Cheaper to Buy, Dearer to Rent?: The Local Effects of New Housing Supply in Berlin*

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Abstract

New housing can lower nearby housing costs by competing with existing homes, or raise them by making the neighbourhood more attractive. We study these opposing forces in Berlin, linking 1,180 residential developments to condominium transactions, rental listings, historical site records and local establishment counts. A stacked difference-in-differences design compares existing flats within 200 metres of a development with flats 300–500 metres away. Averaged over the five years from completion, asking rents rise by 2.1%, while purchase prices fall by 1.9%. Price declines increase with estimated net additions and are larger in later years around condominium projects, while rent increases are smaller around rental projects, pointing to competition from close substitutes. Rents also rise around sites with little prior construction, where food and drink establishments expand most clearly, so the increase is not confined to the replacement of existing homes.

Keywords: Housing supply; Housing prices and rents; Neighbourhood change.
JEL codes: R21, R23, R31.

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1 Introduction

Over recent decades, housing has absorbed a growing share of household spending across OECD countries, leaving less room for other expenses (OECD, 2026). One source of this pressure is that constraints on construction can prevent housing supply from keeping pace with demand, pushing up prices (Baum-Snow, 2023). To improve affordability, governments have sought to expand supply through construction targets, planning reforms and development subsidies. In Germany, the Pestel Institute estimates that the country faced a shortage of roughly 0.8–1.4 million homes at the end of 2024 (Pestel Institut GmbH, 2026). Federal efforts to expand supply include an annual target of 400,000 new homes, announced in 2021, alongside more recent financial support and planning reforms.[1]

However, new construction need not improve affordability in the surrounding neighbourhood. Renters may support building more homes across the city while opposing nearby projects if they expect local rents to rise (Hankinson, 2018; Been et al., 2019). Tenant organisations have also raised concerns that redevelopment can replace older rental homes with more expensive housing (Bartels and Tietzsch, 2023; ACORN Canada, 2016). Even a development that replaces few existing homes can bring new residents whose spending supports additional shops and services. If prospective tenants value those amenities, demand for nearby rental homes may rise. Yet Asquith et al. (2023) find that new apartment buildings lower nearby rents, and Li (2022) documents restaurant entry alongside falling rents. These findings suggest that additional supply can outweigh the increase in neighbourhood demand. How far it does so depends in part on which existing homes the new flats compete with. A development that mainly adds homes for sale may therefore lower nearby purchase prices even as stronger neighbourhood demand pushes up asking rents.

We study this question in Berlin, where rental housing accounted for 85.1% of the city's housing stock in 2024 (Investitionsbank Berlin, 2026). We compare how nearby condominium purchase prices and asking rents respond to new development, asking whether the downward pressure is greater in the market the new flats are intended to serve. We also examine whether the responses vary with how much housing projects add and what they replace, and whether development is accompanied by changes in neighbourhood services.

[1] The 2021 target included 100,000 publicly subsidised homes (Bundesregierung, 2021). More recent measures include subsidised loans for residential construction and €23.5 billion in social housing funding through 2029 (Bundesregierung, 2026a). The Bau-Turbo reform, which entered into force in October 2025, allows exemptions from planning requirements for eligible housing projects, subject to municipal consent (Bundesregierung, 2026b).

We assemble a novel dataset of 1,180 residential projects comprising approximately 99,000 recorded flats. Project locations, reported completion years and other characteristics come from the Deutsches Architektur-Forum, supplemented with public-source research and manual checks.[2] We link the projects to official condominium transactions recorded by the Berlin Valuation Committee and ImmobilienScout24 rental advertisements accessed through FDZ Ruhr at RWI. The two sources record agreed purchase prices and asking rents. Historical building and land-use records from 2010 describe prior site use and support a proxy for net housing additions. Annual OpenStreetMap records provide counts of nearby food and drink establishments.

Developers choose sites in response to land availability, access to jobs and transport, and expected neighbourhood growth, so a comparison with other parts of Berlin would mix the effects of construction with the conditions that attracted it. We therefore use a stacked difference-in-differences design to compare flats within 200 m of a development with flats 300–500 m away in the same neighbourhood, before and after completion.[3] To identify how new development affects purchase prices and asking rents for existing homes, we include only flats in buildings completed at least two calendar years before the development's completion. This prevents the entry of newly built flats, which may differ in quality and price, from mechanically shifting the observed averages.

The baseline estimates point to different responses in the purchase and rental markets. Averaged over the completion year and the following four years, asking rents rise by 2.1% relative to the comparison areas, while the purchase-price estimate is a decline of 1.9%.

We first examine whether the local responses are consistent with competition from newly built flats. If new supply competes with existing homes, we would expect greater downward pressure where projects add more housing or where the new flats are close substitutes. Averaged over the completion year and the following four years, the fitted purchase-price decline is 2.9% at 42 net dwelling equivalents and 3.4% at 84. Asking rents vary little with estimated net additions. The comparison by intended tenure also points to differences across markets. In years three and four, purchase-price estimates are more negative around condominium projects, while asking-rent increases are smaller around rental projects. This pattern is consistent with stronger competition within the market the new flats are intended to serve. Rental projects are larger on average, so the larger price declines around condominium projects suggest that the type of housing added matters alongside project size.

[2] The Deutsches Architektur-Forum is a German-language online forum on architecture, construction and urban development. Its project threads contain user-contributed updates and photographs documenting individual developments.

[3] This near-versus-far comparison follows Asquith et al. (2023) and Li (2022); Butts (2023) formalises the identifying conditions for such spatial designs. We omit the intervening 200–300 m band to separate the two groups and exclude comparison observations within 200 m of another recorded project.

We then examine whether the increase in asking rents is concentrated around developments that were more likely to remove existing homes. Tenant organisations have raised concerns that redevelopment can replace older rental homes with more expensive housing.[4] We use the 2010 building and land-use records to distinguish residential replacement sites, which had substantial structures on residential land, from sites with no or only marginal structures. Asking rents rise around both groups. Averaged over the completion year and the following four years, the estimated increases relative to the comparison areas are 2.9% around residential replacement sites and 2.0% around sites with no or marginal prior structures.

Finally, we examine whether neighbourhood upgrading could help explain the rise in asking rents around developments on sites with little prior construction. We track nearby food and drink establishments as one measure of changes in local services. The number of recorded establishments rises after completion, including around these sites. Across the full establishment sample, the estimated increase averages 3.5% over the completion year and the following four years. Stronger neighbourhood demand need not raise purchase prices as well. In the purchase market, it can be offset by competition from new condominium developments, which outnumber rental developments in our data by about two to one. Purchase prices also capitalise expected future rents, so they can respond differently from current asking rents when new development changes expectations of future supply nearby (Molloy et al., 2022).

These estimates speak only in part to the concerns that motivate local opposition to construction. Asking rents describe the terms offered to prospective tenants, while purchase prices describe those faced by buyers, who include both owner-occupiers and investors. The two outcomes also cover different flats and project samples, so their contrast need not reflect a change in the price-to-rent ratio of the same properties. Higher nearby asking rents are consistent with the local rent increases that renters may anticipate when opposing new projects. However, they do not measure the rents paid by incumbent tenants, whose gains and losses also depend on their tenure and whether they move. Finally, the design compares areas within the same neighbourhood and absorbs responses shared across the city. Higher asking rents close to construction can therefore coexist with lower rents in the wider housing market, which is the scale at which supply targets aim to improve affordability.

[4] In Berlin, Bartels and Tietzsch (2023, p. 2) argue that demolition can replace affordable rental housing with more expensive homes, including units sold to owner-occupiers. In Burnaby, Canada, tenant organisations opposed the replacement of low-rise rental buildings with condominium towers (ACORN Canada, 2016). Related evidence from San Francisco shows that landlords responded to expanded rent control by converting rental units to owner-occupation or redeveloping buildings into housing exempt from rent control, shifting the stock towards higher-end condominiums and new rental housing (Diamond, McQuade, and Qian, 2019).

Our paper contributes to two strands of literature. The first examines how housing supply affects housing costs. Moving-chain evidence shows how new market-rate homes can release housing in lower-income neighbourhoods (Mast, 2023; Bratu et al., 2023), and Mense (2025) finds rent reductions across the distribution in German regional markets. These wider adjustments can coexist with different responses close to construction, where new housing may also change neighbourhood demand. Market-rate apartment construction lowers nearby rents in Asquith et al. (2023) and Pennington (2025). Subsidy-induced construction raises nearby purchase prices in Montevideo (González-Pampillón, 2022), while Low-Income Housing Tax Credit developments raise prices in low-income US neighbourhoods and lower them in higher-income areas (Diamond and McQuade, 2019). Our focus is the joint response of purchase prices and asking rents at this immediate neighbourhood scale.

The closest comparison is Li (2022), who jointly studies rents, condominium prices and restaurant entry around New York high-rise completions. Restaurants expand while both housing outcomes decline. Li also examines existing property types and the tenure of new buildings, finding no statistically detectable difference in the rental response between rental and condominium/co-op high-rises and no significant condominium-price decline around new rental buildings. Singh and Baldomero-Quintana (2026) find higher assessed values of nearby rental buildings, new amenities and higher-income arrivals following tax-incentive-induced rental construction.[5] We add evidence from Berlin, where the baseline purchase-price estimate is negative and the asking-rent estimate positive, and relate these patterns to measured housing additions, intended tenure and prior site use.

Comparisons across housing segments help assess which existing homes compete with new units. Damiano and Frenier (2026) find higher rents in lower-priced buildings and lower rents in higher-priced buildings, despite an insignificant average effect. Chen et al. (2026) distinguish low-income rental, mixed-income and market-rate developments in Amsterdam, finding positive nearby purchase-price spillovers from low-income rental construction and larger effects for infill than redevelopment. These comparisons distinguish the segment of existing housing affected from the type of housing entering a neighbourhood. In Berlin, we use intended tenure to examine whether the contrasting purchase and rental responses are consistent with competition from close substitutes. Intended tenure describes the development's planned use; condominiums may subsequently be let.

The relevant supply change also depends on what construction removes or replaces. Baum-Snow and Han (2024) show that teardowns and renovations are important margins of

[5]The rental outcomes differ across studies. Li uses annual gross rental income per unit from building records, incorporating vacancies and concessions. Singh and Baldomero-Quintana use tax-assessed rental-building valuations as a proxy for rental income. We observe asking rents in advertisements for individual flats.

housing-supply adjustment. Nygaard et al. (2024) distinguish infill projects by net dwelling additions and show that purchase-price responses differ across the surrounding housing types. Studies of public-housing demolition and redevelopment find higher local housing values and rents (Blanco, 2023; Liu, 2026), highlighting that redevelopment can change both the housing stock and its surroundings. We use historical building footprints and land use to construct a proxy for net additions and distinguish sites with substantial prior residential structures. These measures allow us to assess the net-supply prediction in both markets and examine whether the positive rental response extends beyond substantial residential replacement.

The second strand studies how service provision and residential sorting reinforce one another. Diamond (2016) shows how endogenous amenity improvements amplify the sorting of workers by skill across cities. Couture and Handbury (2020) provide complementary evidence on demand: the growing taste of young college graduates for restaurants, nightlife and other non-tradable services helps explain their movement towards city centres. Within cities, Almagro and Domínguez-Iino (2025) model the feedback between the composition of local demand, service provision and household location choice. Baum-Snow and Hartley (2020) find that changes in amenity valuations across demographic groups help explain changes in the composition of US city centres. For residential construction, this implies that new residents may change demand both for housing and for local services.

Studies of business dynamics distinguish growth in establishment counts from changes in the mix of services. Behrens et al. (2024) identify cultural, recreational and creative businesses that predict subsequent gentrification. Glaeser et al. (2023) find that gentrifying neighbourhoods experience both establishment growth and higher closure rates, with little evidence of changes in retail mix or prices. For residential construction, the restaurant and amenity responses in Li (2022) and Singh and Baldomero-Quintana (2026) show that local services can change alongside new housing. We extend these comparisons by tracing food and drink establishment counts across historical site types, including sites with little prior built space.

The remainder of the paper proceeds as follows. Section 2 describes the data on construction projects, condominium transactions, rental listings, historical site use and food and drink establishments. Section 3 sets out the empirical strategy. Section 4 presents the baseline responses of purchase prices and asking rents and examines how they vary with net housing additions, intended tenure and prior site use. Section 5 studies food and drink establishments around new developments, and Section 6 concludes with implications for households and housing policy.

2 Data

We combine data on residential developments, condominium transactions, rental advertisements and local food and drink establishments. Historical building and land-use records describe the development sites. Linking these sources allows us to study the purchase and rental markets around new housing and examine how the responses vary with the housing supplied and changes in nearby food and drink establishments. Statistical blocks provide a common spatial reference across the datasets. Berlin is divided into 15,943 such blocks, usually bounded by streets, railways or waterways, with a median area of 2.0 hectares (Amt für Statistik Berlin-Brandenburg, 2025b).

Construction projects. Official statistics report housing completions as totals by district and year. A local comparison instead requires the location, completion date and characteristics of individual developments, which we assemble for Berlin. Project locations and reported completion dates come from the Deutsches Architektur-Forum, an online platform documenting construction in Berlin (Deutsches Architektur-Forum, 2025). We collect additional public information on project use, flat counts, intended tenure and subsidised housing, and check the information manually.[6] The dataset contains 1,750 Berlin projects with usable completion information: 1,180 residential projects with 98,611 recorded flats, and 570 non-residential projects.[7] Housing-market samples exclude student halls, care homes and similar specialised housing, and require a qualifying nearby transaction or listing. Non-residential projects are not analysed themselves; their locations enter the exclusion of observations near other projects.

Intended tenure, collected from the same public sources, records whether a development's flats are sold individually as condominiums or let by their owner. Of the 1,180 residential projects, 621 are condominium developments and 319 rental developments; 28 combine both tenures, 43 provide specialised housing such as student or senior residences, and 169 have no recorded tenure. Rental developments are larger than condominium developments: their median recorded size is 85 flats, compared with 29 for condominium projects (Panel A of Table 1). They account for 47% of all recorded flats, despite being less numerous. Most projects are new buildings. Project names identify 27 developments, with 1.4% of recorded flats, that convert, renovate or extend existing buildings, some alongside

[6] Public-source information is retrieved from developer websites, property platforms and archived pages, with language-model-assisted search followed by manual checks.

[7] The starting dataset contains 2,402 projects. We remove 425 flagged as unrealised and 83 located outside Berlin, leaving 1,894. We then exclude 144 projects without a usable completion year: 129 with no recorded year, 11 whose placeholder date could not be replaced with a verified year and 4 with ineligible dates. All 2,402 recorded locations are retained for the exclusion of observations near other projects, as described in Appendix A.

new construction. We use historical site records to distinguish project scale from a proxy for net additions below.

Panel B summarises condominium transactions from 1990 to 2025 and rental listings from 2007 to 2025. It counts each transaction or listing once, before matching it to developments. The estimation samples count each match separately, so a transaction or listing matched to several developments contributes one observation per project.

Table 1: Descriptive statistics of construction projects and housing-market data

Panel A. Residential projects

	All residential projects	Condominium developments	Rental developments
Projects	1,180	621	319
Total recorded flats	98,611	32,636	46,381
Flats per project, mean	88.6 (176.2)	53.4 (132.0)	151.1 (233.1)
Flats per project, median	40	29	85
Completion year, median	2017	2016	2019
Recorded subsidised housing (%)	9.7	0.5	32.0
Recorded mixed use (%)	43.6	37.0	50.5
Site in 2010 (% of projects)			
No or marginal structures, built-up area	43.7	43.2	50.8
No or marginal structures, open land	7.4	5.5	13.2
Substantial residential structures	23.0	23.5	18.5
Substantial non-residential structures	19.3	20.5	14.4
Planned or under construction	6.6	7.4	3.1

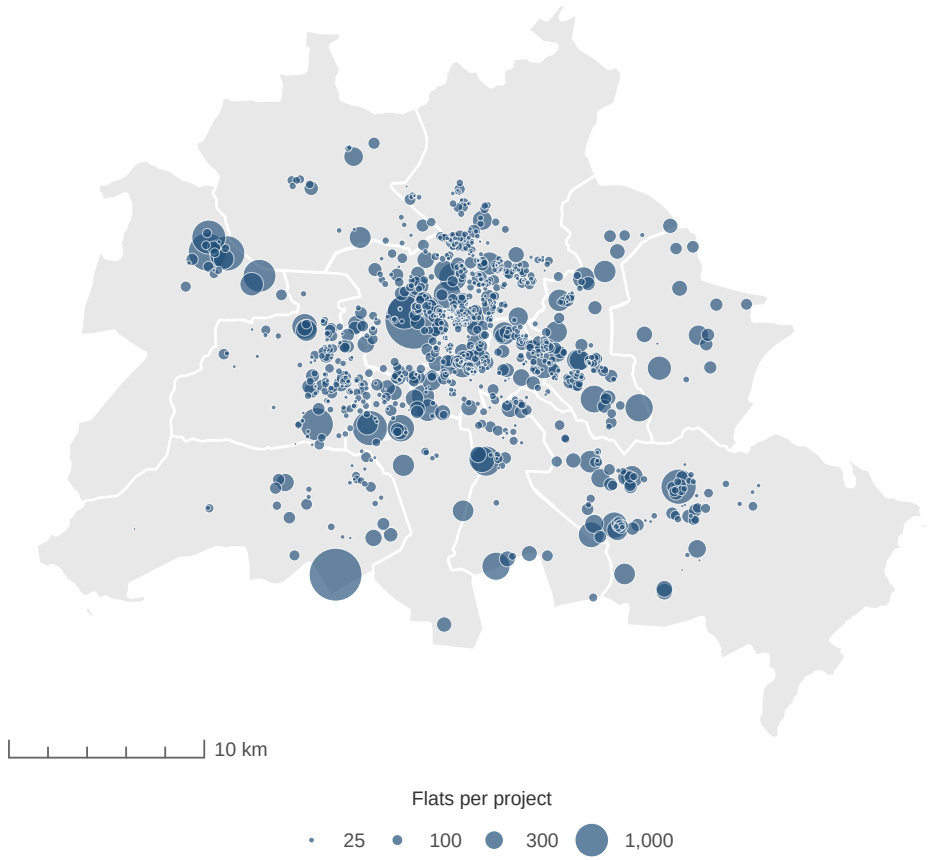
Panel B. Transactions and rental listings

	Transactions	Rental listings
Observations	358,896	1,893,977
Calendar years	1990–2025	2007–2025
Price / rent per m^2 (euros), mean	2,726 (1,764)	9.63 (5.83)
Price / rent per m^2 (euros), median	2,154	7.55
Living area (m^2), mean	74.3 (34.4)	73.3 (34.1)
Construction year, mean	1950 (42.0)	1957 (41.7)

Note. Standard deviations appear in parentheses. Panel A counts each project once. The all-project column includes 28 mixed-tenure projects, 43 specialised-housing projects and 169 projects with missing tenure. Size statistics and flat totals use projects with recorded unit counts: 1,113 overall, 611 condominium and 307 rental developments; other statistics use all projects in the respective column. Subsidised housing denotes at least one recorded subsidised flat, with missing subsidised-unit counts set to zero. Mixed use denotes housing with any recorded non-residential use. Site categories follow the 2010 cadastre and land-use classification described in the text. Panel B counts each transaction or listing once, before project matching, using the source-data filters described in the text; transactions cover 1990–2025 and listings 2007–2025. Purchase prices are trimmed at the first and ninety-ninth percentiles of the retained transactions; rents are restricted to €3–35 per square metre. Construction-year statistics use nonmissing usable years, without imposing that requirement on the other rows. Both estimation samples impose further spatial, building-age and data-quality restrictions. Purchase prices are agreed condominium transaction prices per square metre; asking rents are advertised monthly net rents per square metre, excluding operating and heating charges. *Source:* Deutsches Architektur-Forum (2025), Gutachterausschuss für Grundstückswerte in Berlin (2025), RWI Essen and ImmobilienScout24 (2026), own research.

Smaller developments cluster in the central districts, while several of the largest projects lie farther out (Figure 1). To assess the scale and geographic coverage of the project data, Appendix A compares recorded flats with official completions by year, period and district. Over 2010–2024, the recorded total equals 56% of official completions in new residential buildings of all sizes (Amt für Statistik Berlin-Brandenburg, 2025a). The definitions differ: our data include conversions and renovations and assign each project's entire flat count to one completion year. The ratio consequently measures relative aggregate volumes, not the share of individual official completions observed in our data.

Figure 1: Residential construction projects in Berlin



Note. Each circle represents one of the 1,094 mapped residential projects with a positive recorded flat count. Circle area is proportional to the number of flats; white lines mark district boundaries.
Source: Deutsches Architektur-Forum (2025), own research.

Condominium transactions. Purchase prices are agreed condominium transaction prices per square metre of living area. The data come from the Automated Purchase Price Collection (Automatisierte Kaufpreissammlung, AKS), maintained by the Berlin

Valuation Committee from transactions reported by notaries (Gutachterausschuss für Grundstückswerte in Berlin, 2025). The source contains 413,664 transactions from 1990 to 2025. We retain evaluated regular purchases with positive prices and living areas, and trim the top and bottom one percent of the price-per-square-metre distribution, which leaves the 358,896 transactions summarised in Panel B.[8]

Transactions are anonymised at the statistical-block level. We locate each sale at its block centroid and link it to every project within 500 m. To study existing housing, we retain flats built at least two calendar years before the project's completion, following the exclusion of newly developed properties in related price studies (González-Pampillón, 2022; Nygaard et al., 2024). The baseline contains 403,647 sale–project observations across 991 projects. This count is not a subset of the transactions in Panel B: a sale near several projects enters once for each, while sales far from any project, in the 200–300 m band or in recently built flats do not enter. The observations come from about 180,000 distinct transactions, each linked to 2.2 projects on average. The median project has 178 transactions in its treated area and 75 in its comparison ring. Before completion, flats sold in the treated areas are on average somewhat larger, more expensive and in more recently constructed buildings than those sold in the comparison rings (Table A.1 in Appendix A). The project-by-block and project-by-construction-year effects in Section 3 absorb these differences in levels. Sales include purchases for owner-occupation and investment, without distinguishing the buyer's intended use.

Rental advertisements. Rents come from RWI-GEO-RED, the research version of ImmobilienScout24 advertisements accessed through FDZ Ruhr at RWI (RWI Essen and ImmobilienScout24, 2026; Heuer and Thiel, 2026). We observe advertised monthly net rent per square metre, excluding operating and heating charges, together with location, living area, construction year and indicators for an elevator, balcony and fitted kitchen. The source covers 2007–2025. We remove duplicate reposts and observations without usable coordinates, dates, rent or area; we also exclude areas below 12 m^2 and rents outside €3–35 per square metre. The resulting source sample contains 1,893,977 distinct listings, as shown in Panel B.

For estimation, we require a usable construction year and apply fixed first- and ninety-ninth-percentile rent bounds calculated on a reference sample around residential

[8] The source file contains 413,664 transactions. We first retain evaluated sales and transactions with a missing evaluation-status code, leaving 403,417 observations. We then retain regular purchases and transactions with a missing contract-type code, leaving 367,661. Of these, 366,194 have a recorded price, living area, and transaction date. For Panel B, we calculate the trimming bounds from these individual transactions before matching them to developments. Applying those bounds leaves 358,896 transactions. For estimation, we calculate a separate set of bounds using a reference sample of transactions near residential developments and apply those fixed bounds to the estimation samples.

projects.[9] Listing coordinates allow us to measure distance directly. We link each listing to every project within 500 m and retain projects with a qualifying listing within 200 m. Applying the same building-age restriction as for sales yields 1,166,495 listing–project observations from 564,552 distinct listings across 1,126 projects.

Asking rents measure offers to prospective tenants. The data do not reveal the rent ultimately agreed or the payments of incumbent tenants. Regulation can affect both advertised prices and the properties offered for rent, as Hahn et al. (2024) document for Berlin's rent freeze. Restricting the sample to existing flats removes recently constructed units; changes in the quality and composition of older flats offered for rent remain possible. Conversions and renovations in older buildings can also enter both housing-market samples.

Site history. We match project locations to the 2010 building footprints in the Berlin cadastre and to the Environmental Atlas land-use map (Senatsverwaltung für Stadtentwicklung und Umwelt Berlin, 2010, 2011). Each project is assigned the 2010 building whose footprint contains its coordinates or, failing that, the nearest building within 20 m, together with the land use recorded for the surrounding block. Of the residential projects, 38% lie inside a 2010 footprint, 43% are matched to a building within 20 m and 19% have no building within this distance. A site has no or marginal structures if no building lies within 20 m or if the matched structure is a transport structure, a shed, garage or similar ancillary building, or a building with at most two storeys. Other buildings are substantial structures, which the land-use map identifies as residential or non-residential. Sites the cadastre records as planned or under construction in 2010 form a separate group.

Half of the residential projects, 603 of 1,180, were built on sites with no or marginal structures in 2010 (Panel A of Table 1). Most of these sites lie in built-up areas, such as gaps between existing buildings; 87 lie on open land, including brownfields, green space, car parks and former transport land. A further 271 projects (23%) were built on sites with substantial residential structures and 228 (19%) on sites with substantial non-residential structures. Rental developments are more often located on open land than condominium developments. The estimation samples have a similar composition: sites with no or marginal structures account for 47% of the projects in the transaction sample and 50% of those in the listing sample.

We approximate net housing additions by deducting matched prior floor space, converted into dwelling equivalents, from the recorded project flat count. We calculate prior floor space as footprint area multiplied by storeys, then divide by 80 m^2 per dwelling equiv-

[9] About 63% of source listings have a usable building year, so this requirement materially changes the estimation sample. Appendix A provides the detailed sample and trimming definitions.

alent, irrespective of prior use. Sites with no or marginal structures receive zero prior floor space. The snapshot can contain structures planned or under construction and post-dates the few projects completed before 2010. The resulting proxy compares project flats with historical built space; the number of occupied dwellings added or removed remains unobserved.

Food and drink establishments. We count establishments recorded in the full edit history of OpenStreetMap, retrieved through the ohsome API (OpenStreetMap contributors, 2025; Raifer et al., 2019). Counts are measured for each statistical block on 1 July of every year from 2013. The aggregate includes restaurants, cafés, fast-food outlets, bars, pubs, ice-cream parlours and beer gardens. We divide it into food and drinks establishments.[10]

Establishments within 30 m of any recorded project point are excluded to reduce direct counting of premises supplied within new developments. Some premises on larger sites may remain outside this point-based exclusion. Starting in 2013 reduces exposure to the early expansion of OpenStreetMap coverage, although later count changes can still reflect mapping or classification changes as well as business entry and exit. The outcome measures recorded establishments; it contains no information on their quality or customers.

3 Empirical Strategy

Developers choose sites in response to land availability, access to employment and transport, and expected neighbourhood growth. A comparison with other parts of Berlin would therefore mix the consequences of construction with the conditions that led to it. We instead compare changes in purchase prices and asking rents close to a development with changes slightly farther away, within the same neighbourhood. The two areas share access to employment and transport, local services and neighbourhood-wide changes in demand, so the comparison isolates changes specific to the immediate surroundings of new housing. This near-versus-far design follows Asquith et al. (2023) and Li (2022); Butts (2023) formalises its identifying conditions.

Two features of construction in Berlin support this comparison. First, within a neighbourhood, developers can build only where land is available. About half of the developments in the asking-rent sample were built on sites that had no or only marginal structures in 2010, such as gaps in the built fabric, brownfields, car parks and former railway or other transport land (Section 2). The location of these sites reflects the neighbourhood's earlier

[10] Food establishments comprise restaurants, fast food and ice-cream parlours; drinks establishments comprise cafés, bars, pubs and beer gardens.

development rather than recent changes in local demand. Second, completion follows land acquisition, planning approval, financing and construction, which together span several years. The year in which new flats reach the market is therefore difficult to time to local movements in prices and rents.

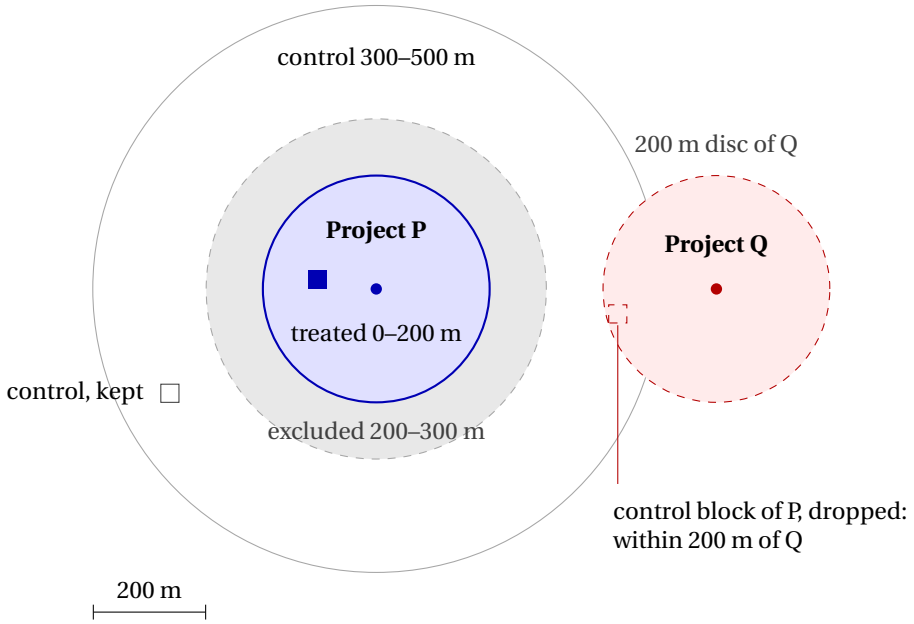
Local comparisons. Each development defines a treated area within 200 m and a comparison ring more than 300 m and at most 500 m away. The treated area covers the immediate surroundings of a development, where competition from new flats and the arrival of new residents are most direct. The comparison ring lies within walking distance and shares the neighbourhood's transport links, services and demand. Omitting the intervening band separates the two groups. These distances are similar to those of Asquith et al. (2023), who compare listings within 250 m of large new apartment buildings with listings 250–600 m away. For transactions, which are recorded by statistical block, distance is measured from the development to the block centroid; for rental listings, it is measured to the listing's coordinates. Statistical blocks in the sales sample are small, with a median area of 1.8 hectares, roughly a square of 140 m on each side. Figure 2 illustrates the block-based comparison.

Comparison locations should show how prices and rents would have evolved without nearby construction. We therefore exclude comparison observations within 200 m of any other recorded project, using the broader set of locations described in Appendix A. Because each project sample covers the full observation period, the exclusion applies regardless of the other project's completion year. As a result, no observation within the treated area of another development serves as a comparison. Treated observations near several developments enter the sample of each; applying the exclusion to them as well would restrict the analysis to developments with no other project nearby. Appendix B3 reports the spatial profile of the responses in four 100 m bands, with the same exclusion.

Timing and samples. Event time is measured from the recorded completion year, T_p, when new flats enter the market and their residents arrive. Announcements and construction precede completion, and year -1 typically falls during construction. The coefficients therefore measure the response to the delivery of new housing relative to the year before completion. The estimates are similar when completion years are taken from a separate set of public sources (Table B1.1).

Both markets retain flats built at least two calendar years before completion (Section 2). This restriction excludes the newly built flats of the development itself, so the estimates describe responses in the surrounding housing stock. We include all completion cohorts with a qualifying observation in the treated area; each project contributes to the event

Figure 2: Treatment and control rings and exclusion near another development



Note. Schematic of the block-based sales comparison around project P. The treated ring extends to 200 m, the intervening 200–300 m band is excluded, and eligible controls lie 300–500 m away. Squares mark block centroids: the filled square is treated, the open square is a retained control, and the dashed square is excluded because it lies within 200 m of project Q. The outlined circle around Q has a radius of 200 m. For rents, both ring assignment and the exclusion near another project use listing coordinates rather than block centroids.

years in which it has eligible observations. The two markets follow the same design: the rings, the exclusion near other projects, the existing-stock restriction, the treatment of event time, the fixed effects and the trimming of extreme values are identical. The design differs between them only in the location measure available in each source and in the hedonic controls the rental data allow.

Event-study specification. For each project p, we collect transactions or listings i in its treated and comparison areas across calendar years t, then stack the project samples. Let D_{ip} equal one inside 200 m and zero in the comparison ring, and let E_{pt}^{k} indicate event year $k = t - T_p$. We estimate

$$\begin{aligned} \log y_{ipt} = & \sum_{k \in \mathcal{K}} \beta_k D_{ip} E_{pt}^{k} + \mathbf{X}_i' \boldsymbol{\gamma} \\ & + \alpha_{pt} + \alpha_{p\,b(i)} + \alpha_{p\,v(i)} + \varepsilon_{ipt}, \end{aligned} \tag{1}$$

separately for purchase prices and asking rents per square metre. The set $\mathcal{K} = \{-5, \ldots, 5\} \setminus \{-1\}$ contains annual indicators for years -4 to 4 and two pooled tails: E_{pt}^{-5} includes all observations at least five years before completion and E_{pt}^{5} those at least five years after it. Year -1 is the reference. The tails retain observations beyond the displayed window under a common coefficient within each tail (Schmidheiny and Siegloch, 2023). Stacking the project samples, each with its own fixed effects, means that every coefficient compares treated and comparison observations around the same development in the same calendar year. Developments completed in different years are never compared with one another, which avoids the biases of two-way fixed-effects estimators under staggered treatment timing (Cengiz et al., 2019; Wing et al., 2024).

Project-by-year effects, α_{pt}, absorb shocks common to the treated and comparison areas around a development, including citywide changes in housing demand, financing conditions and rent regulation, such as Berlin's rent freeze of 2020–21 (Hahn et al., 2024). Project-by-block effects, $\alpha_{p\,b(i)}$, absorb persistent differences between locations. Treatment status does not vary within a project's block, so these effects also absorb the level difference between the treated and comparison areas. Project-by-construction-year effects, $\alpha_{p\,v(i)}$, absorb differences between building vintages within each project's sample. Both regressions control for log living area; rental regressions also control for an elevator, a balcony and a fitted kitchen. The regressions are unweighted, so each development contributes according to the number of transactions or listings around it and their division between the treated and comparison areas (Wing et al., 2024).

Identification rests on two conditions (Butts, 2023). First, without the development, outcomes in the treated and comparison areas would have evolved in parallel, conditional

on the controls and fixed effects. Second, the development leaves outcomes in the comparison ring unchanged, so that this ring traces the counterfactual path. The pre-completion coefficients provide evidence on the first condition: differential trends within project neighbourhoods would appear as non-zero coefficients for years -4 to -2. For the second, the spatial profile in Appendix B3 shows no statistically significant post-completion change at 200–400 m, relative to 400–500 m, in either market.

Standard errors are two-way clustered by project and statistical block. Clustering by project allows for correlation within a development's sample; clustering by block accounts for common shocks to nearby locations and for transactions or listings that enter several project samples. We report the annual coefficients and summarise each path by their equally weighted average over years zero to four, $\bar{\beta} = \frac{1}{5}\sum_{k=0}^{4}\beta_k$, expressed as $100[\exp(\bar{\beta}) - 1]$ with confidence intervals calculated from the covariance matrix of the annual coefficients. Comparisons across groups of developments estimate Equation 1 separately for each group and also summarise the responses over years 0–2 and 3–4, as described in the figure notes.

Interpretation. The coefficients measure changes close to a development relative to the surrounding neighbourhood; responses shared by the treated and comparison areas are absorbed by the project-by-year effects. Within this comparison, competition from new housing and changes in neighbourhood demand can move purchase prices and asking rents in different directions. Sections 4.2–5 use project characteristics to examine the predictions of each explanation. If new flats compete with existing homes, responses should be more negative around larger net additions and around developments whose intended tenure matches the market of the existing flats. If redevelopment raises rents by removing existing homes, rent increases should be concentrated around residential replacement sites. If new residents support local services, food and drink establishments should expand around new developments. Section 5 applies the same distance bands, project-by-block effects and project-by-year effects to annual establishment counts, estimated by Poisson pseudo-maximum likelihood (Santos Silva and Tenreyro, 2006).

4 Effects on purchase prices and asking rents

New housing competes with existing homes for buyers and tenants and can attract demand to the surrounding neighbourhood. The balance between these forces may differ across the purchase and rental markets. We first estimate the response of purchase prices and asking rents for existing flats, then use project characteristics to examine possible explanations for the patterns.

The project comparisons address two predictions of competition from new housing: larger additions should exert greater downward pressure, and that pressure should be stronger where new units are closer substitutes for existing homes. We examine these predictions using measured net additions and the intended tenure of new flats. Historical site records provide a separate comparison of developments with and without substantial prior residential structures, allowing us to assess whether the rental response is confined to residential replacement. In Section 5, we examine whether food and drink establishments expand alongside development.

4.1 Baseline effects

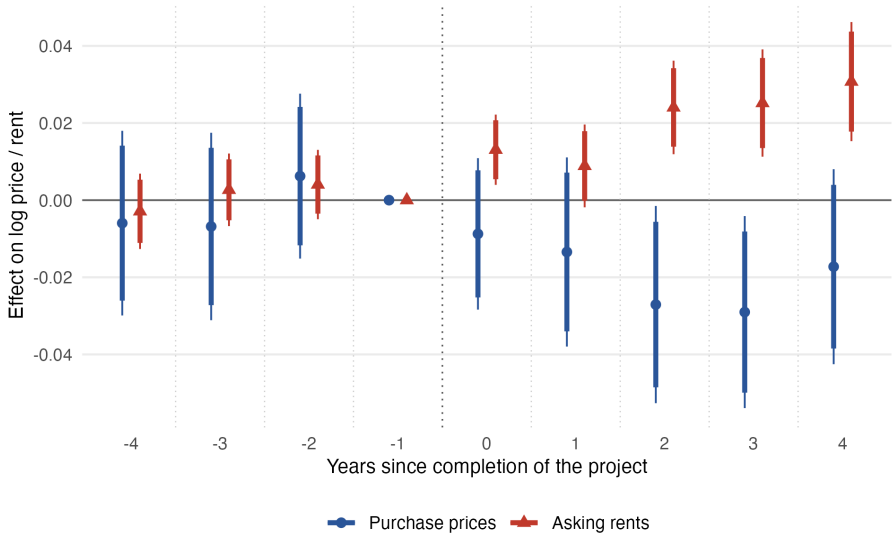
The baseline estimates point to different responses in the purchase and rental markets (Figure 3). Averaged over the completion year and the following four years, asking rents rise by 2.1% relative to the comparison areas, a statistically significant increase at the 5% level. The corresponding purchase-price estimate is a decline of 1.9%, which falls just short of statistical significance at the 5% level. Both samples retain only flats in buildings completed at least two calendar years before the development, so the estimates describe responses in the surrounding housing stock.

Purchase prices are approximately 2.7–2.9% lower in years two and three, with both estimates statistically significant at the 5% level. Asking rents are 1.3% higher in the completion year and 2.4–3.1% higher in years two through four, each estimate statistically significant at the same level. Both responses persist beyond the displayed window: in the pooled endpoint bin for years five and later, purchase prices are 3.4% lower and asking rents 3.9% higher, both statistically significant at the 1% level, although only earlier completion cohorts contribute to these years. Joint tests of the pre-completion coefficients yield p-values of approximately 0.71 for purchase prices and 0.51 for asking rents.

The purchase-price decline emerges on a similar timetable to the decline around new high-rises in New York City studied by Li (2022). Within 500 feet (about 152 m), Li estimates that condominium prices fall by approximately 5.6% in the period starting two years after completion, compared with declines of 2.7–2.9% in Berlin in years two and three. The rental estimates differ in direction. Li finds a decline of about 2% one year after completion, using rental income per unit measured at the building level. Our estimates capture the asking rents advertised to prospective tenants.

Studies using rental listings also find responses of a few percentage points, with estimates in both directions. Asquith et al. (2023) estimate a 4.9% decline in listed rents within 250 m of large new apartment buildings in low-income US neighbourhoods, relative to listings 250–600 m away. In San Francisco, Pennington (2025) reports declines of 1.2–2.3% within 500 m of new market-rate projects, similar in absolute magnitude to Berlin's 2.1%

Figure 3: Local purchase-price and asking-rent responses to residential development



Note. The figure reports annual coefficients from Equation 1 for log purchase prices and asking rents per square metre. Both samples retain flats in buildings completed at least two calendar years before the nearby development. Treated flats lie within 200 m of the project and comparison flats more than 300 m and at most 500 m away. Distances use statistical-block centroids for sales and listing coordinates for rents. Comparison observations within 200 m of another recorded project are excluded. Models include project-by-year, project-by-block and project-by-construction-year fixed effects and control for log living area. Rental models also control for an elevator, a balcony and a fitted kitchen. Year zero is recorded project completion. Coefficients are relative to year -1, shown as zero. Endpoint bins $k \leq -5$ and $k \geq 5$ enter estimation but are not displayed. Thick and thin bars show 90% and 95% confidence intervals. Standard errors are two-way clustered by project and statistical block.

increase. In Minneapolis, Damiano and Frenier (2026) estimate a 4.4% increase for nearby lower-priced rentals over the first five years and a 1.7% decline for higher-priced rentals. These estimates place Berlin's increase within the range of magnitudes reported elsewhere and show how the direction of the response can vary across settings and segments of the existing stock.

Both responses are concentrated within 200 m of development, with small and insignificant estimates at 200–400 m in either market (Figure B3.1). The estimated responses are similar when we use separately collected completion years (Table B1.1). Across Berlin, purchase-price estimates are negative in both the inner and other districts, while the estimated increase in asking rents is larger outside the inner districts (Table B2.1).

The following sections examine which of the two forces drives each response: Section 4.2 relates the responses to the amount and tenure of the housing added, Section 4.3 to what stood on the site before, and Section 5 turns to changes in local services.

4.2 Housing additions and intended tenure

If additional supply contributes to the estimated price decline, larger additions should exert greater downward pressure. Larger projects also bring more new residents, so the demand they attract to the area grows with project size as well. How the responses vary with the amount of housing added therefore shows which of the two forces grows faster. The relevant quantity is the housing added after allowing for buildings that previously occupied the site. Nygaard et al. (2024) show that price responses to Melbourne infill vary with net dwelling additions and the type of surrounding property. We examine whether measured additions help account for the different purchase-price and rental responses in Berlin.

We construct a proxy for net additions, N_p, by subtracting prior floor space, expressed in dwelling equivalents, from the recorded number of new flats. We estimate prior floor space from building footprints and storeys in the 2010 records.[11] To estimate how responses vary with net additions, we interact the event-time indicators in Equation 1 with $D_{ip}z_p$, where $z_p = \operatorname{asinh}(N_p) - \operatorname{asinh}(42)$. The transformation accommodates zero and negative values. We centre it at 42 net dwelling equivalents, close to the median recorded size of 40 flats across residential projects (Table 1). The fitted response at event time k is

$$\tau_k(N_p) = \beta_k + \theta_k \left[\operatorname{asinh}(N_p) - \operatorname{asinh}(42)\right]. \tag{2}$$

[11] We use 80 m^2 per dwelling equivalent regardless of prior use and assign zero prior floor space to sites with no or marginal structures (Section 2). Projects without recorded flat counts, on sites recorded as planned or under construction in 2010, or whose matched building lacks a storey count have no measure and are excluded.

The coefficient β_k gives the response around a project adding 42 net dwelling equivalents, and θ_k measures how that response changes per unit of transformed net additions. For additions of this size, $\operatorname{asinh}(N_p) \approx \ln(2N_p)$, so doubling net additions raises the transformed measure by about $\ln 2 \approx 0.69$ and changes the response by about $0.69\,\theta_k$.

Purchase-price estimates become more negative as estimated net additions increase (Figure 4). Over the completion year and the following four years, the fitted decline is 2.9% around a project adding 42 net dwelling equivalents and 3.4% around one adding 84. The average gradient is -0.65 log percentage points per unit of transformed net additions and is statistically significant at the 5% level: doubling net additions deepens the decline by about 0.45 percentage points. Evaluated at the sample mean of the transformed measure, the fitted decline is 1.8%, close to the baseline estimate of 1.9%. The mean lies below the reference size because about one in five projects in the sample has negative measured net additions. The pooled post-completion estimate is also negative, with weaker statistical evidence ($p = 0.13$).[12]

Berlin's estimates lie within the range reported for Melbourne by Nygaard et al. (2024). There, projects adding 5–49 net dwellings reduced prices of existing apartments and townhouses by approximately 1.2–1.6% at distances of 101–300 m, and projects adding at least 50 dwellings reduced them by 5.4% within 100 m.

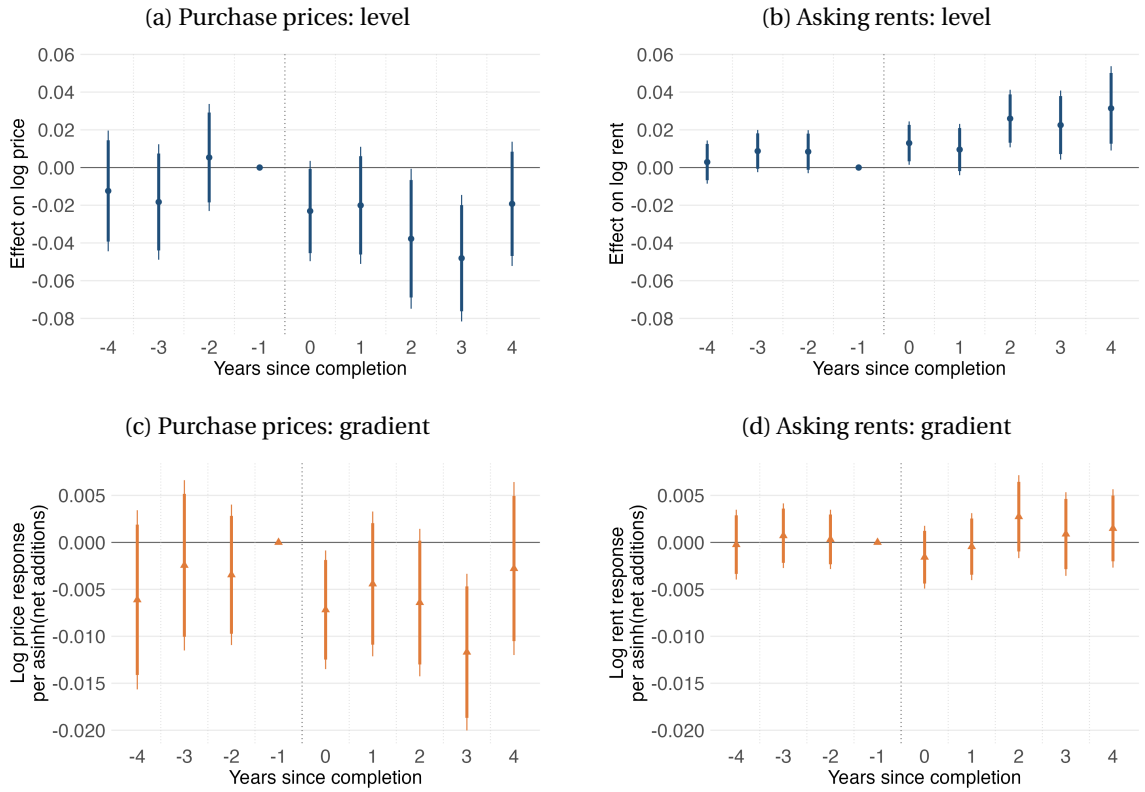
The asking-rent estimates show little variation with net additions. Around a project adding 42 net dwelling equivalents, asking rents rise by approximately 2.1% over the same period. The estimated gradient is 0.06 log percentage points per unit of transformed net additions and is statistically insignificant at the 5% level. The price gradient indicates that, in the purchase market, competition from new flats grows faster with the amount of housing added than the demand that new residents bring. In the rental market, the increase in asking rents is similar across project sizes.

Two alternative measures of project scale, reported in Appendix C2, point in the same direction for purchase prices. Grouping projects by their net share yields larger estimated price declines where less prior floor space is deducted relative to the number of new flats (Figure C2.1), and scaling the response by the log of the recorded flat count yields a negative average purchase-price coefficient (Figure C2.2).

Having examined how much housing projects add, we next compare the type of housing they supply. If new flats compete most directly with existing flats in the same market, condominium projects should put greater downward pressure on purchase prices, and rental projects on asking rents. Project size points the other way for purchase prices: rental developments are almost three times as large as condominium developments, with a

[12] The pooled gradient is -0.45 log percentage points, with a standard error of 0.30. The event-study average gives equal weight to the five annual coefficients. The pooled regression estimates a common coefficient for years zero to four.

Figure 4: Local housing-market responses by measured net additions



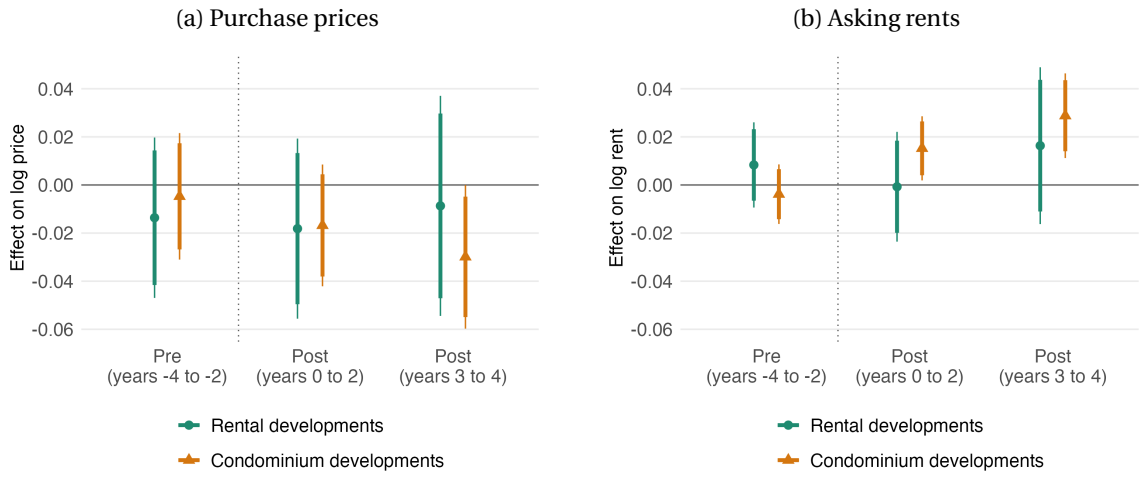
Note. The upper panels show the level coefficients β_k at 42 measured net dwelling equivalents in Equation 2; the lower panels show θ_k, the gradients per unit of $\operatorname{asinh}(N_p) - \operatorname{asinh}(42)$. Net additions subtract the matched 2010 footprint area multiplied by storeys, converted at 80 m^2 per dwelling equivalent irrespective of prior use, from the recorded project flat count. No or marginal prior structures receive zero prior floor space. Projects without a net-addition measure are excluded. The samples contain 320,280 sale–project observations around 785 projects and 930,935 listing–project observations around 905 projects. Both markets retain flats in buildings completed at least two calendar years before the nearby development. Outcomes, distance measures, rings, comparison exclusions, controls and fixed effects follow Figure 3. Coefficients are relative to year -1, shown as zero; endpoint bins $k \leq -5$ and $k \geq 5$ enter estimation but are not displayed. Thick and thin bars show 90% and 95% confidence intervals. Standard errors are two-way clustered by project and statistical block.

median of 85 recorded flats compared with 29 (Table 1). If scale alone drove competition, purchase prices would fall more around rental projects.

Purchase prices fall by approximately 1.7–1.8% around both project types in years zero to two (Figure 5). By years three and four, the estimated decline is 2.9% around condominium projects and 0.9% around rental projects. The larger decline thus occurs around the smaller condominium projects, which supply flats to the same market as the existing condominiums sold nearby. This ordering is consistent with evidence from New York City, where Li (2022) finds a decline in nearby condominium prices in the full sample of new high-rises and a statistically insignificant response near new rental buildings.

Asking rents rise less around rental projects than around condominium projects. In years zero to two, the estimate is close to zero around rental projects and 1.5% around condominium projects. By years three and four, the estimated increases are 1.6% and 2.9%, respectively. The smaller increase around rental projects is consistent with greater competition from new rental flats.

Figure 5: Local housing-market responses by intended project tenure



Note. Responses around rental developments (green circles) and condominium developments (orange triangles), summarised over years -4 to -2, 0–2 and 3–4 relative to year -1. Sales coefficients are estimated directly using separate period indicators in place of the annual indicators in Equation 1. Rental points are equally weighted averages of annual event-study coefficients within each period. Thick and thin sales bars are 90% and 95% confidence intervals. Rental bars average the corresponding annual confidence bounds; they are not exact covariance-based confidence intervals for the period averages. Both markets retain flats built at least two calendar years before the development. The sales samples contain 80,219 observations around 237 rental developments and 248,669 around 580 condominium developments; the rental-listing samples contain 315,960 around 312 and 660,774 around 619, respectively. Outcomes, rings, comparison exclusions, controls and fixed effects follow Figure 3. Endpoint bins $k \leq -5$ and $k \geq 5$ enter estimation but are not shown. Standard errors are two-way clustered by project and statistical block.

The increase in asking rents around both project types leaves open whether redevelopment puts pressure on rents by removing existing homes. We next compare developments by prior site use to examine whether the rent increase is concentrated where substantial housing removal was more likely.

4.3 Prior site use

Next, we ask whether it matters what stood on the site before construction. We compare developments on residential replacement sites with those on sites with little prior construction. If redevelopment removes existing rental flats, displaced households look for homes nearby, raising demand for the remaining flats even when the new building adds to the overall housing stock. This channel is relevant in Berlin, where most homes are rented. Because demolition precedes construction, it predicts higher rents before completion rather than after it.

Housing removal and neighbourhood upgrading can operate together. In Chicago, public housing demolitions raised nearby prices and rents after reducing the housing stock and displacing many households into nearby private housing (Blanco, 2023). The subsequent shift towards higher-income residents suggests that neighbourhood upgrading may also have contributed. In Berlin, upgrading could occur even where construction replaces few existing homes. New residents may support additional shops and services, making the area more attractive to prospective tenants. We therefore examine whether asking rents rise on both site types or whether the increase is concentrated around residential replacement sites, and whether its timing follows the removal of homes or the completion of new ones.

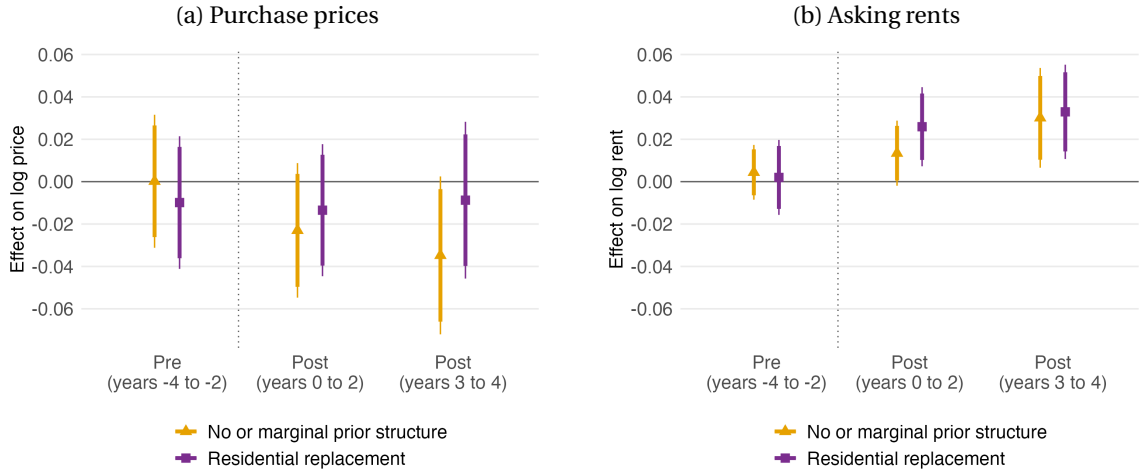
We use the 2010 records to compare sites with substantial prior residential structures with sites that had no or only marginal structures. The second group includes infill sites and open land, where substantial housing removal is less likely.[13] We set aside sites with substantial non-residential structures, whose redevelopment replaces workplaces and services rather than homes, so that the comparison isolates the removal of housing. The two groups also differ in how much housing they add. Projects on residential replacement sites have a median of 23 recorded flats and median measured net additions close to zero. Projects on sites with no or marginal structures have a median of 60 flats, all of which count as net additions. Both market samples retain older surrounding flats, and the estimates cover the same periods as the tenure comparison.

Asking rents rise around both site types relative to their comparison areas (Figure 6). Averaged over years zero to four, the estimated increases are 2.9% around residential replacement sites and 2.0% around sites with no or marginal prior structures. The estimates are 2.6% and 1.4% in years zero to two and 3.3% and 3.1% in years three and four, respectively.

[13] Site types follow Section 2. Residential replacement denotes a substantial 2010 structure on residential land. We also exclude projects on sites recorded as planned or under construction in 2010. Both markets include the few projects completed before 2010. For purchase prices, the residential replacement estimates are similar when the group is restricted to projects completed from 2010 onwards and located inside a 2010 building footprint (92 projects): -1.4% in years zero to two and 0.0% in years three and four.

The timing of the increase points away from housing removal. Homes on replacement sites are demolished before construction and therefore before year -1. Around these sites, asking rents remain close to their year -1 level in years -4 to -2 and rise by 2.8% in the completion year, when the new building and its residents arrive. Relative to year -1, completion adds homes rather than removing them, and replacement projects leave the measured stock roughly unchanged. The increase in asking rents is also present where substantial housing removal was less likely.

Figure 6: Local housing-market responses by prior site type



Note. Responses around developments on sites with no or marginal prior structures (amber triangles) and sites with substantial prior residential structures (purple squares), summarised over years -4 to -2, 0–2 and 3–4 relative to year -1. Sales coefficients are estimated directly using period indicators in place of the annual indicators in Equation 1. Rental points equally weight the annual event-study coefficients within each period. Thick and thin sales bars are 90% and 95% confidence intervals. Rental bars average the corresponding annual confidence bounds and are not exact covariance-based intervals for the period averages. Site types use the 2010 records. The sales samples contain 164,874 observations around 464 projects on sites with no or marginal structures and 133,581 around 255 residential replacement projects; the rental-listing samples contain 562,205 around 566 and 316,849 around 261, respectively. Both markets retain flats built at least two calendar years before the development. Outcomes, rings, exclusions, controls and fixed effects follow Figure 3. Endpoint bins $k \leq -5$ and $k \geq 5$ enter estimation but are not shown. Standard errors are two-way clustered by project and statistical block.

Purchase-price point estimates are more negative around sites with no or marginal prior structures in both periods after completion. By years three and four, the estimated decline is 3.4% around these sites, compared with 0.9% around residential replacement sites. Projects on residential replacement sites add roughly as much floor space as they remove, while those on sites with no or marginal structures add their full flat count. The ordering therefore mirrors the net-additions gradient in Section 4.2: purchase prices fall where projects add to the local stock.

Asking rents rise around sites with little prior construction, and around replacement sites they rise only once the new homes are completed. They also rise by similar amounts around projects without and with a deduction for prior floor space, by 1.9% and 2.1% (Figure C2.1). The increase therefore reflects changes in the neighbourhood rather than the removal of housing.

If new development raises asking rents by making the neighbourhood more attractive, the increase should be largest where the neighbourhood has the most room to change. Where it is already attractive, competition from the new flats should dominate. We examine this using the official location grades in the transaction data, which classify residential locations as simple, middle, good or very good according to the quality of their surroundings. We assign each block around a development the most frequent grade among its sales before completion and estimate the rental response separately for each group (Appendix C1). Averaged over years zero to four, asking rents rise by 3.1% in simple and 3.3% in middle locations. In good and very good locations, the estimate is -1.0% and not statistically different from zero (Figure C1.1). The rental market therefore reflects both forces. Where neighbourhoods are already attractive, asking rents do not rise, consistent with competition from new flats; elsewhere, neighbourhood change outweighs it. This pattern mirrors evidence from Minneapolis, where Damiano and Frenier (2026) find higher rents for nearby lower-priced rentals and lower rents for higher-priced rentals after new construction.

New residents bring additional customers and can support more local businesses, making the neighbourhood more attractive to prospective tenants. We next track nearby food and drink establishments after completion as one observable dimension of this change.

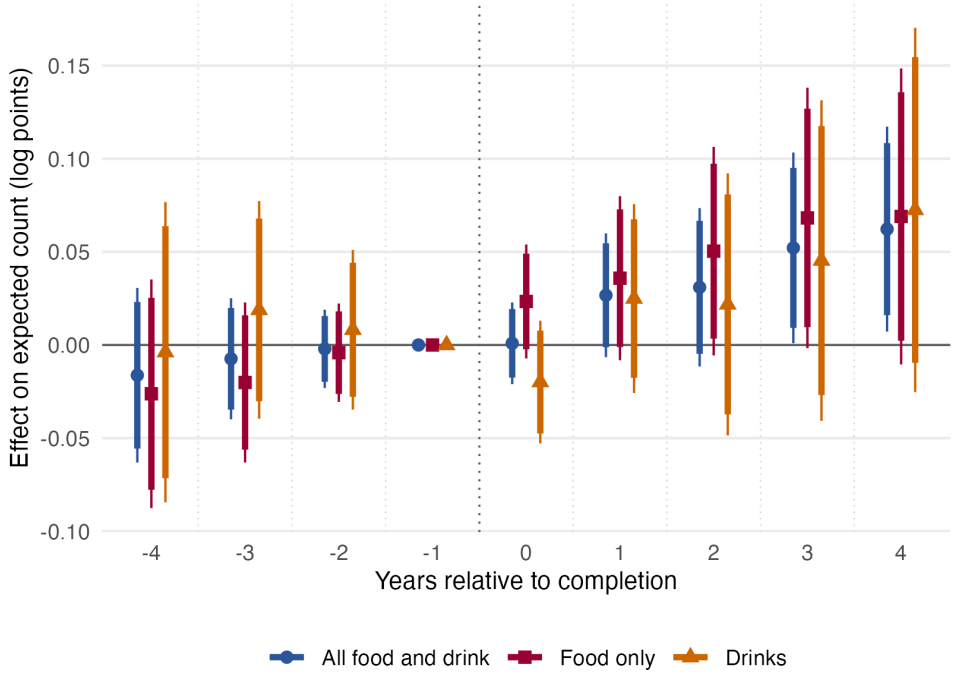
5 Food and drink establishments and neighbourhood change

In this section, we examine whether residential development is followed by changes in local services. The site comparison showed that asking rents rose even where substantial housing removal was less likely. Projects on either site type can bring new residents whose spending supports local businesses. An expansion of food and drink establishments would capture one dimension of neighbourhood upgrading that could make the area more attractive to prospective tenants.

We estimate Poisson pseudo-maximum-likelihood models for annual establishment counts (Santos Silva and Tenreyro, 2006). We use the same distance bands as in the housing analysis and include project-by-block and project-by-year fixed effects. The sample covers residential developments completed in 2016–2025 and annual OpenStreetMap records from 2013 onward. Counts, category definitions and exclusions follow Section 2.

The total number of recorded food and drink establishments changes little in the completion year and rises gradually thereafter (Figure 7). The increases in years three and four are statistically significant at the 5% level. Averaged over the completion year and the following four years, the estimated increase is 3.5% relative to the comparison blocks and falls just short of statistical significance at the 5% level. The estimated increase is 5.1% for food establishments, significant at the 5% level, and 2.9% for drinks establishments; the latter estimate is statistically insignificant at that level.

Figure 7: Food and drink establishments around residential developments



Note. Poisson event-study coefficients for counts of all food and drink establishments (blue circles), food establishments (red squares) and drinks establishments (orange triangles). Food includes restaurants, fast-food outlets and ice-cream parlours; drinks includes cafés, bars, pubs and beer gardens. The samples cover residential developments completed in 2016–2025 and annual OpenStreetMap records from 2013 onward; the estimation sample varies by outcome. Changes in recorded counts can reflect mapping or classification changes as well as business entry and exit. Treated blocks have centroids within 200 m of a project; comparison blocks lie 300–500 m away. Comparison blocks within 200 m of another recorded project and establishments within 30 m of any recorded project point are excluded. All models include project-by-block and project-by-year fixed effects. Coefficients are log changes in expected counts relative to year -1, set to zero; $100[\exp(\beta_k)-1]$ gives the percentage change. Endpoint bins $k \leq -5$ and $k \geq 5$ are estimated but not shown. Thick and thin bars show 90% and 95% confidence intervals. Standard errors are two-way clustered by project and statistical block.

We then return to the prior-site comparison to examine whether the expansion in services also occurs where substantial housing removal was less likely. Around sites with no or marginal prior structures, the estimated increases in food and drink establishments

are 4.4% in years zero to two and 11.4% in years three and four (Table 2). The corresponding estimates around residential replacement sites are 1.7% and 4.5%. Thus, the largest point estimate is for the later period around sites with little prior construction, where we also find an increase in asking rents.

Table 2: Food and drink establishments around residential developments by prior site type

Outcome	All food and drink		Food only		Drinks only	
Prior site	No/marginal	Replacement	No/marginal	Replacement	No/marginal	Replacement
	(1)	(2)	(3)	(4)	(5)	(6)
Treated × Pre (years -4 to -2)	0.0054	-0.0243	-0.0135	-0.0442	0.0367	0.0082
	(0.0206)	(0.0235)	(0.0249)	(0.0306)	(0.0370)	(0.0386)
Treated × Post (years 0 to 2)	0.0431**	0.0169	0.0591**	0.0428	0.0396	-0.0004
	(0.0197)	(0.0228)	(0.0263)	(0.0347)	(0.0286)	(0.0409)
Treated × Post (years 3 to 4)	0.1079***	0.0440	0.1180**	0.0932	0.1374**	-0.0236
	(0.0346)	(0.0488)	(0.0506)	(0.0712)	(0.0586)	(0.0752)
Observations	21,492	9,154	15,943	7,472	14,569	6,688
Pseudo R^2	0.46017	0.52436	0.38609	0.44025	0.31841	0.38205
Project-Block fixed effects	✓	✓	✓	✓	✓	✓
Project-Year fixed effects	✓	✓	✓	✓	✓	✓

Note. The table reports Poisson regressions of annual establishment counts around residential developments completed in 2016–2025. No/marginal denotes sites with no or marginal structures in the 2010 records. Replacement denotes sites with substantial structures on residential land. These categories describe prior structures and land use, leaving demolitions and prior occupancy unobserved. Drinks includes cafés, bars, pubs and beer gardens. The pre-period covers years -4 to -2. Separate post-period indicators cover years 0–2 and 3–4, relative to year -1. Endpoint bins $k \leq -5$ and $k \geq 5$ enter estimation and are omitted from the table. Models include project-by-block and project-by-year fixed effects. Coefficients give log changes in expected counts. Standard errors in parentheses are two-way clustered by project and statistical block. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

If the growth in establishments reflects spending by new residents, it should increase with the number of homes added. Appendix C3 relates the response to the measure of net additions from Section 4.2. The additional demand from larger projects shows most clearly in drinks establishments: doubling net additions raises their increase by about 1.2 percentage points over years zero to four, significant at the 5% level. Food establishments increase by a similar amount around smaller and larger projects (Figure C3.1).

Growth in food and drink establishments can accompany different housing-market responses. Li (2022) finds restaurant entry alongside lower nearby rents and condominium prices in New York City, while Singh and Baldomero-Quintana (2026) find higher assessed values of nearby rental buildings alongside new amenities. In Berlin, food and drink establishments expand alongside higher asking rents and negative purchase-price estimates. The housing and establishment models use different project samples and describe their respective responses to development. Household valuations and the contribution of services to asking rents are not estimated separately.

6 Conclusion

New housing moves nearby purchase and rental markets in opposite directions. Around residential developments in Berlin, asking rents for existing flats rise by 2.1% over the completion year and the following four years, while purchase prices fall by 1.9%. The opposite signs need not conflict. Asking rents reflect current conditions for prospective tenants, while purchase prices also capitalise expected future rents and can therefore reflect the further supply that new development signals for the area (Molloy et al., 2022).

The project comparisons show that the amount and type of housing added shape the purchase-price response. The decline grows with measured net additions, from 2.9% around a project adding 42 net dwelling equivalents to 3.4% around one adding twice as many. In the purchase market, competition from new flats grows faster with the amount of housing added than the demand new residents bring, whereas asking rents rise by similar amounts around small and large projects. In later years, the decline is larger around condominium developments than around the larger rental developments, while asking rents rise less around rental developments. These patterns point to competition between new flats and existing homes in the same market.

The increase in asking rents extends beyond sites where existing homes were replaced. Around replacement sites, asking rents rise only once the new homes are completed, not when the old ones are demolished, and these projects leave the measured stock roughly unchanged. Asking rents also rise around sites with little prior construction, where food and drink establishments expand most clearly after completion. This points to neighbourhood change that makes the area more attractive to prospective tenants, raising rental demand even as new supply adds to the local stock.

These responses fall on different households. Buyers of existing flats near new development pay less, particularly where projects add many homes for sale. Prospective tenants face higher asking rents, and the increase is concentrated in simple and middle residential locations, while asking rents in good locations do not rise. Higher asking rents therefore arise where new development changes the neighbourhood most, consistent with the concerns of renters who support more housing across the city but oppose projects nearby (Hankinson, 2018).

Because the estimates compare areas within the same neighbourhood, they complement evidence that additional supply eases housing costs across the wider market through moving chains and regional adjustment (Mast, 2023; Bratu et al., 2023; Mense, 2025). Completion counts show how much housing was built, but not who gains or loses nearby. Assessing these local consequences requires attention to what a development adds and

replaces and to the neighbourhood in which it is built, as well as separate tracking of purchase prices and asking rents.

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Online Appendix

Cheaper to Buy, Dearer to Rent? The Local Effects of New Housing Supply in Berlin

Maximilian Günnewig-Mönert and Joscha Reiners

This appendix provides the data documentation and additional evidence for the local housing-market analysis in Berlin. Appendix A describes sample construction and compares recorded development with official housing completions. Appendix B examines completion timing, geographic coverage and the spatial comparison. Appendix C extends the analysis of residential locations, housing additions and food and drink establishments.

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A Data and construction coverage

This appendix describes how the project and housing-market data used in Section 2 are constructed and how the recorded volume of residential development compares with official housing completions. The comparisons describe the scale, timing and geographic distribution of recorded construction. Differences across periods and districts motivate checks on the estimates. Appendix B1 and Appendix B2 examine the corresponding sensitivity of the housing-market estimates.

Housing-market samples. The analysis links existing flats to nearby residential projects and compares changes in purchase prices and asking rents around project completion. Panel B of Table 1 describes individual transactions (1990–2025) and listings (2007–2025) before matching them to projects. An observation can be linked to several developments, so estimation counts refer to transaction–project or listing–project pairs rather than distinct properties.

The transaction sample retains evaluated regular purchases with positive prices and living areas; transactions with missing evaluation-status or contract-type codes remain eligible. Rental observations exclude duplicate reposts and require usable coordinates, dates, rent and area. We retain areas of at least 12 m^2 and advertised monthly net rents between €3 and €35 per square metre. Rental estimation additionally requires a usable building year between 1500 and 2025. In both markets, the baseline and project comparisons retain flats built at least two calendar years before project completion.

The estimation samples exclude observations below fixed first-percentile bounds or above fixed ninety-ninth-percentile bounds. For each market, we calculate these bounds on a reference sample of eligible residential projects in event years -4 to 4. The reference sample includes observations within 100 m and those more than 200 m and at most 300 m away, excluding comparison observations within 100 m of another project. Holding these bounds fixed prevents changes in rings or project groups from also changing the price or rent thresholds. The source-data purchase-price descriptives instead use bounds calculated on individual transactions before project matching.

Locations used for the exclusion. The exclusion of comparison observations near other projects (Section 3) uses all 2,402 recorded project locations in the starting dataset. This list is broader than the estimation samples and the construction series compared below: it also contains the recorded points of unrealised, specialised, non-residential and undated projects.

Treated and comparison areas. Table A.1 describes the transactions behind the baseline purchase-price estimates. Comparing flats sold around the same development in the same year, those in the treated area in the five years before completion are about 5% more expensive per square metre and are in buildings constructed about ten years later on average than those in the comparison ring. Project-by-block effects absorb persistent differences between locations, and project-by-construction-year effects compare flats of the same vintage, so identification rests on common changes over time rather than equal levels (Section 3).

Table A.1: Transactions in the treated and comparison areas

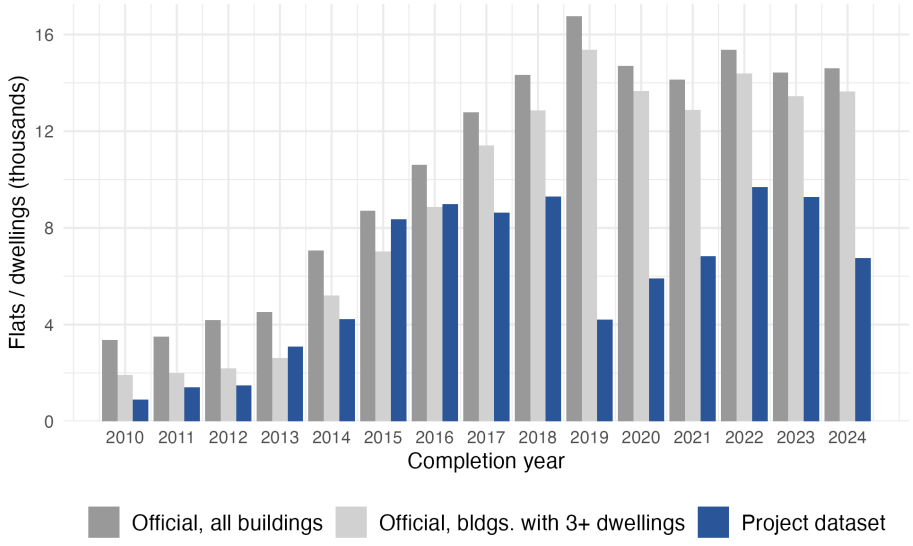
	Years -5 to -1		All years	
	Treated	Comparison	Treated	Comparison
Sale–project observations	57,153	33,181	238,162	165,485
Projects	944	639	983	676
Statistical blocks	1,355	874	1,443	977
Price per m^2 (euros), mean	3,103 (1,549)	2,779 (1,443)	3,082 (1,780)	2,738 (1,660)
Price per m^2 (euros), median	2,758	2,413	2,535	2,165
Living area (m^2), mean	80.2 (38.5)	73.4 (33.5)	77.1 (36.6)	73.8 (33.9)
Construction year, mean	1949 (49.7)	1931 (35.0)	1939 (45.1)	1930 (34.3)
Built before 1950 (%)	50.1	65.2	57.7	64.9
Sale year, mean	2013.5	2014.3	2011.0	2010.3

Note. Baseline purchase-price estimation sample of Figure 3, after removing observations in singleton fixed-effect cells. Treated areas lie within 200 m of a development and comparison rings 300–500 m away, excluding comparison observations within 200 m of another project. Years -5 to -1 are the five calendar years before completion. Projects and blocks count those with at least one observation in the respective column. Standard deviations appear in parentheses. *Source:* Gutachterausschuss für Grundstückswerte in Berlin (2025), Deutsches Architektur-Forum (2025), own calculations.

Recorded and official construction volumes. Project locations and reported completion years come from the Deutsches Architektur-Forum, supplemented by public information on project use and flat counts. We compare recorded project flat counts with official completions of dwellings in new residential buildings (Deutsches Architektur-Forum, 2025; Amt für Statistik Berlin-Brandenburg, 2025a). The project series includes residential developments with recorded flat counts and usable completion years, excluding unrealised projects, before imposing any requirement for nearby transactions or listings. Specialised housing contributes to this descriptive series but is excluded from the housing-market estimations.

The two sources measure different quantities. Official completions cover dwellings in new residential buildings of all sizes. The project data also include conversions, renovations and extensions, whose recorded flat counts can contain existing dwellings. Ratios of the two totals therefore compare aggregate construction volumes; they do not measure the fraction of individual official completions matched to our data. Neither series measures the net change in Berlin's housing stock after demolitions.

Figure A.1: Recorded residential project flats and official housing completions, 2010–2024



Note. Dark grey bars show official Berlin completions in new residential buildings of all sizes; light grey bars restrict the official series to buildings with at least three dwellings. Blue bars sum recorded flat counts for residential Berlin projects with usable completion years, excluding projects flagged as unrealised or with unresolved completion dates. Projects without recorded flat counts do not contribute. The vertical axis reports thousands of flats or dwellings. Each project's entire flat count is assigned to its reported completion year. The dataset includes specialised housing and some conversion, renovation and extension projects, so its totals do not correspond exactly to the official new-building definition. *Source:* Deutsches Architektur-Forum (2025), Amt für Statistik Berlin-Brandenburg (2025a), own calculations.

Recorded construction is substantial but uneven across completion periods (Figure A.1 and Table A.2). Over 2010–2024, the project data contain 89,095 flats, compared with 159,093 official completions, a ratio of 56.0%. The ratio rises from 49.1% in 2010–2014 to 76.0% in 2015–2018, then falls to 47.4% in 2019–2024. Restricting the official denominator to buildings with at least three dwellings raises the pooled ratio to 64.8%. The recorded numerator is unchanged, so this increase reflects the narrower official benchmark.

Table A.2: Recorded flats relative to official completions by completion period

	Recorded flats	Official completions all building sizes	Recorded / official (%)	
Completion period			All sizes	Buildings with ≥ 3 flats
2010–2024 (total)	89,095	159,093	56.0	64.8
2010–2014	11,125	22,648	49.1	79.8
2015–2018	35,280	46,424	76.0	87.9
2019–2024	42,690	90,021	47.4	51.2

Note. Both ratios use the same recorded flat counts as Figure A.1. The first denominator includes official completions in new residential buildings of all sizes; the second includes only buildings with at least three dwellings. This restriction changes the denominator only. Ratios are calculated from totals over each period, rather than averages of annual ratios. All flats in a project are assigned to its reported completion year. The dataset and official definitions differ as described in the text. *Source:* Deutsches Architektur-Forum (2025), Amt für Statistik Berlin-Brandenburg (2025a), own calculations.

The sources also allocate construction across years differently. We assign a project's entire recorded flat count to one reported completion year, including projects built in phases. Official statistics count dwellings in the year their buildings are completed. Aggregating over several years reduces differences arising from phases completed within the same period, although projects spanning period boundaries can still affect the ratios. Variation over time can thus reflect completion timing and project composition as well as the amount of construction recorded. The completion-year comparisons in Appendix B1 address timing more directly.

Geographic distribution. Recorded construction is more concentrated in the inner districts relative to the official benchmark (Table A.3). Using official completions in buildings with at least three dwellings as the denominator, the ratios range from 75% to 109% in Mitte, Friedrichshain-Kreuzberg, Charlottenburg-Wilmersdorf and Tempelhof-Schöneberg over 2010–2024. We group these as the inner four districts. Their pooled ratio is 96%, compared with 49% elsewhere, and the gap appears in each completion period. Ratios above 100% can arise from the differences in definitions and timing described above. Appendix B2 reports the housing-market estimates separately for these two parts of Berlin.

Table A.3: Recorded flats relative to official completions by district, 2010–2024

District	Recorded flats	Official completions buildings with ≥ 3 flats	Recorded / official (%)
Mitte*	21,319	19,579	109
Charlottenburg-Wilmersdorf*	9,167	8,604	107
Friedrichshain-Kreuzberg*	8,612	11,141	77
Tempelhof-Schöneberg*	4,835	6,470	75
Neukölln	3,069	4,802	64
Pankow	10,959	17,540	62
Spandau	4,946	7,948	62
Lichtenberg	9,261	17,544	53
Treptow-Köpenick	11,639	22,749	51
Steglitz-Zehlendorf	2,033	4,729	43
Reinickendorf	1,689	4,291	39
Marzahn-Hellersdorf	1,566	12,097	13
Inner districts*	43,933	45,794	96
Other districts	45,162	91,700	49
Berlin	89,095	137,494	64.8

Note. Recorded flats as in Table A.2, by project district. The denominator is official completions in new residential buildings with at least three dwellings, from the annual district tables of Amt für Statistik Berlin-Brandenburg (2025a). *Inner districts. Ratios above 100% can arise from the differences in definitions and timing described above. *Source:* Deutsches Architektur-Forum (2025), Amt für Statistik Berlin-Brandenburg (2025a), own calculations.

These comparisons help describe which developments enter the data, but do not establish the exposure of individual housing observations to unrecorded construction. The comparison-group exclusions use the broader list of recorded locations described above. Unrecorded developments can nevertheless remain near observations in either ring. The aggregate construction ratios cannot determine whether such omissions bias the local estimates upward or downward.

B Robustness of housing-market estimates

The baseline comparison in Section 4.1 yields a negative purchase-price estimate and a positive asking-rent estimate for existing flats close to development. We examine three features of that comparison: the assignment of completion years, differences in the construction recorded across districts, and the choice of treatment and comparison areas. The timing checks leave the estimates broadly similar, and the spatial profile places both responses within 200 m of development. The geographic comparison reveals more variation in the rental response.

Unless an exercise changes them explicitly, we retain the specification in Section 3. We compare flats within 200 m of a project with those 300–500 m away, excluding comparison observations within 200 m of another recorded project. Flats must have been built at least two calendar years before completion. Models for log purchase prices and log asking rents per square metre include project-by-year, project-by-block and project-by-construction-year effects, together with log living area; rental models also control for an elevator, a balcony and a fitted kitchen. Sales distances use block centroids and rental distances use listing coordinates. Standard errors are two-way clustered by project and block. Sales and rental regressions use their own eligible projects and observations.

B1 Completion timing

Developments can deliver homes in phases, so one completion year may only approximate when the additional supply reaches the market. We assess this source of measurement error using completion years collected separately from developer websites, press reports and planning documents through an LLM-assisted search. An alternative year is available for 747 of the 991 projects in the sales sample. The sources agree exactly in 59% of these cases and differ by at most one year in 88%; the separately collected year is more often later when they disagree. Neither source necessarily dates the availability of every flat in a project.

Table B1.1 compares the baseline with two alternatives. The first restricts the sample to projects with matching completion years, retaining the reported dates. The second replaces reported years with separately collected years where available, redefining event time and which observations satisfy the building-age restriction.

Across the three specifications, mean purchase-price changes over years zero to four range from -1.89% to -1.64%, with all 95% confidence intervals including zero. Asking-rent estimates range from 1.96% to 2.34%, with all intervals excluding zero.

Table B1.1: Housing-market estimates under alternative completion years

	Change (%)	95% CI	Pre-trend p	Observations
A. Purchase prices				
Reported completion year	-1.89	$[-3.80, 0.05]$	0.71	403,647
Both sources agree	-1.70	$[-4.72, 1.42]$	0.74	178,542
Independent year when available	-1.64	$[-3.48, 0.22]$	0.13	406,477
B. Asking rents				
Reported completion year	2.06	$[1.04, 3.09]$	0.51	1,166,495
Both sources agree	2.34	$[0.85, 3.86]$	0.44	535,787
Independent year when available	1.96	$[0.86, 3.07]$	0.43	1,173,204

Note. The first row in each panel uses reported completion years. The second retains projects for which reported and independently collected years coincide. The third replaces the reported year with the independent year where available, redefining event time and the building-vintage restriction accordingly. Changes are $100[\exp(\bar{\beta}) - 1]$, where $\bar{\beta}$ equally weights event-year coefficients for years 0–4. Confidence intervals use their full covariance matrix, with two-way clustering by project and block. Pre-trend p tests the pooled $k \leq -5$ coefficient and annual coefficients for $k = -4, -3, -2$ jointly. Year -1 is the reference; pooled endpoint bins enter estimation. Observations count transaction–project or listing–project pairs. Treated flats lie within 200 m and comparison flats 300–500 m away, with the existing-stock restriction described in the text. Each market uses its own eligible sample.

B2 Geographic coverage

The project data record a larger volume of construction relative to official completions in some districts than in others (Table A.3). In Mitte, Friedrichshain-Kreuzberg, Charlottenburg-Wilmersdorf and Tempelhof-Schöneberg, recorded flats over 2010–2024 amount to 96% of official completions in buildings with at least three dwellings, compared with 49% in the remaining districts. These aggregate ratios use different project definitions and completion timing, as discussed in Appendix A. We use the geographic contrast to examine whether the baseline pattern appears in both parts of the city.

Table B2.1 re-estimates the baseline separately for projects in these inner four districts and elsewhere. The purchase-price estimates are negative in both groups: -2.26% in the inner districts and -1.33% elsewhere, with both 95% intervals including zero. Asking rents rise by 0.68% in the inner districts and 3.07% elsewhere; only the latter interval excludes zero. The asking-rent point estimate is therefore larger outside the inner districts.

The district groups differ in construction recording, housing markets and development patterns. The table reports separate within-group estimates, with no formal test of their difference. These specifications describe geographic variation in the observed project sample; they do not model unrecorded developments.

Table B2.1: Housing-market estimates in inner and other districts

	Change (%)	95% CI	Pre-trend p	Observations
A. Purchase prices				
All districts	-1.89	$[-3.80, 0.05]$	0.71	403,647
Inner four districts	-2.26	$[-4.76, 0.30]$	0.99	254,955
Other districts	-1.33	$[-4.21, 1.64]$	0.14	148,692
B. Asking rents				
All districts	2.06	$[1.04, 3.09]$	0.51	1,166,495
Inner four districts	0.68	$[-0.83, 2.22]$	0.95	542,383
Other districts	3.07	$[1.74, 4.42]$	0.42	624,112

Note. Baseline event-study specifications estimated separately by project district. The inner group comprises Mitte, Friedrichshain-Kreuzberg, Charlottenburg-Wilmersdorf and Tempelhof-Schöneberg. Changes equally weight coefficients in years 0–4 and are transformed as $100[\exp(\bar{\beta}) - 1]$. Confidence intervals use the full covariance matrix of those coefficients, with two-way clustering by project and block. Pre-trend p tests the pooled $k \leq -5$ coefficient and annual coefficients for $k = -4, -3, -2$ jointly. Observations are transaction–project or listing–project pairs; the two markets are estimated on their own samples.

B3 Responses across distance bands

The baseline measures changes relative to nearby comparison locations. We examine the spatial profile by dividing observations within 400 m into four 100 m bands and comparing each with observations 400–500 m away. Separate band–event-time interactions replace the binary treatment path:

$$\log y_{ipt} = \sum_{r=1}^{4} \sum_{k \in \mathcal{K}_{\text{sp}}} \beta_{rk} D_{ip}^{r} \times E_{pt}^{k} + \mathbf{X}_i' \boldsymbol{\gamma} + \alpha_{pt} + \alpha_{p\,b(i)} + \alpha_{p\,v(i)} + \varepsilon_{ipt}. \tag{B.1}$$

Here D_{ip}^{r} denotes the rth band, and $\mathcal{K}_{\text{sp}} = \{-4, \ldots, 4\} \setminus \{-1\}$. We exclude observations outside event years -4 to 4 and omit pooled endpoint bins. Distances use block centroids for sales and listing coordinates for rents.

As in the baseline, we retain all observations within 200 m and exclude observations farther away, in the 200–300 m and 300–400 m bands and in the 400–500 m reference ring, if another recorded project lies within 200 m.[14] Projects remain if they have a qualifying observation within 400 m. The sales sample contains 160,059 transaction–project observations.

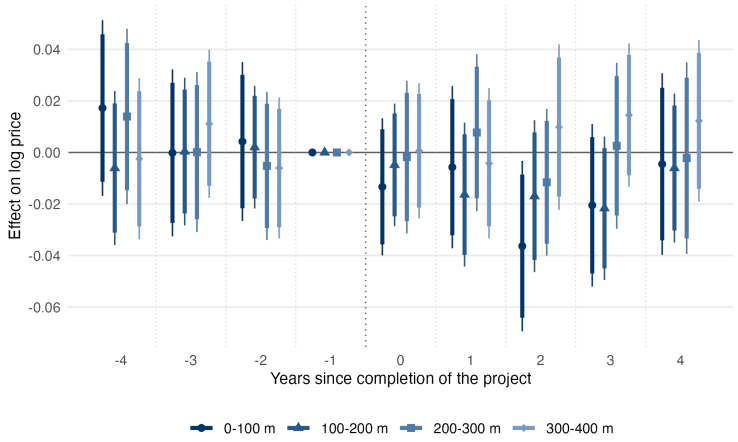
Panel (a) of Figure B3.1 shows that purchase prices fall closest to development and that the decline fades with distance. Averaged over years zero to four, the estimated changes are -1.6% within 100 m, -1.3% at 100–200 m, -0.1% at 200–300 m and 0.7% at 300–400 m; their 95% confidence intervals include zero. The point estimates in both bands within 200 m are negative in every year after completion, and the decline within 100 m reaches 3.6% in year two, significant at the 5% level. Beyond 200 m, none of the annual post-completion coefficients is significant at the 10% level. The joint test of the pre-completion coefficients in all four bands gives a p-value of 0.75.

Panel (b) shows the same spatial pattern for asking rents, with the opposite sign. Averaged over years zero to four, asking rents rise by 2.2% within 100 m and 2.0% at 100–200 m, both significant at the 5% level, compared with 0.6% at 200–300 m and 0.1% at 300–400 m, where the confidence intervals include zero. The increases within 200 m build up after completion and are significant at the 5% level in years three and four within 100 m and in years two and four at 100–200 m. None of the pre-completion coefficients differs significantly from zero.

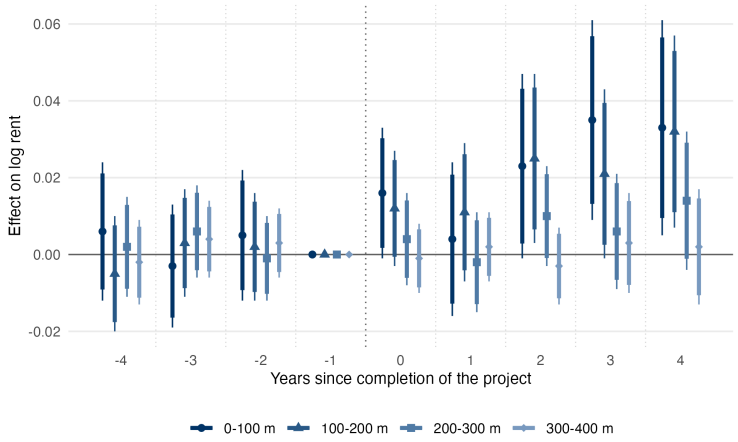
[14] The exclusion applies beyond 200 m, where the comparison locations lie, regardless of the other project's completion year (Section 3). It does not extend to the two bands within 200 m: applying it there would restrict them to developments without another recorded project nearby.

Figure B3.1: Housing-market responses across distance bands

(a) Purchase prices



(b) Asking rents



Note. The four bands are 0–100 m (circles), 100–200 m (triangles), 200–300 m (squares) and 300–400 m (diamonds), each relative to 400–500 m. Distances use block centroids for sales and listing coordinates for rents. As in the baseline, observations beyond 200 m, including the 400–500 m reference ring, are excluded if another recorded project lies within 200 m, regardless of its completion year; observations within 200 m are retained. Projects require a qualifying observation within 400 m. All paths are estimated jointly within each market over event years -4 to 4, without endpoint bins. Year -1 is the reference and is shown as zero; year zero is reported completion. Both markets retain flats built at least two calendar years before completion. Models include project-by-year, project-by-block and project-by-construction-year effects and log living area; rental models also control for an elevator, a balcony and a fitted kitchen. Outcomes are log purchase price and log asking rent per square metre. The panels use different vertical scales. Thick and thin bars show 90% and 95% confidence intervals with two-way clustering by project and block.

C Additional comparisons

The main analysis uses housing additions, intended tenure and prior site use to examine the sources of the different purchase-price and rental responses. This appendix extends those comparisons in two directions. We first ask whether the responses vary across residential locations. We then examine alternative measures of project scale and the amount of prior built space deducted from recorded flats. Appendix C3 turns to neighbourhood change, relating growth in food and drink establishments to the number of homes added.

The housing-market models compare existing flats within 200 m of a project with flats 300–500 m away, following Section 3. Outcomes are log purchase prices and log asking rents per square metre. Flats must have been built at least two calendar years before project completion, and comparison observations within 200 m of another recorded project are excluded. Distances use statistical-block centroids for sales and listing coordinates for rents. All models include project-by-year, project-by-block and project-by-construction-year fixed effects, and control for log living area; rental models additionally control for an elevator, a balcony and a fitted kitchen. Eligible projects completed before 2010 remain included.

Year -1 is the reference period. Annual coefficients for years -4 to 4 are accompanied by pooled endpoint bins for earlier and later observations. Unless stated otherwise, reported post-completion changes transform the equally weighted mean of the coefficients for years zero to four as $100[\exp(\bar{\beta}) - 1]$. Confidence intervals use their full covariance matrix, with two-way clustering by project and statistical block. The separate group estimates describe variation across locations or developments; they do not test differences between groups.

C1 Residential location grade

Local housing markets may differ in both the strength of competition from new flats and the demand for neighbourhood change. We examine this variation using the official residential location grades in the Automated Purchase Price Collection (AKS). These grades describe the location of existing homes. We classify each project–block pair by its most frequent nonmissing grade among pre-completion sales and hold the classification fixed. The three groups are simple, middle, and good or very good locations.[15] Rental observations inherit the classification of their project–block pair. Pairs without a qualifying pre-completion sales grade are excluded, and a project can contribute to several groups through different surrounding blocks.

[15] The modal grade uses available pre-completion sales passing the transaction-type and evaluation filters, before the estimation price and building-age restrictions. Ties use the lower numeric AKS code.

The purchase-price estimates are most negative in middle-grade locations (Figure C1.1). The mean decline over years zero to four is approximately 6.0%, compared with 0.8% in simple and 0.4% in good or very good locations. The middle-grade path also has a negative and statistically significant coefficient for the pooled early years ($k \leq -5$), indicating that differences relative to the reference year are already present before completion.

Asking rents rise in simple and middle locations, by 3.07% (95% CI: 1.27 to 4.90%) and 3.25% (0.76 to 5.81%), respectively. The estimate in good or very good locations is -1.03% (-3.11 to 1.10%). Joint lead tests are not rejected at the 10% level in any rental group.

The classification requires earlier sales with a usable location grade. The resulting rental sample contains 826,411 listing–project observations, compared with 1,166,495 in the baseline. Location grades classify project–block pairs using prior sales information, so the estimates compare residential locations grouped by their surrounding housing characteristics.

Figure C1.1: Housing-market responses by residential location grade

(a) Purchase prices



(b) Asking rents



Note. Separate event-study regressions by the modal pre-completion official AKS residential location grade of each project–block pair, held fixed over time. Blue circles denote simple, yellow squares middle, and red triangles good or very good locations. Rental observations receive the classification from linked pre-completion sales in their project–block pair; unclassified pairs are excluded. Each regression requires a qualifying treated observation of the relevant grade within 200 m. Outcomes are log purchase price and log asking rent per square metre. Existing flats within 200 m are compared with flats 300–500 m away; flats must predate completion by at least two calendar years. Comparison observations within 200 m of another recorded project are excluded. Distances use block centroids for sales and listing coordinates for rents. Models include project-by-year, project-by-block and project-by-construction-year fixed effects and the housing controls described above. Coefficients are relative to year -1, shown as zero. Year zero is reported completion. Pooled endpoint bins $k \leq -5$ and $k \geq 5$ enter estimation but are not displayed. Thick and thin bars show 90% and 95% confidence intervals, with two-way clustering by project and block.

C2 Project scale and net housing additions

Net-addition share The continuous net-addition analysis in Section 4.2 associates larger additions with larger purchase-price declines. We examine a simpler division of projects according to how much prior built space is deducted from their recorded flat count. For recorded flats G_p and measured net additions N_p, we define the net-addition share as

$$s_p = \min\{1, \max\{-1, N_p/G_p\}\}.$$

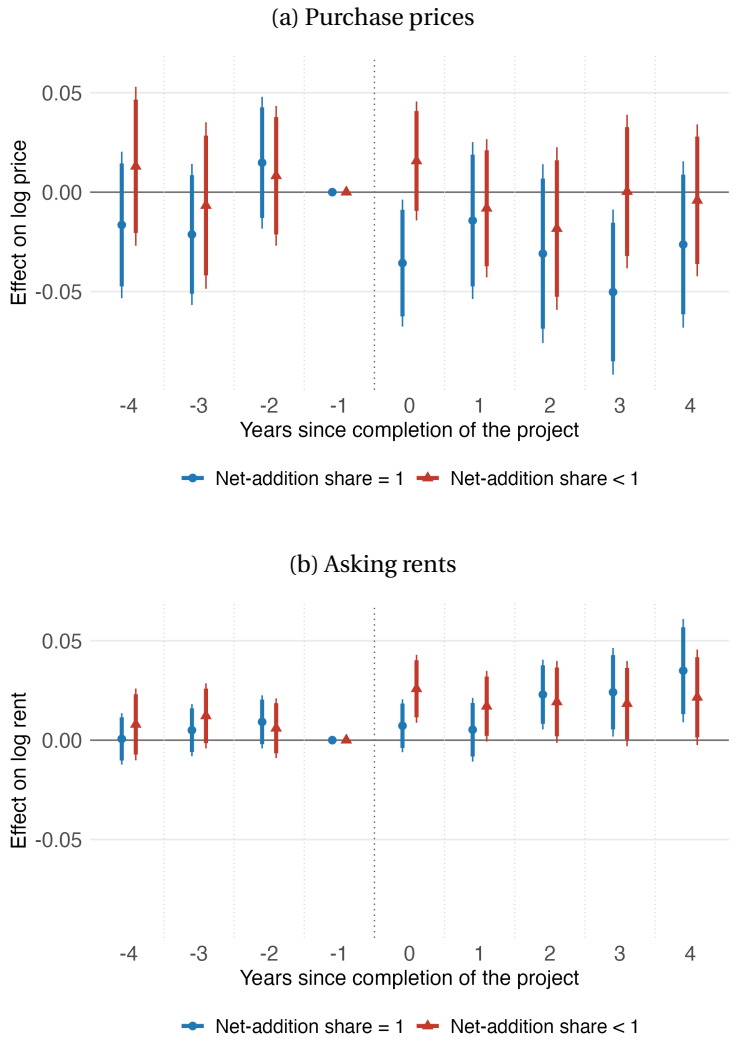
A share of one means that no substantial prior floor space is deducted under the classification; a lower share indicates a larger deduction relative to project size.[16] We divide projects into shares equal to one and below one, using the same cutoff in both markets. Each project retains its group in the treated and comparison rings; projects without a usable share are excluded. Unlike the prior residential-use comparison in Section 4.3, this division depends on the amount of prior built space, irrespective of its use.

Purchase-price point estimates follow the ordering in the continuous specification: the average decline is approximately 3.1% around projects with a share of one and 0.3% around projects with a lower share (Figure C2.1). Asking rents rise by similar amounts in the two groups: 1.91% (95% CI: 0.38 to 3.46%) and 2.06% (0.47 to 3.68%), respectively. Both rental lead tests have $p > 0.49$.

Positive asking-rent estimates are therefore also present around projects where the historical records imply no substantial deduction for prior built space. This comparison complements the classification by prior residential land use in the main text.

[16] Prior built space is estimated from matched 2010 footprints multiplied by storeys and converted at 80 m^2 per dwelling equivalent, irrespective of prior use. Sites with no or marginal structures, including buildings with at most two storeys, receive zero prior floor space. The snapshot does not measure occupied dwellings demolished immediately before development.

Figure C2.1: Housing-market responses by measured net-addition share



Note. Separate regressions for measured net-addition shares equal to one (blue circles) and below one (red triangles). The share divides the net-addition proxy by recorded project flats and is bounded between -1 and 1. Prior floor space is converted at 80 m^2 per dwelling equivalent; no or marginal prior structures receive zero. Both markets use the cutoff of one and their own eligible projects and observations. Outcomes are log purchase price and log asking rent per square metre. Flats within 200 m are compared with flats 300–500 m away and must predate completion by at least two calendar years. Comparison observations within 200 m of another recorded project are excluded. Models include project-by-year, project-by-block and project-by-construction-year fixed effects and housing controls. Year -1 is the reference; year zero is reported completion. Pooled endpoint bins $k \leq -5$ and $k \geq 5$ are estimated but not shown. Thick and thin bars show 90% and 95% confidence intervals, with two-way clustering by project and block.

Recorded flat count The recorded flat count provides an alternative measure of project scale that does not require converting prior floor space into dwelling equivalents. It includes units in renovation and conversion projects, so it need not equal the number of newly created dwellings. We use its log, replacing the binary treatment–event-time terms with $D_{ip} \log G_p \times E^k_{pt}$. The fitted treated–comparison difference, relative to the year before completion, is

$$\tau_k(G_p) = \theta_k \log G_p. \tag{C.1}$$

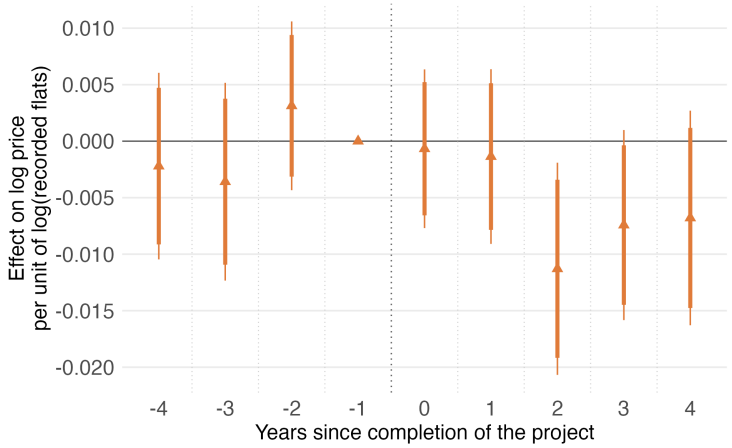
This specification includes a single event-time path scaled by log project size, with the response constrained to zero at one flat. The net-addition model in Equation 2 instead includes a separate treatment-level path. Here, θ_k combines the level of the response with its scaling by project size, rather than estimating an independent size gradient. The fitted difference for a doubling of recorded project size is $\theta_k \log 2$, an across-project comparison under the proportionality restriction.

Both samples require a qualifying observation within 100 m, while the treated ring extends to 200 m. We exclude missing and nonpositive flat counts. The comparison with the net-addition model consequently changes the supply measure, functional form and eligible projects together.

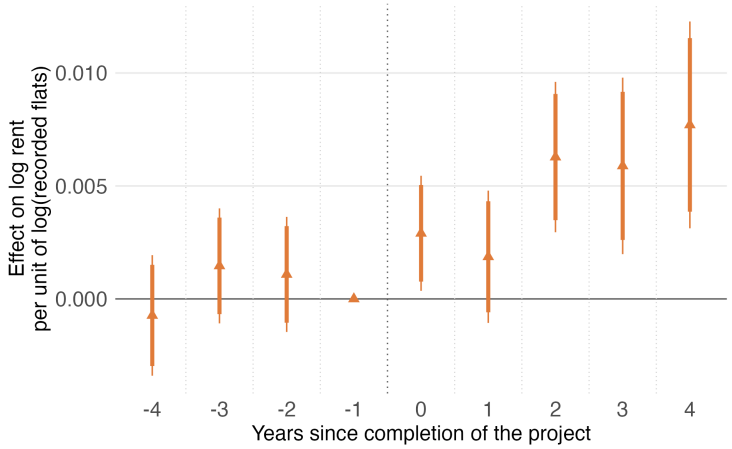
The resulting coefficients retain the signs of the baseline responses (Figure C2.2). Averaged over years zero to four, θ_k is -0.55 log percentage points per unit of log recorded flats for sales and +0.49 for rents (95% CI: 0.21 to 0.78). The rental joint lead-test p-value is 0.36. These estimates show that a negative purchase-price coefficient and a positive rental coefficient also emerge when scale is measured by the recorded flat count. The rental coefficient captures the fitted response scaled by log size. The main net-addition model estimates a separate treatment-level path and size gradient.

Figure C2.2: Housing-market estimates using the log recorded flat count

(a) Purchase prices



(b) Asking rents



Note. The panels show θ_k in Equation C.1, in log points per unit of log recorded project flats. No separate binary-treatment level path is included. The fitted response at size G_p is $\theta_k \log G_p$; the response is constrained to zero at one flat. Projects require a qualifying observation within 100 m, while treatment extends to 200 m and the comparison ring lies 300–500 m away. Outcomes are log purchase price and log asking rent per square metre. Flats must predate completion by at least two calendar years; comparison observations within 200 m of another recorded project are excluded. Models include project-by-year, project-by-block and project-by-construction-year fixed effects and housing controls. Coefficients are relative to year -1, shown as zero; pooled endpoint bins are estimated but not displayed. Thick and thin bars show 90% and 95% confidence intervals with two-way clustering by project and block. The text multiplies coefficients by 100 to report log percentage points.

C3 Food and drink establishments and project size

Food and drink establishments grow gradually around residential developments in the main analysis (Figure 7). If this growth reflects spending by new residents, it should be larger around projects that add more homes. We examine this prediction with the measure of net additions used for the housing-market responses in Section 4.2.

We add to the Poisson event-study model of Section 5 the interaction of treatment with $\operatorname{asinh}(N_p) - \operatorname{asinh}(42)$, as in Equation 2. The level coefficients give the response around a project adding 42 net dwelling equivalents, and the gradient coefficients give the change in that response per unit of transformed net additions. The sample comprises the residential developments of Figure 7 that have a net-addition measure, 590 of 669 projects. Distance bands, exclusions and fixed effects are unchanged. Average levels over years zero to four and their confidence intervals are computed as in Section 3. We also report estimates from a version with separate indicators for years 0–2 and 3–4, as in Table 2.

Around a project adding 42 net dwelling equivalents, all three counts rise after completion (panel (a) of Figure C3.1). They change little in the completion year and increase gradually thereafter, so establishments follow the arrival of new residents with a delay. Averaged over years zero to four, the increase is 4.5% for all food and drink establishments (95% CI: 0.4 to 8.8%), 5.6% for food establishments (0.0 to 11.4%) and 5.3% for drinks establishments (-1.6 to 12.7%). By years three and four, the increases reach 7.6%, 8.4% and 9.6%, the first two significant at the 5% level and the third at the 10% level.

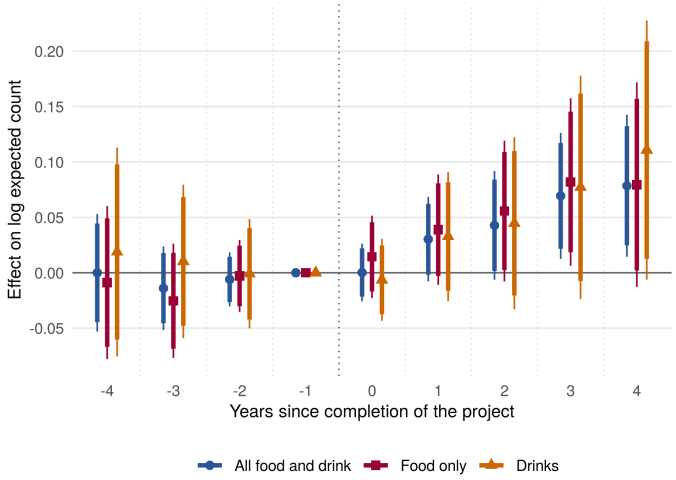
The increase in drinks establishments grows with the number of homes added (panel (b)). Their gradient is close to zero in the completion year and rises in each year thereafter. Averaged over years zero to four, it is 1.71 log percentage points per unit of transformed net additions (s.e. 0.84), statistically significant at the 5% level. Doubling net additions thus raises the increase in drinks establishments by about 1.2 percentage points: the fitted increase is 5.3% around a project adding 42 net dwelling equivalents and 6.6% around one adding 84. In years three and four, the gradient is 2.81 (s.e. 1.34), and the fitted increase rises from 9.6% to 11.8% between the same two sizes.

Food establishments increase by a similar amount around smaller and larger projects: their gradient is small in every year and averages -0.09 (s.e. 0.89). For all food and drink establishments, it lies between the two categories, at 0.61 (s.e. 0.65). The prediction is thus borne out most clearly for drinks establishments, in line with the additional demand that larger projects bring.

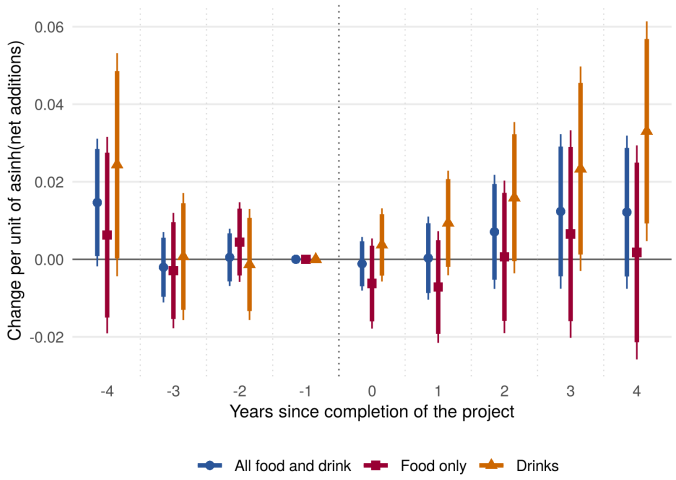
Joint tests of the pre-completion coefficients do not reject zero for any of the six paths ($p > 0.15$). The gradients are close to zero in years -3 and -2; those for year -4 are positive and significant at the 10% level for drinks and for all establishments.

Figure C3.1: Food and drink establishments by measured net additions

(a) Level: project adding 42 net dwelling equivalents



(b) Gradient per unit of transformed net additions



Note. Poisson event-study coefficients for counts of all food and drink establishments (blue circles), food establishments (red squares) and drinks establishments (orange triangles) around residential developments completed in 2016–2025 with a net-addition measure. Panel (a) shows the level coefficients β_k at 42 net dwelling equivalents and panel (b) the gradients θ_k per unit of $\operatorname{asinh}(N_p) - \operatorname{asinh}(42)$ in Equation 2. Net additions are measured as in Figure 4. Food includes restaurants, fast-food outlets and ice-cream parlours; drinks includes cafés, bars, pubs and beer gardens. Treated blocks have centroids within 200 m and comparison blocks lie 300–500 m away. Comparison blocks within 200 m of another recorded project and establishments within 30 m of any recorded project point are excluded. Models include project-by-block and project-by-year fixed effects. Coefficients are log changes in expected counts relative to year -1, shown as zero; year zero is reported completion. Endpoint bins $k \leq -5$ and $k \geq 5$ enter estimation but are not displayed. Thick and thin bars show 90% and 95% confidence intervals, with two-way clustering by project and block. Recorded count changes can also reflect mapping or classification changes.