

The Impact of Opportunity Zones on Housing Supply

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The United States suffers from a large and persistent shortfall in housing supply. While housing regulations are primarily decided at the local level, the federal government has for many years attempted to boost supply and affordability through a variety of policy interventions. Opportunity Zones (OZs) are one among many such policies, but only recently has enough time passed since implementation that their impact can be observed on an important indicator of local revitalization: growth in local housing stock. We measure this effect using net residential address growth from the United States Department of Housing and Urban Development's Aggregated United States Postal Service Administrative Data on Address Vacancies. The results offer insight into the effectiveness of a novel capital gains tax incentive to drive investment activity to areas with significantly higher economic need than the typical U.S. community. Using modern difference-in-differences methods, we find that OZs roughly doubled the total amount of new housing added to low-income communities from Q3 2019 to Q3 2024, at a fiscal cost of about \$26,000 per new residential address. Our findings show that the causal effect of OZs on housing supply is positive, substantial, and has continued to grow through the end of 2024. The results furthermore show that these effects are geographically widespread and cost-efficient.

Keywords: Opportunity Zones, Housing, Place-based Policy

Opportunity Zones (OZs) were enacted as part of the 2017 Tax Cuts and Jobs Act with the purpose of attracting long-term, private investment into designated low-income areas nationwide. As a tax incentive to help distressed communities, the policy was similar in intent to previous place-based policies like Empowerment Zones (EZ) and the New Markets Tax Credit (NMTC). The OZ incentive, however, marked a substantial departure in terms of its design, including the speed and flexibility with which it can be utilized and the near total absence of bureaucratic intermediaries. The novel OZ approach raised the question of whether “a more flexible, market-driven approach could improve on the previous track record of place-based tax policies” (Corinth and Feldman, 2024).

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In this paper, we test one essential outcome: whether OZs are causing an increase in the stock of residential housing within designated census tracts.

Housing supply represents an important outcome for understanding the effects of the OZ incentive for the simple reason that housing investment has been the most widespread use case of OZs. Tax return data through 2022 finds that 75 percent of OZ investment has gone to real estate, and, of that, the majority has been in residential rental property (Corinth et al., 2025). These investments potentially increase both the amount and quality of housing stock within designated communities, but only if the investments would not have otherwise happened. If OZs have successfully generated significant increases in the stock of residential addresses within designated low-income communities, it is a hopeful signal that they can have other positive downstream effects as well. Housing should therefore be considered a central indicator of the overall effectiveness of the policy.

In addition, housing supply will be one of the first signs of the broader revitalizations that OZs hope to induce. A growing literature has formed around examining the effectiveness of OZs in changing outcomes related to broad revitalization. The existing literature can be divided into two groups: studies looking at upstream effects (e.g. investment dollars that go to OZ communities, or the number of building permits), and studies looking at downstream effects (economic indicators like job postings, employment, and income).

Studies looking at downstream outcomes of revitalization find mixed results, as we discuss in the Literature Review section. In many cases, however, these studies were looking too early at measures that were structurally unlikely to experience any significant change as a result of OZs until later, leaving little clarity as to the impact of the policy. It is possible that early null results are indicative of no long-run change as a result of OZs, but it is equally possible that no change could be reasonably expected given the mechanism at play. Early null results are unable to distinguish between either explanation.

Studies looking at upstream effects tend to find positive results when focused on variables with a strong theoretical justification given the timing and mechanisms of the OZ incentive. Indications of significant pools of private funds being allocated to designated OZs (Coyne and Johnson, 2023; Corinth et al., 2025) and increasing building permit and development activity (Wheeler, 2022) both appear to be strong indications of an impact, at least on local investment and take-up of the incentive.

In this paper we focus on the most plausible upstream factor that would follow a positive impact on building permits: completed housing supply. We measure housing supply using net address growth from United States Department of Housing and Urban Development's (HUD) Aggregated United States Postal Service (USPS) Administrative Data on Address Vacancies. We find that OZ designation has had a significant impact, estimating an additional 312,524 new addresses among treated tracts as a direct result of OZs between the third quarter of 2019 and the third quarter of 2024. This total represents 48 percent of all new resi-

dential active and vacant addresses that have been added in OZ designated areas since the end of 2019, when OZ regulations were finalized.

Following the analysis, we contextualize the results among previous findings on OZs and other tax incentives.

I. What are Opportunity Zones?

The OZ incentive enables an investor to defer and reduce capital gains if such gains are invested in Qualified Opportunity Funds (QOFs), which are special purpose funds that make qualifying investments in designated OZ census tracts. Any subsequent gains realized from the QOF investment are generally tax free if such investment is held for ten years or more.

Eligibility for OZ designation relied on the same “low-income community” (LIC) census tract criteria used in the New Market Tax Credit (NMTC) program, which was enacted in 2000. This meant that eligibility was generally limited to tracts with poverty rates greater than 20 percent or median family incomes that do not exceed 80 percent of the local area.¹ State governors were then able to nominate up to 25 percent² of eligible tracts to be designated as Opportunity Zones.³ While governors were given broad latitude in selecting among eligible areas, selected tracts exhibited consistently worse economic characteristics than those that were eligible but not selected (Fikri and Lettieri, 2018).

In total, 8,764 census tracts were designated as OZs across states, territories, and the District of Columbia, amounting to roughly 12 percent of all U.S. census tracts and home to about 10 percent of the U.S. population. These tracts covered a wide range of geographic typology and are overwhelmingly places with significantly higher economic distress than the typical U.S. community. Designated communities had an average poverty rate of 29 percent⁴ and a median family income 40 percent lower than the national median.⁵ While more than 97 percent of OZ tracts met the LIC definition, over 70 percent of zones qualified for a more stringent “severely distressed” classification according to the U.S. Treasury Department’s Community Development Financial Institution (CDFI) Fund (Fikri and Lettieri, 2018).

Opportunity Zones were conceived as a way to encourage private investments in local revitalization efforts that may have otherwise been unattractive or uncertain.

¹The statute also allowed a small share of non-LIC tracts to be designated under a “contiguous tracts” exception. Such tracts must be contiguous with a designated LIC and have a median family income that does not exceed 125 percent of the adjacent LIC’s median family income. In total, 2.6 percent of all OZ designations were made under this exemption.

²The statute included a special rule for Puerto Rico, automatically designating all qualifying tracts as Opportunity Zones.

³This selection process by governors raised questions about the comparability of selected and unselected tracts due to the endogenous nature of treatment assignment. For more information, see Frank, Hoopes and Lester (2022). We address this issue through the use of conditional parallel trends and test for the validity of the parallel trends assumption in our analysis.

⁴The U.S. Census Bureau’s American Community Survey’s 2012-2016 5-Year Estimates.

⁵The median family income of OZs was \$42,400 while the national median income was \$67,900.

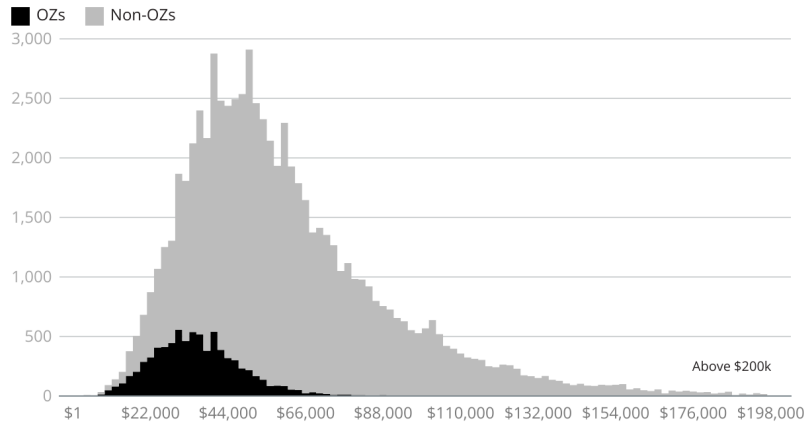


FIGURE 1. NUMBER OF OZS AND NON-OZS GROUPED BY MEDIAN HOUSEHOLD INCOME

Source: 2017 ACS 5-year estimates.

An investment qualifies for OZ tax benefits if, and only if, its “original use” begins in the OZ (e.g., a new apartment building) or it meets a “substantial improvement” test within a 30 month period after the date of acquisition, which requires the amount spent on improvements to exceed the full acquisition cost of the original asset (e.g., a major expansion of a factory). These requirements were intended to ensure that the OZ incentive was limited to economically significant investments, rather than simple changes in ownership. Furthermore, full tax benefits are not guaranteed up front simply by making a qualifying investment. Instead, to achieve the most generous feature of the OZ incentive — a permanent exclusion on future capital gains — a qualifying investment must be held for at least 10 years.

The concept behind OZs was first outlined in a white paper by Bernstein and Hassett (2015). In 2016, a bipartisan and bicameral group of legislators introduced the first OZ legislation, entitled The Investing in Opportunity Act, which was later incorporated with minor modifications into the Tax Cuts and Jobs Act (TCJA) and enacted in December 2017.

OZs have some similarities with other place-based policies like enterprise zones (Bernstein and Hassett, 2015; Neumark and Simpson, 2015) — but while similar in intent, OZs in fact offered a novel mechanism to spur investment in neighborhoods generally left behind. The OZ incentive differs from previous project-based or place-based programs in a number of ways, including that it is uncapped and by-right, thus avoiding the heavy regulatory and administrative burdens on qualifying investments that have often characterized earlier programs. OZs are noteworthy for their relatively low entry costs and the speed with which OZ capital can be deployed once qualifying investments are identified.

The zone designation process was completed in June of 2018, when the U.S. Secretary of the Treasury certified Opportunity Zone designations. The regulations governing the incentive were then promulgated and finalized in three waves from October 2018 through December 2019.

In the years since, OZs have attracted a large pool of private investment. As of the 2022 tax year, Qualified Opportunity Funds had a total holding of \$89 billion dollars in Qualified Opportunity Zone Property across more than two-thirds of all qualifying OZ tracts (Corinth et al., 2025). These dollars have been raised from a wide array of investors spread across virtually every U.S. state (Kennedy and Wheeler, 2021). Through 2020 alone, IRS data analyzed by Coyne and Johnson (2023) reveals that the OZ incentive had generated participation from roughly 21,000 individual and 4,000 corporate investors. This is evidence that OZs are tapping new and differentiated sources of financing, since individual investors are often ineligible to benefit from participating in legacy community development incentive programs.⁶

While OZs and NMTC generally target similar places, OZs have achieved a significantly larger scale and geographic reach. From the time of designation in 2018 through the end of 2020, about 3,800 tracts received at least one OZ investment, roughly equivalent to the total number of tracts to see investment over the first 18 years of the NMTC program (Fikri, Benzow and Lettieri, 2023). Corinth et al. (2025) find a similar result. From 2019 to 2022, a total of 1,259 census tracts had received at least one NMTC investment. The number that had received an OZ investment was 4.5 times greater: 5,669 tracts.

These disparities trace back to important differences in the design of the two incentives. While OZ investment is only eligible in roughly one quarter of LICs, it features an uncapped tax benefit, enabling capital to be aggregated and deployed at a larger scale across a larger number of communities. Meanwhile, NMTC can support investment in any LIC, but features a fixed cap on tax credit allocations each year.

II. Literature Review

OZs are targeted at catalyzing broad revitalization in distressed communities. In the long-run, success or failure should be assessed using a variety of socioeconomic outcomes for the resident population, including employment, poverty rates, median income, and others. A process of revitalization that operates through increased capital investment, however, will take time to affect broader outcomes. As Fikri and Glasner (2023) note, research that looks for initial signs of revitalization in the years immediately following the TCJA should focus on early outcomes that are upstream from revitalization.

Much of the literature has taken the opposite approach, looking at downstream outcomes that would only be expected far down the road of revitalization. For

⁶For example, Fikri, Benzow and Lettieri (2023) found that whereas 95 percent of NMTC investors are corporations, 85 percent of OZ investors are individuals.

example, using restricted American Community Survey microdata, Freedman, Khanna and Neumark (2023) find no impacts on employment, income, or poverty. The path from raising OZ funds, to applying for permits, to construction, to completing and occupying a property, to broad revitalization, to positive neighborhood impacts on residents would be expected to take years. Unfortunately, the data they use ran from 2013 to 2019, ending before regulations on OZs were finalized in December 2019. A null effect as of 2019 does little to illuminate the effectiveness of OZs. Rather, it is looking for an effect before any could have reasonably existed.

Yet even against this unrealistic benchmark, other downstream research is relatively mixed. Atkins et al. (2023) find no impact on job postings using Burning Glass data, but do find small positive effects in urban areas, where the majority of OZ investment has gone. Arefeva et al. (2024) find a positive impact on employment using Infogroup data that runs through 2021 on the universe of private business establishments. Given the development timeline, any positive effects that can be identified this early bode well for the long-run.

Research five years out from OZ implementation would be better focused on upstream outcomes related to development activities. Studies looking at upstream effects tend to find positive results when focused on variables with a strong theoretical justification. Among the most robust estimates comes from Wheeler (2022), who looked at what should be the first sign of revitalization and a necessary condition of increased investment and new construction: building permits. Using a sample of 47 large cities and 12,000 neighborhoods from January 2014 through June 2022, Wheeler (2022) found that OZ designation resulted in a significant increase in the likelihood of development activity occurring, particularly in communities with more available land and in-fill opportunities, a more elastic housing supply, and lower home values. Wheeler (2022) finds that tracts which were designated an OZ saw an increase in the probability of new development in a given month of 2.9 percentage points, a 20.5 percent increase from baseline.

Other studies suggest positive impacts on the construction of real estate, and in particular multifamily residential buildings (Coyne and Johnson, 2023; Corinth et al., 2025; Sciarretti, 2023). New residential construction (upstream) could have a range of impacts on important long-run local outcomes, and would be one of the first signs of broad revitalization.⁷

Other upstream studies are often limited in their usefulness by focusing on outcomes that lack a theoretical motivation and/or clarity. For example, housing prices could be a plausible upstream outcome to study because they can change in anticipation of economic activity. But prices can also change with the supply and quality of goods, making the expected direction of change unclear. If the primary

⁷As new buildings are constructed, local poverty at the tract level could shift partly due to a dilution of poverty (more residents above the poverty line moving in), a substitution of poverty (those in poverty moving out while individuals above the poverty line move in), and a reduction in poverty (improvements in neighborhood characteristics increasing the incomes of residents who were in poverty before the OZ designation occurred). These contrasting mechanisms have yet to be tested in the literature.

effect of OZs is to increase housing supply, for example, this could lower prices in both OZs and in surrounding tracts. If OZs trigger an increase in amenities, then prices could outweigh supply impacts and increase prices. The lack of clear theoretical prediction for prices makes it impossible to interpret the price effects found in a study if the same study fails to account for quantities, for example Chen, Glaeser and Wessel (2023).⁸

Wheeler’s (2022) study does measure the effects of OZ designation on both prices and development activity. It found not just a rise in development activity, as already discussed, but also an appreciation in home values — a sign that amenities have improved, making homes and neighborhoods more attractive to buyers. Interestingly, Wheeler also finds no increase in rents as a result of OZ designation, suggesting that supply effects outweigh the amenity effect for rental units.

Transaction volume is another outcome that is upstream but lacks a theoretical justification for its usefulness as a measure of whether OZs are having their intended effects. Feldman and Corinth (2023)⁹ and Sage, Langen and Van De Minne (2023) investigate the impact of OZs on a dataset that comprises nearly the full universe of commercial transactions above \$2.5 million. But OZs only increase the returns to investments that are new construction or include “substantial improvements” equal to the initial value of investment.¹⁰ Aggregate transaction volume across OZs might appear unchanged, but the nature of the underlying transactions could be very different as a result of the policy. A shift toward redevelopment may well be lost in the noise of ineligible and unrelated transactions. When focused on the more narrow question of multifamily transaction volume, Feldman and Corinth (2023) find a positive effect despite measuring the universe of transactions rather than those intended for reinvestment. Even using imprecisely measured outcomes, the impact on housing is strong enough to be

⁸Interestingly, when Wheeler (2022) explored the null effect reported by Chen, Glaeser and Wessel (2023), he found that their null result was driven by the use of price growth rates rather than price levels or log price levels. Wheeler (2022) reported a 3.4 percent increase in median home values in a subset of urban OZs from 2017 to 2020.

⁹Feldman and Corinth (2023) also introduce a regression discontinuity design that uses both the tract poverty rate and median income as running variables, marking a departure from the difference-in-differences design favored by most work on OZs. In a traditional regression discontinuity design, a comparison is made on either side of a treatment threshold. However, in Feldman and Corinth (2023), a multivariate measure of OZ eligibility cutoffs is used. Given the RCA data employed, the regression discontinuity is designed to detect whether OZ eligibility led to changes in commercial investment on either side of a multivariate eligibility threshold. In a simplified univariate context, a regression discontinuity would test for differences between census tracts with a 20.1 percent poverty rate and those with a 19.9 percent poverty rate (i.e., on either side of the 20 percent eligibility cutoff) for example. This approach creates three issues. First, a discontinuity design is less well-suited to detect treatment effects across the entire sample, including in higher-poverty census tracts where the impact of the incentive may be less marginal or less meaningful, thus offering limited capacity for heterogeneity analyses. Second, a discontinuity design relies on precision in the running variable, yet aggregated poverty rates lack consistency in measuring the depth of poverty, compromising our ability to identify two tracts that are truly similar in terms of poverty exposure. Third, discontinuity models struggle to control for spillover effects across geographic units, which other studies (Arefeva et al., 2024; Wheeler, 2022) have shown to be significant for OZs.

¹⁰See Internal Revenue Service (2024).

identified.

As a point of comparison, research on the impacts of zoning reform would not look for an effect in total commercial transaction volume. Likewise, a null impact of zoning reform on house prices would not be interpreted as proving no effect of zoning reform. Yet both outcomes have been proposed as plausible tests of whether OZs are working as intended, perhaps resulting from a misunderstanding of the underlying incentive and how it differs from legacy programs.

One question was whether the lack of government pre-approval of OZ investments would result in investors excluding the vast majority of designated tracts in favor of a small share that are the least distressed and most attractive. The available evidence instead shows that a large and growing share of OZ tracts are seeing investment, and that “OZs [are] providing a large amount of investment to distressed areas” (Corinth et al., 2025). As of 2022, fully two thirds of designated tracts had already received investment from a Qualified Opportunity Fund (Corinth et al., 2025). OZ investment activity was inversely related to economic well-being at the tract-level.¹¹ Indeed, even without the government intermediation required by the NMTC, OZ investments target areas with similar levels of economic distress. Analysis of Coyne and Johnson’s (2023) findings on tracts that received OZ investment through 2020 reveals that they were on average in the 87th percentile for poverty, 81st for median family income, and 80th for unemployment among all U.S. tracts.¹²

It is a matter of ongoing debate whether federal development incentives are best targeted to places that demonstrate both economic need and the capacity to channel new investment into productive uses, or instead to places that demonstrate economic need but without proven investment potential. The answer may vary, depending on the specific design of a given incentive or the goals of policymakers.

In the case of OZs, Corinth et al. (2025) find that OZ investment tended to target census tracts with a higher volume of commercial transactions from 2013 to 2017, suggesting that the OZ incentive structure favors places that demonstrated investment potential over ones “not ripe for productive investment on their own.” But if OZ investment were instead concentrated in places without the capacity to use it, a separate criticism could be made that taxpayer dollars were subsidizing unproductive investments, which has long been a critique of place-targeted subsidies (Glaeser and Gottlieb, 2008).

Corinth et al. (2025) interpret the pre-existing transaction volume in OZ tracts as evidence of the “OZ tax incentive rewarding investment that would have occurred in the absence of the program.” On its own, however, such data cannot establish whether OZ designation caused subsequent investment to increase. This

¹¹Corinth et al. (2025) found that at the tract level, OZ investment and NMTC investment both targeted a similar level of distress. When they expanded their analysis to the county level, they discovered that a greater share of investment went to low-income tracts embedded in less distressed counties compared to NMTC investments. It is unclear how much of this result is driven by price differentials across counties given the breadth and scale of OZ investment.

¹²Ranked from lowest to highest levels of need, per Fikri, Benzow and Lettieri (2023).

is precisely the question we will address.

In short, when studies look at theoretically justified measures, the results of the literature are consistent with a positive effect of OZs on upstream factors of redevelopment. This distinction in quality of evidence and stage of developmental mechanism is often missing from recent summaries of the literature, such as the one provided by Corinth and Feldman (2024).

Our work also contributes to the literature on federal policy to increase housing supply. In recent decades, the government has shifted its housing supply side policy from directly providing it through public housing projects to subsidizing construction (Collinson, Ellen and Ludwig, 2015). The largest supply subsidy is the Low-Income Housing Tax Credit (LIHTC), which promotes the development and rehabilitation of affordable rental housing. LIHTC awards overwhelmingly go to corporate investors, with an estimated cost of roughly \$14 billion in 2025 rising to nearly \$16 billion in 2028 (Joint Committee on Taxation, 2024). There is also growing awareness that zoning reform is an important policy lever for housing supply (Gyourko, Hartley and Krimmel, 2021; Been, Ellen and O’Regan, 2025). As zoning is largely set at the state and local level, however, there has been to date relatively little federal policy along this important margin.

III. Data

A. Data Sources

The primary dataset used in this analysis is the quarterly count of residential and business addresses in a given Census Tract. When new buildings are constructed, the count of addresses in the neighborhood will grow. An exception is when older and potentially dilapidated buildings are torn down and replaced with new buildings with the same number of units, in which case the amount of new construction would be underestimated by net address growth. While it will miss revitalizations, we use net address growth as a lower bound estimate of new construction.

We measure net address growth using United States Department of Housing and Urban Development’s (HUD) Aggregated United States Postal Service (USPS) Administrative Data on Address Vacancies. This data is gathered by the USPS to facilitate mail delivery, and provides quarterly counts of addresses serviced by USPS. There are several types of addresses provided, which are defined by HUD as follows:

- Total Number of Addresses reflects all addresses (residential and business) that are recorded by the USPS.
- Total Vacant Addresses are addresses that delivery staff on urban routes have identified as being vacant (not collecting their mail) for 90 days or longer.

- Total No-Stat Addresses are addresses that can be classified as "No-Stat" for many reasons, including:
 - Rural Route addresses that are vacant for 90 days or longer
 - Addresses for businesses or homes under construction and not yet occupied
 - Addresses in urban areas identified by a carrier as not likely to be active for some time

The data is collected by postal workers with the primary goal of supporting the efficient delivery of mail, not for research purposes.

One potential issue with the data — which is not problematic for our analysis — is that it can be subject to volatility as a result of changes in USPS policy. Most notably, in 2011 and 2014, address counts increased significantly due to the introduction of "Move to Competitive (MTC) Street Addressing for PO Boxes" that allowed customers to register PO boxes as street addresses. This change, however, preceded the designation of OZs by a large enough margin to be un concerning.

Another data issue is that tracts with high growth or high decline both tend to have high rates of no-stat addresses. No-stat addresses are both empirically more volatile and also difficult to interpret as genuine new housing units. But the data does allow for active and vacant addresses to be combined into a total that excludes no-stat addresses. This is the approach we take in this analysis.

Finally, USPS also captures an "other" category of address type, which in many ways is a black box. Since this analysis is focused on housing as the outcome of interest, we exclude both "business" addresses and "other" addresses. In future work, we will explore how OZs impact these three address types separately.

Despite these issues, the administrative nature and regularity of the data offers a clear advantage. As compared to the American Community Survey, for example, this is not a sample but represents the universe of addresses serviced by USPS. In addition, we can compare HUD's address counts to external data sources. Changes in HUD's active residential addresses for the U.S. track closely to decadal changes in occupied housing units from the Decennial Census and estimates of new residential construction from the Census Survey of Construction (SOC) and the Building Permits Survey (BPS).¹³

We also use data on which Census Tracts were eligible and designated as OZs. One complication is that while OZs were based on the 2010 census tract boundary definitions, we use the 2020 standardized HUD data and walk OZ boundaries forward into the 2020 definition structure. This is due to an error discovered in the 2010 census definition data that HUD is actively working to resolve. A key component of our preliminary work is the selection of only tracts which maintained

¹³This was validated as a robustness check of this paper. The code used can be found within the Github repository for replication (linked here)

consistent treatment definition throughout the analysis. This means that a 2020 census tract is only included in our analysis if we can say confidently that it either was unchanged from 2010, or if the component parts of the 2020 tract definition all maintained the same OZ designation status even as boundaries were shifted. This excludes 7.9 percent out of 84,122 Census Tracts.

To support our analysis and introduce conditional parallel trends, we measure a variety of socioeconomic outcomes at the tract level using 5-year American Community Survey data from 2012 to 2023. This includes tract-level poverty rates, median household income, unemployment rates, and the share of prime-age residents. This data is intended to help ensure that tracts are compared to valid control units when constructing our difference-in-differences analysis.

B. Geographic heterogeneity

One of the contributions of this analysis beyond the national scope of the address count assessment is the testing for geographic heterogeneity in the effect of OZs. Using a novel tract-level geographic coding scheme defined by a population-weighted assignment, we classify census tracts into one of the following categories: large urban, mid-sized urban, small urban, suburban, small town, and rural. We test for the effect of OZs both in aggregate and across distinct geographic subsets to explore how the policy’s effectiveness may vary across types of places.

Classifying a tract along the urban-rural spectrum is no simple task. Block group population data from the 2017-2021 American Community Survey is paired with 2021 locale classifications¹⁴ from the National Center for Education Statistics (NCES) to calculate the locale where most people in a tract live. We then determine where a tract sits on the urban-rural spectrum according to the community characteristics where residents tend to live.

The urban definitions in the NCES framework are adopted here to create three groups of urban tracts: large, mid-sized, and small.

At the other end of the spectrum, the NCES definitions for the continuum of rural and small towns are collapsed into two definitions, depending on whether the majority of tract residents are in a small town or a rural area. Between these two poles, suburban tracts are based on the share of the population living in a medium or large suburban area. The explicit definitions are as follows:

- Large urban: At least 50 percent of the tract population is in a large urban area, and the tract is in a large urban county. Classified as suburban if at least 50 percent of the tract population is in a large urban area but the tract is not in a large urban county.
- Mid-sized urban: At least 50 percent of the tract population is in a mid-sized urban area, and the tract is in a mid-sized urban county.

¹⁴See National Center for Education Statistics Locale Classifications (2023)

- Small urban: At least 50 percent of the tract population is in a small urban area, and the tract is not classified as large or mid-sized urban.
- Suburban: If at least 50 percent of the tract population is in an urban suburban area of any size the tract is classified as suburban (excluding those already classified as urban) regardless of county type. If at least 50 percent of the tract population is in a small town area the tract is classified as suburban if in an urban or suburban county, otherwise classified as small town.
- Small town: At least 50 percent of the tract population lives in a small town of any size, and the tract is not classified as suburban or urban.
- Rural: More than 50 percent of the tract population lives in a rural or small town area of any size, and the tract is not classified as urban, suburban, or small town.

Around 500 tracts were not assigned an NCES Locale and were given their county classification.

IV. Methodology

Due to the geographic variation in OZ designation, the simultaneous designation of tracts and finalization of regulations, and the characteristic-dependent selection of eligibility, we favor a difference-in-differences approach that is flexible enough to incorporate conditional parallel trends and produce dynamic effect estimates over the observed post-treatment period.

In particular, we use the doubly-robust difference-in-differences estimator from Callaway and Sant’Anna (2021) (CSDID). The sample for the CSDID estimates is all low-income community (LIC) tracts that were eligible to be designated as OZs. Those that were designated OZs are the treated group, and those that were not designated are the control group. We exclude contiguous and ineligible tracts from the analysis at this stage. To help ensure against a violation of the parallel trends assumption, we construct conditional parallel trends using a tracts’ poverty rate, median household income, unemployment rate, and share of the population who are of prime age (25 to 54) in 2016, before OZs were enacted.

When considering the effect estimate on residential address counts at the tract level, it is important to note the relationship between treatment and our outcomes of interest. OZs are being utilized first and foremost to increase local construction. The construction of new buildings takes time, often with long lags between planning and due diligence, purchase, land development and permitting, construction, sale, and finally, occupancy. This implies a lag between treatment assignment and changes in the count of residential addresses. As such, an average treatment effect over the entire post-treatment period will likely underestimate the true effect of the policy. In fact, the latest available data in the post-period

will show the most accurate picture of the effect of OZs up to this point. In our case, we report effect estimates in the third quarter of 2024.¹⁵

V. Results

A. Descriptive statistics

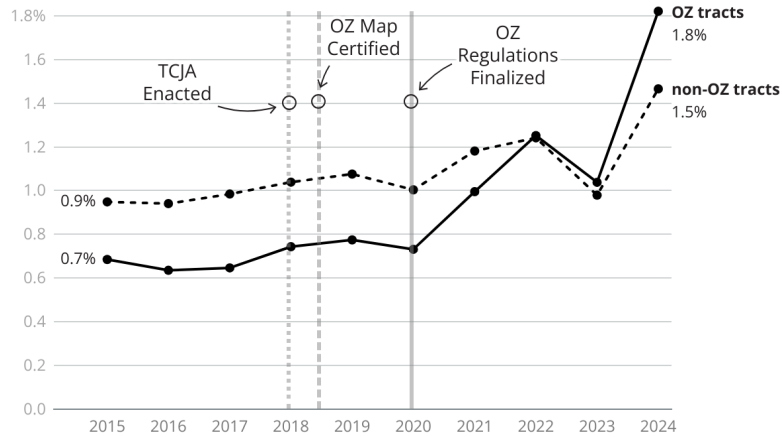


FIGURE 2. ANNUAL GROWTH RATE IN RESIDENTIAL ADDRESSES

Source: United States Department of Housing and Urban Development’s (HUD) Aggregated United States Postal Service (USPS) Administrative Data on Address Vacancies.

A high level look at the data provides evidence that is consistent with OZs leading to an increase in new residential supply. Prior to OZ regulations being finalized, annual growth in residential addresses in OZ tracts lags consistently behind growth in the rest of the country. After OZ regulations were finalized at the end of 2019, we can see a sustained break in the trend as OZ tracts not only close the gap with non-OZ tracts, but by 2023 have pulled ahead of them.

One plausible reason for this break in trend is that low-income census tracts overall may have seen an increase in demand, and the increase in housing supply in OZ tracts may simply reflect this broader shift. However, prior to the implementation of the OZ incentive, a steadily declining share of addresses was apparent across all low-income tracts, demonstrating years of low rates of residential investment. This is true of both OZ designated and non-designated low-income tracts. After implementation, however, OZ tracts have seen their share of all U.S. residential addresses grow for the first time in over a decade. Meanwhile, low-income communities that were not designated as OZs are continuing to shrink relative to the rest of the country.

¹⁵HUD regularly updates this data and future work will likely include Q4 of 2024.

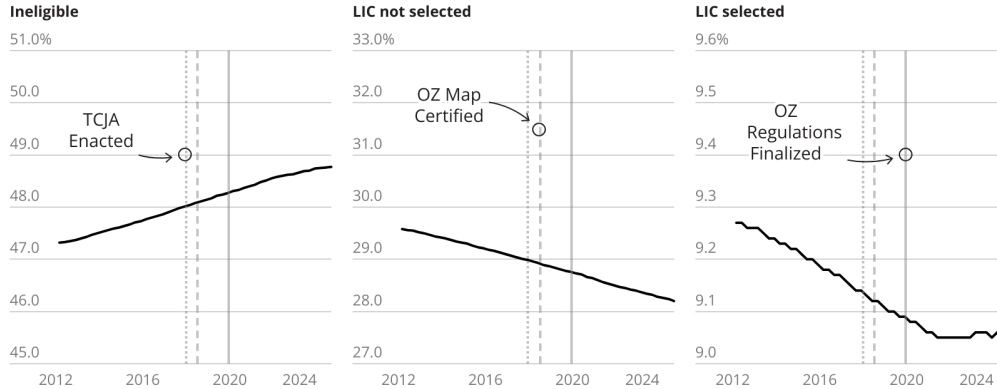


FIGURE 3. SHARE OF RESIDENTIAL ADDRESSES ACROSS TREATMENT TYPE

Note: This figure contrasts the annual growth rate in residential addresses for census tracts that were designated Opportunity Zones and tracts that were not designated. This is inclusive of all tract types, after restricting the sample to tracts that maintain the same treatment definition when moving from the 2010 census tract boundaries to the 2020 boundaries.

While the aggregate data are consistent with the OZ incentive driving a substantial increase in residential housing investment, a more careful analysis is needed to establish causality. The key comparison is between LIC tracts that were or were not designated OZs. Our treatment group, designated LIC, made up a total of 7,730 tracts, which were observed quarterly from Q1 2012 to Q3 2024. They are contrasted with the 24,083 undesignated LIC tracts, offering a comparable control group.

B. Effect Estimates

Leveraging the CSDID methodology, we estimate the effect of OZs across multiple outcomes of interest and explore the heterogeneity of the effect across geographic typology.

Due to the risk of a violation of parallel trends, in part because of the endogenous selection of treated tracts, we not only report dynamic effect estimates but also test for a violation of parallel trends in the pre-treatment period across each of our outcomes: the total count of active and vacant residential addresses, and the logged count of active and vacant residential addresses.

A single unit increase in the level of active and vacant addresses in our effect estimate translates to a single new address present in a tract that is either actively occupied or vacant, either short-term or long-term. Units that are under construction or that are determined to be “no-stat” by USPS are not included in the analysis’s outcome measures.

We find that OZ designation results in a significant increase in the number of active and vacant residential addresses in aggregate. The average effect size is

TABLE 1—DESCRIPTIVE STATISTICS AS OF Q1 2017

Outcome	Designated LIC	Undesignated LIC	Ineligible
Active/Vacant Addresses	1,362	1,373	1,578
Active Addresses	1,279	1,313	1,578
MFI	\$35,355	\$40,529	\$77,677
Poverty Rate	27.5%	22.0%	6.6%
Prime-Age Share	39.0%	39.6%	39.4%
Unemp. Rate	9.7%	8.0%	4.4%
Share Large Urban	29.1%	30.1%	15.8%
Share Mid-sized Urban	8.2%	8.9%	5.3%
Share Small Urban	12.1%	11.1%	11.0%
Share Suburban	19.1%	22.9%	47.2%
Share Small Town	11.4%	7.5%	4.6%
Share Rural	20.1%	19.4%	16.1%
Number of Tracts	7,730	24,083	34,953

Note: For the purposes of our analysis, we compare designated and undesignated "Low-Income Community" tracts. Contiguous and ineligible tracts are not included in the analysis due to a lack of comparability. When calculating summary statistics on median family income, poverty rates, prime-age share, and unemployment rates, five tracts are dropped due to missing data.

35.7 new residential addresses per OZ tract. We see significant variation in the effect size across geographic typology. Mid-sized urban tracts report the largest effect estimate, with an effect of 58.85 additional residential addresses resulting from OZ designation. This is followed by large urban, suburban, and small urban tracts. While both small town and rural tracts have positive effect estimates, they are statistically insignificant in the third quarter of 2024 at a 95 percent confidence level.¹⁶

Our findings comport with previous research done examining building permits across a sample of larger cities (Wheeler, 2022). That study found that OZ designation caused a "large and immediate" effect on the likelihood of development in a given tract and significant spillovers into non-OZ tracts nearby, but did not estimate the number of new addresses or fiscal cost of new housing units created. Survey data from Novogradac of a subset of OZ investment reveals nearly 200,000 housing units built or scheduled to be built (as opposed to the completed, net new

¹⁶Although their quarterly effect estimates are insignificant, the aggregate effect on residential addresses in rural tracts is statistically significant at the 95 percent level, with a value of 9.79, and in small towns, with a value of 7.97. The impacts are clearly trending positive and moving increasingly toward statistical significance.

TABLE 2—WHAT EFFECT DO OPPORTUNITY ZONES HAVE?

Geographic Typology	Active and Vacant Res.	Log(Active and Vacant Res.)
All	35.66*** (2.8)	0.0204*** (0.0022)
Large urban	49.74*** (5.34)	0.0344*** (0.0038)
Mid-sized urban	58.85*** (10.06)	0.0146 (0.0144)
Small urban	33.49*** (6.45)	0.0213*** (0.0036)
Suburban	38.15*** (7.7)	0.0178** (0.0045)
Small town	16.61** (6.21)	0.0045 (0.0042)
Rural	19.15* (7.07)	0.0125 (0.0051)

Note: Using 2020 standardized Census tracts with consistent treatment assignment from 2010 to 2020. The results account for conditional parallel trends using tract poverty rate, median household income, unemployment rate, and share of the population who are prime-age (25 to 54) adults in Q4 2016, before TCJA. Reported effect estimates are the average treatment effects in Q3 2024. * Significant at the 90% level. ** Significant at the 95% level. *** Significant at the 99% level.

addresses in our findings) with OZ investment (Watkins, 2025), but the nature of this survey data cannot establish causality. Similarly, private data from RealPage found that OZ communities have more than doubled their national share of market rate multifamily housing since the policy was enacted (Parsons, 2024), but did not establish causation or analyze fiscal cost.

One key point of contention in the literature is about the timing of when OZ impacts on neighborhood outcomes would begin to materialize empirically. Using CSDID’s dynamic estimates, we can assess when effects begin, the rate of change in the post-treatment period, and the validity of the control group using the pre-treatment period.

The event study structure of the effect estimates makes two things clear.

First, our treatment and control groups appear to be an appropriate fit. The pre-treatment period, defined as the quarters preceding when OZ regulations were finalized, exhibits no clear violation of the parallel trends assumption.¹⁷ This falls in line with the aggregate descriptive figure on annual growth rates across OZ and non-OZ tracts.

Second, the growth in residential addresses across all tract types appears to grow steadily after regulations were finalized. An estimate of the aggregate treatment effect across all periods would underestimate the effect of OZs, downweighted by early periods when construction is likely still underway. As such, we are confident in the reporting of the final period of the analysis as our primary effect estimates.

Taking these results, we can estimate an aggregate effect on the number of active and vacant residential addresses caused by OZs.

¹⁷We found that the parallel trends assumption held both with and without the inclusion of conditional parallel trends. Due to the uncertainty surrounding OZ investment relative to OZ designation, we present effect estimates using the conditional parallel trends.

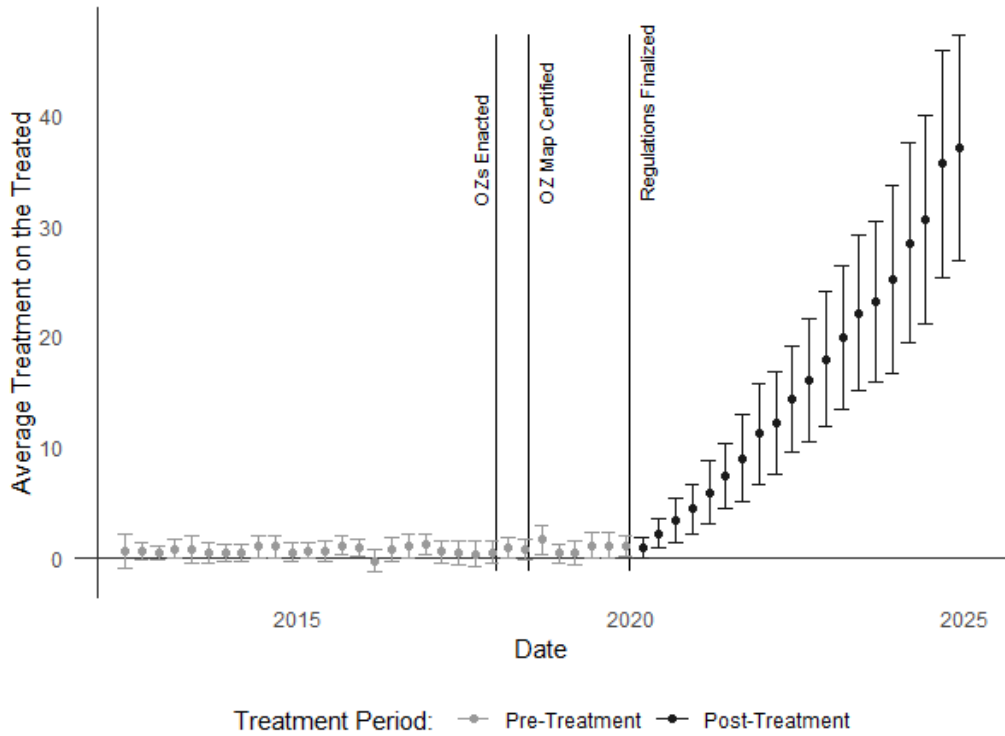


FIGURE 4. DYNAMIC EFFECT ESTIMATE OF OPPORTUNITY ZONES ON THE COUNT OF ACTIVE AND VACANT ADDRESSES

Note: Effect estimates are from the Callaway and Sant’Anna difference-in-differences (CSDID) approach. The control group are census tracts defined as “Low Income Communities” that were not designated Opportunity Zones. The results account for conditional parallel trends using tract poverty rate, median household income, unemployment rate, and share of the population who are prime-age (25 to 54) adults in the fourth quarter of 2016, before TCJA.

From Q3 2019 to Q3 2024, OZ communities added a total of 651,497 new active and vacant residential addresses. This accounts for 32.4 percent of all new active and vacant addresses among LIC-eligible tracts, which saw a total of 2,008,099 new addresses regardless of OZ designation. Across the entire analysis sample, OZ tracts contributed 8.9 percent of the 7,293,471 new active and vacant residential addresses. But for the OZ incentive, designated communities would have accounted for merely 4.9 percent of new residential addresses nationwide. In the preceding period, from Q3 2014 to Q3 2019, OZ tracts accounted for only 6.5 percent of the 5,718,562 new active and vacant residential addresses across the full analysis sample.

Using an average effect estimate of 35.66 new active or vacant addresses per OZ tract, and with 8,764 OZ tracts across states, territories, and the District

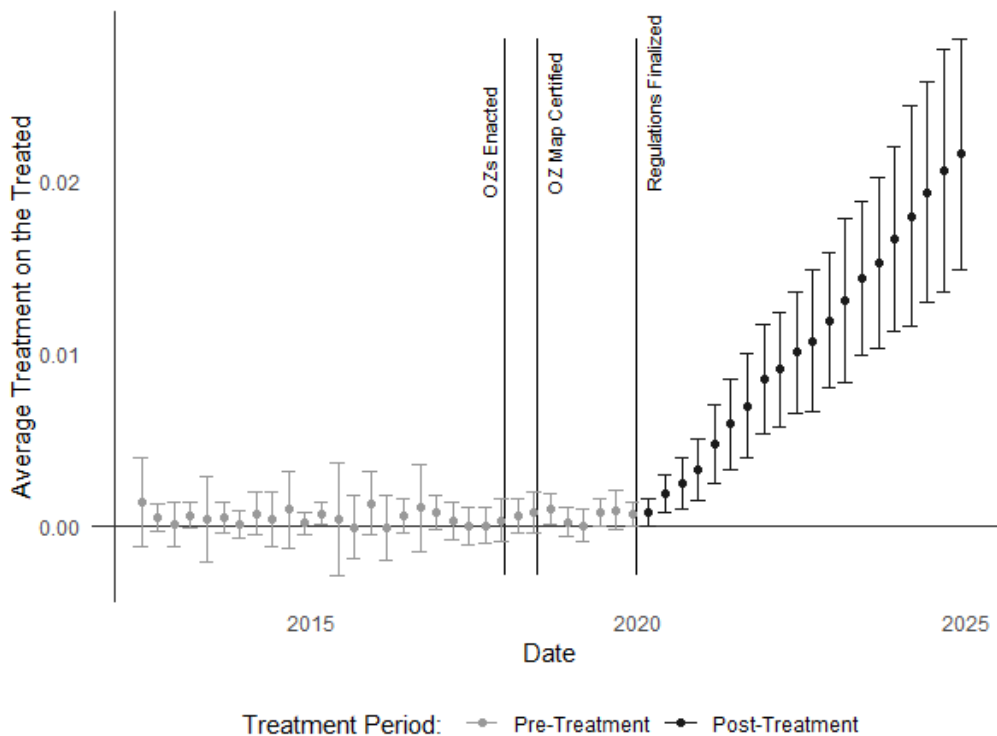


FIGURE 5. DYNAMIC EFFECT ESTIMATE OF OPPORTUNITY ZONES ON THE LOGGED COUNT OF ACTIVE AND VACANT ADDRESSES

Note: Effect estimates are from the Callaway and Sant’Anna difference-in-differences (CSDID) approach. The control group are census tracts defined as “Low Income Communities” that were not designated Opportunity Zones. The results account for conditional parallel trends using tract poverty rate, median household income, unemployment rate, and share of the population who are prime-age (25 to 54) adults in the fourth quarter of 2016, before TCJA.

of Columbia, we estimate that the OZ incentive has resulted in 312,524 new residential addresses.¹⁸ This total represents 48 percent of all new residential active and vacant addresses that have been added to OZ designated areas since 2019, 15.6 percent of those added to LICs regardless of designation, and 4.3 percent of all new active and vacant addresses nationwide.

¹⁸This analysis leverages HUD’s data on addresses within states and the District of Columbia and does not include addresses in territories. It is possible that the average effect estimate would be reduced if territories were included in the analytic sample, thereby lowering the aggregate effect estimate across all OZs. If we exclude OZs that are not in states or the District of Columbia, we are left with 7,826 designated tracts. This exclusion yields an alternative estimate of 279,075 new addresses caused by OZs, representing 42.84 percent of all new residential active/vacant addresses in OZs since 2019, 13.9 percent among LICs regardless of designation, and 3.83 percent of all new active/vacant addresses in the country as a whole. However, this estimate ignores any potential effect on addresses within territories and is likely to underestimate the total effect.

At a projected total cost of \$8.2 billion,¹⁹ the average cost per new residential address resulting from OZs is \$26,238, assuming all of the costs were allocated to residential addresses that had been completed as of Q3 2024. As pointed out by Corinth et al. (2025), approximately 75 percent of investment was in real estate and rental leasing. Modifying the topline total cost to account for this brings the average cost per new residential address down to \$19,678. These estimates compare favorably to the fiscal costs associated with LIHTC, which have been estimated to be as high as \$1 million per net new unit on average (Soltas, 2024). However, a key difference is that LIHTC is limited to units that are affordable to low-income tenants, while the OZ incentive can be used to support a wide spectrum of housing supply.

C. Other considerations about effects

There are a number of reasons our results may understate the scale or cost efficiency of the OZ incentive’s effect on housing investment. We exclude units that are planned or under construction, as well as completed developments that do not yet show up as USPS addresses. Because the effect is rising as of the end of our study period, there is strong reason to expect that even larger cumulative effects will be observed in subsequent quarters as in-progress developments are completed for occupancy. And as we are only modeling the net change in residential addresses, our totals furthermore exclude units that have been substantially rehabilitated as a result of the OZ incentive, or dilapidated housing that was demolished and replaced. Additionally, the true per-address fiscal cost is likely less than our \$26,238 estimate; we count the full cost of the tax expenditure over the five-year study period (\$8.2 billion) even though tax data analyzed by the Joint Committee on Taxation (JCT) finds that a substantial share of OZ dollars are going to non-housing investment. Furthermore, the incentive is designed to recoup a significant amount of deferred tax revenue later in the budget window, partially offsetting the fiscal costs associated with the incentive during our treatment period.²⁰

VI. Conclusion

Our results fill an important gap in the literature on Opportunity Zones by quantifying both the magnitude and cost-efficiency of housing development induced by the OZ incentive. Not only are these results relevant to an understanding of OZs, they are also a meaningful contribution to broader debates on the design

¹⁹Cost estimates come from the projected cost of OZs from 2020 through 2024 in the published “Estimates of Federal Tax Expenditures for Fiscal Years 2020-2024” prepared by the Joint Committee on Taxation (Joint Committee on Taxation, 2020).

²⁰The Joint Committee on Taxation’s most recent estimates are that OZs will raise over \$16 billion between 2024 and 2028 (Joint Committee on Taxation, 2024). The budgetary window used is a complicating factor for long-run estimates of the cost efficiency of the OZ incentive.

and efficacy of tax incentives, housing supply, and local economic revitalization efforts.

Future research should continue to explore effects like employment, poverty, and other downstream effects of revitalization. The need to boost housing supply, however, has already become a rare area of agreement across the political spectrum, supported by a large and growing body of research showing that an increase in housing supply reduces rents or slows rent growth (Been, Ellen and O'Regan, 2025). And this includes all types of housing supply, not just “affordable” units built specifically for lower-income residents (Lettieri, 2021). New market rate construction, for example, does not just create housing for higher income households, but loosens the housing market for middle and low income households as well (Bratu, Harjunen and Saarimaa, 2023). This helps reduce the risk that the benefits of revitalization lead to displacement, as housing supply reduces eviction rates (Dawkins, 2024). Yet despite the bipartisan interest of policymakers and the supportive body of evidence, the effects of one of the most significant economic development policies on the books remain poorly understood.

An early criticism of OZs was that the level of discretion provided to investors might result in investment failing to target genuinely distressed places (Jacoby, 2019). The data have now conclusively alleviated this concern (Corinth et al., 2025).

We firmly establish OZs as a significant housing supply policy and answer a central question about whether the incentive boosted investment activity in targeted areas. Making novel use of HUD data sourced from USPS counts of addresses, we tested the effect of the OZ incentive on the total number of active and vacant residential addresses, the geographic heterogeneity of the effect, and estimated the fiscal cost of the new supply induced by the incentive. We find that the OZs caused a large — and still rising — increase in housing supply in designated communities.

We also identify a clear pre- vs. post-designation shift in housing growth, refuting the concern that OZs merely subsidize investments that would have occurred regardless of the incentive such as “sure bets” in borderline-distressed areas. As indicated by the aggregate data, low-income tracts that became OZ communities had been steadily shrinking as a share of the national housing stock, a clear indicator of relative economic decline. OZ designation subsequently changed their trajectory. As a result, the growth rate in residential addresses of OZ communities has surpassed the rate of growth in non-OZ communities nationwide.

We furthermore find the fiscal cost per unit of housing induced by the OZ incentive to be extremely low compared to other housing incentives.

Finally, an important lesson for understanding existing OZ research is that the causal increase in housing supply in OZs does not begin to materialize until 2020, after OZ regulations are finalized. For most and perhaps all outcomes, studies relying on pre-2020 data, as much of the literature does, are likely to substantially underestimate the incentive’s effects, and possibly miss them entirely.

Our findings directly address three of the chief questions about any incentive policy: 1) whether the subsidy led to changes in behavior or economic outcomes that would not have occurred “but for” the policy, 2) whether any such outcomes occurred at significant scale, and 3) whether such outcomes were achieved in an efficient, cost effective manner. Our results affirm all three, demonstrating that OZs have quickly become a leading federal housing supply policy. Indeed, even with a large effect size already established as of Q3 2024, an examination of subsequent quarters is likely to reveal that the effect of the OZ incentive continues to grow.

More broadly, our results speak to the efficacy of the novel OZ incentive structure at spurring private capital investment in distressed areas. OZs stand out for their heavy reliance on private capital’s ability to spot opportunities in targeted communities. Our evidence that the incentive has induced substantial housing supply — a much sought-after outcome — suggests that this more flexible, market-driven approach can indeed succeed at mobilizing private capital in ways that prior programs did not. The results further suggest that there was significant overlooked investment potential in designated low-income communities prior to their OZ designation.

Demonstrating a robust effect at a relatively modest cost per new address indicates that some uncapped or streamlined incentives can be more cost-effective than historically presumed. Our results should therefore inform debates on reforming or expanding similar incentive frameworks in the future.

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