leveraging variation across places in wage gains and ownership gains, thereby differencing out local fixed effects and national-level changes that affected ownership rates similarly across places. Whether with or without extensive sets of control variables, including prewar characteristics and trends, wartime shocks, and post-1940 changes in population composition, there is a strong correlation between local income gains and homeownership gains. This is consistent with theory, as higher income allows more people to form independent households, afford down payments, secure financing, and select into owner occupancy if so desired.

The baseline OLS estimates suggest that income gains made large contributions to the rise in homeownership, accounting for half of the total gains in homeownership observed in our samples of men, ages 18 to 64. Instrumental variable estimates, based on relatively new shift-share techniques, are smaller in magnitude, but still indicate economically significant ownership gains due to income gains. We also uncover some evidence of heterogeneity by region, with stronger effects apparent in the Northeast relative to the West, and by local population size.

In earlier research, extending estimates based on eligibility for veterans' benefits, Fetter (2013) suggested that about 40 percent of the 1940–60 ownership boom might be attributed changes in mortgage terms. Chambers et al. (2014), relying on a dynamic general equilibrium model, estimate that about 21 percent of the era's homeownership gains are attributable to changes in mortgage markets. Thus, our findings, although based on a different kind of variation and approach to measurement, complement earlier work that has focused on innovations in mortgage finance in accounting for the rise of homeownership.

The chapter's findings are closely connected to American suburban growth. Although that story remains in the background of our regression analyses, it is clear from 1960's cross-sectional data that new, single-family housing in the suburbs was an important vehicle for gains in homeownership. The chapter's findings are also connected to changes in the level and distribution of home equity, a key component of Americans' wealth in 1960 and beyond. Few families held stocks or bonds in 1960's Survey of Consumer Finances, but most owned housing. Both aspects—midcentury suburban development and the accumulation of housing wealth—are important for our understanding of the changing geography of US economic activity and prosperity, including our understanding of how homeownership interacted with group disparities and residential segregation by race and income.

Finally, we would argue that homeownership is just one of many potential ramifications of the rapid and widespread gains in midcentury income. Effects from the rise in labor market earnings, on which we focus here, or

the compression of the income distribution, which is featured in the "Great Compression" literature, may have been widespread. We encourage more research on how midcentury income gains affected American consumption patterns, demographic outcomes, public finance decisions, urban planning choices, and political economy.

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