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Transportation and housing markets in cities

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Abstract

This paper surveys recent literature estimating the causal effects of urban transport investments and urban mobility policies on housing markets. We synthesise evidence along three dimensions: the capitalisation of accessibility gains, the internalisation of transport-related externalities, and the rise of green mobility initiatives. Results indicate that while improved accessibility is generally capitalised into higher property values, negative externalities—such as noise, pollution, and congestion—can attenuate or reverse these effects. Policies such as congestion pricing, zoning reforms, and low-emission zones also influence these outcomes, highlighting how institutions, network design, and local environmental conditions shape the housing market's response to transport investments. Recent green interventions in city centres have shown an even stronger impact on housing prices, although they can also create spillover effects in nearby neighbourhoods.

Keywords: transportation, housing prices, within cities

JEL Codes: R41, R48, R53

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1. Introduction

Transport infrastructure is a central form of public investment that shapes the spatial structure of cities. By altering accessibility, commuting costs, and the distribution of economic activity, new transport links change how households and firms value locations. In spatial equilibrium, these changes are capitalised into land and housing prices, as agents bid for locations that trade off accessibility, housing costs, and local amenities (Duranton and Puga, 2020). Beyond these direct effects, transport infrastructure influences a broader set of urban outcomes. It affects productivity and employment (Gibbons et al., 2019), residential sorting by income and occupation (Fretz et al., 2022), and the spatial distribution of economic activity and land use (Redding and Turner, 2015; Hurst and West, 2014). The channels through which these effects operate differ across contexts. Interurban investments primarily enhance trade and production by reducing transport costs between cities (Duranton et al., 2014). In contrast, within-city investments operate through labour market integration, commuting patterns, and residential location choices. At the same time, their highly localised nature implies that they can generate substantial negative externalities—such as noise, pollution, and congestion—that affect nearby residents independently of infrastructure use, particularly in dense urban environments.

This paper reviews recent quasi-experimental evidence on the causal effects of within-city transport investments and related policies on housing markets[1]. We organize the discussion around three interconnected themes, all centered on housing market outcomes: the capitalization of accessibility improvements into housing prices and rents; the effects of policies aimed at correcting or mitigating the negative externalities generated by transport infrastructure; and the impact of newer urban mobility interventions, particularly those associated with greener transport modes. Throughout, we emphasize spatial heterogeneity within cities and the

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[1] Transport investments can be aimed at connecting distant locations -for example, national highway systems or high-speed rail- or at improving urban mobility. This article focuses on the latter type of intervention, which affects mobility for both work and consumption of amenities located in different parts of the city. See Duranton and Turner (2026) in this issue for a related discussion.

importance of policy design in shaping these effects. Overall, the evidence suggests that the effects of transport infrastructure and mobility policies on housing markets are highly context dependent. Additionally, while improved accessibility tends to increase property values, local environmental externalities such as noise, congestion, and air pollution can attenuate or even reverse this gain.

Housing prices have long served as indicators for evaluating households' willingness to pay for accessibility and local amenities. Transport investments affect housing markets through two opposing forces. On the one hand, improved accessibility increases effective labour market size by expanding the set of feasible job–residence combinations. This enhances matching between workers and firms, raising productivity and wages while reducing commuting costs. In equilibrium, these gains increase the attractiveness of well-connected locations and are capitalised into higher land and housing prices, as reflected in upward shifts of bid–rent curves (Ahlfeldt and Wendland, 2011; Gibbons et al., 2019).

On the other hand, transport infrastructure often generates local disamenities that reduce residential quality. Noise, vibration, air pollution, and visual intrusion are common side effects of railways and highways, while stations and interchanges may increase congestion, parking pressure, or perceived crime (Diao et al., 2023). In settings where baseline accessibility is already high—such as dense urban cores—these disamenities may offset or even dominate the marginal benefits of improved connectivity.

The net effect of transport investments on housing markets therefore depends on the balance between accessibility gains and externality costs, which varies systematically across space. For example, highways may be valued as amenities in suburban or interurban contexts, where they improve connectivity, but as disamenities in dense urban areas, where environmental and social costs are more salient (Levkovich et al., 2016; Brinkman and Lin, 2024). In contrast, projects that mitigate existing nuisances—such as tunnels or bypasses that reduce surface traffic—tend to increase property values by improving local environmental quality rather than accessibility per se (Ossokina and Verweij, 2015; Tijm et al., 2019). These patterns underscore that the sign and magnitude of capitalisation effects are inherently context dependent.

This balance is further shaped by features of the urban environment and institutional context, including the structure and maturity of the existing transport network, the spatial scope of the intervention, and land-use regulations or complementarities with other policies. Accounting for these factors is essential both for interpreting empirical estimates and for designing effective transport and housing policies. These same considerations also motivate the structure of our review, which separates evidence on the capitalisation of accessibility gains, policies aimed at mitigating transport-related externalities, and newer green-mobility interventions that reshape both accessibility and local amenities.

Estimating the causal effects of urban transport investments and mobility policies on housing markets poses important identification challenges. These interventions are spatial, induce behavioral responses, and are typically located in areas with high demand or congestion rather than assigned randomly. Section 2 reviews the main quasi-experimental approaches used to address these issues, focusing on how the recent literature constructs credible counterfactuals and exploits spatial and temporal variation in exposure. We also highlight key threats to identification—such as spillovers, anticipation effects, and endogenous sorting—that are central for interpreting the evidence presented in the following sections.

The remainder of the paper is organised as follows. Section 3 surveys evidence of housing capitalization across transport modes, focusing on rail and metro expansions, which dominate the urban literature, as well as road-based interventions such as highways, tunnels, bypasses, and bus systems. Section 4 reviews the impact on the housing market of policies aimed at managing or internalising negative externalities, including zoning reforms, and environmental mitigation strategies. Section 5 examines the rapid expansion of cycling infrastructure and low-traffic interventions as part of broader climate and sustainability urban agendas. These policies aim to reduce emissions, improve air quality, and enhance urban liveability, but they also have important effects on housing markets and can generate spillovers across neighbourhoods. Our review of these three strands—capitalization effects, policies aimed at correcting or mitigating externalities, and green mobility interventions—allows us to draw general policy lessons and identify promising directions for future research. In particular, the literature highlights the importance of understanding the interaction between accessibility gains and local disamenities, the role of policy design in shaping distributional and spatial outcomes, and the need to account for longer-run equilibrium adjustments, including residential sorting and housing supply responses. These issues are discussed in the final section of the paper.

2. Empirical challenges in evaluating urban transport policies

Assessing the causal effects of urban transport investments and mobility policies is challenging because these projects are spatial, generate behavioural responses, and are typically located in high-demand or high-congestion areas rather than placed randomly. This creates endogeneity concerns that require quasi-experimental strategies, most commonly difference-in-differences and event-study designs with rich fixed effects and clustered standard errors, together with recent estimators for staggered and heterogeneous treatment effects (Rambachan and Roth, 2023; Callaway et al., 2024; Baker et al., 2025, Abadie et al, 2025). A central difficulty is defining credible control areas—an issue familiar from place-based policy evaluation—so choices about comparison groups, timing, and exposure measures are crucial for internal validity (Baum-Snow and Ferreira, 2015).

Recent studies on within-city transport interventions have converged on four main empirical approaches. The first, and most common, exploits distance-based contrasts within a project, comparing locations closer to the new infrastructure—

defined through buffers, rings, or walking-network distances—with nearby control areas slightly farther away. Robustness is typically assessed using doughnut checks, alternative bandwidths, and continuous distance or accessibility gradients. This strategy leverages fine-grained spatial variation while balancing proximity and comparability. (Figure 1 illustrates an example from Gupta et al., 2022.)

Figure 1: Illustration extracted from Panel A fig 3 in Gupta et al. (2022): Treated properties (in blue) and control properties (in red). This is an example of distance-based contrasts within the same urban project.

A second approach uses planning alternatives—corridors seriously considered but ultimately not built—as counterfactuals, since they were subject to similar political and technical scrutiny as realised routes (a clear example is Baum-Snow, 2007). A third one relies on historical transport alignments and engineering least-cost paths that predetermined route placement and long-run accessibility patterns, and can be used directly or as instruments to isolate plausibly exogenous components of modern network changes (Faber, 2014; Banerjee et al., 2020). Finally, a growing literature replaces binary "treated vs. control" indicators with continuous accessibility metrics rooted in quantitative spatial-equilibrium theory—typically market-access or commuter-market-access measures—that situate each location within the wider network and capture how changes in travel times reshape effective labour markets and land-use incentives (Redding and Turner, 2015; Donaldson and Hornbeck, 2016).

Beyond treatment assignment, several issues affect the interpretation of reduced-form coefficients. Spillovers are especially relevant for environmental and regulatory policies: low-emission areas or street pedestrianization policies can shift traffic, pollution, and economic activity to adjacent neighbourhoods, complicating counterfactual construction. Credible identification therefore requires testing for boundary effects and ensuring that control areas are not indirectly treated through network or displacement channels (Butts, 2023).

Further challenges relate to anticipation. Transport projects and regulatory interventions usually involve lengthy planning, approval, and construction phases, during which information about routes, funding, and implementation becomes gradually public. Expected benefits or costs may thus be capitalised into housing prices well before completion, and event-study designs need to detect such pre-treatment dynamics. Event-study specifications are particularly valuable in this context, as they trace price responses across the full project timeline—from announcement through construction to operation—allowing researchers to distinguish anticipation from operational effects.

Another empirical challenge is that most interventions simultaneously alter accessibility and local externalities, so reduced-form price responses reflect the net effect of multiple amenity and disamenity changes. Interpreting these capitalisation effects for welfare analysis requires clarifying which components are likely driving prices and how marginal valuations vary across locations and households.

Finally, reduced-form estimates may embed equilibrium adjustments. Transport and environmental policies can induce residential resorting and housing-supply responses, so observed price changes combine amenity effects with compositional and quantity adjustments. With inelastic supply and short horizons, estimates mostly capture partial-equilibrium amenity effects; over longer horizons, sorting and new construction can reshape spatial equilibrium and amplify or dampen initial impacts. Spatial-equilibrium frameworks emphasise that prices reflect both local amenities and endogenous migration, so long-run impacts inherently incorporate these adjustments. Fully capturing such general-equilibrium responses often requires embedding interventions in spatial- or general-equilibrium models with flexible heterogeneity across neighbourhoods, incomes, and baseline conditions (Donaldson, 2025).

Quasi-experimental designs remain central in evaluating urban transport and environmental policies because they offer transparent checks—such as pre-trend tests and event-study dynamics—and are simpler to implement and interpret than fully fledged structural models, although they require rich data. Distance-based methods are practical and widely used, but sensitive to buffer choices and spillovers that may contaminate control areas. Planning alternatives provide compelling counterfactuals, yet such cases are rare; historical instruments can address endogeneity but rely on strong and sometimes contested exclusion restrictions; and network-based accessibility measures capture underlying mechanisms well but demand sophisticated modelling and detailed network data. In practice, spatial interventions require careful boundary analysis to detect spillovers, and event-studies help validate timing by tracing responses from planning through implementation and testing for anticipation. Taken together, these considerations clarify both the strengths and the limits of the identification strategies reviewed in Sections 3, 4, and 5, and they provide the lens through which the evidence in the rest of the paper should be interpreted.

3. The capitalisation of urban transport investments

Urban transport infrastructure can reshape cities by altering accessibility, commuting patterns, and land use. These changes are often capitalized into housing prices, making property markets a valuable lens through which to assess the benefits and costs of infrastructure investment. A growing body of empirical work uses quasi-experimental methods to estimate these effects (See Table 1). This section reviews the evidence from studies that exploit spatial and temporal variation in urban transport interventions, highlighting the mechanisms through which infrastructure affects housing markets and the heterogeneity of impacts across contexts. In interpreting the empirical results reviewed below, it is useful to distinguish short-horizon studies in settings with inelastic supply (e.g., Gupta et al. 2022, Alvez 2025), which primarily identify capitalization of demand shifts under limited supply responses, from longer-horizon analyses where housing supply adjustments are central to observed price patterns.

3.1. Rail-Based Infrastructure

A large share of the literature focuses on the effects of rail-based transport infrastructure, including metro, light rail, and high-speed rail systems[2]. Most studies find positive capitalization effects on housing prices, though the magnitude and distribution of these effects vary considerably across settings, depending on urban form, station characteristics, and the presence of externalities.

Several studies document substantial accessibility benefits from new transport infrastructure. Gibbons and Machin (2005) show that the opening of new rail stations in London increased property prices by 3–5% per kilometre closer to a station. Similarly, Gupta et al. (2022) find that the Second Avenue Subway in New York generated sizable increases in property values and rents, particularly for larger and newer dwellings. Evidence on major rail projects consistently points to local housing premia of 5–10% within 400 metres, largely reflecting travel time savings (Gibbons and Machin, 2005; Gupta et al., 2022). By contrast, Jing and Liao (2023) show that even modest network extensions can generate city-wide price effects by improving

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[2] See Koster and Thisse (2026) in this issue for a survey on the impacts of high-speed trains.

overall connectivity, suggesting diminishing marginal returns as networks mature. However, standard hedonic approaches struggle to disentangle travel time gains from concurrent changes such as construction, redevelopment, or land use shifts, highlighting the need for structural models (Ahlfeldt et al., 2019).

Other studies highlight the presence of anticipation effects, with housing prices increasing even before new infrastructure becomes operational. McMillen and McDonald (2004) show that property values near Chicago's Midway Line began to rise several years prior to its opening. Similarly, Diao et al. (2017) document significant pre-opening price effects, consistent with forward-looking behaviour in housing markets.

Historical studies also provide evidence of long-run accessibility effects. Ahlfeldt and Wendland (2011) show that Berlin's rapid transit expansion explains most of the observed decentralization, with travel time reductions strongly capitalized into commercial land values.

However, not all rail investments generate positive impacts on nearby property values. Wagner et al. (2017) find that the introduction of the Tide light rail in Norfolk, Virginia, led to a decline in surrounding house prices, likely reflecting low ridership and local disamenities associated with the system. Pilgram and West (2018) show that the initial price premiums for proximity to light rail in Minneapolis dissipated over time, indicating limited long-run behavioural responses. Similarly, Billings (2011) reports positive neighbourhood-level effects of light rail development in Charlotte but no significant price gradient relative to station distance, suggesting that in low-density urban contexts, transit investments may function more as catalysts for redevelopment than as valued transport amenities.

These capitalization effects also have distributional consequences, as improved transit access can reshape socioeconomic composition and residential location choices around new infrastructure. Improved transit access raises property values, enabling higher-income households to bid into prime locations while displacing lower-income residents. Fast metro upgrades attracted high skill workers to station areas, raising local incomes via gentrification (Akbar, 2025). Light Rail Transit (LRT) expansions similarly shifted demographics toward college-educated residents (Baum-Snow and Kahn, 2000), while Tyndall (2021) documents increases in rents and changes in local employment composition around new light-rail stations. High-speed rail (HSR) extensions triggered ‘second-hand gentrification,’ with skilled workers from Paris raising Bordeaux-area incomes and prices by 10.6% (Loumeau and Russo, 2026).

3.2. Roads and tunnels

A growing strand of the literature examines road infrastructure effects—particularly new highways (quantity/capacity expansions), quality upgrades, tunnels, and urban redesigns—on housing price[3]. Road infrastructure interventions differ fundamentally by type—new capacity expansions (quantity) versus quality upgrades—with strikingly divergent housing price effects.

Several studies show that new road capacity expansions can reduce nearby property values when disamenities dominate. Alvez (2025) analyses a radial bypass in Phoenix and finds housing prices declined by 12% at announcement and 20% after completion, with the largest losses within 0.25 miles and partial offsetting effects further away due to accessibility gains. The results highlight the importance of ramp placement and alignment for distributional outcomes. By contrast, Ghosh et al. (2024) study road quality upgrades in Bangalore and find no price response at announcement, but sharp increases during construction that peak after completion. These contrasting findings suggest that capacity expansions tend to amplify local nuisances, whereas quality improvements can enhance net amenities.

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[3] Highways have similarly induced skilled sorting toward locations with better market access (Fretz et al., 2022). New roads and bypasses can trigger marked demographic shifts through housing price changes—for example, the Phoenix freeway led to income sorting following 12–20% price declines (Alvez, 2025), while Dutch railroad tunnelling attracted higher-income households and can bias amenity estimates (van Ruijven & Tijm, 2021).

These interventions often generate both accessibility gains and local disamenities, such as noise, pollution, and severance, making net effects highly context-dependent. A related study by Levkovich et al. (2016) decomposes the effects of new highway links in the Netherlands into accessibility gains and traffic-related externalities. They find that while improved access raises prices in nearby municipalities, increased noise and traffic intensity offset these benefits, and in some locations dominate them. The results reinforce the idea that road infrastructure produces a bundle of amenities and disamenities whose net effect depends on local conditions.

Another strand examines road interventions that reduce traffic, such as tunnelling and bypass projects. Tijm et al. (2019) study the relocation of the A2 highway into a tunnel in Maastricht and find a 7.1% increase in house prices within 500 metres, driven by reductions in noise, pollution, and severance. Hoogendoorn et al. (2019) analyse the Westerschelde tunnel and estimate that a 1% increase in accessibility raised house prices by 0.8%, with half of the effect occurring before completion and stronger responses in higher-income areas. Ossokina and Verweij (2015) show that a bypass in The Hague, which reduced traffic density by 50%, increased prices by 1.4% on average and up to 6% in high-exposure streets, highlighting the value of nuisance reduction.

Highway expansions can also induce non-random residential sorting, with higher-skilled and higher-income households relocating toward areas with better market access (Fretz et al., 2022). New roads and bypasses often trigger demographic shifts through their effects on nearby housing prices: for example, the Phoenix freeway project led to income sorting following 12–20% price declines near the corridor (Alvez, 2025), while railroad tunnelling in the Netherlands attracted higher-income households to previously nuisance-affected areas, altering local socio-economic composition and biasing amenity estimates (van Ruijven and Tijm, 2021).

3.3. Buses and tramways

Beyond rail and road infrastructure, a smaller but diverse set of studies examines the effects of other transport interventions on housing markets[4]. Yang et al. (2020) study conventional bus transit in Xiamen, China, and show that both "to-transit" accessibility (number of nearby stops) and "by-transit" accessibility (travel time and frequency) affect housing prices. Bus frequency has stronger effects in peripheral areas, suggesting that service reliability matters more where alternatives are limited.

Two recent studies examine intra-city transport developments in Colombian cities. Garcia-López and Gómez-Hernández (2024) (see Figure 2) evaluate two systems in Medellín—Metroplús (BRT) and Tranvía (tramway)—and find contrasting effects: rental prices fell by 5.7% near BRT stations, likely due to congestion and disamenities, but rose by 4.4% near tram stations, which provided faster and better-integrated connections. The results underscore the importance of service quality and urban context. Tsivanidis (2026) studies Bogotá's TransMilenio using a structural model and reduced-form estimates, finding strong capitalisation of accessibility gains into property prices. He shows that conventional measures based on travel time savings capture only about half of the welfare gains, with the remainder driven by reallocation and general equilibrium effects[5] [6].

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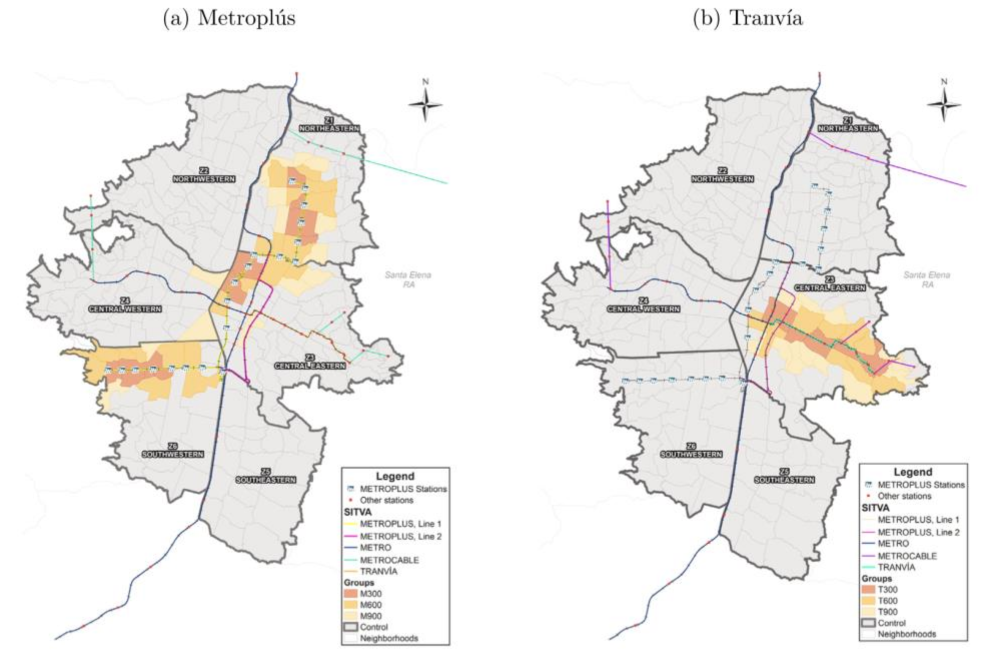
[4] Buses/trams induce sorting via housing capitalization: BRT price premia attract middle/higher-income households (Rodríguez et al. 2016; Beaudoin et al. 2023); in Medellín, BRT led to low-income shifts away from stations following a 5.7% rental price decline (Garcia-López and Gómez-Hernández 2024); Bogotá's TransMilenio generated skilled sorting through accessibility elasticities of 0.38–0.62 (Tsivanidis 2026).

[5] A related study is Silva et al. (2025), who develop a multi-modal accessibility measure to examine how land-use regulation shapes the impact of transport infrastructure on housing markets. They find that subway and highway expansions in Santiago increased floor space and prices only in areas with permissive zoning, while restrictive FARs in wealthy neighborhoods muted the supply response.

[6] With a different perspective, Gorback (2024) exploits city-level shocks, the entry of ridesharing services, which affect the whole urban travel costs network. Examining the impact of these new travel technologies, she studies the staggered entry of ridesharing services across U.S. cities and finds that it improved accessibility in transit-poor areas, leading to faster growth in amenities and housing prices.

Improved transport accessibility from rail, roads, and buses consistently generates housing premia, though varying by mode, urban density, and network context. Rail expansions yield strongest localized gains in new/maturing systems; roads show net negatives for surface capacity but positives for nuisance-reducing tunnels; buses/trams hinge on service quality. Effects balance connectivity against construction disamenities and long-run behavioural responses, underscoring design's role in net outcomes.


(a) Metroplús

(b) Tranvía

Figure 2: Illustration extracted from Garcia-López and Gómez-Hernández (2024): It shows the treatment and control groups used in estimating the effects of Metroplús and Tranvía in the analysis.

Table 1: Empirical evidence of urban transport investment on housing prices

Paper	Setting	Policy Intervention	Period	Impact
Jing and Liao (2023)	Singapore	Downtown Line Stage 1	2012–2015	0.37% housing price increase per 1% connectivity gain, (vs. control areas)
Gibbons and Machin (2005)	London	Opening of new stations on Jubilee Line and DLR Lewisham extension	1997–2001	3–5% increase per km closer to stations (pre/post-opening)

Gupta et al. (2022)	New York (Manhattan)	Second Avenue Subway (3 new stations)	2003–2019	5.5-8% housing prices; 16% new buildings, (within 0.25-mile stations)
McMillen and McDonald (2004)	Chicago	Midway Airport Line	1983–1999	19.4% reduction per mile; 6% station premium (hedonic DiD)
Wagner, Komarek and Martin (2017)	Norfolk (VA)	Tide Light Rail (new LRT)	2002–2016	8% housing price decrease within 1500m (vs. control corridors)
Diao, Leonard and Sing (2017)	Singapore	Circle Line MRT expansion	2007–2013	8.6% within 600m; 19.6% within 200m (distance gradients)
Pilgram and West (2018)	Minneapolis	METRO Blue Line LRT	1990–2014	2.5-7% short-run premiums fading to zero long-run within 0.5-mile (vs. neighborhoods)
Ahlfeldt and Wendland (2011)	Berlin	Early U-Bahn electrified line and modern network	1900–1914; 1990–2012	15–20% per km closer to U-Bahn stations (historical/modern networks)
Billings (2011)	Charlotte	South Corridor LRT	2000–2007	4% single-family; 11% condos within 1-mile LRT neighborhoods (vs. proposed corridors)
Alvez (2025)*	Phoenix, USA	Construction of a new radial bypass freeway	2010–2023	12% drop announcement; 20% post-opening within 2-mile freeway rings (vs. 3-5 mile control)
Ghosh et al. (2024)	Bangalore, India	Urban road redesign and improvement (Tender S.U.R.E.)	2011–2016	8% residential rents post-completion on treated roads (vs. adjacent roads)
Levkovich et al. (2016)	Netherlands	Construction of two new highways (A30 and A50)	1995–2011	2.5-4.3% house price increase post-highway completion (treated municipalities vs. adjacent 10km control roads); 1.76% per 1% accessibility gain (repeat-sales DiD)
Ossokina and Verweij (2015)	The Hague, Netherlands	Opening of a bypass (N14)	1998–2006	1.4% house prices post-bypass (50% traffic drop on treated streets vs. unaffected adjacent)
Tijm et al. (2019)	Maastricht, Netherlands	Highway tunnelling (A2 relocation)	1985–2017	7.1% house prices post-tunnel (<500m treated vs. >2km adjacent roads).
Hoogendoorn et al. (2019)	Zeeland, Netherlands	Opening of Westerschelde road tunnel	1995–2013	8% house prices post-tunnel (1% access gain near-treated vs. far adjacent)
Yang et al. (2020)	Xiamen, China	Introduction of a Bus Rapid Transit (BRT) corridor	2010s	0.4% house prices per extra bus stop within 500m (to-bus); -0.08% per min bus time to old center

Garcia-López and Gómez-Hernández (2024)	Medellín, Colombia	Opening of BRT (Metroplús) and Tramway (Tranvía) lines	2008–2018	-5.7% rental prices post-BRT (300m treated neighborhoods vs. >900m control); +4.4% post-tram (300m treated vs. >900m)

Note: (*) denotes unpublished paper

4. Policies to correct negative externalities and housing markets

As discussed in the previous section, transport investments tend to increase housing prices through improved accessibility. However, they also generate substantial negative externalities, including congestion, air pollution, and noise, with significant social costs. Congestion alone leads to large time losses, costing over €110 billion annually in the EU and $71 billion in the US (Pishue and Kidd, 2025). Air pollution remains a major health risk, with PM2.5 responsible for over 200,000 premature deaths each year in both regions (EEA, 2024), while noise exposure affects more than 20% of the population and is linked to adverse health outcomes (ECA, 2025). In response to these negative effects, a range of transport related policies have been implemented. The focus here is on the subset of these policies that operate at the urban scale and are most likely to affect local housing markets through changes in neighbourhood amenities, mobility patterns, and environmental quality. The first generation of policies sought to internalize the external costs of fuel consumption through national-level interventions such as fuel taxes, fuel economy standards, and engine emission regulations. More recently, a second generation of policies has emerged, targeting the direct mitigation of these externalities by fostering cleaner and more sustainable urban mobility at the city level, including the implementation of driving restrictions, congestion pricing schemes, and noise attenuation strategies. These policies, while designed to correct transport-related externalities, may also generate unintended effects on housing markets by altering local amenities, accessibility, and the spatial distribution of economic activity, with implications for property values and residential sorting.

4.1 Driving restrictions

Driving restriction policies limit the use of private vehicles within specific areas or time periods. Two prominent approaches are license plate-based restrictions and low-emission zones (LEZ). License plate restrictions reduce traffic by limiting circulation based on plate numbers, typically on a rotating schedule. However, these policies can be counterproductive, as households may acquire additional, often more polluting vehicles. When combined with complementary measures that restrict such responses, these policies can significantly reduce pollution.

Although the literature on the real estate effects of driving restrictions remains limited, emerging empirical evidence suggests that successful implementation of such policies is capitalized into housing prices (see Table 2). Xu et al. (2015) and Jerch et al. (2024) examine the effects of the one-day and odd-even policies in Beijing since 2008. In general, they find that these policies led to a 4-8% increase in housing prices near subway stations. Furthermore, Jerch et al. (2024) investigate the implications for household location choices and find evidence of income-based residential sorting: higher-income households relocated closer to subway stations, potentially diminishing transit accessibility for lower-income groups.

Similar results are obtained by Lyu (2022) when studying the effects of a new and complementary driving restriction in Beijing: The car purchase lottery. Since 2011 a permit is required for first-time vehicle owners, whether buying a new car, purchasing an old car, accepting a gifted car, or transferring registration to Beijing. Permits are issued through a monthly lottery to individuals and institutions that intend to purchase cars. Using monthly data at both neighborhood and monitoring station levels, the author finds that this policy improved air quality and increased housing prices close to employment centers (0.7%), primary schools (3.3%), subway stations (1.2%), and bus lines (0.08%).

Low Emission Zones constitute a technologically advanced and environmentally oriented form of driving restriction that limits access to vehicles failing to meet specific emission standards, thereby encouraging the adoption of cleaner technologies and reducing exposure to harmful pollutants. Overall findings broadly support their effectiveness in improving air quality.

The literature on the impact of low-emission zones (LEZs) on property prices is relatively recent and provides growing evidence of capitalisation effects (see Table 2). Nishitateno et al. (2021) show that diesel vehicle restrictions in Japan reduced particulate matter by 17% and increased residential land prices by 11%, with migration dynamics playing an important role. In Tokyo, Kang et al. (2024) (see Figure 3) find that the introduction of an LEZ improved air quality—reducing PM, NOx, and NO_2 by 7%, 9%, and 3%, respectively—and led to a 2.7% increase in land prices. Similar results are found in Europe. Gruhl et al. (2025) document that LEZs across German cities reduced PM_{10} and NO_2 concentrations by 4.9–5.5% and 3.7–4.9%, respectively, and increased rents by around 1.7%. However, these effects are not spatially uniform. Aydin and Rauck (2023) show that Berlin's LEZ increased housing prices near well-connected stations but reduced them in more peripheral areas.

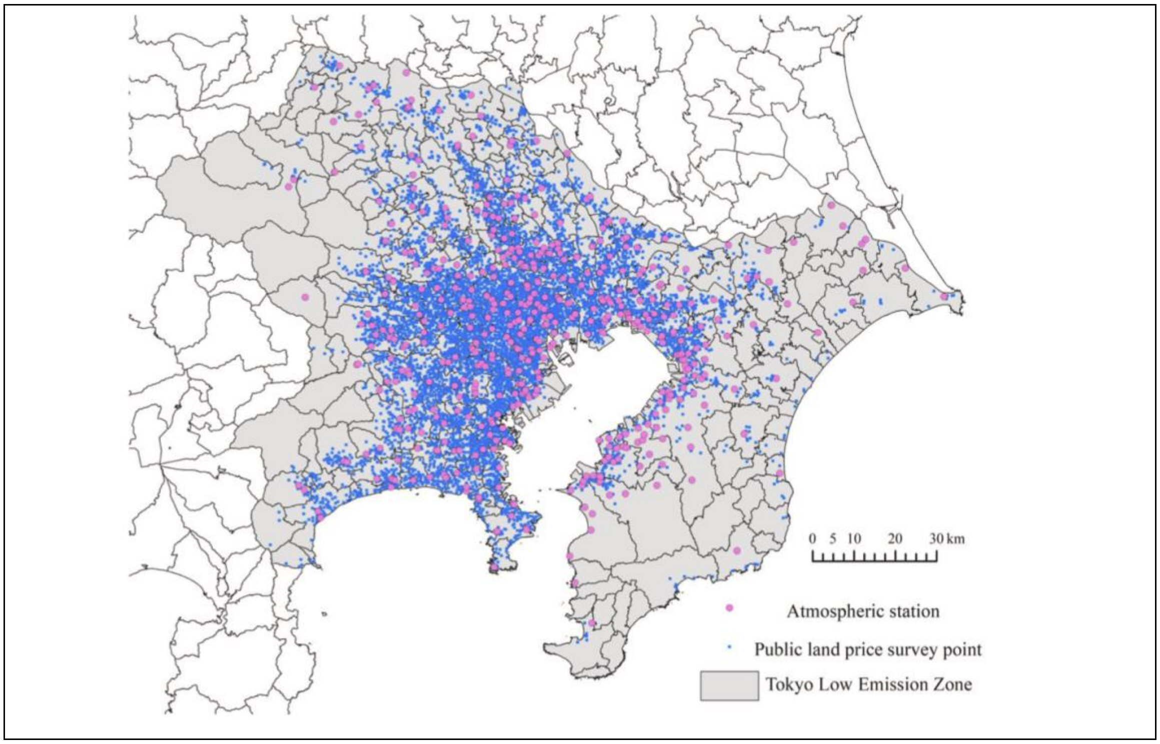


Figure 3: Illustration extracted from Kang et al. (2024): It shows the granular information on pollution and land prices of the Tokyo LEZ, the world's largest LEZ.

4.2 Congestion pricing

Congestion pricing reduces traffic by charging drivers for access to specific areas, typically city centres, during peak periods. Unlike quantity-based restrictions such as license plate policies or low-emission zones (LEZs), it operates as a price-based mechanism that internalises the external costs of congestion, pollution, and noise. Empirical evidence shows that it lowers traffic and improves air quality, particularly in cities with strong public transport systems. However, poorly coordinated or overlapping policies can offset these gains, especially when opt-out provisions are not well designed. Effects are stronger when revenues are reinvested in public transport, supporting modal shifts and improving equity outcomes. The impact of congestion pricing on property prices varies depending on the context and the nature of the policy (see Table 2). Percoco (2014) studies the case of Milan's congestion charge implemented in 2008 and finds that in the charge area housing prices decreased by 1.2-1.8%. Similarly, Agarwal et al. (2015) examine the impact of a modification of Singapore's congestion pricing scheme in 2010. The authors find that the revised policy significantly decreases retail real estate prices by 19% in treated areas, likely due to reduced foot traffic and potential declines in retail revenues. In contrast, transaction prices for office and residential properties remained largely unaffected.

Conversely, when congestion pricing results in noticeable improvements in traffic flow and air quality, these benefits may be capitalized into residential property values. Tang (2021) analyzes the introduction of London's congestion charge in 2003 and finds that the policy led to a 9% reduction in average annual daily traffic and a 7% decline in PM_{10} concentrations. Beyond environmental improvements, the author also finds a 3% increase in housing prices within the charging zone. See Figure 4 for the illustration of the London LEZ and the design of the empirical strategy.

Table 2: Empirical evidence of externality policies in cities and housing prices

Paper	Setting	Policy Intervention	Period	Impact
Xu et al. (2015)	Beijing	Odd-even and one-day-per-week policies	2006-2010	4-8% increase in housing prices near subway stations
Jerch et al. (2024)	Beijing	Odd-even and one-day-per-week policies	2005-2011	Higher-income households relocate close to subway stations
Lyu (2022)	Beijing	Car purchase lottery	2009-2014	Increase in housing prices by 0.7% near job centers, 3.3% near primary schools, 1.2% near subway stations, and 0.08% near bus lines.
Nishitateno et al. (2021)	42 Japanese municipalities	Diesel vehicle restrictions	1995-2015	11% increase in residential land prices
Kang et al. (2024)	Tokyo	Low Emission Zone	1990-2010	2.7% increase in land prices
Gruhl et al. (2025)	169 German cities	Low Emission Zones	2003-2019	1.7% increase in rental prices
Aydin and Rauck (2023)	Berlin	Low Emission Zone	2007-2015	9% increase in housing prices near suburban train stations
Percoco (2014)	Milan	Congestion charge	2006-2009	1.2-1.8% decrease in housing prices
Agarwal et al. (2015)	Singapore	Congestion charge	2007-2013	19% decrease in retail real estate prices
Tang (2021)	London	Congestion charge	2000-2010	3% increase in housing prices
Diao et al. (2023)	Singapore	Noise barriers	2011-2017	2-3% increase in property values
Moretti and Wheeler (2025)*	Florida	Noise barriers	1990-2022	7% increase in housing prices

Note: (*) denotes unpublished paper

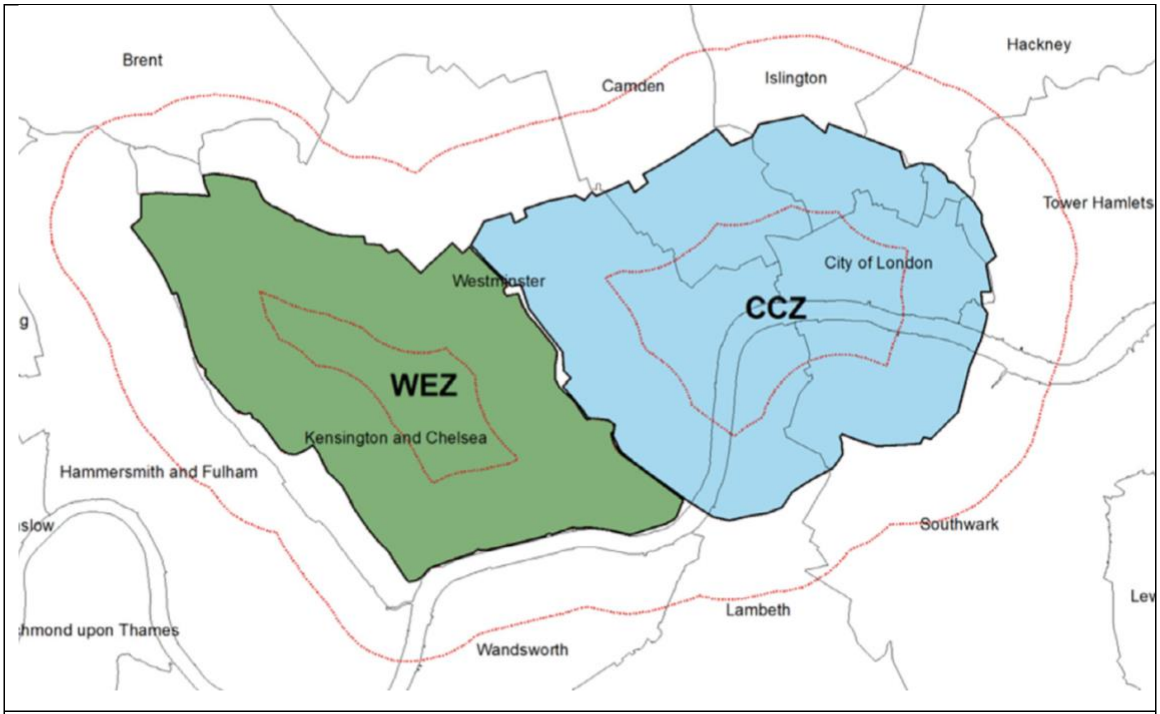


Figure 4: Illustration extracted from Tang (2021): It shows the treated and control areas of the London Congestion Charge Zone (LCC) and 1 km buffers (in dash-line) from the LCC boundary.

4.3 Noise attenuation

Noise attenuation policies aim to reduce transport-related noise through measures such as acoustic barriers, low-noise surfaces, traffic calming, and restrictions on nighttime traffic. Empirical evidence shows that noise significantly reduces property values, often offsetting accessibility gains, as households place a high premium on quiet environments—an effect that is stronger at higher income levels and with remote work. This disamenity is consistently observed across contexts, with proximity to noisy roads, rail lines, and bus routes associated with lower housing prices and rents.

The literature on noise mitigation policies remains limited and has primarily concentrated on the installation of acoustic barriers, with recent key contributions by Diao et al. (2023) and Moretti and Wheeler (2025) (see Table 2). Diao et al. (2023) examine housing prices in Singapore, finding that resale prices of public housing increase by 3–4% for each additional kilometer from noisy aboveground rail tracks.

They also find that the construction of noise barriers along selected segments effectively reverses this negative capitalization effect, raising nearby property values by 2–3% and generating housing wealth gains exceeding S$1.6 billion—substantially above project costs. Similarly, Moretti and Wheeler (2025) analyze the impact of noise barriers along urban road segments in Florida. The authors find that the construction of road noise barriers increases housing prices by 6.8–10.3% within 100 meters. They also estimate that traffic noise imposes an aggregate economic burden of $110 billion in the United States.

5. Calming traffic in cities: new developments in urban mobility

In recent years—accelerated by the COVID-19 pandemic—many cities have moved decisively to reshape urban mobility by reallocating street space from private cars to active and public transport. Temporary measures such as pop-up cycle lanes, widened sidewalks, and time-limited street closures have since been consolidated into permanent infrastructure. At the same time, the escalating impacts of climate change, together with well-documented local harms from traffic-related emissions, have strengthened political support for policies that reduce car use or, in some districts, ban it altogether. Unlike the policies reviewed in Section 4, these interventions often work by reallocating street space and changing the local mix of transport modes, so their effects on housing markets reflect both amenity improvements and changes in local accessibility.

The variety of interventions—traffic calming, integrated cycling networks, pedestrianised corridors and plazas, and low-traffic neighbourhoods—does more than cut emissions: it alters generalised travel costs, improves last-mile connectivity to transit, and upgrades the quality and safety of public space. Yet some residents also perceive costs, including traffic diversion, parking loss, and reduced car access for certain trips. Empirical evidence on how these interventions affect traffic volumes, travel times, mode choice, and residents' behaviour remains mixed and context-dependent. As with other environmental and urban greening policies, perceived trade-offs shape how residents value these changes. Housing markets capture both the direct benefits of new infrastructure and the contested aspects of such interventions. The distributional dimension also raises key policy questions, particularly amid growing concerns about gentrification and displacement. In equilibrium, housing prices in affected areas may reflect the net valuation of residents—capitalising both perceived benefits and costs. This section examines residents' willingness to pay for two major interventions: the expansion of bicycle infrastructure and the pedestrianisation of streets.

5.1. Bicycle infrastructure

Cycling has expanded rapidly as a mode of urban transport, supported by investments in infrastructure and active mobility policies. Many cities have seen substantial increases in use—for example, daily cycling in New York City rose by 64% between 2013 and 2023, while Paris more than doubled its cycling network between 2014 and 2024. Reflecting this trend, the European Declaration on Cycling (2024) highlights its environmental, health, and economic benefits. However, the effects of cycling infrastructure are heterogeneous: while nearby residents may benefit from improved accessibility, lower noise, and better air quality, the distribution of costs and benefits remains spatially uneven as modal shifts reshape local amenities.

Although still developing, the empirical literature on the causal effects of cycling infrastructure on housing markets is expanding rapidly (see Table 3). Existing estimates are heterogeneous and depend on both infrastructure design and urban context. Daniele et al. (2025) analyse Paris's *Plan Vélo* and find modest housing-market responses: higher bike-lane density is associated with price increases of around 0.02%. They do not find evidence of an effect operating through improved market access. In contrast, Garcia-López et al. (2025) study Barcelona between 2011 and 2019 (see Figure 5), jointly examining the expansion of bike lanes and the roll-out of the bike-sharing system, while distinguishing between rental and sales markets. They report larger capitalisation effects—around a 2.5% increase in housing prices within 50 metres of a bike station and about 0.05% near bike lanes or in areas with improved accessibility—but also substantial heterogeneity: renters and buyers respond differently to the bike-sharing component, with additional variation across socio-demographic groups. In this context, connectivity appears to play a role, although improved access through nearby links generates only modest price effects. The mechanisms underlying these patterns remain unclear, as the available evidence is still limited. Daniele et al. (2025) find no effect of changes in market access on housing prices, pointing to an amenity-based interpretation, whereas Garcia-López et al. (2025) report estimates consistent with both amenity improvements and changes in market access contributing to price increases in affected areas.

In a different context, Shr et al. (2023) study Kaohsiung (Taiwan), a city of about 2.8 million residents, to estimate the rental effects of a docked bicycle-sharing system. They find rent increases of about 2% within 150 metres of a station, concentrated where stations connect to the metro—consistent with the capitalisation of multimodal access. Chu et al. (2021) provide a complementary perspective, examining dockless bike sharing in ten major Chinese cities using apartment resale data. They find that dockless systems reduce the subway proximity premium by 29% per kilometre, as lower first- and last-mile costs rebalance accessibility benefits. This suggests that, rather than uniformly raising prices near stations, dockless availability redistributes accessibility gains, reshaping how transit proximity is capitalised into housing values.

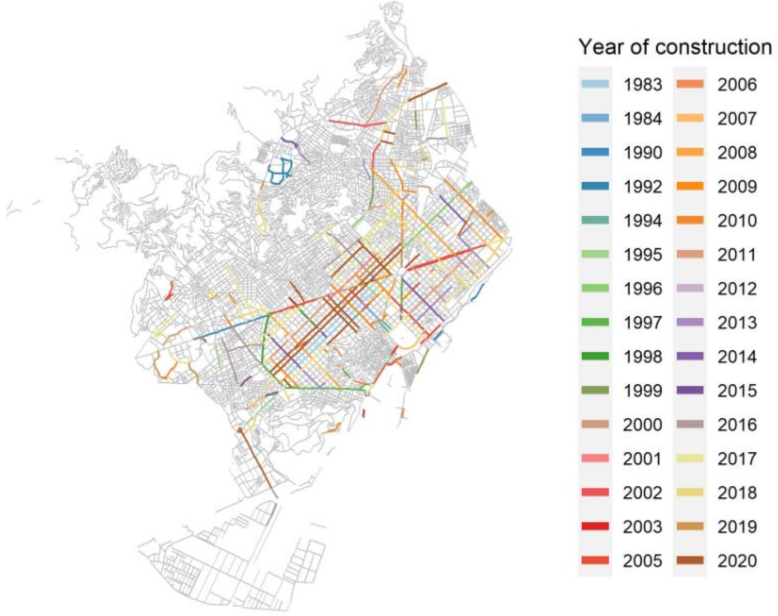


Figure 5: Cycle lanes in Barcelona. Source: Barcelona Open data and Garcia-López et al. (2025)

Recent studies have also incorporated quantitative spatial models (QSMs) to assess welfare effects. Shang (2024) analyses Seattle's bike-lane expansion using reduced-form evidence and a QSM. He finds that proximity to bike lanes increases housing prices by about 5% after installation. In the model, paved or dedicated lanes enhance local amenities, while shared lanes do not, and aggregate welfare effects are slightly negative because congestion costs outweigh amenity gains. By contrast, Hendrich et al. (2026) develop a nationwide QSM for the Netherlands with explicit mode choice and car congestion. Although they do not focus on housing prices, their counterfactuals show clear welfare gains from cycling: eliminating cycling would raise average commuting times by 14% and reduce worker welfare by around 6%, implying that cycle infrastructure supports more compact and efficient urban systems.

5.2. Pedestrianisation and car-free streets

In recent years, people-first street design has transformed many city centres, with some cities sharply restricting or even banning private cars (e.g., Paris's pedestrianised Seine riverbank or Oslo's removal of most on-street parking). These interventions offer clear local benefits—cleaner air and soundscapes, safer and more pleasant public spaces, and shifts toward walking, cycling, and transit—but also entail costs such as traffic diversion, delivery frictions, and parking loss. A growing literature highlights additional concerns about equity, gentrification, and political resistance (Anguelovski et al. 2023). Because pedestrianisation operates at the street scale, its welfare effects are spatially uneven. Citywide gains include lower pollution and climate benefits, but also higher driving costs for car-dependent households. Locally, benefits—less noise, cleaner air, safer and more usable streets—concentrate on treated areas, while costs may shift nearby through traffic diversion. These uneven effects reshape retail activity and residential sorting, with amenities capitalized into higher rents. The net impact depends on context and on complementary policies that manage spillovers and equity (See Table 3).

Paris and Barcelona have been at the forefront of car-restriction policies. Bou Sleiman (2024) analyses the 2016 closure of the Voie Georges-Pompidou—an expressway crossing central Paris—and its effects on traffic, pollution displacement, and housing prices (See Figure 6). The study finds increases in congestion and nitrogen dioxide emissions, alongside a 1% decline in housing prices along substitute routes in 2017. This effect disappears in 2018, likely due to the announcement of new metro lines in southern Paris.

Barcelona's Superblocks program, launched in 2015 to curb traffic and pollution while enhancing urban livability, shows a contrasting pattern. Unlike Paris, the policy does not appear to have increased traffic or pollution in adjacent areas (Estruch et al. 2025), likely because residents shifted to walking, cycling, or transit, trips were diverted to ring roads, or fewer cars entered the city. Housing-market evidence points to highly localised gains: property values rose substantially on streets directly affected by the intervention. De Solà-Morales et al. (2025) find corresponding increases in rental prices—over 10% near pedestrianised streets, with effects declining by distance—raising concerns about “green gentrification” and the potential displacement of middle- and low-income households.

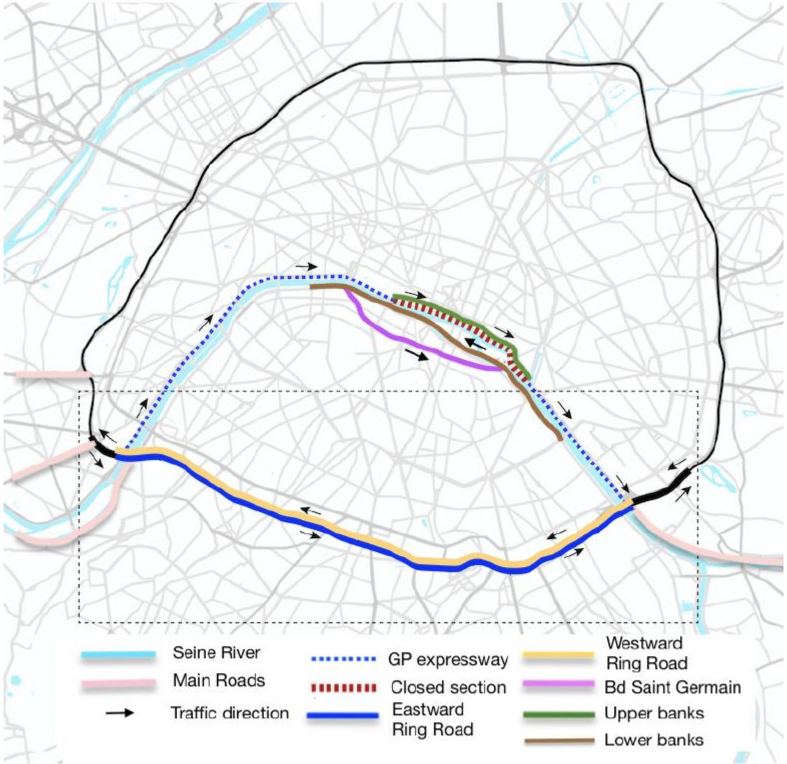


Figure 6: Illustration from Bou Sleiman (2024). It shows the 3.3 km pedestrianised segment of the Georges Pompidou riverbank in Paris and the roads potentially affected by diverted traffic.

Table 3: Empirical evidence of green infrastructures in cities and housing prices

Paper	Setting	Policy intervention	Period	Impact
Daniele et al. (2025)*	Paris	Plan Vélo-Bike lanes	2015-2019	Market access: no impact Bike lane density increases 0,02% the house price index
Garcia-López et al. (2025)*	Barcelona	Bikes lanes and bike sharing stations	2011-2019	2,5% increase in house prices 50m within to a bike station; 0,05% 50m to a bike lane. Improving accessibility 0,05%
Shang (2024)*	Seattle	Bike lanes	2008-2017	5% increase of sales prices in the presence of bike lanes
Shr et al. (2023)	Kaohsiung (Taiwan)	Docked bike sharing stations	2019-2021	1,87% increase in rentals within 150m from the station

Chu et al. (2021)	10 cities in China	Dockless bike sharing station	2015-2017	29% reduction of the resale price premium per km away from a subway station
De Solà-Morales et al. (2025)*	Barcelona	Pedestranisation-Green Axes	2018-2024	10% increase in rental listings diminishing effects with distance
Bou Sleiman (2024)*	Paris	Pedestranisation-Closure Voie George-Pompidou	2016-2018	1% decrease of housing sales prices in substitute roads

Note: (*) denotes unpublished paper

6. Discussion and future research

In this paper, we have shown that the housing-market effects of transport and mobility policies depend on the balance between accessibility gains and the local externalities they generate. Transport infrastructure affects housing markets primarily through the capitalisation of accessibility gains into property values, often before project completion. These gains, however, are not uniform. Negative externalities—such as noise, congestion, and visual intrusion—can offset or even reverse price effects, particularly for aboveground infrastructure. The net impact therefore depends on project design and the extent to which mitigation measures are incorporated. These effects are highly heterogeneous across space and population groups. Accessibility improvements raise housing demand in some areas, while disamenities or safety concerns dominate in others. Price effects may also evolve over time as networks expand and households re-sort, reflecting the interaction between transport systems and local housing markets.

Policies aimed at mitigating negative transport externalities also affect housing markets. Driving restrictions increase housing demand when supported by limits on vehicle ownership and strong public transport alternatives. Low-emission zones and congestion pricing raise property values when they generate measurable improvements in air quality and traffic conditions, although gains are concentrated in central and well-connected areas. By contrast, transport-related noise consistently depresses nearby housing values, while mitigation measures can reverse these effects. These findings highlight the importance of policy design. Transport interventions are most effective when combined with complementary investments in public and active transport and when tailored to local conditions. Accounting for distributional effects and reinvesting policy revenues in sustainable mobility can further improve outcomes.

Evidence on green mobility policies points to similar patterns. Cycling infrastructure generally increases nearby housing prices, although effects vary across tenure types and socio-demographic groups. Identifying these impacts remains challenging, as network expansions generate system-wide changes in accessibility. The magnitude of capitalisation depends on network design and integration with existing transport systems. More restrictive interventions, such as pedestrianisation and car-free zones, also affect housing markets. These policies tend to increase property values in treated areas but may generate spillovers to adjacent neighbourhoods through traffic diversion or changes in accessibility. Measuring these spillovers remains challenging.

Note that beyond average effects on housing prices, transport interventions can reshape the spatial distribution of households within cities. Improvements in accessibility increase the attractiveness of certain neighbourhoods and may induce residential sorting, as higher-income households move into newly well-connected areas.[7] As a result, price capitalisation reflects not only changes in local amenities but also shifts in socio-economic composition. These distributional effects depend on local housing market conditions, including supply elasticity, tenure structure, and initial neighbourhood characteristics, and may intensify over time as sorting reinforces price differentials. Moreover, rising property values benefit incumbent owners while potentially excluding renters and new entrants, raising equity

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[7] See Akbar and Couture (2026) in this issue for a survey on mobility, segregation and inequality.

concerns. Recent evidence points to income sorting and gentrification dynamics following transport improvements. At the same time, interpreting housing price responses as welfare measures requires caution. Reduced-form estimates capture localised land value changes but may miss broader equilibrium effects, including spillovers across neighbourhoods and indirect impacts on control areas. Fully capturing these effects requires frameworks that incorporate household mobility and housing supply responses. Combining credible reduced-form designs with general equilibrium approaches remains an important direction for future research.

Future research should deepen our understanding of how transport infrastructure interacts with the broader urban system. In particular, it should examine how accessibility, environmental quality, and regulatory policies jointly shape housing markets and distributional outcomes. Expanding the evidence base across diverse institutional and spatial contexts would help assess the external validity of existing findings and clarify how urban form and governance mediate policy impacts.

Advances will require combining high-resolution spatial data with frameworks that capture dynamic adjustments, including household mobility, housing supply responses, and longer-run equilibrium effects. While short-run capitalisation estimates credibly identify demand-side amenity changes, supply responses—such as construction, sorting, and suburbanisation—unfold over longer horizons. Incorporating these dynamics, for instance through structural models that allow for heterogeneous supply elasticities, would improve welfare analysis and policy evaluation. Greater attention should also be given to the interaction of multiple policy instruments—such as congestion pricing, low-emission zones, and noise mitigation—to identify complementarities and trade-offs. Finally, a more comprehensive welfare perspective is needed to move beyond local price effects and account for spillovers, distributional consequences, and long-run urban transformations.

On the identification strategy side, recent methodological advances have substantially improved the causal estimation of the impact of transportation improvements on the housing markets. New quasi-experimental designs, dynamic analyses, and spatial models[8] allow researchers to identify not only local impacts but also wider spillovers through the urban network, enhancing our understanding of how accessibility changes propagate across markets and how welfare gains and losses are distributed across residents and neighbourhoods.

However, building on these advances requires further refinement of identification strategies along several dimensions. In particular, future work should improve the construction of credible counterfactuals in spatial settings where spillovers and network effects blur treatment boundaries. Greater use of high-resolution data and continuous exposure measures can help capture heterogeneous and non-local effects, while careful modelling of anticipation is needed to account for pre-treatment dynamics. Disentangling accessibility gains from local externalities remains essential for interpreting capitalisation effects, calling for designs that isolate underlying mechanisms. Finally, advancing beyond reduced-form estimates will require integrating quasi-experimental approaches with spatial equilibrium frameworks that incorporate household sorting and housing supply responses, enabling a more complete assessment of long-run and distributional impacts.

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[8] See Severen (2026) in this issue for an article on the evaluation of transportation improvements within cities using quantitative spatial models.

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