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IZA DP No. 15855

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ISSN: 2365-9793

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# ABSTRACT

## Knocking It Down and Mixing It Up: The Impact of Public Housing Regenerations*

Due to their negative effects on surrounding neighborhoods, some countries have gradually been replacing distressed public housing developments with mixed-income housing. This paper studies the effects of such policies on local housing markets in London (UK), where local authorities demolished and rebuilt several public housing developments while adding market-rate units on-site. We show that these 'regeneration' programs lead to large increases in nearby house prices and rents over a six-year period, although house prices decrease farther away. The results are consistent with strong demand effects from observed amenity improvements near the buildings and downward price pressures from increased supply dominating in the broader area. We provide suggestive evidence that regenerations involving larger socioeconomic composition changes are associated with higher price increases.

**JEL Classification:** I38, H75, R23, R31

**Keywords:** public housing, mixed-income housing, house prices, amenities

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* We are immensely grateful to Rebecca Diamond, Amy Finkelstein and James Poterba for their invaluable guidance and support. We also thank Aileen Devlin, Zoel Martín, Carlos Molina, Liyang Sun, and discussants and seminar participants at AIEL Conference, AREUEA National Conference, Causal Inference with Spatial Data Workshop, Cornell University, Federal Reserve Bank of Dallas, LSE, MIT Department of Economics, MIT-CRE, University of Dundee, University of Newcastle, University of Padova, IEB Workshop on Urban Economics, NBER Summer Institute, Nova School of Business and Economics, NYU Furman Center, Rutgers University, Syracuse University, UEA European Meeting and UEA North American Meeting for their helpful comments. Funding for this project was generously provided by the George and Obie Shultz Fund.

# 1 Introduction

Over the past few decades, traditional public housing developments in countries such as the United States and the United Kingdom have been demolished and replaced with mixed-income housing, i.e., a combination of affordable and market-rate units in the same building.[1] Public housing high-rises often had negative effects on nearby households, such as poverty clusters, high crime rates, and low housing values. While prior research has examined the effects of demolishing these buildings on affected neighborhoods (Aliprantis and Hartley, 2015; Sandler, 2016; Tach and Emory, 2017; Almagro et al., 2022; Blanco, 2022), there has been little focus on their redevelopment as mixed-income housing. In this case, the effects on local housing markets are ambiguous: while an increase in market-rate supply on-site can lower nearby housing prices, demand effects from improved amenities can raise them. Moreover, urban renewal programs of this type often raise concerns about gentrification and displacement of residents in low-income neighborhoods.[2]

In this paper, we study the effects of converting distressed public housing into mixed-income developments on local housing markets. We exploit the demolition and redevelopment of 130 public housing *estates* (akin to US projects) in London, UK between 2004 and 2018, which approximately maintained the amount of public housing in the new buildings while adding a similar number of market-rate units on-site. These programs, known as "estate regenerations", provide an excellent setting to answer two questions. First, can mixed-income housing overcome the negative effects of traditional public housing on nearby areas even when preserving the same number of public housing units? Second, can increased market-rate supply help mitigate the housing price increases resulting from the revitalization of these areas?

London's public housing, which is home to nearly a fourth of households living in the city, has faced similar challenges as distressed public housing projects in the United States. This paper focuses on a set of large public housing developments that were mostly built between 1950 and 1980, when the public sector supplied a significant amount of new affordable housing. From the 1980s, gradual disinvestment and poor maintenance led to the decay of many of these buildings –

[1] Vale and Freemark (2012), Goetz (2012), Fraser et al. (2013) and Collinson et al. (2019) provide a detailed description of this policy shift. Since the 1990s, the public housing stock in the United States has been reduced by about 300,000 units, while affordable units in subsidized private mixed-income developments have increased by 1.7 million units via the Low-Income Housing Tax Credit (LIHTC) program.

[2] Guerrieri et al. (2013) suggest that housing demand shocks such as urban revitalization programs can increase local housing prices in low-income areas by attracting high-income households.

referred to as “sink estates” (Slater, 2018; Lees and White, 2020). Hence, public authorities started a wave of regeneration programs in partnership with private developers, which led to the creation of mixed-income housing through the sale of additional units in the new buildings on the private market. In our sample, regenerations entailed a large local housing supply shock: about 31,000 public housing units were regenerated into 60,000 units, of which 34,000 were market-rate units.

We estimate that public housing regenerations significantly raise nearby house prices and rents, but moderately decrease house prices in the broader area. We exploit a difference-in-differences strategy that compares housing units within multiple 100m-wide rings around an estate (treated group) to units within 800-1,000m of the same estate (control group). Using address-level data on residential sales and rental listing, we first find that house prices rise up to 6% within 100m of regenerated estates and drop by 2-3% for housing located within 400-500m over a six-year period. We then show that rents increase by 8% within 100m and up to 2% as far as 400m away from regenerations. We do not observe rent reductions at any distance. These findings are consistent with strong demand effects from improved amenities very close to the buildings and moderate effects from increased supply that dominate in the broader area in the sales market.

Two additional results point to the growing attractiveness of regenerated areas. First, we find suggestive evidence that the number of sales and listings of existing units, as well as the amount of new builds, increase near regenerated estates. Given that housing is more expensive at these distances, this suggests that higher-income households are moving to these areas. Second, using data on listings’ descriptions, we find that nearby landlords are more likely to advertise high-quality features of their rental units (e.g., refurbishment), possibly catering to a higher-income tenant pool.

Using a wide range of data, we document strong demand effects that support nearby price increases via large socioeconomic composition changes in the neighborhood and improvements in amenities. First, we show that regenerations bring in higher-income households by using data on children’s eligibility for subsidized lunch at school as a proxy for socioeconomic status (SES). The number of medium- to high-SES children (non-eligible) increases by about 15% within 200m after the regenerations, while the number of low-SES children remains unaffected, consistent with the quantity of public housing not changing in the new developments. Regarding amenities, we estimate that the probability of a rental listing advertising general amenities, cafés, restaurants, and green spaces significantly goes up within 100m of regenerations. Using administrative records on businesses, we show that this increase is not solely driven by landlords advertising these amenities more extensively: we observe an *actual* increase in the number of cafés and restaurants, although it takes place slightly farther away (within 200-300m). Finally, we also estimate a significant reduction in crime in nearby areas. Taken together, these results indicate that mixed-income housing leads to higher income diversity and higher-quality amenities in the vicinity of regenerated sites.

Finally, we provide suggestive evidence that neighborhoods undergoing large changes in their socioeconomic composition due to increased market-rate supply after a regeneration are associated with larger price increases. Although new market-rate supply should put downward pressure on local prices, it can also lead to the opposite effect by attracting relatively more high-income households, which may in turn generate endogenous amenities (Bayer et al., 2007; Guerrieri et al., 2013; Diamond, 2016). We explore the relative importance of these two mechanisms by studying the heterogeneity of the price results by the intensity of market-rate construction. We find that housing price increases are significantly higher for regenerations leading to larger market-rate supply shocks. In contrast, regenerations with moderate levels of market-rate construction are able to benefit more from downward price pressures from increased supply: they maintain rent affordability and reduce house prices in the broader area. Given that new market-rate supply brings in richer households, these results are consistent with high levels of new market-rate construction making these neighborhoods less affordable by drastically changing their socioeconomic composition.

Our findings suggest that mixed-income housing, although it can make nearby housing less affordable, can mitigate the negative effects of traditional public housing on nearby areas while preserving the existing stock. There are two caveats to our results. First, our research question focuses on the *local* effects of public housing regenerations. Regenerations may, however, also have general equilibrium effects in areas beyond those considered. For example, and even though housing becomes relatively more expensive close to regenerations, housing prices may decrease slightly in London overall due to increased supply. Second, many regenerations take place in areas that are close or well communicated to the center of London –a dense city with strong housing demand–, which are able to attract high-income households into the new mixed-income developments. Our results are relevant to similar cities but are not likely to apply to shrinking cities with low housing demand.

This paper is related to several strands of literature. First, we contribute to the literature on the impact of public housing on neighborhoods. Prior research focuses on the demolition of US' most problematic projects, which resulted in a large, negative supply shock and its partial replacement with mixed-income housing through private subsidies.[3] Demolitions led to large house prices increases (9-20%) nearby (Brown, 2009; Zielenbach and Voith, 2010; Almagro et al., 2022; Blanco, 2022; Blanco and Fournier, 2022), sizeable crime decreases (Aliprantis and Hartley, 2015; Sandler, 2016), and neighborhood socioeconomic composition changes (Tach and Emory, 2017).[4] We examine a new setting in which redevelopment as mixed-income housing was achieved by preserving the amount of public housing and expanding market-rate housing supply. The price increases in this paper, which are smaller than those for US demolitions, are likely mitigated by increased supply.

Second, and more generally, this paper builds on the literature studying the local impacts of housing policies. Prior work has studied the effects of urban revitalization (Rossi-Hansberg et al., 2010) and rent control programs (Autor et al., 2014; Diamond et al., 2019) on neighborhoods and housing prices. More directly related to our paper, Diamond and McQuade (2019) studies the Low-Income Housing Tax Credit program (LIHTC) in the US, which creates mixed-income housing by subsidizing affordable housing in new market-rate construction. That paper shows that LIHTC buildings have heterogeneous price effects that depend on neighborhood composition –low-income areas experience price increases. Additionally, Sinai and Waldfogel (2005), Baum-Snow and Marion (2009), Eriksen and Rosenthal (2010) find large crowd-out effects of LIHTC on new market-rate housing supply. Our paper contributes to this literature by studying mixed-income buildings as an alternative form of supplying public housing that may alleviate its negative effects on nearby areas.

Finally, recent work has examined the local effects of new market-rate buildings on housing prices. While most studies point to a reduction in nearby rents (Asquith et al., 2021; Li, 2021; Pennington, 2021), others find significant increases (Singh and Baldomero-Quintana, 2022). Damiano and Frenier (2020) suggests that low-end units experience rent increases, while high-end units bear rent decreases. We contribute by examining how supplying market-rate units via public housing affects local housing markets in deprived areas. A potential reason for our positive price effects is that we focus on previously depressed areas (i.e., with distressed public housing), where amenity gains

[3] An exception is Koster and van Ommeren (2019), who estimate a mild positive reaction of nearby house prices to a public housing quality improvement in the Netherlands.

[4] A large body of work studies the consequences of US demolitions on displaced residents.(Jacob, 2004; Chyn, 2018; Haltiwanger et al., 2020). Regarding London's regenerations, Neri (2022) shows that children staying in the neighborhood improved their academic performance, potentially by increased exposure to a more income-diverse population.

are probably much larger (Schwartz et al., 2006; Ooi and Le, 2013; González-Pampillón, 2022).

# 2 Background

Although public housing had been an important source of new affordable housing in London until the 1980s, gradual disinvestment led to the decay of most of its traditional developments (known as council estates; henceforth, *estates*) by the 2000s. To address this, local authorities started a wave of public housing regenerations that resulted in new mixed-income housing by rebuilding existing public housing units and constructing additional market-rate units on-site. How these regenerations impact local housing markets is ambiguous: they increase nearby housing demand by making the area more appealing, which raises prices, but they also expand housing supply, driving prices down.

## 2.1 An Overview of Public Housing in London

Public housing is more common in London and the United Kingdom than in other developed countries.[5] In 2011, there were about 786,000 public housing units in London providing affordable housing to about 24% of the 3.2 million households living in the city. Such units are subject to a range of rent levels, yet all of them are below market price.[6] In contrast, the population share living in public housing is much lower for comparable metropolitan areas in the United States, a country that has faced similar challenges regarding large public housing developments. Some examples include New York (2.2%), Chicago (0.5%) or Atlanta (0.4%).[7]

The management of public housing is decentralized to the 33 Local Authorities in London (LAs, i.e., boroughs) and housing associations (HAs). HAs are non-profit organizations, regulated and funded by the government, which cooperate with LAs in providing affordable housing –as of 2011,

[5]According to the OECD, 17% of UK dwellings were social rental dwellings in 2020, compared to the 7% OECD average. The share was only higher for the Netherlands, Austria and Denmark. Social housing is defined as the rental housing stock provided at sub-market prices and allocated according to specific rules rather than market mechanisms.

[6]There are three main rent levels associated to public housing in London. The most common category is *social rent*, with a median rent of around 35% of that in the private market (Trust for London, 2020). The second category is *intermediate rent*, which includes rentals and shared-ownership housing that targets lower middle-and middle-income households. Lastly, *affordable rent* was introduced in 2011 with rents up to 80% of those in the private market. This last category accounted for a very small fraction of units in the regenerated buildings that are the focus of this paper.

[7]Based on the authors' calculations. London's number comes from the percentage of housing units classified as social housing according to the 2011 Census. For the US, public housing population was obtained from the Picture of Subsidized Households of the Department of Housing and Urban Development and total population from the Census.

45% of public housing units were managed by HAs. However, LAs set eligibility requirements for all public housing. Once an individual meets the eligibility criteria, they join a waiting list and can apply for housing as properties become available. Priority is given to households with medical or welfare needs, those living in unsatisfactory conditions (e.g., overcrowding), and the homeless.

In this paper, we focus on a subset of large public housing estates that had entered into a state of decay by the 2000s after gradual disinvestment by public authorities. These estates were mostly built between the 1950s and the 1980s, a period when LAs accounted for almost half of the yearly production of new housing units in England. By the early 1990s, however, this figure had dropped to below 1% –most new public housing production had been undertaken by HAs, accounting for 20% of total new construction.[8] The process of disinvestment in public housing started in 1980, when the government introduced the possibility for public housing tenants to buy their unit at a highly discounted price, i.e., the so-called *Right-to-buy* scheme (RTB). The RTB scheme considerably reduced the housing stock publicly maintained by LAs.[9] Furthermore, the government continued the cutback on public housing with the 1986 Housing and Planning Act, which allowed LAs to transfer the management of all their public housing stock to HAs. By the turn of the millenium, the ongoing decay –and a mounting need to increase housing density in major urban centres– fostered a large wave of public housing estate regenerations.

## 2.2 Public Housing Regenerations: towards Mixed-Income Housing

In response to the poor condition of public housing estates, LAs/HAs started a process of demolition and redevelopment ("regeneration") in the early 2000s. Before this, the word "estate" carried stigma: the press related it to crime, neglect, and poverty –similarly to US projects.[10] Given the lack of investment from public authorities, some researchers even referred to the poor housing conditions and the estates' general air of disrepair as "managed decline" (Watt, 2009, 2013). Regeneration programs are seen as an opportunity to revitalize local communities rather than to move

[8] Ministry of Housing, Communities and Local Government, "Live tables on house building", Table 244.

[9] The *Right-to-buy* scheme helps public housing tenants to buy their home by benefiting from a consistent discount. House and flat tenants can benefit from a 35% and 50% discount, respectively after they have been public sector tenants for three years. After 5 years the discount increases by 1% and 2%, respectively, up to a maximum of 70%.

[10] Some examples include: "The word 'estate' has become synonymous with the term 'ghetto'. It's become a dirty word. Back in the '20s and '30s it didn't carry the same stigma", "The Aylesbury estate became journalistic shorthand for inner-city crime, squalor and deprivation, with the Daily Mail describing a walk around its precincts as 'like visiting hell's waiting room"', "The estate has been neglected for years". *Sources*: BBC (2012), The Guardian (2010).

their residents away (Mayor of London, 2018). LAs should prioritize estates for regeneration based on their estimated level of unfitness, i.e., poor design and physical conditions.

As a result, many public housing estates have been redeveloped as mixed-income communities, i.e., a combination of public and market-rate units in the new buildings (see Appendix Figure B.1 for an example). Due to a lack of funding of LAs/HAs, regenerations are often carried out with the involvement of private developers. Hence, regeneration programs not only tend to preserve the amount of public housing originally present in the estate but also facilitate the sale of a substantial number of market-rate units in the new buildings. Although the details of these partnerships with private developers vary from regeneration to regeneration,[11] LAs/HAs usually retain the ownership of public housing units in the new buildings and their management is often transferred to a private entity. The involvement of the private sector also implies that LAs/HAs may have the incentive to prioritize estates in more "profitable" areas, although we do not find supportive evidence for this hypothesis.[12] Hence, public authorities are often accused of accelerating gentrification and displacing low-income households from the center of London via estate regeneration (Lees and White, 2020).[13] Despite our focus on mixed-income regenerations, a subset of small estates have been regenerated as public housing only.[14]

Regenerations take several years to complete and displaced households are generally relocated nearby, which temporarily increases local housing demand. Estates can include buildings regenerated at different points in time. Because of that, in our sample - as defined in Section 3.1 below - after permission is granted, it takes on average one year to start and four years to complete the

[11]The Myatts Field North estate is an example of this: "the local authority signs a contract with a private developer, which provides the upfront capital financing and subsequent management of the asset. The public sector repays the developer in monthly installments and, in residential developments, often with land and permission for private dwellings alongside the revamped social housing". *Source*: The Guardian (2017).

[12]Appendix Figure B.2 compares regenerated block groups to the rest of London across several proxies for neighborhood profitability. Although regenerated block groups approve more new builds, such result does not hold within LAs (likely because there are more regenerations in inner London). Furthermore, regenerations take place in neighborhoods with declining household income within LA, contrary to the profitability hypothesis. None of the other variables are statistically significant.

[13]See, e.g., "Regeneration –or pushing out the poor? Labour divides in bitter housing battle" and "The real cost of regeneration" from The Guardian (2017)

[14]We focus on mixed-income regenerations for two reasons. First, mixed-income housing is especially policy relevant: policymakers argue that it can solve problems associated with traditional public housing. Second, estates regenerated fully as public housing are significantly smaller than those converted into mixed-income housing (60 and 240 units on average, respectively); hence, they cannot be used as a counterfactual. Relatedly, the fact that mixed-income regenerations are larger indicates that this group reflects better the sample of estates that were in poor conditions and that are the focus of this paper. Appendix A.2 reproduces the main analysis for "public housing only" regenerations.

regeneration. During the regeneration, tenants are moved to alternative public or private accommodation, either in the preferred area or one that minimizes disruption to the household's work and schooling circumstances. Due to this provision, public housing tenants tend to be initially rehoused in the surrounding neighborhood.[15] Life-time tenants have the right to be offered a flat in the new premises and homeowners who bought their home through the RTB scheme are offered a price for their unit.

## 2.3 Potential Demand and Supply Effects of Regenerations

Public housing regenerations can affect the local housing market through both demand and supply effects, which push prices in opposite directions. To study these effects, we assume that housing units around each estate are separate neighborhoods within the city, following the previous literature (Diamond and McQuade, 2019; Asquith et al., 2021; Pennington, 2021).

On the demand side, nearby housing prices may rise if regenerations increase amenities and attract higher-income neighbors. First, redevelopment replaces run-down housing with new and higher-quality buildings, along with the general beautification of the area (newly paved streets, green spaces, etc.). The old buildings' poor conditions likely depressed the values of nearby properties due to an eyesore effect. Second, households living in newly constructed market-rate units are presumably richer. In turn, prior research suggests that households are willing to pay to live near higher-income and more educated neighbors (Bayer et al., 2007; Guerrieri et al., 2013; Diamond, 2016). Finally, the deconcentration of poor households in large estates may also bring amenities to the broader neighborhood such as crime reductions and increases in local economic activity, e.g., new businesses. Taken together, demand effects should be strong very close to the estates and still be present in the broader area, but decaying with distance to the estates.

Tenant relocation is an additional demand margin that plausibly increases local housing prices in the short/medium-run. Most displaced public housing tenants are at least temporarily rehoused within 1km of the estates, a fraction of which relocates to private housing. Hence, the reduction in public housing supply shifts the local private housing demand outwards, which pushes up prices. Rents should especially reflect this increase due to the temporary nature of the shock. This feature of regenerations, i.e., the provision (in this case, temporary reduction) of public housing as a way to

[15] Neri (2022) finds that about 60% of tenants with children in primary school moved within 1km of regenerations.

affect local housing prices, links to the public finance literature on the pecuniary effects of in-kind transfers (Coate et al., 1994; Blanco, 2022).

On the supply side, estate regenerations shift the private housing supply curve outwards, which puts downward pressure on prices. In a simple supply and demand model, this shift implies that the marginal household's willingness to pay for living in the neighborhood is weakly lower after the regeneration. How the magnitude of the supply effect varies with distance is uncertain. Intuitively, supply effects should be stronger for closer substitutes of newly constructed units. If housing demand is strongly driven by distance to the estate, i.e., households really care about location within the neighborhood, we expect supply effects to be highly concentrated right around the estate. If housing demand reflects preference for the neighborhood more generally, as opposed to others, supply effects should persist also for units farther away from the estate.

The net price effect is therefore *ex ante* ambiguous, and an empirical question. It also likely varies with distance to the regeneration site, since the relative impact of demand-side and supply-side factors may vary with distance. If demand effects are strong relative to supply effects, regenerations may result in nearby price increases. For instance, Singh and Baldomero-Quintana (2022) finds rent increases within 150m of new market-rate housing in NYC. On the contrary, if supply effects are stronger, we can expect lower sale and rental prices in the neighborhood. Asquith et al. (2021), Li (2021), and Pennington (2021) estimate rent decreases up to a distance from market-rate construction going from 0.15 to 1.5km for several US metropolitan areas. A third option is that the two effects dominate at different distances. For instance, highly localized demand-side factors can lead to price increases near the estates but price reductions in the broader area as the relative importance of supply effects dominates.

# 3 Empirical Strategy

We estimate the effects of public housing regenerations on nearby housing units using a difference-in-differences design that compares units near regenerated estates to those located farther away. To do this, we gather a rich set of data on regenerations, house sales, rental listings, and local amenities.

## 3.1 Data

We identify public housing regenerations from a dataset containing the universe of planning applications in London. To explore the effects on the local housing market, we collect data on real estate transactions, rental listings, and new constructions. Importantly, we build a novel dataset containing information on the quality of rental units and nearby local amenities by scraping rental listings' descriptions. Lastly, we study neighborhood change using a combination of administrative records on children, crime and business activity.

**Estate regenerations.** We identify all estate regenerations in London between 2004 and 2018 using administrative records from the London Development Database (LDD). The LDD contains all housing planning applications filed to the planning authorities –represented by the 33 LAs– either approved or completed since 2004. Each application contains information on the permission, start and completion dates, exact location, the number of existing/proposed units by type (i.e., public or market-rate), and the provider of existing/proposed units (LA, HA or private entity). We identify buildings belonging to an estate regeneration as applications where the existing building contains public housing units whose provider was either an LA or a HA. We restrict the sample to buildings with ten or more existing units. There are 343 such buildings.

Given that buildings belonging to the same estate may be filed under different applications, we group them as follows. Buildings are grouped into the same estate regeneration if they share the same estate name in the application, are located within 400m of each other and their permission was approved within six years of each other. This process leaves a sample of 244 regenerations.

Finally, we define mixed-income regenerations as estates where the new buildings include a percentage of public housing units of 80% or less. Panel (a) of Figure B.3 shows that our analysis is not sensitive to this threshold because an overwhelming majority of regenerations above the 80% limit are capturing estates regenerated as public housing only. In addition, panel (b) illustrates that the number of regenerations is consistently spread throughout the sample period. The final sample consists of 130 regenerations.

**House sales and rental listings.** We measure house prices using administrative records from the UK Land Registry on all residential sales between 1998 to 2019. Every transaction records the date, price paid, unit type (detached, semi-detached, terraced, flats/maisonettes), age (newly built or established residential property), tenure type (leasehold or freehold) and address.[16]

We complement house price data with the universe of rental listings posted between 2006 and 2019 on the website Rightmove, leader in the sector of online rental listings.[17] Every listing reports the date, rent, status (available or let agreed), house type, number of bedrooms, address and website link. The dataset is fairly representative of rent levels in London: the correlation at the LA level between Rightmove rents and official estimates is 0.99.[18] While Rightmove rents are on average 10% higher, part of this is explained because Rightmove mostly captures asking rents, as opposed to agreed rents (only 24% of the sample). In our sample, agreed rents are 5-10% lower than asking rents, which explains most of the gap. Appendix A.1.1 provides more details.

To characterize rental listings, we construct a novel dataset by scraping the ad description in the listings' websites. In the description, agents usually advertise not only details about the unit but also about the neighborhood (e.g., Appendix Figure A.3). We use descriptions to generate dummy variables indicating the presence of certain keywords that refer to characteristics of the unit (refurbished, luxury, washing machine), the building (garden, gym, concierge), and the neighborhood (amenities, cafés, restaurants, parks).[19] This dataset allows us to proxy for rental housing quality changes in response to regenerations, as well as changes in advertised amenities.

**Neighborhood composition, amenities and business data.** We measure changes in local demographics using administrative records from the National Pupil Database (NPD) on students aged 5-18 in England from 2002 to 2018 (approximately 600k per year). We use subsidized lunch eligibility to track the socioeconomic status of households at the block group level –children are linked to regenerations using their block group of residence. We employ crime data at the block group level from 2008 to 2018, which is publicly available from the London Metropolitan Police website and records the number of crime offenses broken down by category (e.g., burglary, theft, violence against the person). Regarding amenities, we use the listings' descriptions dataset described above

[16]We geolocate houses using the latitude and longitude coordinates of the postcode. Postcodes in London are small and usually identify narrow clusters of buildings.

[17]As of 2021, Rightmove receives 127.5 million visits per month, while this figure stands at 50 million for Zoopla, the second leader company in the online rental sector. *Source*: Homeowners Alliance

[18]Our dataset is more representative than listing datasets used in prior literature. E.g., Asquith et al. (2021) find that Zillow rents are a 20% higher than estimates from the American Community Survey for low-income areas.

[19]See Appendix A.1.2 for a more detailed description of the construction of this dataset.

to study effects on new businesses and green spaces. We use the Business Structure Database (BSD) to measure changes in local economic activity. The BSD is derived from the Inter-Departmental Business Register (IDBR) and captures 99% of the economic activity in England.

**Geography and others.** The UK geography is defined by blocks (Output Areas, OAs), block groups (Lower Layer Super Output Areas, LSOAs) and census tracts (Medium Layer Super Output Areas, MSOAs). These are geographical units created by the Office for National Statistics (ONS) for Census reporting purposes and contain an average of 130, 672 and 3,245 households in London, respectively. To construct statistics of the local areas that are targeted for a regeneration we use census data at the block level from the 2001 and 2011 UK censuses. Block-level statistics include detailed information on the population's socioeconomic and housing characteristics.

## 3.2 Summary Statistics

Estate regenerations almost double the total number of units in the new buildings while maintaining the amount of public housing. Columns 2-3 of Table I report the average number of units before and after regeneration by type for the full sample of regenerations and a balanced sample of 70 regenerations approved between 2004 and 2012 that we use in our main specification –both samples are similar on observables. Panel A illustrates that, on average, redeveloped buildings preserve the amount of public housing (197 units before, 196 after) and build around twice as much market-rate housing (218 units). Panel B shows that the change in market-rate units induced by regenerations is a big shock to the nearby area: it is equivalent to 42% of total housing units within 200m of the estates in 2001, and up to 3% of units within 800m. Finally, note that the average existing building contains about 17% of non-public housing units: some public housing tenants had bought their unit at a very discounted price through the RTB scheme.

Estate regenerations are also located in areas with lower socioeconomic status than the average London neighborhood (panel C). While column 1 of Table I shows neighborhood characteristics for the average census block in London, columns 2 and 3 do it for the full and the balanced sample of regenerations. For this table, we define a neighborhood as blocks within 800m of the reference block –consistent with the empirical strategy outlined below. Estate regenerations were in poorer and less educated neighborhoods than the average London neighborhood, as well as in areas with more public housing and similar housing prices. The last fact can be explained by their location: Figure I shows that, although regenerations were spread throughout the city, more mixed-income regenerations take place in Inner London, where housing prices are higher.

## 3.3 Empirical Specification: Using Variation in Proximity

The main empirical challenge is the selection of a plausible comparison group that describes the counterfactual trajectory of housing prices and other neighborhood outcomes in the absence of exposure to regenerations. An ideal experiment would compare housing units near estates randomly assigned to regeneration to those near similar estates not assigned to regeneration. Absent such experiment, we need to address the concern that regenerated areas are endogenous, e.g., private developers may decide to partner up to regenerate estates only in the most profitable areas.

To overcome this issue, we use a stacked difference-in-differences design that uses *variation in proximity* to the estates to define the comparison group. This approach assumes that proximity determines treatment intensity, as argued in Section 2.3. We compare housing units in an inner ring of a certain radius around a regenerated estate to units in an outer ring surrounding that inner ring, which serve as a comparison group. The identifying assumption is that, in the absence of the regeneration, the outcome of interest would have changed in parallel in both rings. Intuitively, the only difference between units in the inner and outer rings after controlling for observables is distance to the estate, since they belong to the same neighborhood. And, because proximity determines treatment intensity, sufficiently far away units (i.e., in the outer ring) should not be treated.

We implement this strategy as follows. For each regenerated estate, we keep sales and listings of housing units within 1km.[20] We exclude units in regenerated blocks from the regressions, since our main goal is to study the effects on nearby housing. Next, we construct an event year variable with respect to the year when the permission to regenerate the associated estate was approved and restrict the sample to observations within 6 event years. Finally, we append all datasets.[21]

We start by interacting event year dummies from/to the regeneration event with multiple 100m-

[20]For house sales and rental listings, we only include arms-length transactions and avoid outliers. We do so by dropping the top and bottom 0.5% sale/rental price transactions each year. This gets rid of a number of outliers and drops observations with zero or extremely low sale/rental price.

[21]Note that some units may appear several times for different estates due to the overlapping of rings of different estates –Section 4.4 presents robustness checks where results hold even when dropping duplicated observations.

wide rings up to 800m indicating the distance of each housing unit to the associated estate (treated rings). Housing units located between 800m and 1,000m are the omitted group (control ring). We estimate the following event study equation at the housing unit $h$, estate $e$ and year $t$ level:

$$\mathrm{Y}_{het} = \quad \alpha_{et} + \kappa_{e,r(h,e),g(h)} + \sum_{\tau=-6}^{6} \sum_{r \in R} \beta_{\tau,r} \, \mathbb{1}(t - E_e = \tau, r(h,e) = r) + \gamma' \mathbf{X_{het}} + \epsilon_{het} \tag{1}$$

$\beta_{\tau,r}$ is the effect of interest, i.e., the evolution of housing prices over time in each treated ring with respect to the most outer ring, set to 800-1,000m. The indicator variable in the summatory interacts event years $\tau$ with dummy variables indicating the ring $r(h,e)$ in which housing unit $h$ is located with respect to estate $e$. $E_e$ denotes the year when the permission was approved for estate $e$, while the set of included rings $r$ is defined as $R = \{$0-100m, 100-200m, ..., 700-800m$\}$.

The inclusion of estate-specific controls ensures that $\beta_{\tau,r}$ captures differences in the evolution of the outcome across rings *within* each estate regeneration. We include two types of estate-specific controls. First, estate-calendar year FE ($\alpha_{et}$) flexibly account for time patterns across all rings around each estate $e$, while estate-ring-census tract $g$ FE ($\kappa_{e,r(e,h),g(h)}$) control for baseline differences of units across each ring, allowing for differences across units located in the same census tract but on opposite sides of a ring boundary. Second, we interact estate indicators with characteristics of the housing unit, 2001 census block, and school market, as well as a quadratic term for distance to the nearest tube station ($\mathbf{X_{het}}$).[22] The fact that both types of controls can vary by estate makes $\beta_{\tau,r}$ a weighted average of estate-specific treatment effects, i.e., the result of running Eq. (1) separately for each estate, but using regression weights to aggregate the coefficients.[23] Specifically, we weight each estate-year equally and, within each estate-year, we weight every block equally.[24] We

[22]As unit characteristics, we include unit type, tenure type, a new build indicator, month-of-sale dummies, and a quadratic term for the average unit area in the postcode. For the latter, we use the 2008-2019 average as reported on Energy Performance Certificates (EPC) –a document detailing the energy performance of properties built, sold or let after 2008. In the case of rents, we use the actual unit area as reported in the listing (assigning the average unit area in the postcode when missing), and also include the number of bedrooms and listing status. As block characteristics, we use density, number of households, public housing share, and owner-occupied housing share. The number of highly and poorly rated schools within the unit's school catchment area are proxies for school market quality.

[23]Such stacked difference-in-differences design is robust to heterogeneous treatment effects, under which traditional differences-in-differences estimators have been shown to perform poorly (Callaway and Sant'Anna, 2020; Sun and Abraham, 2020; Borusyak et al., 2021; Baker et al., 2022).

[24]The first choice accounts for the fact that there are more sales and listings around estates in denser areas and, without weights, these estates would have higher weights than estates in less dense areas. The second choice addresses the fact that the number of sales and listings varies across years. Thus, we also need to weight each block equally to guarantee that $\beta_{\tau,r}$ reports the same weighted average for each ring across event years. In the absence of such weighting, estates

cluster standard errors at the estate level.

We also report a pooled version of Eq. (1) that collapses post-treatment event year dummies into two periods: 0 to 3 years ($\text{Post}^{0\text{-}3}_{et}$) and 4 to 6 years ($\text{Post}^{4\text{-}6}_{et}$). This distinction reflects the fact that, on average, regenerations take 4 years to complete. Hence, we run the following regression:

$$\text{Y}_{het} = \alpha_{et} + \kappa_{e,r(h,e),g(h)} + \sum_{r \in R} (\theta_{0,r}\text{Post}^{0\text{-}3}_{et} + \theta_{1,r}\text{Post}^{4\text{-}6}_{et}) \times \mathbb{1}(r(h,e) = r) + \gamma'\mathbf{X_{het}} + \epsilon_{het} \quad (2)$$

When we use outcomes at the block level, such as the number of sales, listings, and new builds per block, we estimate the equations above without controls and using 200m-wide rings.[25]

In our main specification, we restrict the sample to regenerations with a permission approved between 2004 and 2012 in order to obtain a balanced sample within 6 years of permission. In the case of rents, we use the period 2007-2012 because rental listings data is only available starting in 2006. Because the sample is unbalanced in relative years -2 and below, we only include rental listings between event years -3 and 6 when estimating the equations above.

We define the year when the planning permission is approved as the treatment period for two reasons. First, house prices are forward-looking: the path of price effects should start at the moment when information about regeneration first arrives. Second, we expect rents to react to the relocation of displaced households in the nearby area and gradual improvements in local amenities (e.g., reduced crime), both of which increase housing demand before the completion of the project. Thus, using completion as the triggering event would likely underestimate the impact.[26]

A caveat of our empirical strategy is that we ignore general equilibrium effects: regenerations may have an impact on housing prices throughout the city. Regenerations increase the attractiveness of nearby areas relative to the rest of London, which may decrease relative demand for other neighborhoods in the city. In addition, they also increase housing supply in the city: in our sample,

with more sales or listings in event year $\tau$ for ring $r$ relative to the comparison ring would contribute to $\beta_{\tau,r}$ with a higher weight. Note that this weighting does not matter when the outcome are house sales or rental listings counts per block because we run the regression at the block level, the number of which is constant across years.

[25] We compute the counts of those variables per block for each year. Then, we assign blocks to regenerated estates' rings using population-based block centroids to measure distance to the estates. Instead of estate-ring-tract FE ($\kappa_{e,r(h,e),g(h)}$), we use estate-block FE ($\kappa_{e,i}$) –a block $i$'s centroid is always in the same ring. We use 200m-wide rings because we are less likely to assign blocks to the wrong ring as rings become wider.

[26] When doing so, we find no effects on rents at any distance from the estate (Appendix Figure B.4). Note that the use of permission year as the triggering event is in contrast to prior research, which uses completion as the relevant event to study the rent effects of market-rate construction (Asquith et al., 2021; Pennington, 2021).

regenerations produce about 29,000 new units (0.9% of the number of households living in London in 2011). We argue that city-wide effects should be small and areas in close distance to regenerations concentrate the largest effects. This argument relates to the no price effects assumption in the outermost ring: if such city-wide exist and are significant, our estimates are downward biased but relative comparisons across rings are unaffected.

# 4 The Impact of Regenerations on the Local Housing Market

The regeneration of public housing estates into mixed-income housing significantly raises house prices and rents near regenerations, although house prices slightly decrease in the broader area. We also show that the quantity of sales and listings increases very close to regenerations and that rental unit quality goes up. We provide supportive evidence that our price results are likely not driven by changes in the quality of transacted housing stock.

## 4.1 Effects on Prices: House Prices and Rents

Public housing regenerations significantly increase house prices in their immediate surroundings but decrease them slightly farther away. Figure II plots the event study results for rings within 500m of regenerations using the logarithm of sale prices and rents as dependent variables. Panel (a) shows that housing units within 100m of the estates experience an increase of up to 8% in house prices relative to the omitted group (units in the outermost ring at 800m to 1km), a figure that goes down to a zero effect within 100-400m and becomes slightly negative within 400-500m. Although this last effect is not statistically significant in the event study specification, we show below that it becomes significant when pooling post-treatment years together. Appendix Figure B.5 illustrates that price effects return to zero beyond 500m, which is consistent with effects fading out for sufficiently farther away units.

Rents also significantly increase in nearby areas (panel (b)). In contrast to house prices, the positive effect persists in the broader area. We find that housing units within 100m of an estate experienced rent increases of up to 8% when compared to the most outer ring, while rents for units within 100m-400m increased by approximately 2-3%. Rent effects are statistically indistinguishable from zero beyond that distance (see also Appendix Figure B.5).

Figure III summarizes the results by pooling post-treatment years into two periods: before and after regenerations are completed on average. It estimates Eq. (2) by interacting two "Post" dummies (0-3 and 4-6 years after permission) with either indicators for 100m rings or a third-order degree polynomial of the distance from housing units to the associated estate. The main results become starker. Panels (a) and (b) illustrate that, while there is no effect on house prices within 3 years of permission at any distance, house prices rise up to 6% in the long-run only within 100m of the estate. Furthermore, the mild negative effects within 400-500m (2-3%) are statistically significant at the 95% confidence level using both the 100m and polynomial specifications. Rents also go up by about 8% in the long run (bottom panels). In this case, rent increases are still significant up to 400m away from regeneration sites, yet decreasing with distance.

The time pattern of price effects have two main insights. First, house prices do not fully incorporate all information about regenerations at the moment of announcement. Although house prices are forward-looking, i.e., represent the net present value of future rents, house prices do not jump upon permission approval but steadily increase after that. Some potential explanations are that new information may arrive after permission or that there is uncertainty around regeneration plans. However, the effects seem to be fully realized when the projects are completed (on average, event year 4). Second, rents start going up for units within 300m right after the permission is approved (Figure III). This is suggestive evidence that displaced tenants relocating in the surrounding area temporarily increase nearby housing demand and, hence, exert an upward pressure on rents.

Overall, results are consistent with strong demand effects very close to regenerated estates and moderate supply effects that dominate farther away in the sales market. Price increases are considerably high within 100m of the regeneration site, likely because housing units within this distance benefit more from highly localized amenities: a higher-quality building replacing an eyesore, street repavement, new businesses, etc. Strikingly, supply effects dominate demand effects in the sales market in farther away distances but not in the rental market, which still shows positive effects.[27]

[27] Despite the mixed results at different distances, the aggregate effect of estate regenerations on house prices is slightly negative. The reason is that the number of units exposed to large house price increases within 100m is presumably much lower than that of units experiencing mild decreases within 300-600m. Appendix Table C.1 weights the long-run price effects of the 100m-ring DID specification ($\theta_{1,r}$ in Eq. (2)) by the number of private units in 2001 in each ring. On aggregate, price decreases in the broader area more than offset nearby price increases: mean prices went down by 0.8%. Such percentage change is equivalent to a loss of £425-460 millions in 2001 housing stock value –around £1,700-1,825 per unit. Thus, supply effects in the broader neighborhood compensate regeneration-induced house price increases in the immediate surroundings of the estate.

There are several potential explanations for the contrasting results in the sales and rental markets in the broader area. First, the two markets are pricing different streams of payments. While house prices refer to the discounted value of all future rents, rents represent the one-year spot market. If households expect rents to go up in the short/medium term and then go down, this could explain the difference.[28] Second, there may be market segmentation. Market-rate units in regenerated estates can lead to stronger supply effects for nearby owner-occupied units than for nearby rental units if the former are closer substitutes, e.g., if they are higher-quality. Appendix Figure B.6 provides suggestive evidence that rental units were lower-quality at baseline using data on Energy Performance Certificates: they had lower energy ratings, less habitable rooms and lower energy efficiency ratings for some physical elements (e.g., walls).[29] Third, regenerations may push out more the demand for rental units near regenerated areas, e.g., if they attract more renters such as college graduates and young professionals. If the costs of converting owner-occupied housing to rental housing are high, the supply of rental units cannot adjust as much. This issue can be exacerbated by the low share of privately rented units near regenerations (Table I). Finally, an alternative explanation is that landlords upgrade rental units to cater to higher-income households coming to the area after the regeneration –Section 4.3 examines this question in more detail.

Although we mainly focus on housing prices, regenerations can also generate endogenous responses in the quantity and quality of transacted housing. Examining such responses is important for two reasons. First, quantity and quality effects also carry information on the impact of regenerations on the surrounding neighborhood. For instance, increases in sales suggest substitution of households living in the neighborhood, while quality changes hint at the characteristics of incoming households. The second reason is that such responses raise the concern that our price estimates are not only capturing the value of living close to a regeneration but also endogenous quality changes. The next two sections further explore these issues.

[28]This would be the case if households expect public housing to generate negative effects in the long-run. For instance, public housing was considered a "reward for good citizenship and focused admission on two-parent households with stable employment" in the United States between the 1930s and the 1950s (Vale and Freemark, 2012). Only after poor maintenance and changes in the sociodemographic composition of its tenants did it fall out of favor.

[29]Energy Performance Certificates (EPC) detail the energy performance of a property by gathering data on several unit characteristics, including tenure. EPCs were mandatory for housing units constructed, sold, or rented after 2008. Appendix Figure B.6 regresses a dummy variable indicating whether a property is rented on several unit characteristics for the sample of old owner-occupied and rented units within 800m of a regeneration that were assessed in event years -3 to -1 –regenerations approved before 2009 are not included.

## 4.2 Effects on Quantities: Sales, Rental Listings and New Construction

We start by documenting that estate regenerations significantly increase the supply of new home-ownership and rental units. To show this, we estimate Eq. (1) using the ratio of the number of residential sales and rental listings over the total number of market-rate units in a block as the outcome variable. Table II estimates the pooled DID in Eq. (2) using 200m-wide rings by whether the unit is a new build (see Appendix Figure B.7 for event study results). First, we examine the magnitude of the shock induced by regenerations by focusing on the number of new units in regenerated buildings. Unsurprisingly, the number of sales and rental listings of new units within 200m increases by more than three-fold right after the permission is approved, picking up new construction in regenerated buildings (columns 1 and 3). Reassuringly, there are no significant effects in other rings.

Regenerations also significantly increase turnover in the market for old units (columns 2 and 4). Although not statistically significant in the long run, the number of sales of old units in the first ring increases steadily up to a large 65% of the pre-treatment value. We interpret this increase as a sign that the area might be becoming more attractive for higher-income households, potentially leading to displacement: sales of (now more expensive) old units suggest a replacement of incumbent households by presumably richer families. The findings in the rental market also support this hypothesis: the number of old rental listings in the first ring immediately jumps after the permission year and increases by more than two-fold in the long run.[30]

Lastly, regenerations may lead to more construction nearby. Columns 5-6 use the ratio of newly approved units by tenure (public or market-rate) over the total number of market-rate units in a block as an outcome. Although not statistically significant, regenerations attract more market-rate units in the long run within 200m (six-fold increase) and within 200-400m (more than doubled), which supports the idea that regenerations make the area more appealing for high-income households, the likely occupants of the new units. There are similar but smaller effects on public housing construction. Given the zero result on the probability of new construction, the effects do not seem to be driven by the extensive margin of new construction (columns 7-8).

[30]Since we distinguish new and old rental units by whether the listing advertises the unit as new, this is an upper bound –the plot for old units might be including some new units that are not announced as such later in the sample.

## 4.3 Effects on Quality

The quality of existing housing stock can also change in response to estate regenerations. For instance, landlords may anticipate that regenerated areas will attract high-income households and improve the quality of their units to charge higher rents by catering to this group. We investigate this question in the sample of rental listings, where we can leverage more information on housing quality from listings' descriptions.

We find that nearby landlords are more likely to advertise rental units upgrades and other characteristics that appeal to high-income households after regenerations. Panels (a) to (c) of Figure IV estimate Eq. (2) for dummy variables indicating the presence of several unit characteristics in a listing's description (for building features, see Figure B.8). We exclude listings that are advertised as new builds: we focus on changes in advertisement patterns for units already available for rent before regeneration. First, rental units in the broader area are up to 5 percentage points (about 40% of the baseline value) more likely to be refurbished after regeneration –this category includes keywords such as "refurbished", "renovated" or "rehabilitated". Such investments can improve quality in a way that appeals to the high-end of the rental market, thereby attracting more high-income individuals into the neighborhood. Interestingly, this effect is concentrated as far as 400m away from regenerated sites, which is consistent with the significant rent increases in the range between 200 and 400m. Listings are more likely to advertise several other features. While some results are not statistically significant, they are all suggestive of quality improvements. Within 100m, they are 7.5 p.p. (70% of the baseline value) more likely to advertise luxury units –although we cannot reject that part of it is capturing units in the new building.[31] More broadly, nearby listings are more likely to mention in-unit washing machines, communal gardens, gyms and concierges.

Reassuringly, the pattern of estimated price effects does not change when we control for these endogenous changes in housing quality. The specification for housing prices in Section 4.1 already controls for a wide range of unit and block characteristics, which can partially account for changes in the composition of the transacted housing stock. Column 13 of Appendix Table C.2 estimates the long-run rent effects using the pooled DID specification also controlling for unit and building characteristics advertised in rental listings. These quality-adjusted estimates yield almost identical

[31] The sample in Fig IV only includes units that are not explicitly advertised as new builds in the listing's description. Our text analysis method would include new units in regenerated buildings that are not advertised as newly constructed.

findings to our main specification in column 7, suggesting that endogenous responses to housing quality are not likely driving our price estimates.

## 4.4 Robustness of the Results

As an alternative to our main empirical strategy, we also estimate the main results using a difference-in-differences strategy that builds the comparison group using *variation in the timing* of regenerations (see details in Appendix A.3). This strategy compares the outcomes of housing units near regenerations taking place earlier in the period to those experiencing nearby regenerations later in the future –intuitively, units very close to estates that are going to be regenerated in the future should be similar and, thus, can be used as a comparison group. In this case, the identifying assumption changes: the timing of estate regenerations should be as good as random, for which we provide suggestive evidence (Figure A.5). This timing-based approach yields very similar results.

Appendix Table C.2 shows that the estimated long-run price effects (columns 1 and 7) also hold when using alternative samples. First, we run the main regressions only using the sample of old units. Since new builds can substantially change the housing stock quality, old units are better suited to estimate the price effects that are mainly due to neighborhood changes. Columns 2 and 8 show that the pooled DID results hold almost equally for house prices and rents, respectively. Second, our findings are not sensitive to the set of permission years included in the sample. Column 3 shows that the estimates for house prices hold when using the same sample of rental listings (permissions approved in 2007-2012). Column 9 reveals that rent effects also hold for a panel of regenerations balanced between event years -3 and 6, i.e., with permission years in 2009-2012.

Lastly, dropping sales and listings located within 1km of multiple regenerations does not affect the results. A concern with our main specification is that it does not account for the fact that some units appear in several rings of different estate regenerations and, thus, are contaminated by another treatment –i.e., it treats each regeneration as a separate event. To address this issue, columns 4-6 and 10-12 in Appendix Table C.2 re-estimate Eq. (2) for house prices and rents, respectively, using three different samples: including only the transaction occurring closest to the regenerated building, i.e., most intensely treated; including only the transaction associated to the earliest regeneration; or dropping all duplicated transactions. Coefficients are remarkably similar to our main results for all samples. We also find similar price effects using an alternative empirical specification that estimates the effect of an additional regeneration at a given distance of a census block conditional on all other regenerations taking place in that block's neighborhood (see Appendix A.4).

# 5 Mechanisms: The Role of Demand Effects

The spatial pattern of price increases suggests that demand effects are concentrated very close to regenerated sites. We present supportive evidence for this hypothesis: we show that regenerations led to an inflow of high-income households, an increase in positive local amenities (e.g., cafés, restaurants) and a reduction in negative local amenities (e.g., crime). Overall, the results suggest that mixed-income housing can mitigate the negative effects of traditional public housing on nearby areas while preserving the same number of public housing units in the new buildings.

**Neighborhood's socioeconomic composition.** Regenerations substantially change the neighborhood composition by bringing in higher-income households. To show this, we estimate a version of Eq. (1) at the block group level using the number of children aged 5-18 per block group that are eligible/not eligible for school subsidized lunches as an outcome. Panel (a) of Figure V shows that there is no long-run change in the number of children with subsidized lunch, which is consistent with the fact that the number of public housing units was preserved in the new buildings. Instead, panel (b) shows that, six years after the regeneration's announcement, the number of children without subsidized lunch living near regenerated sites increases by up to about 20 children (about 15% of the baseline average of 134 unsubsidized children). These results likely underestimate the compositional change because we cannot measure differences in socioeconomic status for residents without school children or at different points in the distribution than the school lunch cutoff.[32]

**Neighborhood amenities.** We find that rental listings within 100m are more likely to advertise their units as being close to local amenities, cafés, restaurants and parks. The first row of Figure IV

[32]Using subsidized lunch eligibility of children as a proxy for socioeconomic status assumes that incoming households, on average, have the same number of children aged 5-18 than previous residents. However, new units are usually smaller, suggesting smaller household sizes for new neighbors. In line with this, regenerations might also attract more young professionals, who tend to have less children than households living in the old estates.

estimates Eq. (2) for dummies indicating the presence of these amenities in a listing's description. In the case of cafés, restaurants and parks, these effects are also sizeable slightly farther away from regenerated sites. Note that we exclude listings that are advertised as new builds: we focus on changes in advertisement patterns for units already available for rent before regeneration.

Listings are more likely to include these words right after the announcement of a regeneration, which is consistent with two alternative explanations. On the one hand, businesses might anticipate the revitalization of these neighborhoods and open an establishment before regenerations are completed. This explanation implies that regenerations actually attract new businesses that potentially cater high-income households such as cafés.[33] On the other hand, landlords may anticipate that the regeneration process will bring high-income households that otherwise would have not rented in the area. Thus, landlords may decide to tailor the listings' description to these newcomers by reporting these amenities more frequently. This last explanation does not necessarily mean that new businesses and green spaces actually open as a result of regenerations.

We explore this hypothesis leveraging data from the BSD. We show that regenerations are associated with a larger presence of cafés and restaurants nearby. Figure VI shows that –after 4 years– the *actual* number of cafés and restaurants per block increases by 0.12 (about 48% of the pre-treatment sample average) in the third ring (300m).[34] This pattern is, however, markedly different from the one shown in Figure IV. Taken together, the two figures show that although regenerations foster economic development in the broader neighborhood, landlords located closer to a regeneration showcase these amenities more extensively than those located farther away. This is consistent with the former actively targeting high-income households.

**Crime.** Regenerations significantly decrease the number of crimes in the immediate surroundings. We estimate Eq. (1) for the logarithm of the total number of crimes in a block group using only regenerations approved between 2008 and 2018 due to data availability. Figure VII shows the results for the full sample of regenerations being approved in that period and for the subset of estates with a size of the existing building above the median. Regenerations decrease crime by around

[33] Previous literature uses cafés and restaurants as proxies for neighborhood change (Glaeser et al., 2018; Couture and Handbury, 2020; Singh and Baldomero-Quintana, 2022; Li, 2021). In particular, cafés and restaurants increase the attractiveness of a neighborhood to young professionals and college graduates, and drive up house prices and rents.

[34] Estimates for other rings are generally close to zero except for the 4 - 6 years estimate in the last treated ring, which is about 0.18. The latter, however, is driven by a few outlier blocks in the number of cafés and restaurants.

5% within 200m, 12% for large regenerations. Crime reductions do not seem to be caused only by displacement of public housing tenants during the demolitions, since they persist even after regenerations are completed, i.e., four years after permission approval. The fact that the coefficients go back to zero in the last event year is likely due to the unbalanced nature of the panel.

The numbers above are close to crime decreases after public housing demolitions in the US (8.8% decrease within 400m, Aliprantis and Hartley, 2015; Sandler, 2016). Using literature estimates that relate crime to house price changes (Gibbons, 2004), we calculate that only one-third of the house price increases within 200m of a regeneration can be explained by observed crime reductions (Appendix A.5).

# 6 Heterogeneity: The Role of Market-Rate Supply

Despite their positive effects shown in Section 5, urban renewal programs such as public housing regenerations often raise concerns about increased housing unaffordability for nearby low-income households. Neighborhood revitalization generally involves the beautification of the area and other valuable amenity improvements (Rossi-Hansberg et al., 2010; Ahlfeldt et al., 2017). The resulting higher housing demand in these areas leads to higher housing prices, which may decrease the welfare of incumbent low-income residents because they are either priced out of the neighborhood or endure higher rents for amenities that they do not value as much (Couture et al., 2019).

Additional market-rate construction, which is a unique feature of London's public housing regenerations, can either mitigate or aggravate these concerns. On the one hand, it should put downward pressure on nearby prices and help preserve housing affordability in regenerated areas. By shifting outwards the housing supply curve, regenerations should undo some of the price increases necessarily stemming from neighborhood revitalization. The negative sale price effects in the broader area shown in Section 4.1 support this hypothesis.

On the other hand, new market-rate units can also be a large shock to a neighborhood's socioeconomic composition by attracting relatively more high-income households (as shown in Section 5). Given two regenerations in identical neighborhoods, the regeneration building more market-rate units should increase the neighborhood's socioeconomic status by more. Prior research indicates that households are willing to pay to live near high-income and more educated neighbors and, in turn, they may bring more endogenous amenities (Bayer et al., 2007; Guerrieri et al., 2013; Diamond, 2016; Almagro and Domínguez-Iino, 2022). Hence, such shock may trigger or intensify an upward trend on housing prices near regenerated sites (González-Pampillón, 2022). In fact, such worries have led some local residents to oppose new market-rate construction (Monkkonen, 2016; Been et al., 2019).

Whether the first or the second effect dominates as new market-rate supply increases is an empirical question. We explore the relative importance of these opposing forces by studying the heterogeneity of the price effects by the intensity of market-rate construction. We define the variable "market shock" as the change in market-rate units in the regenerated estate over the number of housing units within 800m, the last treated ring (the normalization accounts for different densities across the city):

$$\text{Market shock}_e = \frac{\Delta\text{Market units}_e}{(\text{Housing units} \leq 800\text{m})_e} \tag{3}$$

We estimate a version of Eq. (2) that interacts relative time and 100m-ring indicators with a dummy variable indicating whether the market shock variable is above or below the median in the regenerations sample ($Z_e$):

$$\begin{aligned} \text{Y}_{het} = \quad & \alpha_{et} + \kappa_{e,r(h,e),g(h)} + \gamma' \mathbf{X_{het}} \\ & + \sum_{z \in \{0,1\}} \sum_{r \in R} (\theta^z_{0,r} \text{Post}^{0\text{-}3}_{et} + \theta^z_{1,r} \text{Post}^{4\text{-}6}_{et}) \times \mathbb{1}(r(h,e) = r, Z_e = z) + \epsilon_{het} \end{aligned} \tag{4}$$

Figure VIII shows that regenerations experiencing more market-rate construction are associated with larger house price and rent increases. In the case of house prices, regenerated areas below the median of the market shock variable experience price decreases within 100-300m of an estate. In a similar fashion, rent increases within that range are exclusively concentrated in areas with market-rate construction above the median; areas below it do not experience significant changes in rents. In the case of rents, we find suggestive evidence that the result is not driven by developers building higher-quality units in regenerations with larger market shocks. Appendix Table C.4 regresses some unit characteristics on the market shock variable and none of them are statistically significant.[35]

These findings suggest that the mixed-income component of housing is key to explain observed

[35]Meanwhile, no clear pattern arises when examining price effects by the size of the public or total housing shocks. Figure B.9 runs a similar analysis by defining "public shock" and "total shock" as the change in public housing and total units, respectively, analogously to Eq. (3).

effects on local housing prices. For moderate rates of market-rate construction, nearby house prices can decrease and rent levels can be maintained: supply effects weakly dominate demand effects in the broader area. However, large market-rate shocks, which are more likely to significantly change the neighborhood socioeconomic composition and potentially gentrify it, lead to higher housing prices. Such idea is consistent with the hypothesis that enough high-income households arriving to a low-income area are needed in order to change the trajectory of the neighborhood. Note that demand effects always dominate supply effects within 100m in our context. A likely explanation is that the new buildings are usually replacing distressed public housing estates and, thus, benefits from physical upgrades are exceptionally large for immediately surrounding housing units.

A concern for the results above is that we observe positive price effects associated to larger market shocks because developers decide to partner up with LAs to supply more market-rate units in more profitable areas. To explore this, Figure B.10 shows the coefficients of a multivariate regression of the market shock on building and neighborhood characteristics. Larger market shocks are not predicted by any neighborhood characteristics. Usually, the market-shock is bigger in larger existing estates and tracks the total supply shock in the nearby area.[36] These results alleviate the concern that regenerations with high market shocks are in selected neighborhoods.

Finally, additional heterogeneity analyses support the idea of socioeconomic composition changes as a key driver of price increases. Table C.3 runs Eq. (4) by using three alternative heterogeneity variables. Columns 1 and 2 show that estates regenerating a larger numbers of units, which is correlated with the market shock variable, induce higher rent increases in the broader area. Columns 3-6, which use mean household income and baseline house prices in regenerated census block groups, show that rent increases in the broader area (100-500m) are especially concentrated in low-income neighborhoods (consistent with Diamond and McQuade (2019) and Damiano and Frenier (2020)), which have the highest potential for large compositional changes. In the case of house prices, no clear pattern arises.[37]

[36] In addition, estate regenerations with a market shock above the median have a similar proportion of public housing units in the new building than those below the median (45 and 51 percent, respectively).

[37] A plausible mechanism for the results is the supply effect being stronger for high-end units: new market-rate units in regenerated estates are a closer substitute to the high-end of the rental market than to low-end units. Since household income and baseline house prices are proxies for housing quality, our results support this vision. The findings contrast with Asquith et al. (2021), who estimate that new market-rate buildings reduce nearby rents in low-income areas. A potential reason is that Asquith et al. (2021) use Zillow data, which overrepresent high-end units. In contrast, Rightmove seems more representative of London's rental market (Appendix A.1).

# 7 Concluding Remarks

This paper estimates the impact of regenerating distressed public housing into mixed-income developments. Over a six-year period, we estimate that regenerations raised house prices and rents in the vicinity of the new building, and decreased house prices slightly farther away. This spatial pattern of net price effects is consistent with strong demand effects very close to the new development and supply effects that dominate farther away in the sales market.

Our findings highlight that mixed-income developments can mitigate the negative effects of public housing even when preserving the amount of existing public housing. Although we estimate that London's regenerations were not particularly cost-effective,[38] the results provide guidance for place-based policies aiming at revitalizing depressed neighborhoods. Such policies are particularly relevant in contexts characterized by the lack of mobility of low-income households (Bergman et al., 2019). Furthermore, mixed-income housing may provide opportunities for exposing individuals to different income groups, which has been shown to be highly correlated with upward economic mobility (Chetty et al., 2022a,b). An important caveat is that conversion to mixed-income housing may not lead to the same income diversity and amenity improvements in other contexts. In London, regenerated estates are often located in otherwise attractive locations of a dense, well-communicated city with strong housing demand, which may be an important explanation for why higher-income households moved into regenerated estates. Our results likely do not apply to cities suffering from shrinking housing demand.

Despite their improvements on neighborhood outcomes, regenerations can also make nearby housing less affordable. Our results show that large levels of market-rate construction in the new buildings are associated with higher price increases. A plausible explanation is that a big shock of incoming high-income households can change the neighborhood's trajectory and gentrify it. This raises the question of how low-income households can reap the benefits of urban renewal while not being displaced by high prices. A potential solution proposed by Diamond et al. (2019) is for the government to provide insurance against rent increases for nearby low-income households. In this paper, we provide suggestive evidence that moderate levels of market-rate construction can also help preserving housing affordability in revitalized neighborhoods, likely through supply effects.

[38] Appendix A.6 provides the details of a back-of-the-envelope calculation of the regenerations' cost-effectiveness. The results suggest that gains from similar programs can be large in places with low demolition and construction costs.

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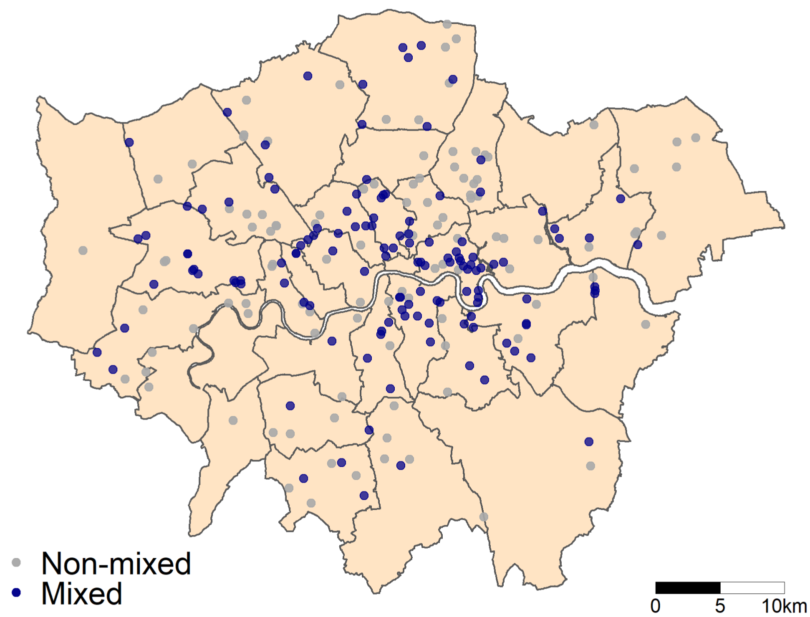
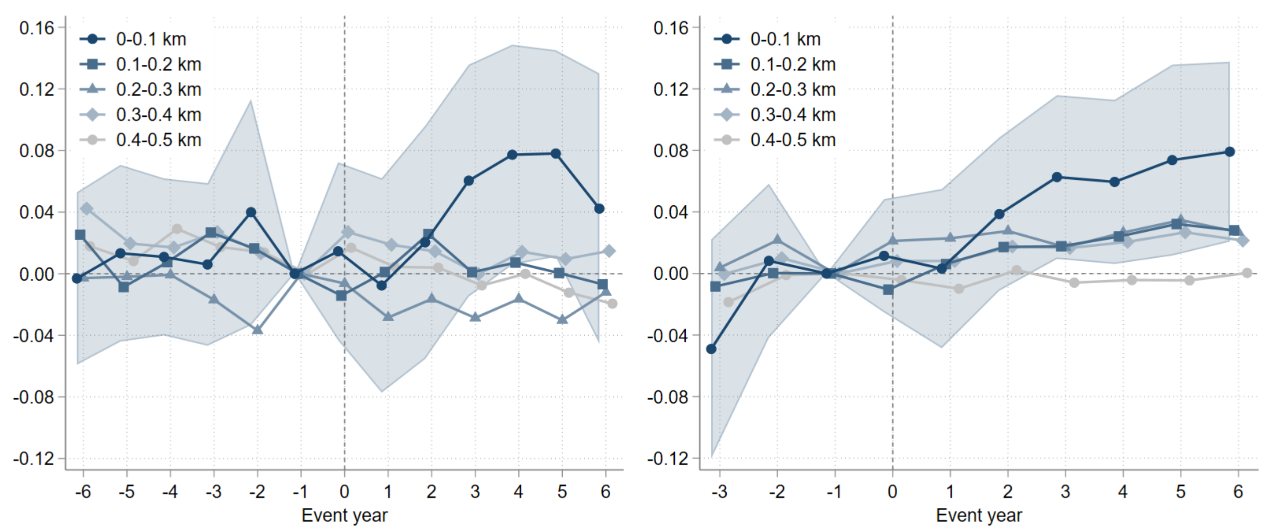
# Figures

**Figure I:** Location of regenerations by income type




*Note*: The black lines delimit each local authority. Blue dots correspond to mixed-income regenerations, gray dots refer to estates regenerated as public housing only ("non-mixed").

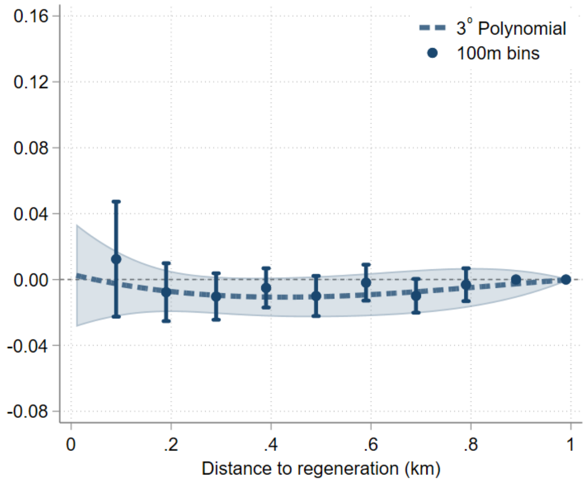
**Figure II:** Effects of estate regenerations on house prices and rents



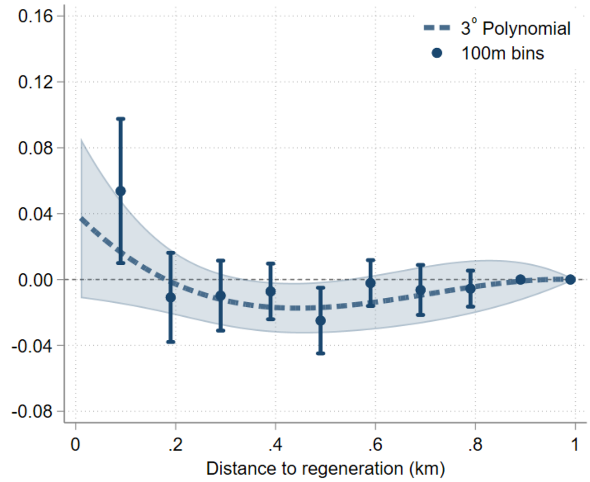

**(a)** House prices **(b)** Rents

*Note*: The plots report coefficients $\beta_{\tau,r}$ in Eq. (1) for each concentric 100m ring within 500m of a regenerated estate. The omitted category is housing units within 0.8-1km of the regeneration. Panel (a) uses the balanced sample of estate regenerations with a permission approval in 2004-2012; panel (b) uses those with a permission approval in 2007-2012. The shaded area refers to the 95% confidence interval of the first ring (0-100m).

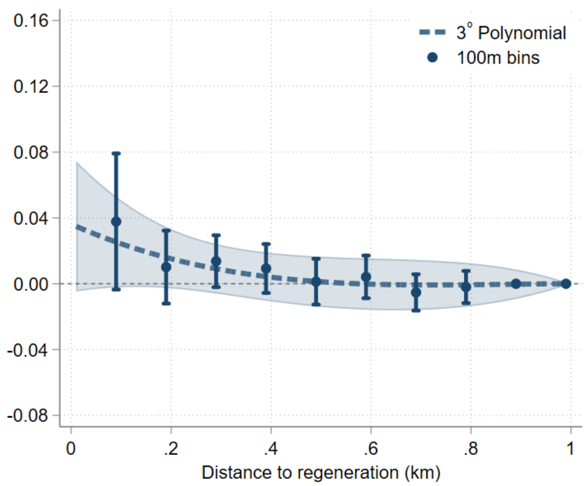
**Figure III:** Effects on house prices and rents with a continuous definition of distance



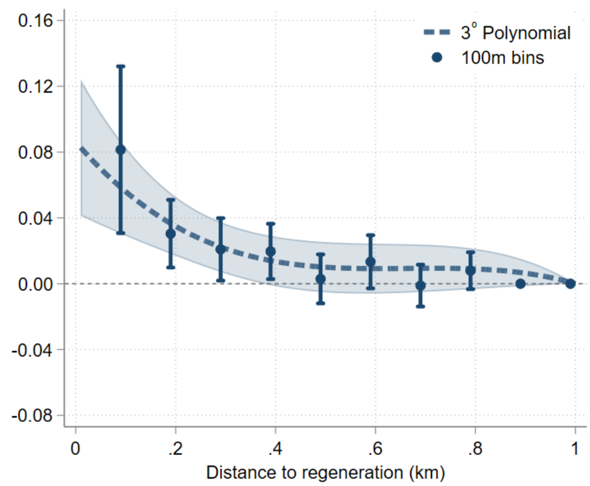

**(a)** House prices: 0-3 years




**(b)** House prices: 4-6 years



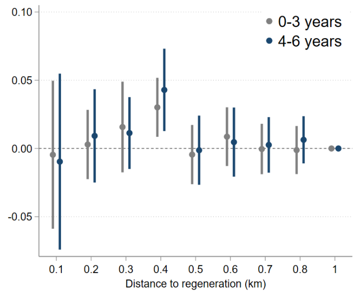

**(c)** Rents: 0-3 years



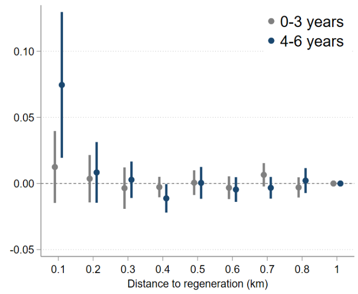

**(d)** Rents: 4-6 years

*Note*: The figure reports point estimates and 95% confidence intervals for coefficients $\theta_{0,r}$ (left panels) and $\theta_{1,r}$ (right panels) in Eq. (2) using 100m rings. The dotted line runs that same regression but using a 3rd order degree polynomial of the distance from each house sale to the regeneration site instead of rings. The shaded area indicates the corresponding 95% confidence interval. Panels (a) and (b) use the balanced sample of estate regenerations with a permission approval in 2004-2012; panels (c) and (d) use those with a permission approval in 2007-2012.

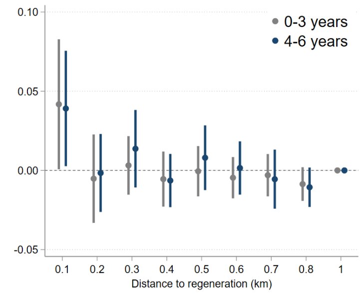
**Figure IV:** Effects on rental listings' description (unit and neighborhood characteristics)



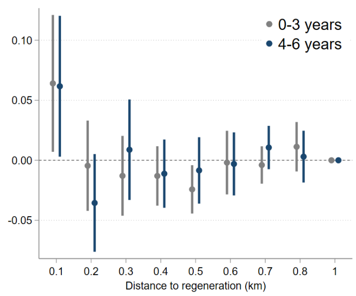

**(a)** Refurbished (0.115)



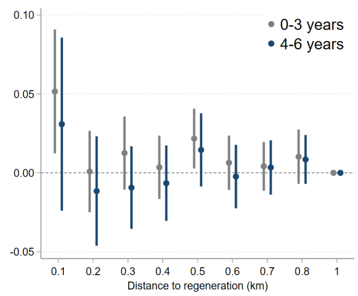

**(b)** Luxury (0.103)



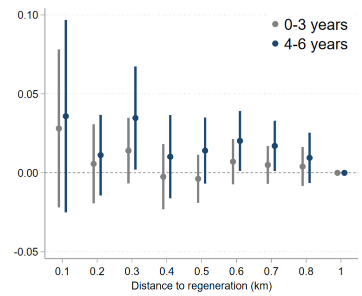

**(c)** In-unit washer (0.061)




**(d)** Amenities (0.152)



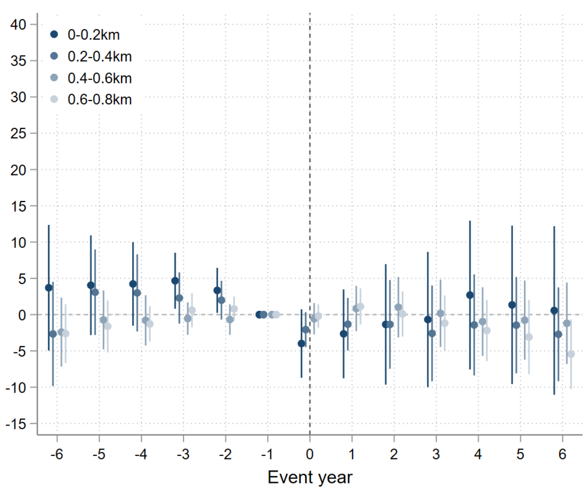

**(e)** Café/Restaurant (0.148)



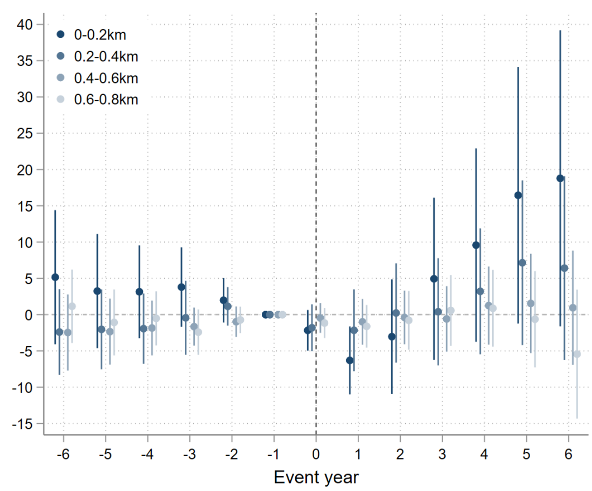

**(f)** Parks (0.079)

*Note*: Coefficients and 95% confidence intervals are obtained by estimating Eq. (2) on the sample of rental listings using 100m rings. The plots use the balanced sample of estate regenerations with a permission approval in 2007-2012. Numbers in parenthesis report the pre-treatment period average of the variable for listings within 800m of regenerations.

**Figure V:** Effects on the number of kids eligible/not eligible for subsidized lunch



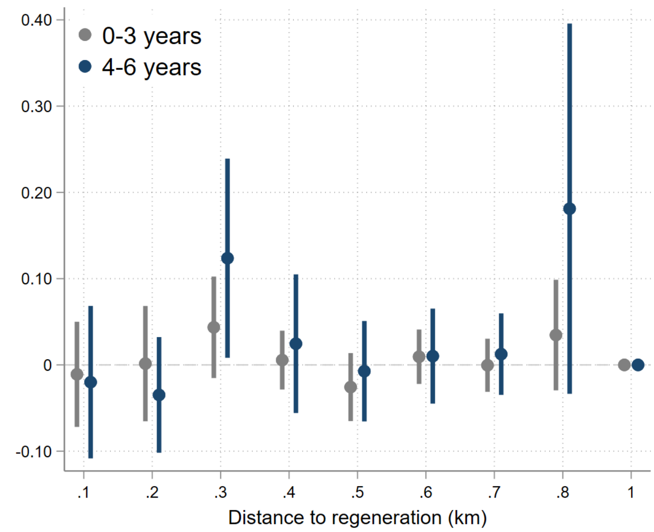

**(a)** With subsidized lunch




**(b)** Without subsidized lunch

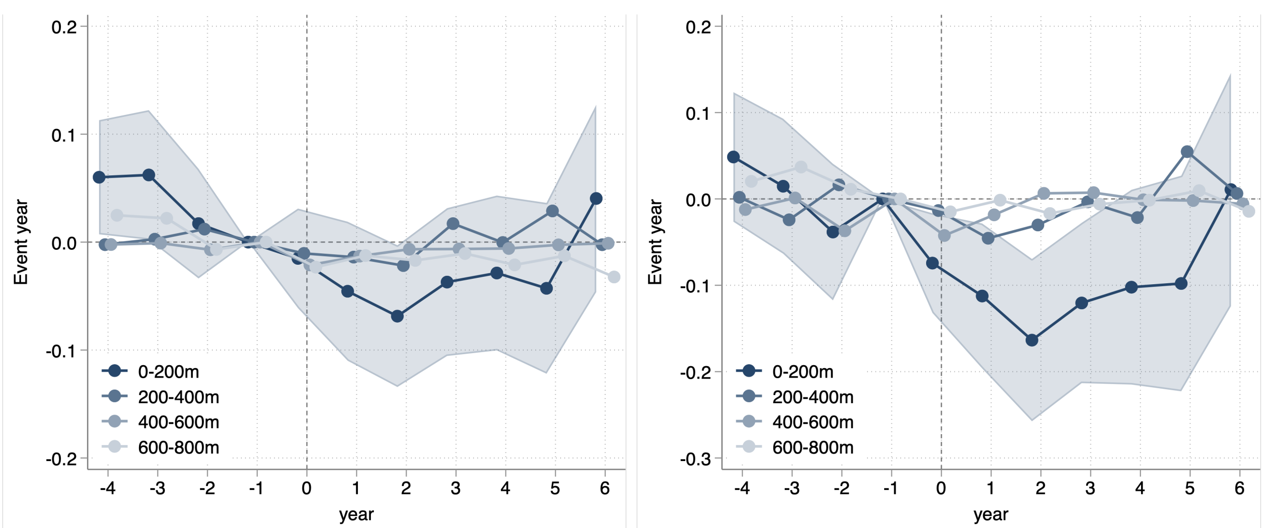
*Note*: The plots report coefficients $\beta_{\tau,r}$ and 95% confidence intervals in a block group version of Eq. (1) using 200m-wide rings. The plots use the balanced sample of estate regenerations with a permission approval in 2004-2012.

**Figure VI:** Effects on the number of cafés and restaurants




*Note*: Coefficients and 95% confidence intervals are obtained by estimating Eq. (2) using administrative records on businesses (see Section 3.1 for details) and 100m rings. The plots use the balanced sample of estate regenerations with a permission approval in 2007-2012. The pre-treatment period sample average of the number of Cafés and restaurant is 0.252.

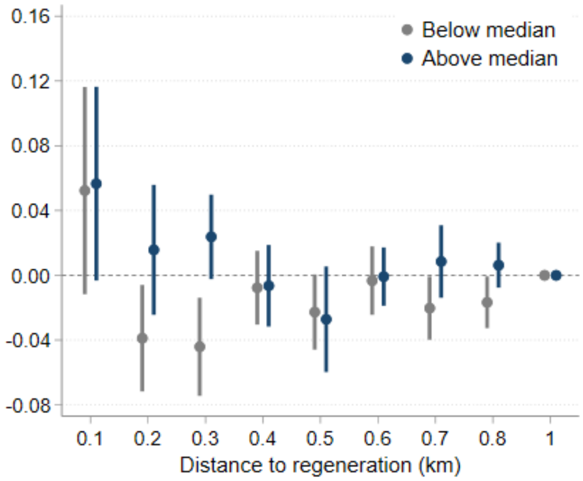
**Figure VII:** Effects on the total number of crimes



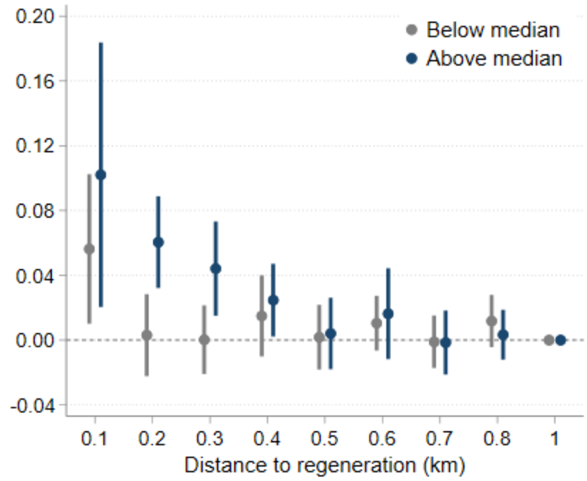

**(a)** All estate regenerations in 2009-2018 **(b)** Large estate regenerations in 2009-2018

*Note*: This figure shows the evolution of the logarithm of total crimes in a census block group around the permission year of a regeneration. Coefficients are obtained by estimating a block group version of equation (1) using 200m-wide rings. The shaded area refers to the 95% confidence interval of the first ring (0-200m). The sample includes all regenerations with a permission between 2009 and 2018. "Large estates" are those with a number of existing public housing units above the median of this sample.

**Figure VIII:** Heterogeneity by the magnitude of the market-rate supply shock




**(a)** House prices




**(b)** Rents

*Note*: The plots report point estimates and 95% confidence intervals for coefficients $\theta^0_{1,r}$ (gray) and $\theta^1_{1,r}$ (blue) in Eq. (4) using 100m rings. Panel (a) uses the logarithm of house prices as an outcome on the balanced sample of estate regenerations with a permission approval in 2004-2012; panel (b) uses the logarithm of rents on regenerations with a permission approval in 2007-2012. The graphs uses the market shock as the heterogeneity variable.

# Tables

**Table I:** Summary statistics of public housing regenerations

| | (1) London | (2) Full sample | (3) Balanced |
|---|---|---|---|
| *Panel A: Building characteristics* | | | |
| Total units before | | 240 | 246 |
| Public housing units before | | 197 | 194 |
| Total units after | | 458 | 431 |
| Public housing units after | | 196 | 208 |
| *Panel B: $\Delta$ Market-rate units/total units within X* | | | |
| $\leq$ 200m | | 0.42 | 0.32 |
| $\leq$ 400m | | 0.11 | 0.11 |
| $\leq$ 600m | | 0.06 | 0.05 |
| $\leq$ 800m | | 0.03 | 0.03 |
| $\leq$ 1,000m | | 0.02 | 0.02 |
| *Panel C: Neighborhood chars. (2001)* | | | |
| Density (per ha) | 108 | 152 | 136 |
| High education | 0.24 | 0.21 | 0.20 |
| Unemployment | 0.07 | 0.10 | 0.10 |
| Public housing units | 0.26 | 0.48 | 0.49 |
| Owner-occupied units | 0.55 | 0.35 | 0.35 |
| Privately rented units | 0.15 | 0.14 | 0.13 |
| House price index | 11.66 | 11.68 | 11.63 |
| Household income | 35,548 | 33,461 | 32,318 |
| Census blocks/Estates | 24,115 | 130 | 70 |

*Note*: Data in Panels A and B were obtained from the London Development Database; data in Panel C come from 2001 census data. Panel B is the average of the ratio between the change in market-rate units induced by the regeneration and the total number of housing units within several distances of regenerations. Neighborhood variables in Panel C are computed as the average of census blocks within 800m of the census block of reference weighted by population –consistent with our empirical strategy. The house price index (constructed as in Appendix A.4) and household income use census block groups. The first column includes all blocks in London. Column 2 uses blocks for the full sample of estate regenerations, while column 3 uses a balanced sample of regenerations approved between 2004 and 2012.

**Table II:** Effects of regenerations on sales, listings and new construction

| | Sales | | Rental listings | | New construction | | prob(new construction) | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | New | Old | New | Old | Public | Market | Public | Market |
| *Panel A*: 0-3 years | | | | | | | | |
| 0-200m | 0.053*** | 0.019* | 0.060 | 0.317 | -0.010 | -0.046 | 0.014* | 0.016 |
| | (0.018) | (0.010) | (0.046) | (0.322) | (0.027) | (0.061) | (0.008) | (0.011) |
| 200-400m | 0.000 | 0.005* | 0.018 | 0.000 | 0.005 | 0.017 | 0.002 | -0.001 |
| | (0.007) | (0.003) | (0.014) | (0.037) | (0.008) | (0.029) | (0.004) | (0.008) |
| 400-600m | -0.007 | 0.004 | -0.006 | 0.008 | -0.007 | 0.029 | 0.002 | 0.005 |
| | (0.005) | (0.003) | (0.007) | (0.026) | (0.018) | (0.061) | (0.003) | (0.007) |
| 600-800m | 0.004 | 0.004* | -0.001 | 0.030 | -0.005 | -0.008 | 0.003 | 0.002 |
| | (0.005) | (0.002) | (0.007) | (0.024) | (0.006) | (0.016) | (0.003) | (0.007) |
| *Panel B*: 4-6 years | | | | | | | | |
| 0-200m | 0.048 | 0.045 | 0.065* | 0.485 | 0.062 | 0.222 | -0.002 | -0.003 |
| | (0.051) | (0.028) | (0.032) | (0.422) | (0.038) | (0.135) | (0.006) | (0.015) |
| 200-400m | 0.010 | 0.006* | 0.048 | 0.023 | 0.037 | 0.042 | -0.003 | -0.002 |
| | (0.016) | (0.003) | (0.037) | (0.042) | (0.026) | (0.054) | (0.005) | (0.011) |
| 400-600m | -0.009 | 0.004 | -0.002 | -0.017 | -0.011 | -0.007 | -0.003 | 0.006 |
| | (0.014) | (0.003) | (0.016) | (0.028) | (0.015) | (0.037) | (0.004) | (0.010) |
| 600-800m | 0.002 | 0.007*** | 0.003 | 0.021 | 0.016 | 0.039* | -0.000 | 0.000 |
| | (0.011) | (0.003) | (0.011) | (0.026) | (0.010) | (0.020) | (0.004) | (0.008) |
| N | 84,749 | 84,749 | 64,592 | 64,592 | 83,536 | 83,536 | 83,549 | 83,549 |
| R-squared | 0.22 | 0.51 | 0.46 | 0.76 | 0.12 | 0.13 | 0.14 | 0.25 |
| Pre Y-mean | 0.015 | 0.070 | 0.029 | 0.226 | 0.027 | 0.037 | 0.022 | 0.123 |

*Note*: The table reports estimates of coefficients $\theta_{0,r}$ (Panel A) and $\theta_{1,r}$ (Panel B) in Eq. (2) using 200m rings for four dependent variables. Columns 1-2 use the ratio of the number of sales over the total number of market-rate units in 2001 in a block per year by new build status. Columns 3-4 use the same ratio for rental listings by status. Columns 5-6 use the same ratio for the number of new units approved for construction by tenure type (public housing or market-rate), while columns 7-8 use the probability of any new construction by tenure type. The last row indicates the mean of the dependent variable in the pre-treatment period across all rings. Standard errors in parenthesis (clustered at the estate level). Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# Supplementary Appendix

"Knocking it Down and Mixing it Up: The Impact of Public Housing Regenerations"

Hector Blanco (NYU) and Lorenzo Neri (University of St. Andrews, IZA)

# A Appendix

## A.1 Data Appendix

### A.1.1 House Prices and Rents: Coverage and Representativeness

The coverage of residential sales and rental listings in the data is comprehensive for our sample period. Figure A.1 shows a histogram of the fraction of sales and listings per year. The plot shows a decrease in the number of sales around 2007 due to the Great Recession, while the number of listings is slightly increasing due to the increased popularity of online advertisements.

We limit the sample of residential sales and rental listings in several ways. In both cases, we drop sales and listings that are in the top and bottom 0.5% distribution of prices to decrease sensitivity to outliers. For rental listings, we make three further sample restrictions:

1. *Drop listings with more than 5 bedrooms*. The objective is making our results less sensitive to outliers and presumably very high-end properties.

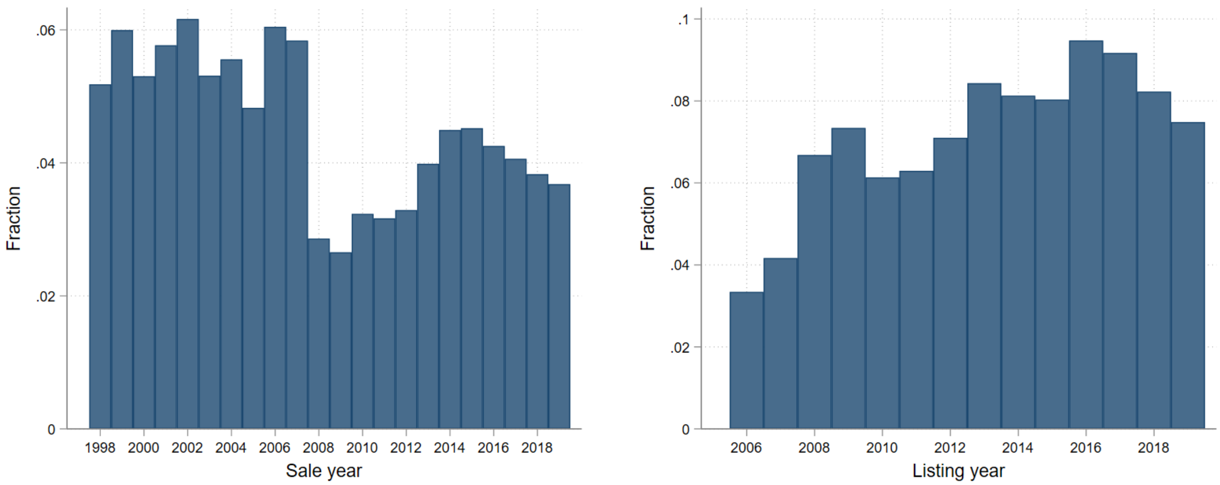
2. *Drop listings with extreme values*. For every postcode-number of bedrooms combination, we drop listings priced more than 3 times the mean rent. These instances are likely to be reporting errors.

3. *Drop listings reflecting bedroom prices*. For each postcode-number of bedrooms combination, we drop listings with a rental price that is less or equal 1.25 times the mean rent divided by the number of bedrooms. We only do this for listings with 2 or more bedrooms. This restriction is intended to eliminate listings referring to a single room within a unit.

We find that the sample of rental listings is representative of private rents in London. To show this, we compare rents in the Rightmove dataset with official estimates of average private rents at the LA level from the Valuation Office Agency (VOA). Fig A.2 compares the 25th, 50th, 75th percentiles and the mean LA private rents for the first and third quarters of years 2011-2016. Rightmove rents are 10% higher than official estimates across all reported statistics.

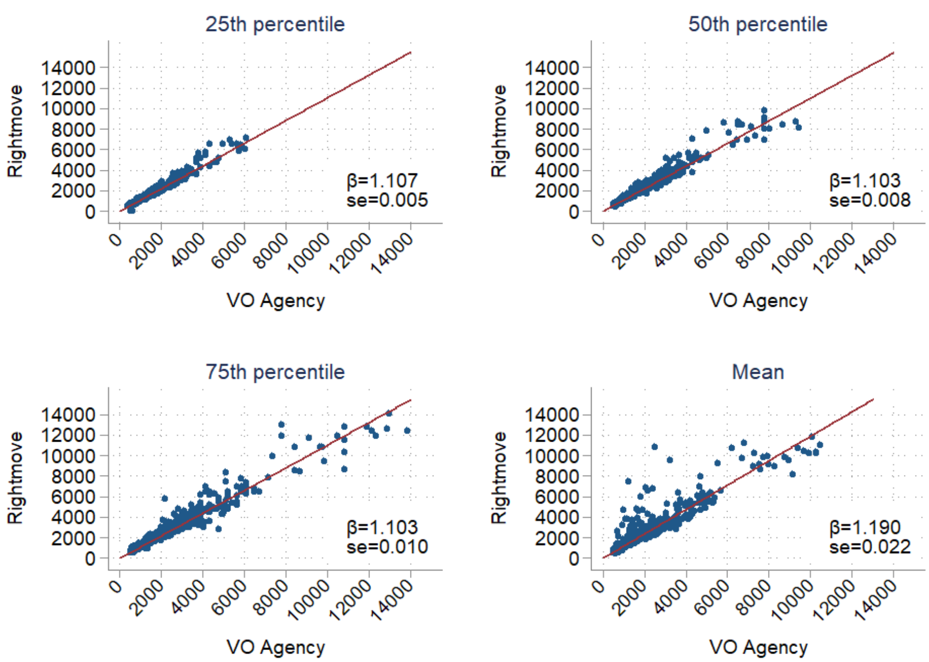
The difference between Rightmove rents and official estimates is at least partially driven by the fact that Rightmove mostly reports asking rents as opposed to agreed rents (76% and 24%, respectively). To explore this, Table A.1 regresses the logarithm of the rent on a dummy variable indicating whether the rent is the agreed price (asking price is the omitted category). We first run this regression without any controls, then we add LA-year FE and, lastly, we add a bunch of unit and neighborhood characteristics. The table shows that agreed rents are on average 5-10% lower than asking rents, close to the difference between Rightmove rents and official estimates. This result suggests that Rightmove rents are a good representation of private rents in London and are not disproportionately skewed to the high-end of the distribution.

**Figure A.1:** Histograms of residential sales and rental listings




**(a)** Residential sales **(b)** Rental listings

**Figure A.2:** Comparison of LA rents in Rightmove to rents in Valuation Office Agency (VOA)




*Note*: Scatter plot of several statistics from Rightmove and VOA at the LA level. Fitted lines are the result of a linear regression that does not include a constant.

**Table A.1:** Difference between asking and agreed rents (asking is omitted)

| | (1) | (2) | (3) |
|---|---|---|---|
| Agreed rent | -0.103*** | -0.066*** | -0.047*** |
| | (0.030) | (0.006) | (0.004) |
| House chars. | No | No | Yes |
| Census chars. | No | No | Yes |
| School chars. | No | No | Yes |
| Distance to tube | No | No | Yes |
| LA × year FE | No | Yes | Yes |
| N | 4,826,481 | 4,826,481 | 4,817,825 |
| Adjusted R-squared | 0.01 | 0.38 | 0.70 |

*Notes*: The table shows the results from regressing the logarithm of the rental price on the rental price type (asking or agreed). The control variables that we use are equivalent to those used in Eq. (1). Standard errors are clustered at the LA level. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

### A.1.2 Rental Listings' Description

To obtain a comprehensive picture of how rental housing characteristics evolve around regeneration, we scraped listings' descriptions using the website link in the dataset (95% have accessible links). Figure A.3 is an example of a Rightmove rental listing in London. It usually provides the price, location, pictures and some key features. At the bottom of the listing, there is usually a description that provides more details of the advertised unit.

In many cases, agents describe not only properties of the units (bedrooms, new unit, bathrooms, etc), but also properties of the building and the neighborhood (amenities, cafés, trendy shops, vibrant). Using this, we created several variables related to these three categories. Table A.2 provides the relation of keywords to several of these variables: when any of the keywords are present in the description, the variable takes value 1; otherwise, it takes value 0.

**Figure A.3:** Example of rental listing's description

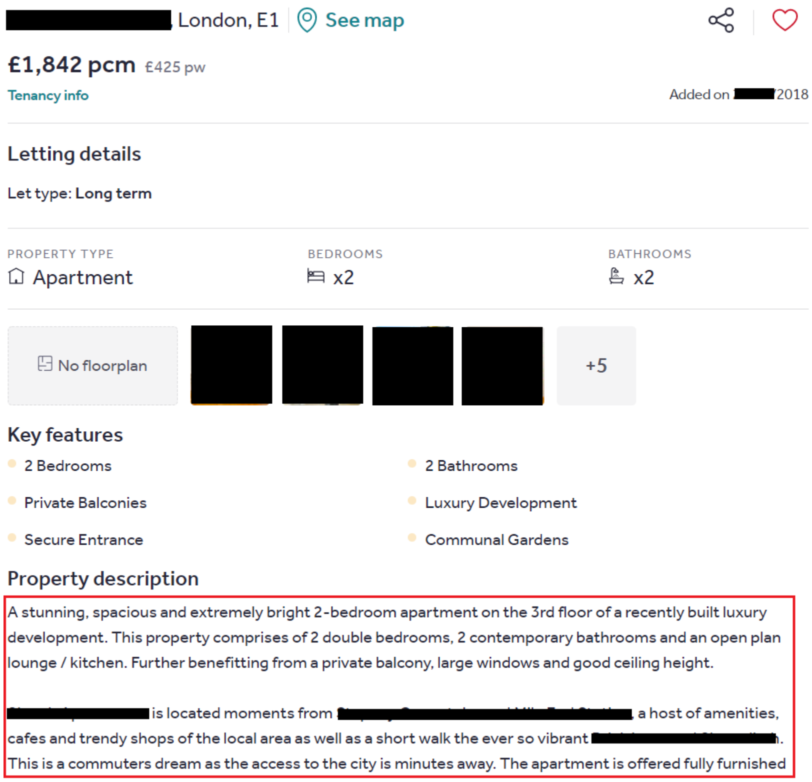



**Table A.2:** Relation of keywords in listings' descriptions

| Variable | Keywords |
|---|---|
| *Panel A: Unit characteristics* | |
| New | brand new, new build, new construct, new develop |
| Refurbished | refurbish, renovat, rehabilitat, reform, upgrad |
| Luxury | luxur, deluxe |
| Washing machine | washing machine |
| *Panel B: Building characteristics* | |
| Garden | garden, courtyard, backyard, patio |
| Gym | gym, fitness |
| Concierge | concierge |
| *Panel C: Neighborhood characteristics* | |
| Amenities | amenities |
| Cafe | café, cafe, coffee |
| Restaurant | restaurant |
| Parks | park, green space |

## A.2 Main Results: "Public Housing Only" Regenerations

As we explain in Section 2.2, some public housing estates were regenerated by including only public housing units in the new building (henceforth "non-mixed"). However, Table A.3 shows that these estates are not directly comparable to the sample of mixed-income regenerations. First, non-mixed regenerations were much smaller in size (60 units versus 240). Since the distribution of units in the existing building does not overlap enough, we cannot use non-mixed regenerations as a counterfactual for mixed-income regenerations. Second, they were located in observably different neighborhoods of the city. Non-mixed regenerations were in less denser areas with less public housing, less renter households and much lower housing prices –presumably because they were more likely to be located in Outer London.

Despite this, we report the key results for non-mixed regenerations following our main empirical specification, which uses housing units within 800-1,000m of the estate as a comparison group. In particular, Figure A.4 estimates Eq. (2) for the logarithm of house prices and rents using 100m bins and a third-order degree polynomial to indicate distance to the estates. Table A.4 estimates the same equation for the ratio of sales, rental listings and new construction to market-rate units in a block.

The price effects of non-mixed regenerations are different in the sales and rental markets. House prices do not react to the regeneration announcement –similarly to mixed-income regenerations–, but later drop by 10% within 100m of the estate. In contrast, rents rise by up to 6% within the same distance right from the permission approval. Both markets are only affected in the immediately surrounding area (100m), which is consistent with the fact that these regenerations were smaller in size and, hence, had less potential to change the neighborhood. A potential explanation for the opposite effects in these markets is that unobservable quality aspects of sold units change as a result of the regeneration, i.e., the lowest-quality units near the estates are sold.

Similarly, there are contrasting effects in the number of sales and rental listings. When examining the market for old units, the number of sales in the short run increases by 7.5% of their baseline value within 200m after the regeneration is approved while the number of rental listings decreases by 25%. This result indicates that there might be some substitution between the sales and rental markets: landlords sell their units and buyers stay in the new apartments. In both markets, the effects on the quantity of sales and listings of new units are close to zero –although it decreases for residential sales in the long run.

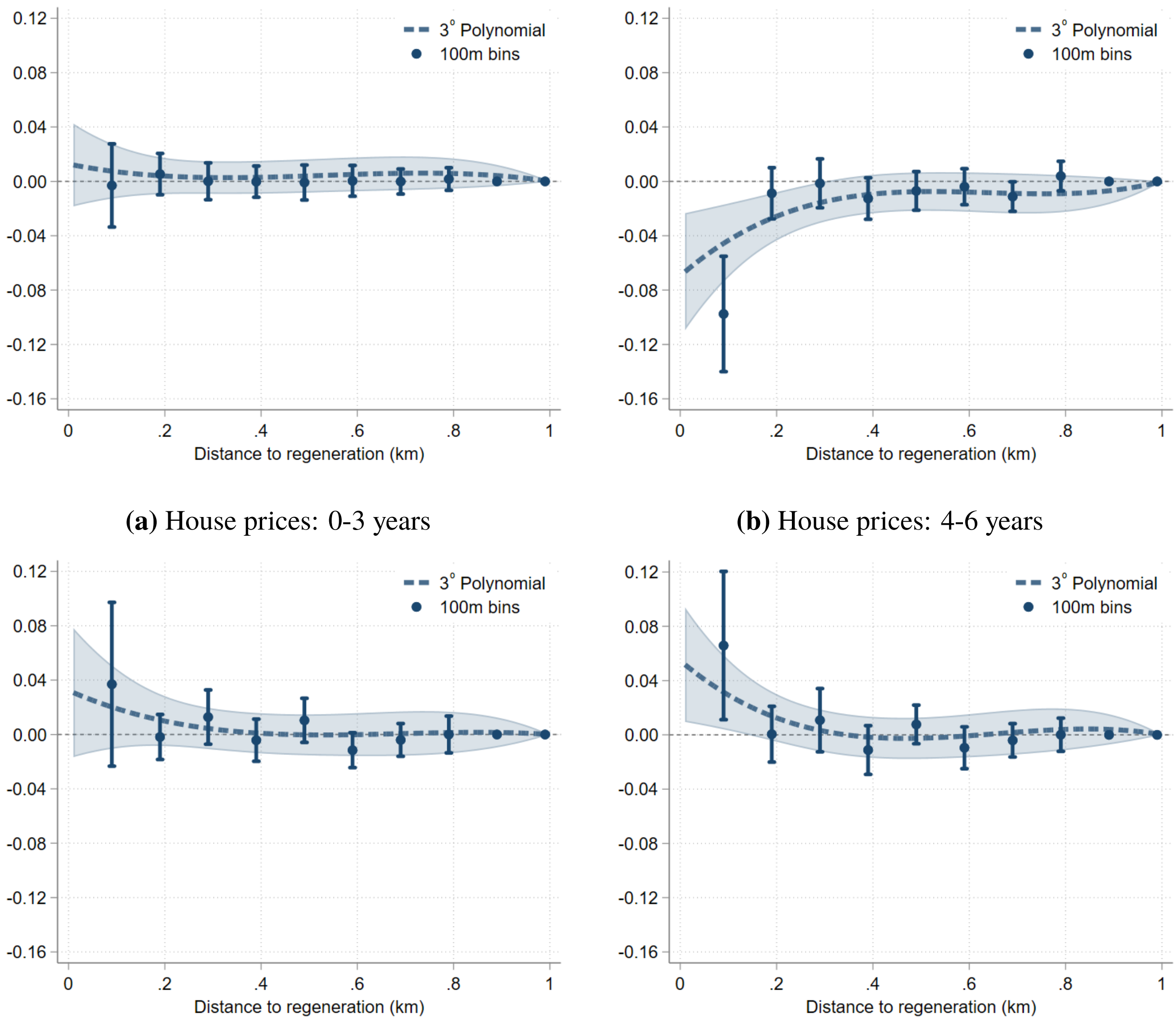
Finally, we find suggestive evidence that non-mixed regenerations are partially crowding out the construction of public housing in the short run. Columns 5 and 7 of Table A.4 show that the number of newly approved public housing units decreases by almost half of the baseline value within 200m for the first three years and that the probability of approving any new public housing units decreases by 1.2 p.p..

**Table A.3:** Summary statistics of public housing regenerations

| | London | Mixed-income | | Non-mixed | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | All blocks | Full | Balanced | Full | Balanced |
| *Building characteristics* | | | | | |
| Total units before | | 240 | 246 | 60 | 60 |
| Public housing units before | | 197 | 194 | 58 | 60 |
| Total units after | | 458 | 431 | 71 | 72 |
| Public housing units after | | 196 | 208 | 68 | 70 |
| *Neighborhood chars. (2001)* | | | | | |
| Density (per ha) | 108 | 152 | 136 | 123 | 136 |
| High education | 0.24 | 0.21 | 0.20 | 0.19 | 0.20 |
| Unemployment | 0.07 | 0.10 | 0.10 | 0.08 | 0.09 |
| Public housing units | 0.26 | 0.48 | 0.49 | 0.37 | 0.38 |
| Owner-occupied units | 0.55 | 0.35 | 0.35 | 0.47 | 0.45 |
| Privately rented units | 0.15 | 0.14 | 0.13 | 0.13 | 0.14 |
| House price index | 11.66 | 11.68 | 11.63 | 11.52 | 11.56 |
| Household income | 35,548 | 33,461 | 32,318 | 31,568 | 31,915 |
| Census blocks/Estates | 24,115 | 130 | 70 | 109 | 78 |

*Note*: The table reports a subset of the same variable than in Table I.

**Figure A.4:** Effects on house prices and rents with a continuous definition of distance




**(a)** House prices: 0-3 years

**(b)** House prices: 4-6 years

**(c)** Rents: 0-3 years

**(d)** Rents: 4-6 years

*Note*: The figure reports point estimates and 95% confidence intervals for coefficients $\theta_{0,r}$ (left panels) and $\theta_{1,r}$ (right panels) in Eq. (2) using 100m rings. The dotted line runs that same regression but using a 3rd order degree polynomial of the distance from each house sale to the regeneration site instead of rings. The shaded area indicates the corresponding 95% confidence interval.

**Table A.4:** Effects of regenerations on sales, listings and new construction

| | Sales | | Rental listings | | New construction | | prob(new construction) | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | New | Old | New | Old | Public | Market | Public | Market |
| *Panel A*: 0-3 years | | | | | | | | |
| 0-200m | -0.001 | 0.005** | 0.003 | -0.035** | -0.008 | -0.006 | -0.012** | 0.002 |
| | (0.004) | (0.002) | (0.003) | (0.013) | (0.012) | (0.007) | (0.005) | (0.012) |
| 200-400m | -0.001 | 0.004* | 0.002 | -0.019* | -0.010 | 0.024 | 0.001 | 0.026*** |
| | (0.003) | (0.002) | (0.003) | (0.011) | (0.035) | (0.042) | (0.004) | (0.007) |
| 400-600m | -0.001 | 0.002 | 0.002 | -0.010 | 0.002 | -0.003 | 0.002 | 0.009 |
| | (0.003) | (0.001) | (0.002) | (0.009) | (0.006) | (0.005) | (0.003) | (0.007) |
| 600-800m | 0.009 | 0.001 | 0.006 | 0.018 | -0.003 | -0.010 | -0.002 | 0.006 |
| | (0.005) | (0.001) | (0.005) | (0.016) | (0.007) | (0.009) | (0.003) | (0.007) |
| *Panel B*: 4-6 years | | | | | | | | |
| 0-200m | -0.007** | 0.003 | -0.002 | -0.032* | -0.001 | -0.029 | -0.005 | 0.006 |
| | (0.004) | (0.003) | (0.004) | (0.016) | (0.013) | (0.023) | (0.006) | (0.013) |
| 200-400m | -0.002 | 0.002 | 0.000 | -0.023* | -0.040 | -0.040 | 0.001 | 0.009 |
| | (0.003) | (0.002) | (0.005) | (0.013) | (0.026) | (0.025) | (0.005) | (0.009) |
| 400-600m | -0.002 | 0.001 | -0.001 | -0.017 | 0.002 | -0.019 | 0.002 | 0.003 |
| | (0.003) | (0.002) | (0.003) | (0.012) | (0.008) | (0.023) | (0.004) | (0.008) |
| 600-800m | -0.003 | 0.005** | -0.002 | 0.025 | -0.000 | -0.024 | -0.002 | 0.011 |
| | (0.003) | (0.002) | (0.003) | (0.021) | (0.007) | (0.024) | (0.003) | (0.008) |
| N | 86,784 | 86,784 | 58,269 | 58,269 | 84,155 | 84,155 | 84,155 | 84,155 |
| R-squared | 0.15 | 0.46 | 0.43 | 0.74 | 0.11 | 0.11 | 0.13 | 0.24 |
| Pre Y-mean | 0.008 | 0.067 | 0.014 | 0.145 | 0.017 | 0.021 | 0.019 | 0.125 |

*Note*: The table reports estimates of coefficients $\theta_{0,r}$ (Panel A) and $\theta_{1,r}$ (Panel B) in Eq. (2) using 200m rings for different dependent variables. Columns 1-2 use the ratio of the number of sales over the total number of market-rate units in 2001 in a block per year by new build status. Columns 3-4 use the same ratio for rental listings by status. Columns 5-6 use the same ratio for the number of new units approved for construction by tenure type (public housing or market-rate), while columns 7-8 use the probability of any new construction by tenure type. The last row indicates the mean of the dependent variable in the pre-treatment period across all rings. Standard errors in parenthesis. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

## A.3 An Alternative Comparison Group: Using Variation in Timing

Following the literature (Aliprantis and Hartley, 2015; Asquith et al., 2021), we develop an alternative difference-in-differences strategy that builds the comparison group using *variation in the timing* of regenerations. This strategy compares the outcomes of housing units near regenerations taking place earlier in the period to those experiencing nearby regenerations later in the future. The idea is that units very close to different public housing estates should be similar. For instance, we can compare the evolution of house prices within 100m of a 2004 regeneration to that of house prices within 100m of a 2018 regeneration between 1998 and 2017.

We view this strategy as complementary to our main specification. The proximity-based method in Section 3.3 assumes that there are no spillovers in the outer ring in order to interpret the gap between the inner and the outer ring as the full treatment effect. A comparison of the estimates of that approach to those of this timing-based method helps us assess the validity of that assumption for the nearest rings. However, the timing-based approach may be less well-suited to study effects in rings farther away from regenerated sites. The reason is that, although units immediately surrounding public housing estates should be similar across different areas of the city, it is less plausible that units farther away from the estates are comparable across regenerated sites.[39]

The identifying assumption is that the timing of estate regenerations is as good as random, e.g., LAs are not targeting estates in the most profitable areas first, which has been argued in the literature (Mense, 2020; Li, 2021; Pennington, 2021). The plausibility of this assumption depends on a number of factors, some of which are observable (e.g., building and neighborhood characteristics) and some that we cannot observe, such as differential availability of funds over time, negotiations with developers, consultation with tenants, etc. We find that, consistent with this assumption, regeneration seems uncorrelated with several characteristics. Figure A.5 regresses the permission year on building and neighborhoood characteristics; none of them is statistically significant.

To implement this strategy, we run a stacked difference-in-differences design (Cengiz et al., 2019; Deshpande and Li, 2019; Fadlon and Nielsen, 2019) for each of the 100m-wide treated rings in the main specification. We construct the sample as follows. First, we keep observations in the relevant ring to any regenerated estate $e$. For each estate, we create a separate dataset $d$. In each dataset $d$, estates that experience the current regeneration have $\text{Treated}_{ed} = 1$, and estates that are regenerated more than two years later serve as the comparison group, which we further restrict in two ways. First, since regeneration decisions take place at the LA level, we exclude to-be regenerated estates in the same LA as the treated estate to rule out anticipation effects.[40] Second,

[39]For instance, the timing-based method probably performs well comparing units within 200m of the estates but poorly when studying units within 600-800m. In this last case, the proximity-based method is likely to perform better since it compares units that are only slightly farther away from each other that belong to the same neighborhood –e.g., compare units within 600-800m to those within 800-1,000m of the same estate.

[40]E.g., regenerating an estate can be a signal of how likely other estates in that LA are to be regenerated in the future.

we only include to-be regenerated estates in the same broad London area, defined as being either in Inner or Outer London.[41] Then, we create an event year $\tau$ variable with respect to the permission year of the treated estate in dataset $d$. Finally, we append all datasets and keep sales/listings within 6 years of permission.

We estimate the following equation separately for each ring:

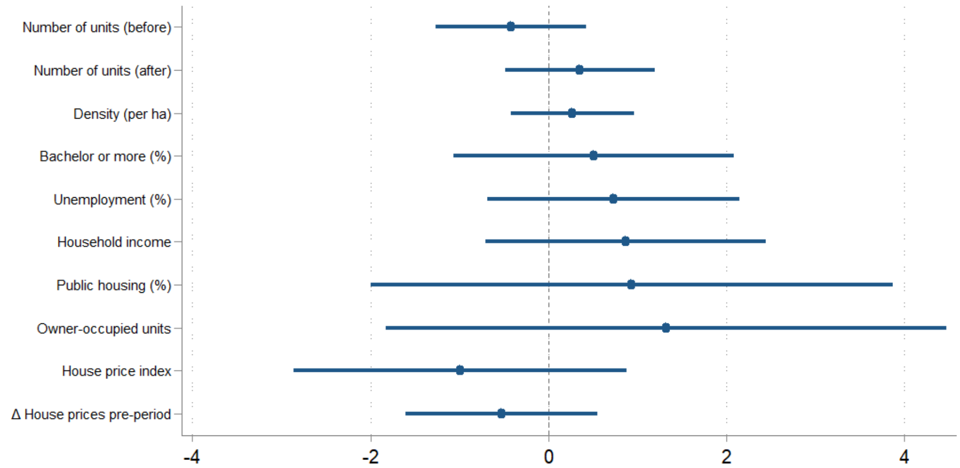
$$\text{Y}_{hetd} = \quad \omega_{td} + \phi_{e,g(h),d} + \sum_{\tau=-6}^{6} \beta_\tau \, \mathbb{1}(t - E_d = \tau) \times \text{Treated}_{ed} + \gamma' \mathbf{X_{htd}} + \epsilon_{hetd} \tag{5}$$

where $\beta_\tau$ is the effect of interest, i.e., evolution of the outcome for units near a current regeneration compared to those that experience a regeneration in the future. We include calendar year-dataset FE ($\omega_{td}$) and estate-tract-dataset FE ($\phi_{e,g(h),d}$) to control for time patterns and baseline characteristics, as well as the same controls $\mathbf{X_{htd}}$ as in Eq. (1) interacted with a dummy for each dataset. To be consistent with the proximity-based specification, we weight each dataset-year-treated estate equally and, within it, we also weight each estate-block equally. Standard errors are clustered at the dataset level to account for the fact that estates appear in the comparison group for multiple datasets.

The timing-based method yields very similar results to our main specification (Figure A.6). We find that house prices go up to 5-8% within 100m and decrease by 4% within 400-500m. Note that this strategy, however, performs poorly for rings farther away from the estate: rings beyond 500m show a pre-trend of decreasing house prices before regeneration. This fact warns against comparing units in far away rings (>500m) across estates, likely because neighborhoods around regenerated buildings are no longer similar at those distances. Regarding rents, they increase by 5% within 100m and by 2-3% within 200-400m, although the main results do not hold for units within 100-200m. Estimated effects on the number of sales and listings, as well as changes in housing quality, are also close to our main specification (Figs. A.7 and A.8). Overall, the similarity of timing-based estimates supports the assumption of no spillover effects to the outermost ring in the proximity-based method.

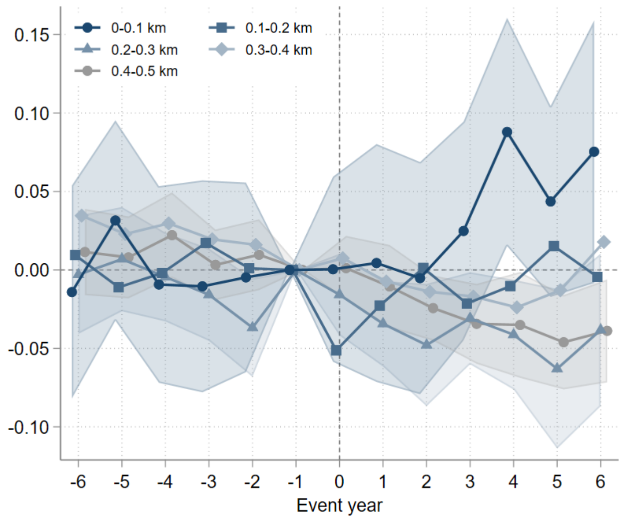
[41] This restriction partially addresses the concern that this specification cannot control for neighborhood time patterns by accounting for different time patterns in the center and the outskirts of the city.

**Figure A.5:** Random timing of estate regenerations

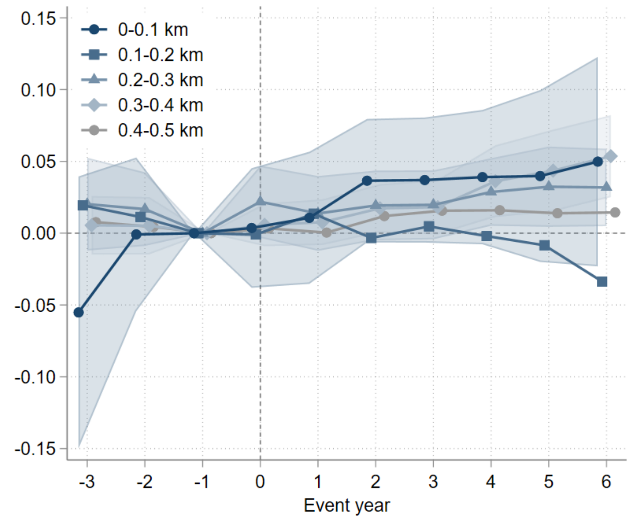



*Note*: The plot shows the results from a regression of the announcement year on a series of regeneration (first two variables) and neighborhood characteristics in 2001 using the sample of regenerations with a permission approval in 2004-2018. Regeneration characteristics are measured either for the building slated for demolition (before) or for the new development (after). Neighborhood characteristics are constructed as the average of the variable of census block groups within 800 of the estate. The house price index refers is a proxy for baseline house prices in 2001 and is constructed as detailed in Section A.4. The change in house prices in the pre-period is a proxy for rising prices and gentrification, and is constructed analogously for periods 1998-2000 and 2001-2003 –the change is defined as the difference between these two periods. All variables used as regressors are standardized.

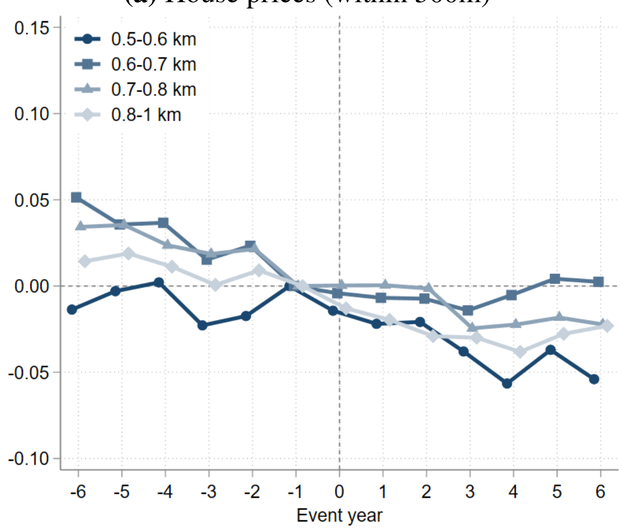
**Figure A.6:** Effects of regenerations on house prices and rents (using timing variation)



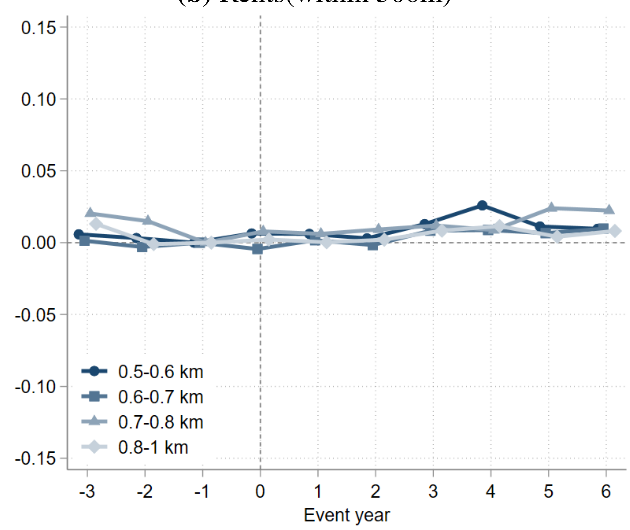

**(a)** House prices (within 500m)




**(b)** Rents(within 500m)



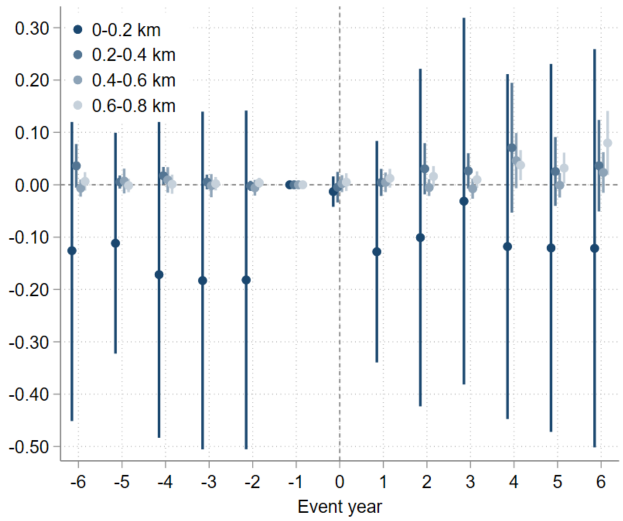

**(c)** House prices (beyond 500m)



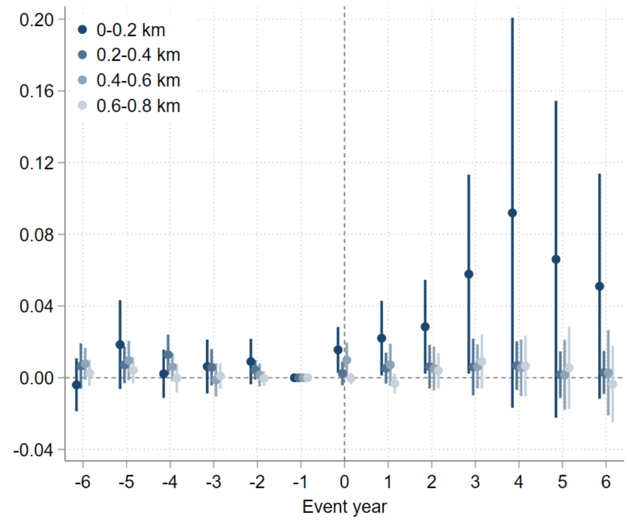

**(d)** Rents (beyond 500m)

*Note*: The plots report coefficients $\beta_\tau$ in Eq. (5) for each concentric 100m ring. The omitted category is housing units within the same distance ring of regenerations approved more than two years later. Panels (a) and (c) use the sample of regenerations with a permission approval in 2004-2012; panels (b) and (d) use those with a permission approval in 2007-2012.

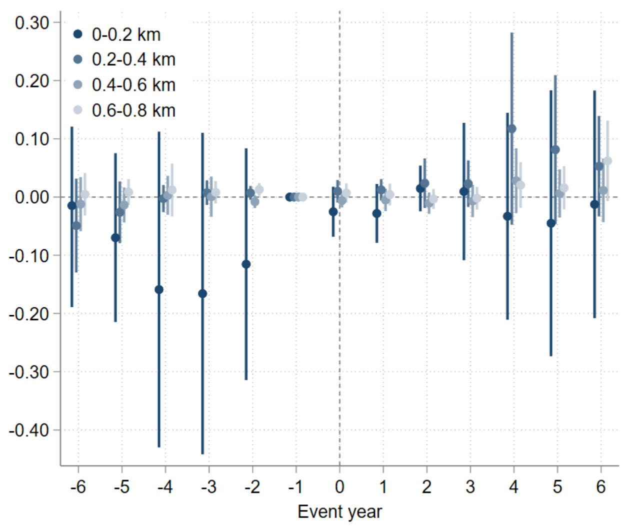
**Figure A.7:** Effects of estate regenerations on sales and listings (using timing variation)



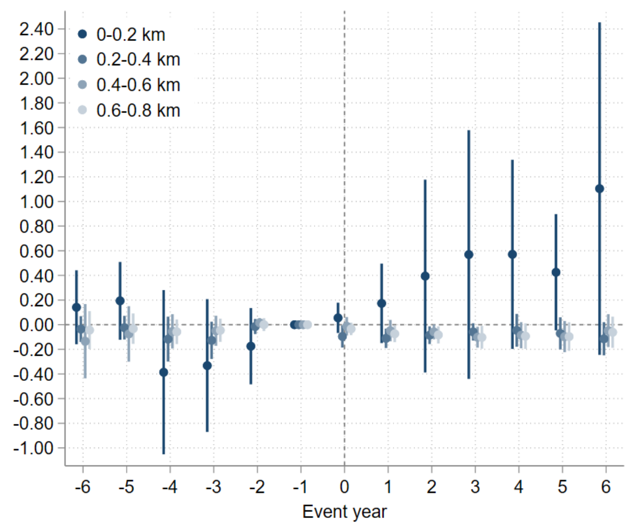

**(a)** Sales of new houses




**(b)** Sales of old houses



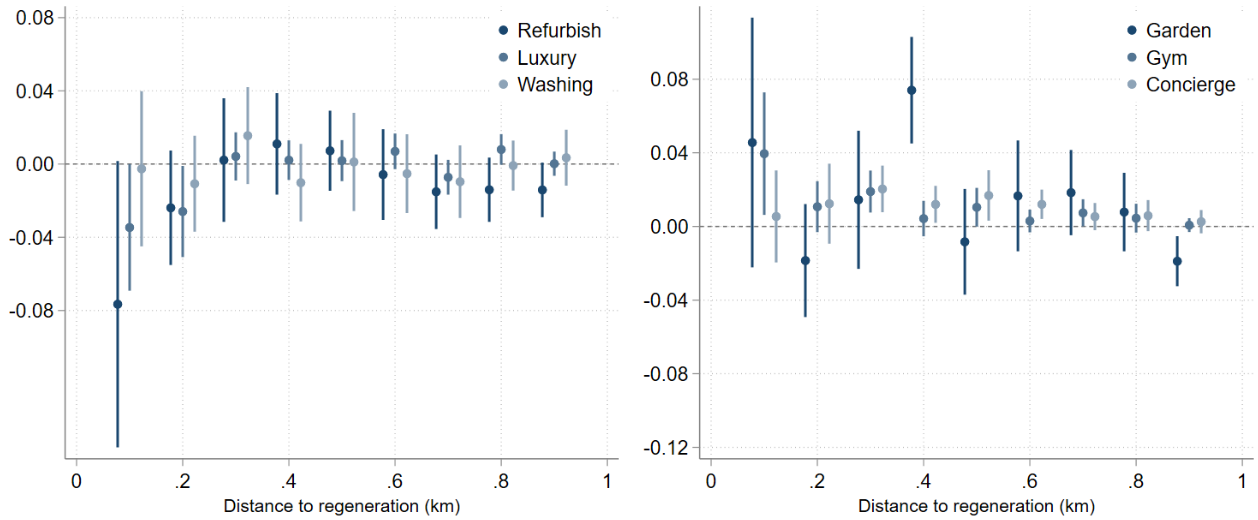

**(c)** Rental listings of new houses




**(d)** Rental listings of old houses

*Note*: The plots report coefficients $\beta_{\tau,r}$ in Eq. (5). For rental listings, we distinguish between "new" and "old" using text analysis on the description of the rental listing. Panels (a) and (b) use the balanced sample of estate regenerations with a permission approval in 2004-2012; panels (c) and (d) use those with a permission approval in 2007-2012.

**Figure A.8:** Effects on listings' descriptions 4-6 years after permission (using timing variation)




**(a)** Unit characteristics

**(b)** Building characteristics

*Note*: Coefficients and related 95% confidence intervals are obtained by estimating a version of Eq. (5) that collapses event years into three periods (-3 to -1, 0 to 3 and 4 to 6) on the sample of rental listings using 100m rings. This plot shows coefficients for the 4-6 event year period. The plots use the balanced sample of estate regenerations with a permission approval in 2007-2012.

## A.4 Robustness to Treatment Intensity

A concern with our main DID specification is that it does not account for the fact that some units appear in different rings for different estate regenerations and, thus, are contaminated by another treatment –i.e., it treats each regeneration as a separate event. To address this issue, we lay out an empirical specification that estimates the effect of an additional regeneration at a given distance of a census block conditional on other regenerations taking place in that block's neighborhood.

We regress the long-run change in a block's house price level on the number of regenerations taking place in all 100m rings around that block up to 1.2km. To do this, we follow Baum-Snow and Han (2021) and Blanco (2022) by creating a quality-adjusted house price index $\rho_{it}$ for each block $i$ and period $t$, where $t = \{1998\text{-}2002, 2015\text{-}2019\}$.[42] Note that the first period ends before the first regeneration is approved and the second period starts three years after the last regeneration in our balanced sample is approved. Next, we compute the number of estate regeneratons in 2004-2012 within each 100m ring of every block in London and run the following regression:

$$\Delta\rho_i = \alpha_{l(i)} + \sum_{r(i)\in R} \beta_r \text{Regenerated estates}_{r(i)} + \rho_i^{98-02} + \omega \text{X}_i + \varepsilon_i \tag{6}$$

where $\Delta\rho_i = \rho_i^{15-19} - \rho_i^{98-02}$. $r(i)$ denotes 100m rings up to 1.2 km of block $i$ and $\alpha_{l(i)}$ are local authority FE. As control variables $\text{X}_i$, we include baseline census block density, number of households, share of public housing units, share of owners and the baseline house price index.[43]

Accounting for the intensity of treatment yields remarkably similar results to the DID strategy –results do not seem to be driven by overlapping rings. Panel (a) of Appendix Figure A.9 shows the results for Eq. (6). Blocks experiencing one regeneration within 100m experience house appreciations of up to 10%, 4 percentage points higher than in our difference-in-differences estimates. Likewise, we observe negative price effects of up to 2% slightly farther away (around 500m away from the estate) and effects go back to zero beyond 600m. Note that the interpretation of $\beta_r$ is slightly different in this case: it measures the effect of being exposed to an additional regeneration at a given ring. As a robustness check for this specification, panel (b) runs a placebo test using the change in the house price index between 1998-2000 and 2001-2003, both in the pre-period: all coefficients go to zero and become statistically insignificant. We do not replicate this result for rents because data is only available starting in 2006: the pre-treatment period is very short for some

[42] This house price index is the result of running a regression of log house prices on unit characteristics in the sample that includes the years in each of the two periods:

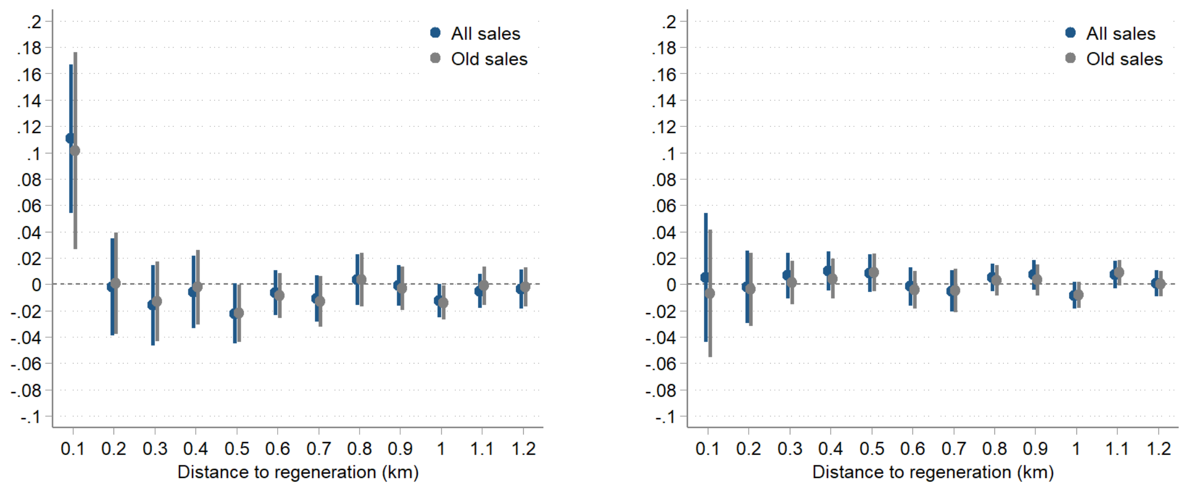
$$\ln(P_{ht}) = \alpha + \tilde{\rho}_{i(h)t} + \gamma X_{ht} + u_{ht}$$

where $X_{ht}$ includes all of the control variables we used in the analysis above, except for block characteristics. $\tilde{\rho}_{i(h)t}$ are block-by-period FE. Then, we generate the house price index as $\rho_{it} = \alpha + \tilde{\rho}_{i(h)t}$.

[43] We adjust standard errors for spatial autocorrelation following Conley (1999).

regenerations, which may not have enough listings and generate a noisy index.

**Figure A.9:** Price effects accounting for treatment intensity and a placebo test




**(a)** Price effects: from 98-02 to 15-19

**(b)** Placebo test: from 98-00 to 01-03

*Note*: The plots report coefficients $\beta_r$ in Eq. (6). Blue estimates use all residential sales to create the house price index $\rho_{it}$, gray estimates only use sales of old houses. Standard errors are adjusted for spatial autocorrelation following Conley (1999).

## A.5 The relationship between crime and house prices

We translate estimated crime reductions in Section 5 into implied house price changes using a back-of-the-envelope calculation that is based on Gibbons (2004). That paper estimates that a 10% (at the sample mean) increase of criminal damage crimes per $km^2$ pushes down property prices in Inner London by 1.5%. This estimate is especially convenient because Gibbons (2004) considers the number of crimes within 250m of a property as the independent variable –and we can compute house price changes using 200m rings in our main specification.

Table A.5 reports the effects on both total crime and criminal damage using Gibbons' methodology. Since Gibbons (2004) measures crime as deviations from a locally weighted average of crimes, we follow that paper and redefine our variable as the difference between the number of crimes in a block group (in 100s per $km^2$) and a locally weighted average of the number of crimes in all other block groups within 2km. Our locally weighted average of variable $x_i$ in block group $i$, $\hat{m}(x_i|d_{i,-j})$, is constructed as follows:

$$\hat{m}(x_i|d_{i,-j}) = \left\{ \sum_{j \neq i} x_j \phi(d_{ij} h_i^{-1}) \right\} \left\{ \sum_{j \neq i} \phi(d_{ij} h_i^{-1}) \right\}^{-1}$$

where $d_{ij}$ is the distance between block group $i$ and $j$, $h_i$ is the standard deviation of $d_{ij}$ for block group $i$. We compute this variable for every block group $i$-year combination.

The estimated 8.84% decrease in criminal damage crimes implies a 1.33% increase in house prices (the sample mean is 1.21 per $km^2$ –in 100s– and criminal damages decreased by 0.107 –column 5), a number that goes up to 1.71% when considering the largest estates. Thus, crime reductions can only explain about one-third of the house price increases within 200m, which we compute to be around 4.5%.

**Table A.5:** Effects of estate regenerations on crime (à la Gibbons (2004))

| | Total crimes | | | | Criminal damage | | | |
|---|---|---|---|---|---|---|---|---|
| | Mixed | | Non-mixed | | Mixed | | Non-mixed | |
| | (1) Full | (2) Large | (3) Full | (4) Large | (5) Full | (6) Large | (7) Full | (8) Large |
| 0-200m | -0.453* | -0.648 | -0.127 | -0.015 | -0.107*** | -0.139** | -0.007 | 0.007 |
| | (0.260) | (0.398) | (0.176) | (0.287) | (0.035) | (0.057) | (0.032) | (0.046) |
| 200-400m | -0.043 | -0.006 | 0.109 | -0.132 | -0.023 | -0.041 | 0.006 | -0.027 |
| | (0.226) | (0.326) | (0.162) | (0.225) | (0.030) | (0.048) | (0.033) | (0.047) |
| 400-600m | -0.196 | 0.145 | 0.185 | 0.312 | -0.023 | -0.014 | -0.010 | -0.023 |
| | (0.174) | (0.192) | (0.188) | (0.302) | (0.021) | (0.025) | (0.025) | (0.035) |
| 600-800m | -0.258* | -0.116 | 0.210 | 0.299 | -0.031 | 0.002 | 0.010 | 0.045 |
| | (0.145) | (0.195) | (0.196) | (0.317) | (0.020) | (0.025) | (0.027) | (0.038) |
| N | 18,076 | 9,337 | 7,930 | 4,363 | 18,076 | 9,337 | 7,930 | 4,363 |
| R-squared | 0.92 | 0.91 | 0.92 | 0.93 | 0.65 | 0.65 | 0.64 | 0.67 |

*Note*: This table estimates Eq. (2) using 200m rings and collapsing the entire post-treatment period into a unique "Post" dummy. Columns 1-4 report the results for the total number of crimes, Columns 5-8 do it only for criminal damage crimes. Within each dependent variable, we report results separately for mixed-income and non-mixed regenerations (mixed-income are the main sample throughout this paper). "Full" columns show estimates for the entire sample, "Large" columns do it for regenerations with a number of existing units above the median of the sample. Panel data goes from year 2008 to 2018 and includes regenerations with a permission approval between 2009 and 2018. Standard errors in parenthesis (clustered at the LA level). Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

## A.6 Cost Effectiveness of Public Housing Regenerations

Our main results indicate that mixed-income regenerations revitalize neighborhoods by improving local amenities and increasing income diversity, even after preserving the amount of public housing. However, regenerations are a costly investment. In this section, we compare the appreciation in nearby housing values due to an additional regenerated public housing unit to the associated costs for the public sector –below we provide the calculation details. We focus on the "place-based" aspect of the policy: we exclude benefits and costs for households in regenerated buildings.

The cost effectiveness analysis is especially challenging in our context. Regarding benefits, an ideal estimate of society's willingness to pay for the policy would be captured by the shift in housing demand after regenerations. However, our estimated price effects do not have a direct welfare interpretation because they conflate demand and supply responses.[44] Hence, we take increases in nearby housing prices as a lower bound for benefits. Regarding costs, we would ideally gather data on the costs of each redevelopment project that are borne by the public sector, but such data is not available. Furthermore, the cost for the public sector may widely vary from estate to estate, since they are the result of a negotiation process between LAs/HAs and developers.[45] More generally, the planning system in London –and the UK– is not based on zoning, i.e. there is no automatic right to build according to some local zoning rules. All planning decisions are discretionary and taken on a case-by-case basis by LAs. In the case of regenerations, this system may be used to relax the budget constraint of LAs, e.g., by allowing developers to build more market-rate housing if they bear a higher share of the cost of new public housing units. In the extreme case, regenerations can come at a zero cost for LAs –and, hence, always pay off. Below, we focus on the case in which the public sector pays a positive amount of the cost.

For the benefits of regeneration, we compute a range of quantities that are likely an underestimate of WTP. First, we estimate that each regenerated unit leads to an increase in the aggregate value of house prices within 100m of £3,227. Second, we estimate that this number adds up to £32,869 when considering rental price increases within 400m. Lastly, we also compute the net present discounted value (NDVP) of changes in long-run earnings of children exposed to regenerations. This concept is just one of many factors that cause the outward shift in the demand curve –but that we can approximate. We translate increases in test scores of incumbent children induced by regenerations as estimated in Neri (2022) to increases in future earnings: each regenerated unit leads to an associated benefit of £21,729 for this concept.[46]

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[44] For this reason, we cannot use the marginal value of public funds to measure the cost effectiveness of public housing regenerations (Hendren and Sprung-Keyser, 2020; Finkelstein and Hendren, 2020).

[45] Housing Committe Members, *"Knock it Down or Do it Up? The Challenge of Estate Regeneration"*, Greater London Authority, February 2015.

[46] Neri (2022) estimates that regenerations increased test scores by 0.091 standard deviations for incumbent children living within approximately 1km of regenerated sites. We closely follow the computation in Hendren and Sprung-

To put these numbers in context, we compute the NPDV of the net costs of regeneration, which include the mechanical costs of the demolition, reconstruction and relocation of households while the development is under construction, minus any fiscal revenues accruing to the government's budget. We approximate the first two types of costs using estimates from research reports. Since the financing of regeneration programs varies from site to site, we consider two scenarios for reconstruction costs: either LAs pay a flat subsidy for each regenerated public housing unit or they pay their full cost. For the latter, we consider a lower and an upper bound given by alternative costs estimates. For relocation, we consider the mean rental price of relocating a household within 800m of an estate in the four years leading to the completion of the project. Regarding fiscal revenues, we subtract tax savings from the council tax (analogous to a property tax) and the stamp duty land tax (a sales tax on house sales) of new market-rate units. In total, we estimate that the regeneration of an additional public housing unit ranges from £147,525 to £430,765.

Thus, estimated housing value appreciations are very low relative to regeneration costs (see Table A.6). While house price increases within 100m account for at most 2.2% of regeneration costs, rent increases within 400m represent between 8 and 22% of regeneration costs. Finally, increases in children's future earnings can account for 5 to 15% of the costs.

## Calculation Details

This section describes the steps to obtain the estimates in Table A.6, which computes the benefits and costs for regenerations with a permission approved between 2004 and 2012. All calculations are expressed in benefits/costs per regenerated public housing unit in the old building. Note that we deflate all estimates to 2001 prices using the Consumer Price Index of all items in the UK from FRED data.[47] Following Hendren and Sprung-Keyser (2020), we also use a discount rate of 0.03 when computing the net present discounted value (NPDV) of benefits and costs –we consider the NPDV at the time of permission approval and that regenerations take 4 years to complete.

### A.6.1 Benefits

We consider the following concepts:

1. *House price increases*. We divide the aggregate effects on house prices within 100m as calculated in Table C.1 by the number of public housing units in the existing buildings.

2. *Rent increases*. We reproduce the calculation in Table C.1 for the NPDV of the change in all future rents within 400m (using 100m ring estimates). We use 2-bedroom rental listings in years 2006 to 2008 to construct baseline rents (deflated to 2001 prices). After converting

Keyser (2020), and convert them into future earnings using the estimate in Kline and Walters (2016).

[47] https://fred.stlouisfed.org/series/GBRCPIALLMINMEI

monthly rents to annual rents, we multiply estimated rent increases within each 100m ring by the number of privately rented units in that ring, calculate the sum for the four rings and divide it by the number of regenerated public housing units.

3. *Children's future earnings*. We use the estimates in Neri (2022) to translate the effects of regenerations on nearby primary school-age children's test scores to future earnings. We closely follow the computation in Hendren and Sprung-Keyser (2020).
   First, we obtain the lifecycle earnings for the average person in London. We use Table 6.7a of the UK's Annual Survey of Hours and Earnings (ASHE), where the mean earnings are reported by age group (18-21, 22-29, 30-39, 40-49, 50-59, 60+). We obtain average earnings at every age by fitting a fourth-order polynomial to a dataset that assigns the mean earnings of each income group to the midpoint age in that group. In this exercise, we assume that individuals earn income only in ages 18-65.
   Second, we compute the number of primary school-age children exposed to regenerations as those living within 1km of the regeneration in 2002. We assume that the number of children of every age between 5 and 11 within 1km is the same at the moment of completion of the regeneration process. For every age and completion year, we estimate the NPDV at the moment of permission of future earnings assuming a wage growth of 0.5% per year, as is assumed in Hendren and Sprung-Keyser (2020). Finally, we aggregate the total NPDV of future earnings of all children within 1km of a regeneration and divide it by the number of public housing regenerated units.

### A.6.2 Costs

We include the following mechanical costs of regeneration:

1. *Demolition costs*. The cost of demolishing a public housing unit includes the cost of physically demolishing the building, home loss and disturbance costs, and buying the remaining private units in the building (previously bought through the RTB scheme). We obtain the demolition cost estimates from Power (2008), which is around £17,500-35,000 per unit in 2006 –we take the upper bound. We place the value of home loss and disturbance at £8,900 in 2018 –from a research report for the regeneration of a specific estate, Aylesbury estate.[48] For buying RTB units, we estimate the average value of old units within 800m of any estate in 2001 and adjust it by the ratio of RTB units to public housing units in the old building.

2. *New construction costs*. Official estimates are not available, thus, we draw on research reports to estimate the construction costs for the government. Since the financing of new units varies

[48]"The Costs of Estate Regeneration: A Report by Architects for Social Housing", by Architects for Social Housing (ASH)

from estate to estate, we consider two different scenarios. On the one hand, we consider that the government pays a flat fee of £100,000 per regenerated unit that stays at social rent (71%) and £38,000 for other rent levels (in 2018 pounds).[49] On the other hand, we consider that the government pays for the full cost of new construction, which might range from £145,500 to £305,000 per unit (in 2016 and 2018 pounds, respectively).[50] We adjust these quantities by multiplying them by the ratio of public housing units in the new relative to the old building.

3. *Relocation costs*. We assume that the cost of relocating one family is equal to the rental price of a 2-bedroom apartment within 800m of a regeneration from the permission to the average completion year. To implement this, we compute the average rent of a 2-bedroom apartment of regenerations taking place between 2007 and 2012 –balanced sample for rental outcomes– and adjust it downwards by 7.5% if it is an asking rent –based on Table A.1. We weight the regeneration-specific average rents by the number of public housing units in the old building and take the NPDV in the permission year.

We subtract the following tax savings:

1. *Council tax savings*. We compute the NPDV of the future stream of new council tax revenues of market-rate units in the new building. The council tax is a lump-sum tax on domestic property. Each property is assigned a council tax band depending on the value of the housing unit at 1991 prices –there are eight bands in total.
   First, we compute the mean council tax rate per band across LAs, weighted by the number of market-rate units in regenerated buildings in each LA. Second, we deflate to 1991 prices all sales of new units taking place in regenerated blocks from years 0 to 6 relative to permission. Third, we apply the corresponding mean council tax rate to each sale according to their council tax band. Fourth, we compute the aggregate NPDV of all future revenues. Finally, we express this number in terms of pounds per regenerating units. We first multiply it by the ratio of the change in total market-rate units in the building to the number of observed new unit sales in order to reflect all new market-rate units –rental units included. Then, we divide this number by the number of regenerated public housing units.

2. *Stamp duty land tax savings*. We compute the NPDV of the stamp duty land tax (analogous to a property tax), which is imposed on the purchase of land and properties with values over a certain threshold. To do this, we apply the tax to all sales of new units in regenerated blocks according to their value –we use the rates just before July 2020. We aggregate these quantities,

[49] Source: Mayor of London, *"Building Council Homes for Londoners"*, Funding Prospectus, May 2018. These quantities are grants that LA can obtain from the Greater London authority.

[50] Sources: "Completing London's Streets", by Savills UK (Research Report to the Cabinet Office) and ASH

compute the NPDV in the permission year, and divide it by the number of regenerated public housing units.

**Table A.6:** Cost effectiveness calculations of public housing regenerations

| | |
|---|---|
| **Benefits** | |
| House price increases | £3,227 |
| Rent increases | £32,869 |
| Children's future earnings | £21,729 |
| **Costs** | |
| + Demolition costs | £83,513 |
| + New construction costs | ? |
| + Relocation costs | £47,580 |
| – Council tax savings | £41,511 |
| – Stamp duty land tax savings | £4,816 |
| *Total costs* (new construction costs in parenthesis) | |
| If LA pays subsidy per units | £147,525 |
| | (£62,759) |
| If LA pays full new construction (lower bound) | £312,936 |
| | (£228,170) |
| If LA pays full new construction (upper bound) | £430,765 |
| | (£345,999) |

*Note*: The quantities in this table are expressed in 2001 pounds per regenerated public housing unit. Appendix A.6 provides the details of this calculation.

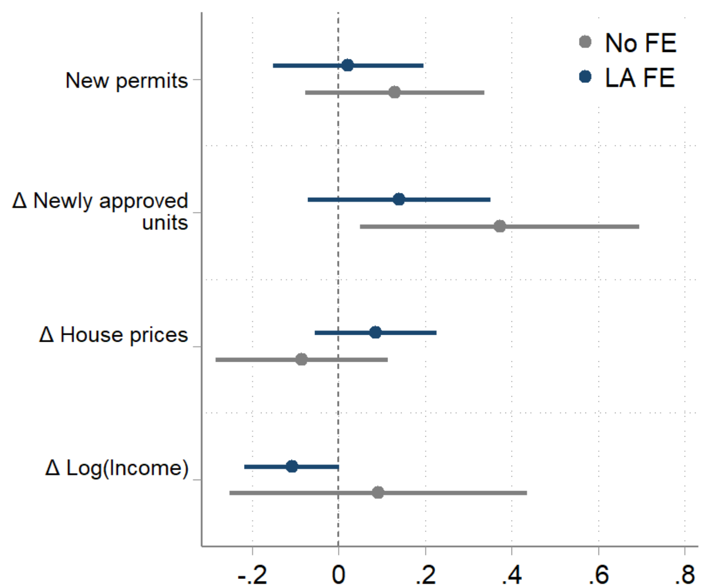
# B Figures

**Figure B.1:** The regeneration of the Meredith Tower in West London

**(a)** Existing building **(b)** New building

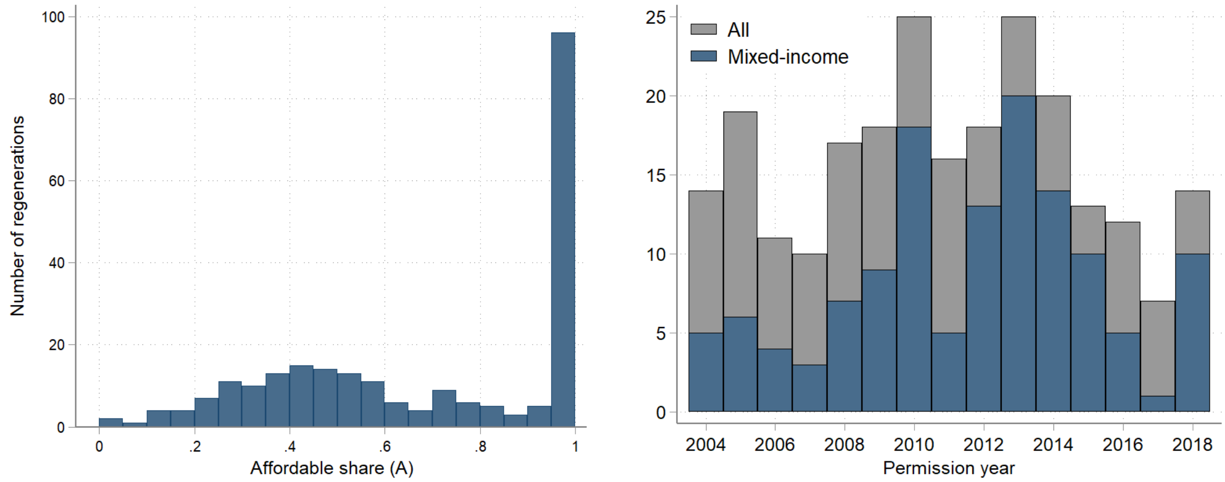
*Note*: This figure shows an example of a regeneration program carried out in West London. Panel A shows the building slated for demolition; Panel B shows a digital rendering of the new building constructed on site.

**Figure B.2:** Selection of estate regenerations




*Note*: This figure regresses each variable on the y-axis on a dummy indicating whether a census block group experienced a mixed-income regeneration between 2004 and 2018, using the sample of all block groups in London. The first two outcome variables refer to the total number of planning applications and the total number of new units, respectively, approved within 800m of a block group between 2001 and 2010. The last two variables are defined as the change in house prices (as constructed in Appendix A.4) and the change in the logarithm of mean household income within 800m of a block group between 2001 and 2004. Estimates in blue include LA fixed effects, estimates in gray do not. All outcome variables are standardized.

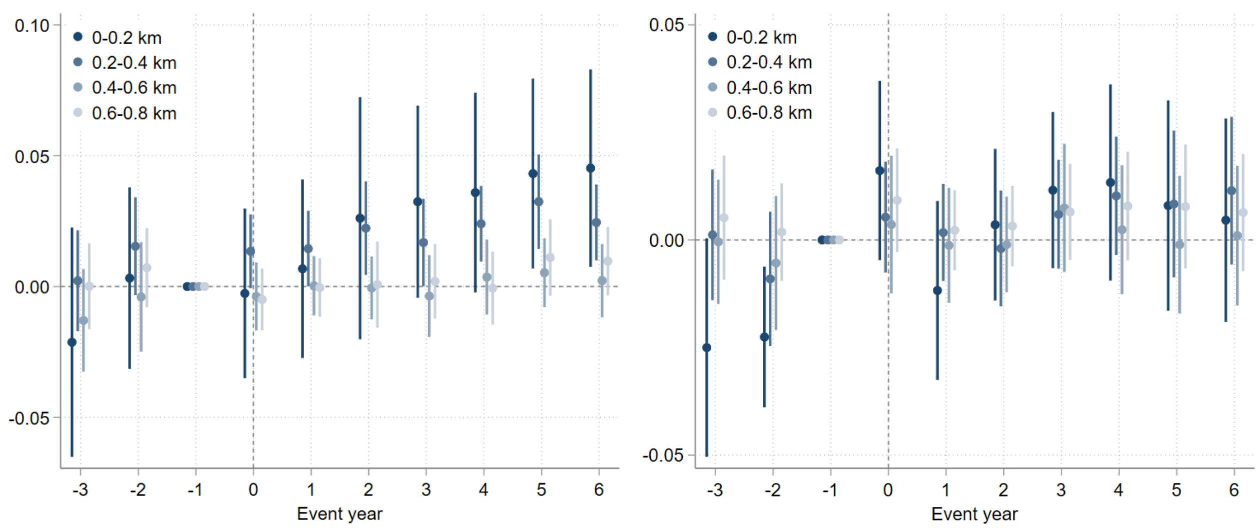
**Figure B.3:** Histograms of public housing share in the new building and timing




**(a)** Share of public housing - new building **(b)** Estate regenerations by year

*Note*: The plots use the sample of estates regenerated between 2004 and 2018.

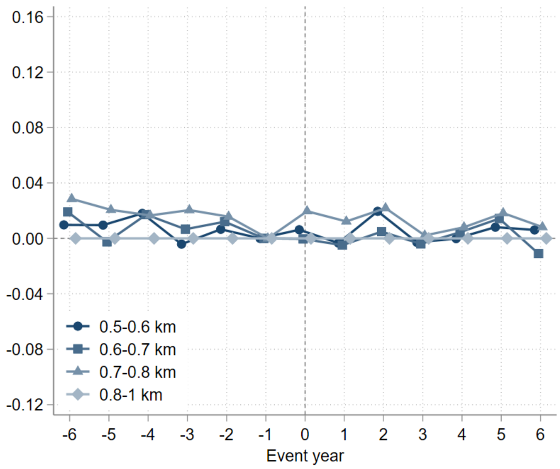
**Figure B.4:** Effects on rents by choice of treatment period



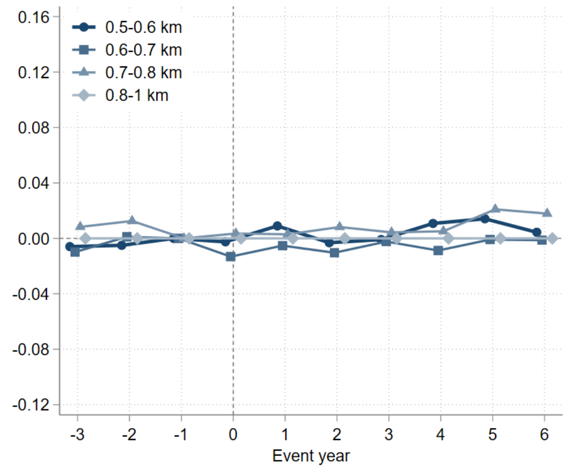

**(a)** Around permission year **(b)** Around completion year

*Note*: The plots report coefficients $\beta_{\tau,r}$ in Eq. (1). Both plots use the sample of estate regenerations in 2007-2012.

**Figure B.5:** Effects of estate regenerations on house prices and rents beyond 500m



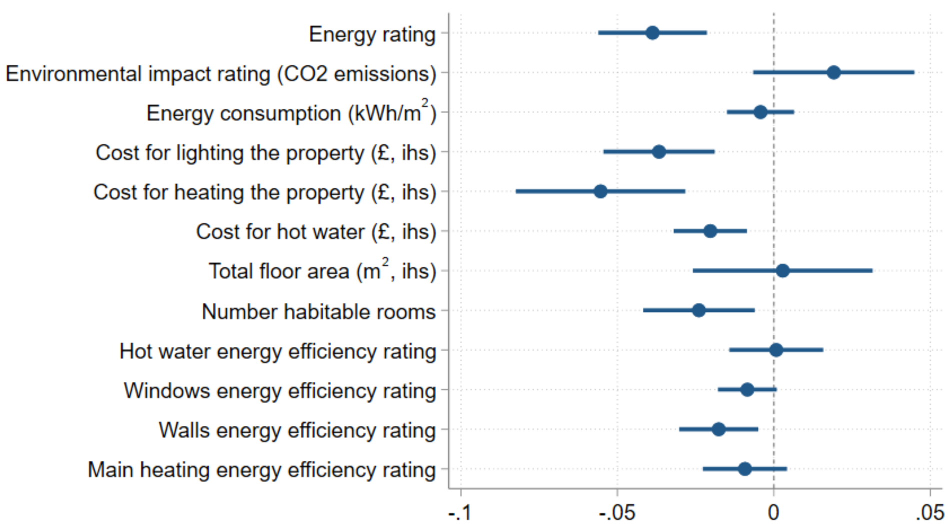

**(a)** House prices




**(b)** Rents

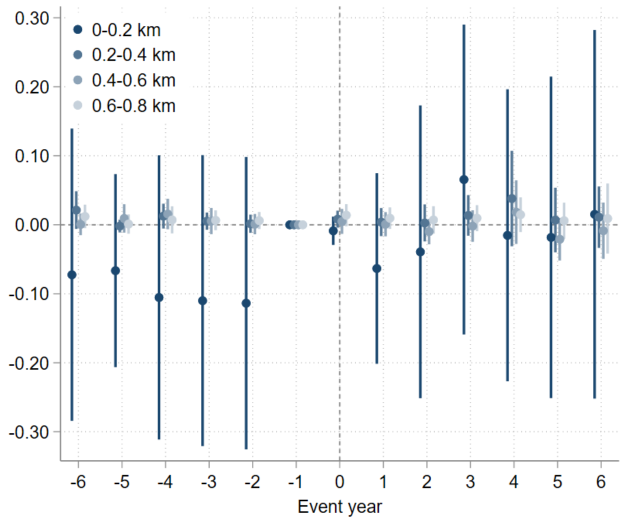
*Note*: The plots report coefficients $\beta_{\tau,r}$ in Eq. (1) for each concentric 100m ring beyond 500m of a regenerated estate. The omitted category is housing units within 0.8-1km of the regeneration. Panel (a) uses the balanced sample of estate regenerations with a permission approval in 2004-2012; panel (b) uses those with a permission approval in 2007-2012.

**Figure B.6:** EPC differences between rental and owner-occupied units at baseline

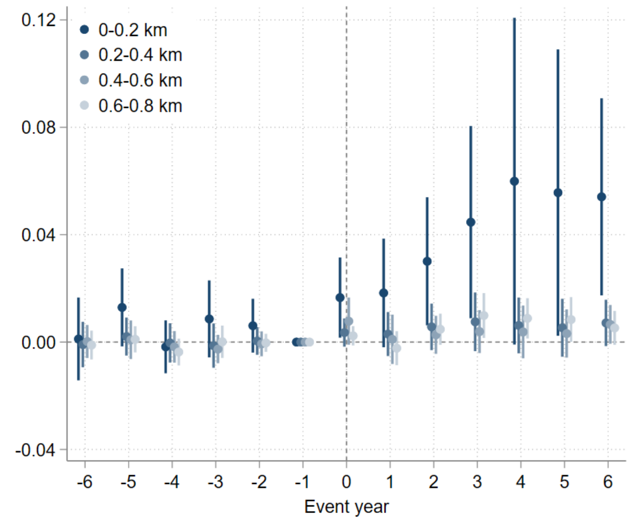



*Note*: The plot regresses a dummy variable indicating whether a property is rented (vs. owner-occupied) on several unit characteristics as reported in Energy Performance Certificates (EPC). "ihs" indicates that we use the inverse hyperbolic sine transformation of the variable. Energy ratings go from A to G, and we transform it into integers going from 7 to 1 –higher numbers denote higher energy efficiency. Energy efficiency ratings in the last four rows are also reported in five categories ("Very good", "Good", "Average", "Poor", "Very poor") that we transform in a similar way. For the regression, we standardize all variables by subtracting their mean and dividing by their standard deviation. The sample includes all owner-occupied and rental units that were issued an EPC three to one years before the corresponding permission approval for regeneration and were located within 800m of a regeneration approved between 2009 and 2012. The regression includes estate fixed effects and standard errors are clustered at the estate level.

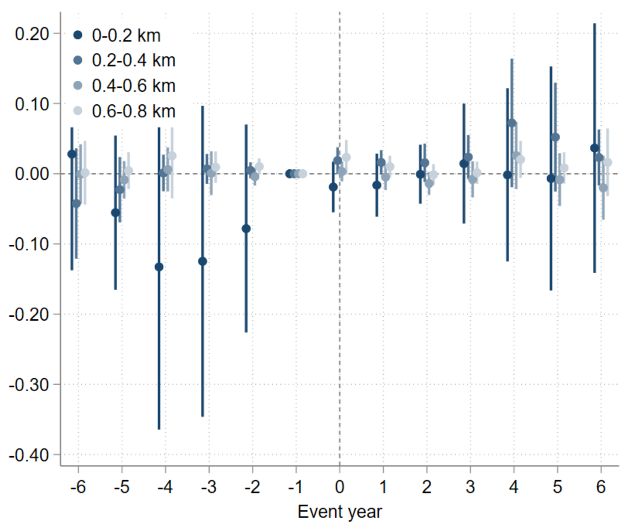
**Figure B.7:** Effects of estate regenerations on house sales and rental listings



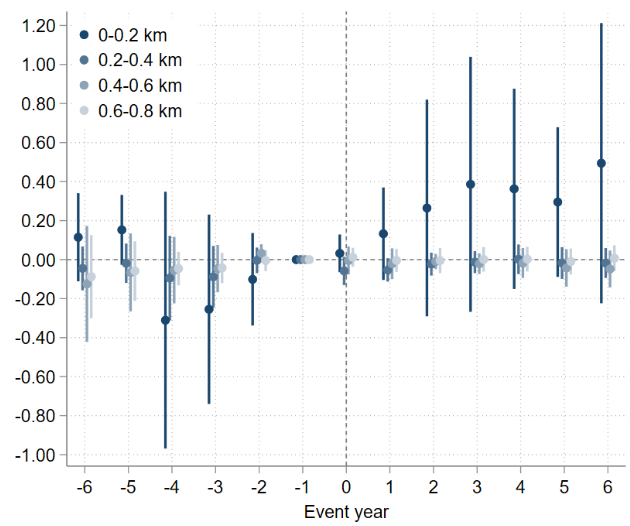

**(a)** Sales of new houses




**(b)** Sales of old houses



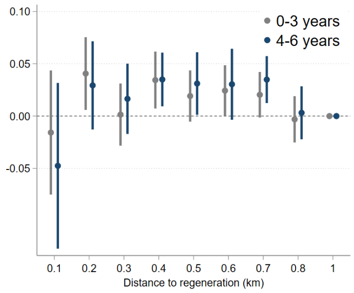

**(c)** Rental listings of new houses



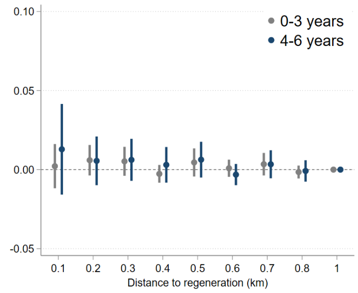

**(d)** Rental listings of old houses

*Note*: The plots report coefficients $\beta_{\tau,r}$ in Eq. (1). For rental listings, we distinguish between "new" and "old" using text analysis on the description of the rental listing. Panels (a) and (b) use the balanced sample of estate regenerations with a permission approval in 2004-2012; panels (c) and (d) use those with a permission approval in 2007-2012.

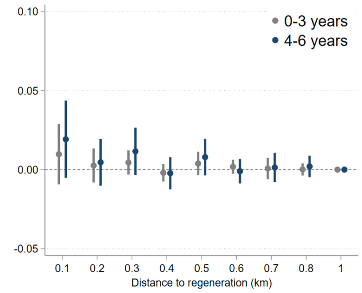
**Figure B.8:** Effects on rental listings' description (building characteristics)




**(a)** Garden (0.250)



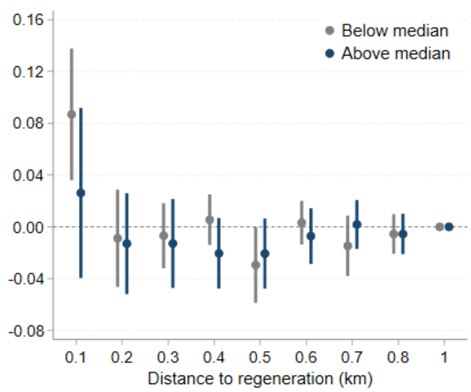

**(b)** Gym (0.097)



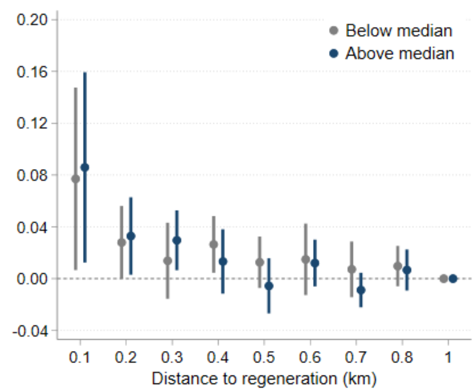

**(c)** Concierge (0.124)

*Note*: Coefficients and 95% confidence intervals are obtained by estimating Eq. (2) on the sample of rental listings using 100m rings. The plots use the balanced sample of estate regenerations with a permission approval in 2007-2012. Numbers in parenthesis report the pre-treatment period average of the variable for listings within 800m of regenerations.

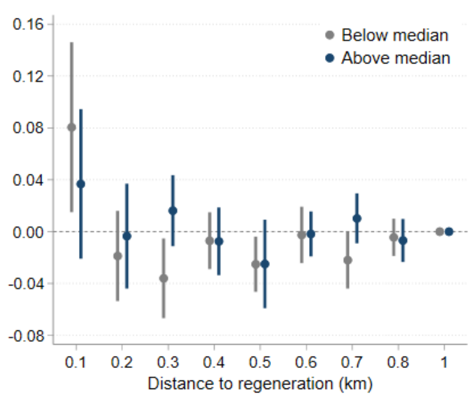
**Figure B.9:** Heterogeneity by the magnitude of the public and total supply shock



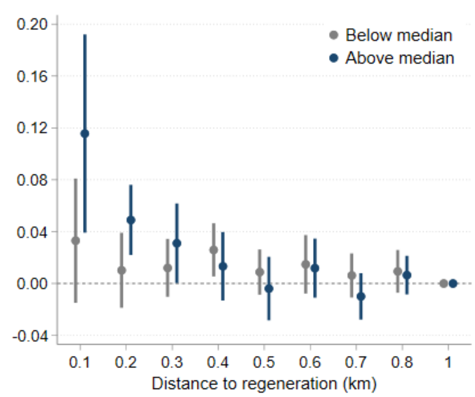

**(a)** Public shock - House prices




**(b)** Public shock - Rents



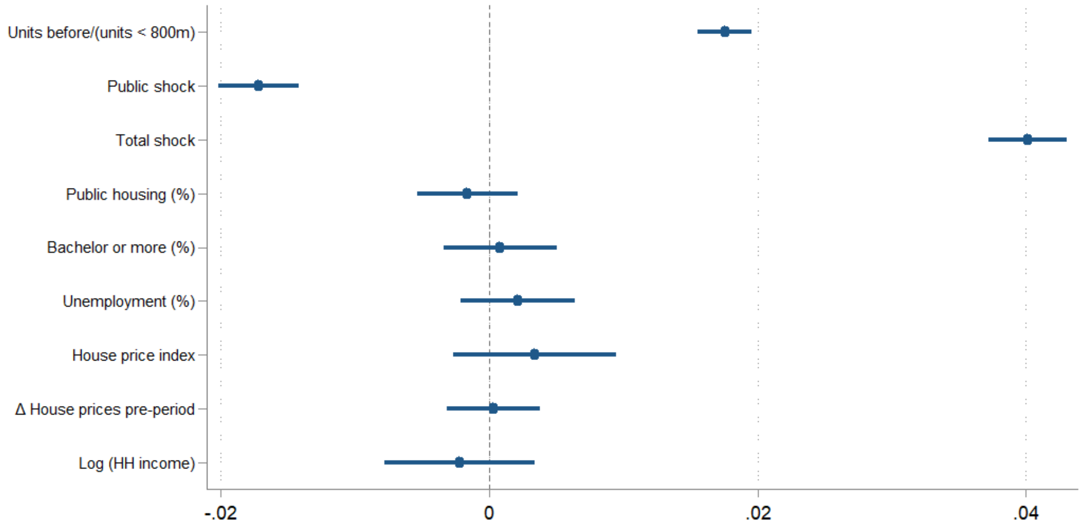

**(c)** Total shock - House prices




**(d)** Total shock - Rents

*Note*: This figure replicates Fig. VIII using the public shock and the total supply shock as heterogeneity variables.

**Figure B.10:** Correlation of the market shock with building and neighborhood characteristics




*Note*: This figure presents the estimated coefficients and 95% confidence intervals of a multivariate regression of the "market shock" variable on several building (units before, affordable shock, total shock) and neighborhood (the remaining variables) characteristics. The sample contains regenerations in the balanced sample, i.e. with a permission between 2004 and 2012. All variables used as regressors are standardized.

# C Tables

**Table C.1:** Back-of-the-envelope calculation: overall house price changes

| | (1)<br>Total (M) | (2)<br>Per unit | (3)<br>Pct. (%) |
|---|---|---|---|
| All sales estimates | -426.3 | -1,697.7 | -0.8 |
| Old sales estimates | -457.8 | -1,823.8 | -0.8 |

*Notes*: For the computation, the table uses average raw house prices at the census block level in the period 2000-2002, and the number of private housing units in 2001 times the average raw house prices as the housing stock value measure. Aggregate price changes are calculated in 2000-2002 millions of pounds, price changes per unit in pounds.

**Table C.2:** Robustness checks: effects of regenerations on house prices and rents 4 to 6 years after permission

| | House prices | | | | | | Rents | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Main | Sample | | Duplicates | | | Main | Sample | | Duplicates | | | Controls |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
| | | Old | Rental | Nearest | Earliest | None | | Old | Balanced | Nearest | Earliest | None | Quality |
| 0-100m | 0.054** | 0.060*** | 0.061** | 0.049** | 0.077*** | 0.089*** | 0.081*** | 0.088*** | 0.085*** | 0.106*** | 0.079** | 0.081** | 0.069** |
| | (0.022) | (0.022) | (0.024) | (0.021) | (0.023) | (0.028) | (0.025) | (0.025) | (0.028) | (0.027) | (0.031) | (0.034) | (0.027) |
| 100-200m | -0.011 | -0.009 | -0.002 | -0.011 | -0.002 | -0.008 | 0.030*** | 0.034*** | 0.031*** | 0.031** | 0.028*** | 0.027** | 0.025** |
| | (0.014) | (0.015) | (0.016) | (0.015) | (0.015) | (0.017) | (0.010) | (0.011) | (0.011) | (0.015) | (0.009) | (0.010) | (0.011) |
| 200-300m | -0.010 | -0.009 | -0.002 | -0.005 | -0.015 | -0.017 | 0.021** | 0.023** | 0.022** | 0.032*** | 0.016 | 0.013 | 0.018* |
| | (0.011) | (0.011) | (0.012) | (0.012) | (0.012) | (0.013) | (0.009) | (0.010) | (0.010) | (0.012) | (0.010) | (0.011) | (0.010) |
| 300-400m | -0.007 | -0.009 | -0.012 | -0.015 | -0.003 | 0.001 | 0.020** | 0.019** | 0.017** | 0.029** | 0.024** | 0.011 | 0.021** |
| | (0.008) | (0.008) | (0.010) | (0.010) | (0.010) | (0.012) | (0.008) | (0.009) | (0.008) | (0.011) | (0.009) | (0.008) | (0.009) |
| 400-500m | -0.025** | -0.025** | -0.031*** | -0.021** | -0.034*** | -0.037*** | 0.003 | 0.003 | 0.006 | 0.004 | 0.004 | -0.003 | 0.000 |
| | (0.010) | (0.010) | (0.011) | (0.010) | (0.010) | (0.013) | (0.007) | (0.008) | (0.008) | (0.007) | (0.007) | (0.007) | (0.008) |
| 500-600m | -0.002 | -0.004 | -0.001 | -0.003 | -0.005 | -0.011 | 0.013 | 0.014* | 0.013 | 0.013 | 0.012 | 0.008 | 0.014 |
| | (0.007) | (0.007) | (0.008) | (0.009) | (0.008) | (0.010) | (0.008) | (0.009) | (0.009) | (0.008) | (0.009) | (0.009) | (0.009) |
| 600-700m | -0.006 | -0.009 | -0.004 | -0.010 | -0.011 | -0.022** | -0.001 | -0.002 | 0.001 | 0.004 | -0.006 | -0.012* | -0.001 |
| | (0.008) | (0.008) | (0.009) | (0.010) | (0.008) | (0.010) | (0.006) | (0.006) | (0.006) | (0.007) | (0.006) | (0.007) | (0.006) |
| 700-800m | -0.006 | -0.005 | -0.003 | -0.008 | -0.010 | -0.017 | 0.008 | 0.010 | 0.003 | 0.007 | 0.005 | -0.007 | 0.007 |
| | (0.005) | (0.006) | (0.006) | (0.007) | (0.008) | (0.011) | (0.006) | (0.006) | (0.005) | (0.007) | (0.007) | (0.007) | (0.006) |
| N | 412,847 | 342,595 | 326,874 | 331,737 | 331,744 | 271,510 | 1,018,970 | 921,546 | 890,070 | 819,433 | 819,568 | 678,825 | 963,149 |
| R-squared | 0.80 | 0.80 | 0.79 | 0.81 | 0.82 | 0.83 | 0.80 | 0.79 | 0.80 | 0.81 | 0.81 | 0.83 | 0.80 |

*Note*: The table reports estimates of coefficients $\theta_{1,r}$ (relative years 4-6) in Eq. (2) using 100m rings using the logarithm of house prices (Columns 1-6) and rents (Columns 7-13). Columns (1) and (7) report the results for the main specifications in Fig. (III). For house prices, we use regenerations with a permission approval in 2004-2012; for rents, in 2007-2012. Columns (2) and (8) only excludes newly constructed units from the analysis. Column (3) uses the sample of regenerations with a permission approval in 2007-2012, and Column (9) uses those within the period 2009-2012. Columns 4-6 and 10-12 drop duplicated sales/listings by either keeping the duplicate that is closest to the regeneration, keeping the duplicate for which the regeneration is announced the earliest, or dropping all duplicates. Standard errors in parenthesis (clustered at the estate level). Column (13) runs the main specification including as controls indicators for the presence of several keywords (“refurbish”, “luxury”, “washing machine”, “gym”, “garden”, and “concierge”) in a listing’s description. Standard errors in parenthesis (clustered at the estate level). Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

**Table C.3:** Heterogeneity: by neighborhood characteristics

| | Building size | | HH income | | Baseline prices | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | $<$ p50 | $\geq$ p50 | $<$ p50 | $\geq$ p50 | $<$ p50 | $\geq$ p50 |
| *Panel A*: House prices | | | | | | |
| 0-100m | 0.078*** | 0.030 | 0.011 | 0.096*** | 0.052* | 0.058* |
| | (0.029) | (0.032) | (0.029) | (0.030) | (0.029) | (0.031) |
| 100-200m | -0.017 | -0.005 | -0.023 | -0.001 | -0.023 | 0.002 |
| | (0.018) | (0.020) | (0.019) | (0.019) | (0.018) | (0.020) |
| 200-300m | -0.034** | 0.010 | 0.003 | -0.022 | -0.021 | 0.001 |
| | (0.016) | (0.013) | (0.011) | (0.018) | (0.015) | (0.015) |
| 300-400m | -0.012 | -0.002 | -0.003 | -0.011 | -0.003 | -0.011 |
| | (0.013) | (0.010) | (0.014) | (0.010) | (0.014) | (0.010) |
| 400-500m | -0.017 | -0.033** | -0.023 | -0.027* | -0.027* | -0.023* |
| | (0.013) | (0.015) | (0.014) | (0.014) | (0.014) | (0.014) |
| N | 412,847 | 412,847 | 412,847 | 412,847 | 412,847 | 412,847 |
| R-squared | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| *Panel B*: Rents | | | | | | |
| 0-100m | 0.033 | 0.120*** | 0.095** | 0.072** | 0.030 | 0.112*** |
| | (0.030) | (0.034) | (0.039) | (0.033) | (0.036) | (0.032) |
| 100-200m | 0.018 | 0.043*** | 0.059*** | 0.005 | 0.043*** | 0.021 |
| | (0.014) | (0.015) | (0.014) | (0.013) | (0.015) | (0.014) |
| 200-300m | 0.003 | 0.037*** | 0.038** | 0.003 | 0.018 | 0.024** |
| | (0.014) | (0.012) | (0.015) | (0.010) | (0.016) | (0.011) |
| 300-400m | 0.018 | 0.021* | 0.027** | 0.011 | 0.023** | 0.017 |
| | (0.012) | (0.012) | (0.013) | (0.010) | (0.011) | (0.012) |
| 400-500m | 0.008 | -0.003 | 0.018*** | -0.013 | 0.008 | -0.001 |
| | (0.010) | (0.011) | (0.007) | (0.013) | (0.008) | (0.012) |
| N | 1,018,970 | 1,018,970 | 1,018,970 | 1,018,970 | 1,018,970 | 1,018,970 |
| R-squared | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |

*Note*: The table reports point estimates for coefficients $\theta^0_{1,r}$ (gray) and $\theta^1_{1,r}$ (blue) in Eq. (2) using 100m rings. Panel A uses the logarithm of house prices as an outcome on the balanced sample of estate regenerations with a permission approval in 2004-2012; panel B uses the logarithm of rents on regenerations with a permission approval in 2007-2012. The first two columns use the original number of units in the estate as the heterogeneity variable. The next two columns use mean household income in the estate's census block group. The last two columns use the baseline house price index in the estate's census block group as constructed in Appendix A.4. Odd columns report estimates for estate regenerations that are below the median of the heterogeneity variable, even columns do the same for those that are above. Standard errors in parenthesis (clustered at the estate level). Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

**Table C.4:** Quality differences of new market-rate units on-site by market shock

| | Unit chars. | | | Building chars. | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Luxury | Modern | Washing | Pool | Gym | Garden | Concierge |
| Market shock > p50 | 0.082 | -0.129* | -0.078 | -0.004 | -0.028 | -0.052 | 0.016 |
| | (0.057) | (0.074) | (0.049) | (0.006) | (0.035) | (0.062) | (0.051) |
| House chars. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Census chars. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| School chars. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Distance to tube | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Baseline nhood chars. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 3,180 | 3,180 | 3,180 | 3,180 | 3,180 | 3,180 | 3,180 |
| R-squared | 0.18 | 0.10 | 0.13 | 0.19 | 0.33 | 0.22 | 0.21 |
| Y mean | 0.18 | 0.51 | 0.14 | 0.01 | 0.06 | 0.33 | 0.10 |

*Note*: This table regresses dummy variables indicating the presence of the corresponding keyword in the listing description of market-rate units in regenerated blocks on the market shock dummy $Z_e$ for listings taking place after completion. As control variables, we include the controls $\mathbf{X_{ht}}$ in Eq. (1), as well as year FE, a dummy for Inner London, the number of units in the estate before and after, and neighborhood household income and baseline house prices. Standard errors in parenthesis (clustered at the LA level). Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$