

Mind the Anticipation Gap: A Difference-in-Differences Analysis of the Elizabeth Line's Impact on London Housing Prices

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Abstract

This paper estimates the causal impact of London's Elizabeth Line on residential property prices using a Difference-in-Differences framework applied to 1,602,487 transactions from the UK Land Registry over 2000–2024. Treated properties within five distance bands of stations are compared to a baseline beyond 10 km, separately for the construction window (2007–2015) and the post-opening window (2022–2024). During construction, prices within 1 km of stations rose by 4.9% relative to control, with substantially larger gains of 7.7–8.1% in the 2–10 km bands, indicating broad anticipatory capitalisation and spillover effects. Following the May 2022 opening, station-adjacent prices fell by 2.0%, consistent with overshooting during the construction phase, while outer-band prices remained unchanged. Effects are concentrated in zones previously under-served by Transport for London. The findings have implications for transport appraisal, value-capture timing, and equity-oriented infrastructure planning.

Keywords: Elizabeth Line; Transport infrastructure; House prices.

JEL Classification: R41, R31, R42, H54

1 Introduction

Urban transport infrastructure shapes residential property values primarily through accessibility and commuting-time effects (Gibbons & Machin 2005). Empirical work consistently documents premiums for properties near transit, with effect sizes mediated by network design, anticipation behaviour, and pre-existing accessibility (Mohammad et al. 2017; Ahlfeldt 2013; Billings 2011). The Crossrail project—rebranded the Elizabeth Line on opening—offers an unusually well-defined natural experiment: an £18 billion east–west rail link spanning 118 km from Reading to Shenfield, formally approved in 2007, under construction

from 2009, and operational in May 2022. Across this long planning horizon, market participants had ample time to internalise expected accessibility gains. This paper quantifies the causal impact of the Elizabeth Line on residential property prices over 2000–2024, separately identifying construction-phase anticipation and post-opening adjustment.

Existing assessments of Crossrail’s price effects are largely descriptive, market-oriented, or based on limited time horizons (GVA 2012; JLL 2018; Knight Frank 2019; Chamberlain & Prentice 2017). Few studies apply rigorous causal designs that exploit the full temporal arc of a mega-project. Several methodological gaps follow. First, standard binary treated-versus-control specifications collapse spatial heterogeneity that may matter—particularly potential spillovers in mid-distance bands (Bowes & Ihlanfeldt 2001; Agostini & Palmucci 2008). Second, evaluations rarely separate the construction phase from the operational phase, even though anticipatory capitalisation and post-opening correction are theoretically distinct. Third, parallel-trend assumptions are seldom formally tested. Fourth, heterogeneity along pre-existing transit access is rarely modelled, despite its relevance to value-capture and equity considerations (Koster et al. 2014).

This paper addresses these gaps with a Difference-in-Differences (DiD) design applied to 1,602,487 residential transactions covering 139,894 properties (HM Land Registry 2024), geocoded to all 41 Elizabeth Line stations and matched to schools, hospitals, other Transport for London (TfL) stations, borough socioeconomic indicators, and macroeconomic controls. The analysis estimates effects across five distance bands—within 1 km, 1–2 km, 2–5 km, 5–10 km, and beyond 10 km (the reference)—for two treatment events: the construction approval in 2007 and the operational launch in 2022. The DiD estimator is complemented by event-study specifications, formal parallel-trend tests, and robustness checks for property-level fixed effects, alternative random-effects estimation, and macroeconomic controls.

Three findings stand out. First, during construction (2007–2015), prices for properties within 1 km of stations appreciated by 4.9% relative to the more-than-10-km control, with similar gains in the 1–2 km band (5.3%) and substantially larger effects in the 2–5 km (8.1%) and 5–10 km (7.7%) bands. The non-monotonic distance gradient is consistent with mid-range zones combining accessibility expectations with limited construction-related disamenities. Second, after the line opened in 2022, station-adjacent prices reverted: properties within 1 km fell by 2.0% relative to control, and 1–2 km prices fell by 1.2%, with no statistically significant change in outer bands. Event-study estimates indicate that capitalisation peaked between 2014 and 2016, well before the opening, consistent with rational anticipation. Third, price responses are concentrated in areas not previously well-served by TfL, in line with diminishing marginal returns to accessibility.

The paper contributes to the urban and transport economics literature in three ways. It provides the first long-horizon DiD estimate of Elizabeth Line price effects spanning the full project lifecycle from announcement to operation; it separately identifies and quantifies anticipatory capitalisation and post-opening correction within a single empirical framework; and it documents heterogeneity

by pre-existing accessibility, with direct implications for equity-oriented infrastructure planning. The remainder of the paper is organised as follows. Section 2 reviews the literature. Section 3 describes the institutional context and data. Section 4 sets out the empirical strategy. Section 5 reports DiD and event-study results. Section 6 discusses interpretation. Section 7 concludes.

2 Literature review

2.1 Amenities and Housing Prices

The hedonic literature documents that property values reflect the joint contribution of structural attributes and surrounding amenities (Tiebout 1956). Empirical studies confirm sizeable premiums for proximity to high-performing schools (Cheshire & Vermeulen 2009), green space (Gibbons et al. 2014), and healthcare facilities (Gabriel & Rosenthal 2010). Cultural and historical amenities also capitalise into prices (Ahlfeldt 2013). Negative externalities including congestion, noise, and pollution can offset these gains for properties immediately adjacent to transit nodes (Bowes & Ihlanfeldt 2001; Du & Mulley 2007). Land-use regulation shapes the extent to which accessibility is reflected in prices by constraining housing supply (Cheshire et al. 2015; Hilber & Vermeulen 2016).

2.2 Accessibility and the Capitalisation of Transport Infrastructure

Bid-rent theory (Alonso 1964) predicts that land values decline with distance from employment centres as commuting costs rise. Improvements in transport accessibility shift the rent gradient outward, raising values in newly accessible locations (Fujita & Ogawa 1982). Capitalisation models extend this logic by emphasising that forward-looking buyers price expected accessibility gains as soon as credible information is available (Agostini & Palmucci 2008). Agglomeration theory (Venables 2007; Graham 2007; Melo et al. 2013) identifies a complementary mechanism: transit improvements raise productivity through closer effective proximity, increasing demand for both residential and commercial space. Together these frameworks predict that announcements of credible transit projects should generate price effects that build during construction, with the spatial profile shaped jointly by expected accessibility and exposure to construction disamenities.

2.3 Empirical Evidence on Transit and Property Values

Quasi-experimental studies of urban rail consistently find capitalisation effects, although magnitudes and spatial patterns vary. Gibbons & Machin (2005) document significant uplifts following the Jubilee Line Extension and Docklands Light Railway in London. Mohammad et al. (2017) estimate a 7.8% premium within 1 km of Dubai Metro stations after opening. Billings (2011) finds positive effects from Charlotte's light rail using a hedonic–DiD design. Ahlfeldt (2013) shows substantial pre-opening capitalisation in Berlin. Dubé et al. (2013) document long-run gains around Montreal's commuter rail using repeat-sales methods. Atkinson-

Palombo (2010) finds that rail investments outperform highway investments in capitalisation effects, while Pan & Zhang (2008) document differentiated land-use responses to Shanghai’s metro expansion. McIntosh et al. (2015) emphasise the broader regeneration benefits of transit-led development.

For Crossrail specifically, market-oriented studies report large pre-opening price growth in catchment areas (GVA 2012; JLL 2018; Knight Frank 2019). Chamberlain & Prentice (2017) document anticipation effects in West London. However, these studies typically rely on hedonic regressions or descriptive comparisons that lack formal counterfactuals, do not separately identify the construction and operational phases, and rarely model spatial spillovers beyond the immediate catchment. The present paper addresses these limitations with a long-horizon DiD design that exploits the full sequence of treatment events from announcement to operation, models spatial heterogeneity through five distance bands, and tests parallel trends and pre-existing access conditions explicitly.

3 Institutional Context and Data

3.1 The Elizabeth Line

The Crossrail project was formally authorised in 2007 and legally enacted by the Crossrail Act 2008. Construction began in 2009 under Crossrail Ltd, a TfL subsidiary, with oversight from the Department for Transport and the Greater London Authority. The line spans 118 km from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east, with 41 stations including 10 newly built. Total project cost exceeded £18 billion, making it the largest infrastructure investment in Europe at completion. Phased opening began on 24 May 2022 between Abbey Wood and Paddington; through-running to Reading and Shenfield was completed in May 2023. The long planning horizon, large catchment, and clearly dated announcement and opening events make the Elizabeth Line an unusually clean setting for a DiD analysis of anticipation versus realised effects.

3.2 Data Sources and Sample Construction

Property transaction data are drawn from the UK Land Registry Price Paid dataset (HM Land Registry 2024), covering Greater London and the boroughs containing Elizabeth Line stations such as Reading and Brentwood, from 2000 to 2024. Each record reports sale price, transaction date, property type, estate tenure (freehold or leasehold), and full postcode. After removing duplicates, non-arm’s-length transactions, and properties outside the study area — following standard practice in the urban economics literature (Gibbons & Machin 2005; Ahlfeldt 2013) — the working sample consists of 1,602,487 transactions on 139,894 properties. The dependent variable throughout is the natural logarithm of sale price.

Postcodes are geocoded using ONS lookup data (Office for National Statistics (ONS) 2011). Distances to each of the 41 Elizabeth Line stations and to other amenities are computed using Stata’s `geodist` command, yielding precise great-circle distances. Each property is assigned to its nearest Elizabeth Line station.

Amenity controls include distance to nearest school (Greater London Authority (GLA) 2016), nearest hospital (National Health Service (NHS) 2025), and nearest non-Elizabeth TfL station (Transport for London (TfL) 2025). Borough-level socioeconomic controls — median income, employment rate, unemployment rate, and total recorded crimes — are obtained from the GLA Datastore and Nomis (Greater London Authority (GLA) 2025; Nomis 2025) but are only available consistently from 2017 onward. Macroeconomic controls are CPI inflation, the Bank of England base rate, and quarterly GDP growth.

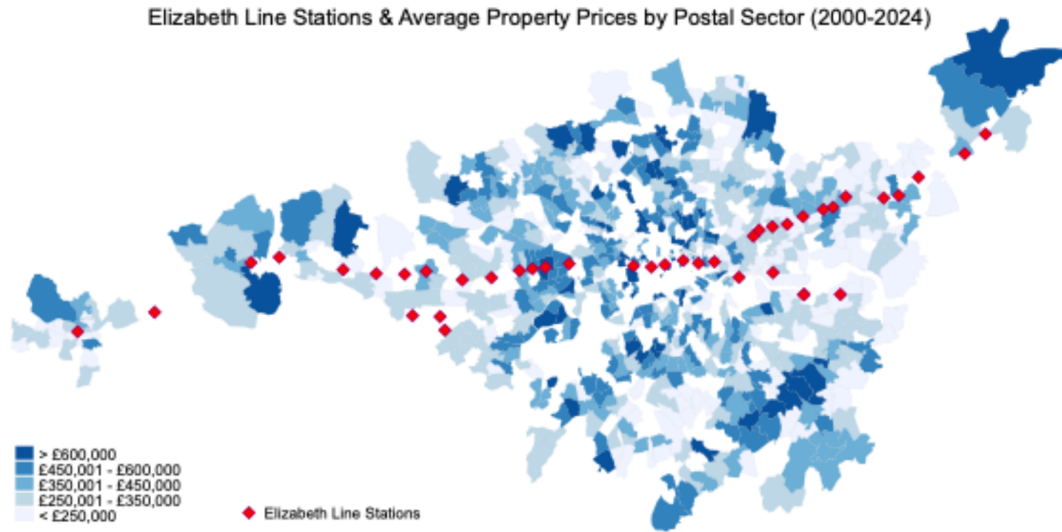


Figure 1: Map of Elizabeth Line Stations and Average Property Prices (£) in Surrounding Areas by Postal Sector, 2000–2024

Source: Author's calculations using HM Land Registry (2024) and Greater London Authority (2018) postcode boundary data; rendered with Stata's *spmap* command.

3.3 Treatment and Control Groups

The DiD analysis uses two complementary specifications. The binary specification defines properties within 2 km of an Elizabeth Line station as treated and properties beyond 5 km as control, following empirical precedents (Mohammad et al. 2017; Billings 2011). To capture spatial spillovers and heterogeneity that the binary design conceals, a richer specification partitions the sample into five distance bands: within 1 km, 1–2 km, 2–5 km, 5–10 km, and beyond 10 km, with the latter as the reference category. The bands are motivated by prior work documenting non-monotonic accessibility gradients (Agostini & Palmucci 2008; Bowes & Ihlanfeldt 2001).

3.4 Descriptive Statistics

Table 1 reports the share of observations in each distance band and corresponding mean log prices and amenity distances. The 2–5 km band contains the largest share of transactions (30.0%) and the second-highest mean log price (12.76). Properties more than 10 km from a station have the lowest mean log price (12.64). Standard ANOVA tests confirm that distance to the nearest Elizabeth Line station

is the single strongest cross-sectional predictor of log price ($R^2 = 0.89$), substantially exceeding the explanatory power of macroeconomic indicators. Inflation, interest rates, and GDP growth show statistically significant but quantitatively small bivariate relationships with prices, consistent with the dominance of localised factors in urban housing markets (Ahlfeldt 2013).

Table 1: Descriptive statistics by distance band, 2000–2024

Distance band	Observations	Share (%)	Mean log price	SD log price	Mean distance (km)	School (km)	TfL station (km)
Within 1 km	127,028	7.93	12.71	0.88	0.64	1.48	2.54
1–2 km	194,381	12.13	12.67	0.80	1.51	2.43	3.87
2–5 km	480,837	30.01	12.76	0.81	3.38	1.71	2.97
5–10 km	433,849	27.07	12.77	0.73	7.22	0.43	1.80
More than 10 km	366,392	22.86	12.64	0.66	13.51	0.37	2.59
Total	1,602,487	100.00	12.72	0.76	6.29	1.13	2.64

Notes: Sample includes residential transactions in Greater London and outer boroughs containing Elizabeth Line stations, 2000–2024. Distance refers to Euclidean distance to the nearest Elizabeth Line station; School and TfL station refer to nearest non-Elizabeth amenity. Log prices are natural logarithms of nominal sale prices in pounds sterling.

4 Empirical Strategy

4.1 Difference-in-Differences Specification

The baseline DiD model is given by equation 1:

$$\ln(\text{Price})_{it} = \alpha + \beta(\text{Treated}_i \times \text{Post}_t) + \gamma X_{it} + \delta_t + \eta_i + \varepsilon_{it} \quad (1)$$

where Treated_i is a binary indicator for properties within 2 km of an Elizabeth Line station, Post_t is an indicator for the post-treatment period (either post-2007 construction or post-2022 opening), X_{it} is a vector of property and macroeconomic controls, δ_t are year fixed effects absorbing common shocks, and η_i are property fixed effects absorbing unobserved time-invariant heterogeneity. The coefficient of interest β captures the causal impact of proximity to the Elizabeth Line, expressed in approximate percentage terms.

The richer specification replaces the binary treatment with distance-band indicators:

$$\ln(\text{Price})_{it} = \alpha + \sum_{d=1}^4 \beta_d(\text{DistanceBand}_{di} \times \text{Post}_t) + \gamma X_{it} + \delta_t + \eta_i + \varepsilon_{it} \quad (2)$$

where DistanceBand_{di} takes values for the within 1 km, 1–2 km, 2–5 km, and 5–10 km bands relative to the omitted reference of more than 10 km. The vector β_d

traces the spatial profile of the treatment effect. Equations 1 and 2 are estimated separately for two windows. The construction window covers 2000–2015 with $\text{Post} = 1$ from 2007. The opening window covers 2016–2024 with $\text{Post} = 1$ from 2022. This split isolates anticipatory capitalisation, when the line was authorised but not running, from post-opening adjustment, when accessibility gains were physically realised.

4.2 Parallel Trends

Identification requires that, absent treatment, treated and control properties would have followed parallel price paths. The assumption is assessed with placebo regressions estimating year-by-year coefficients in the pre-treatment windows (2000–2006 for the construction phase; 2016–2021 for the opening phase). Pre-construction estimates show closely aligned price trajectories across distance bands. For example, in 2001 the log price coefficient for properties within 1 km of future stations is 0.022, virtually identical to the 1–2 km band (0.025), and the alignment holds through 2006. In the opening pre-period (2016–2021), modest divergences emerge from 2020 onward—properties within 1 km record a small negative coefficient of -0.030 in 2021 ($p = 0.032$), reflecting anticipatory adjustment as the operational launch approached. This pattern is consistent with prior literature documenting anticipatory effects ahead of major transport openings (Gibbons & Machin 2005; Agostini & Palmucci 2008) and reflects rational expectations rather than a violation of parallel trends. Robustness checks below confirm that the main DiD estimates are not driven by these end-of-window deviations.

4.3 Event Study

To trace the temporal profile of treatment effects, I estimate the event study in equation 3:

$$\ln(\text{Price})_{it} = \alpha + \sum_{T=-q}^{-2} \beta_T (\text{Treated}_i \times D_t^T) + \sum_{T=0}^m \beta_T (\text{Treated}_i \times D_t^T) + \gamma X_{it} + \delta_t + \eta_i + \varepsilon_{it} \quad (3)$$

where D_t^T indicates calendar year T , and the year preceding treatment ($T = -1$) is omitted as the baseline. The β_T coefficients capture year-specific deviations between treated and control properties. The event-study design enables tests for pre-trends, identifies the timing of capitalisation, and characterises post-treatment dynamics.

4.4 Robustness

Several robustness exercises are conducted. First, property-type indicators (detached, semi-detached, terraced, flat), estate type, and amenity distances are

added to the baseline specification. Second, borough socioeconomic controls are added for the 2017–2024 sub-window. Third, heterogeneity is tested by interacting the treatment with an indicator for pre-existing TfL access, defined as a non-Elizabeth TfL station within 1 km. Fourth, for the post-2017 sub-window I compare fixed-effects (FE) and random-effects (RE) specifications. The Hausman test is inconclusive because of a non-positive-definite variance-covariance matrix—a common outcome when within-property variation is limited (Mohammad et al. 2017). The Breusch–Pagan LM test ($p < 0.001$) and a moderate rho of 0.36 motivate FE as the primary specification while reporting RE estimates as a secondary check, consistent with prior DiD work (Gibbons & Machin 2005; Billings 2011). Standard errors are clustered at the property level throughout.

5 Results

5.1 Construction Phase, 2007–2015

Table 2: DiD estimates: construction phase, 2007–2015

	Binary (1)	Distance bands (2)
Treated $\times$ Construction	−0.003 (0.002)	
Within 1 km $\times$ Construction		0.049 (0.003)
1–2 km $\times$ Construction		0.053 (0.002)
2–5 km $\times$ Construction		0.081 (0.002)
5–10 km $\times$ Construction		0.077 (0.002)
Inflation rate	0.320 (0.017)	−0.006 (0.001)
Interest rate	−6.055 (0.243)	0.060 (0.005)
GDP growth rate	0.710 (0.025)	0.032 (0.003)
Property and year fixed effects	Yes	Yes
Observations	541,796	541,796

Notes: Dependent variable is the natural logarithm of nominal sale price. Standard errors clustered at the property level shown in parentheses. Reference category in column (2) is properties more than 10 km from an Elizabeth Line station. Coefficients on “Yes”-valued rows indicate inclusion of the corresponding fixed effects; standard errors omitted for these rows.

Table 2 reports DiD estimates for the construction window. The binary specification in column (1) yields a small and only marginally significant coefficient of −0.003 ($p = 0.063$), suggesting little aggregate price movement when spatial

heterogeneity is collapsed. Column (2) replaces the binary treatment with the four distance-band interactions and tells a substantively different story. All four coefficients are positive and significant at the 1% level. Properties within 1 km of an Elizabeth Line station appreciated by approximately 4.9% relative to the more-than-10-km reference group; the 1–2 km band gained 5.3%. The largest effects, however, are in the mid-range bands: 8.1% in the 2–5 km band and 7.7% in the 5–10 km band. Macroeconomic controls enter with the expected signs.

The non-monotonic distance gradient is economically interpretable. Mid-range zones may have benefited from a combination of expected accessibility gains and limited exposure to construction disamenities such as traffic, noise, and ground works concentrated near station sites. Properties in the immediate vicinity were more exposed to these short-term costs, partially offsetting the anticipated long-term benefits. The pattern echoes findings from Agostini & Palmucci (2008) and Dubé et al. (2013), who document larger anticipation effects in zones marginally removed from new infrastructure. The construction-phase event study traces this pattern over time: year-specific coefficients for properties within 2 km of stations turn positive shortly after the 2007 announcement, rise through the early 2010s, and reach their peak in 2014–2016, foreshadowing the correction documented below. Figure 2 presents the event-study coefficients for the full 2000–2024 horizon.

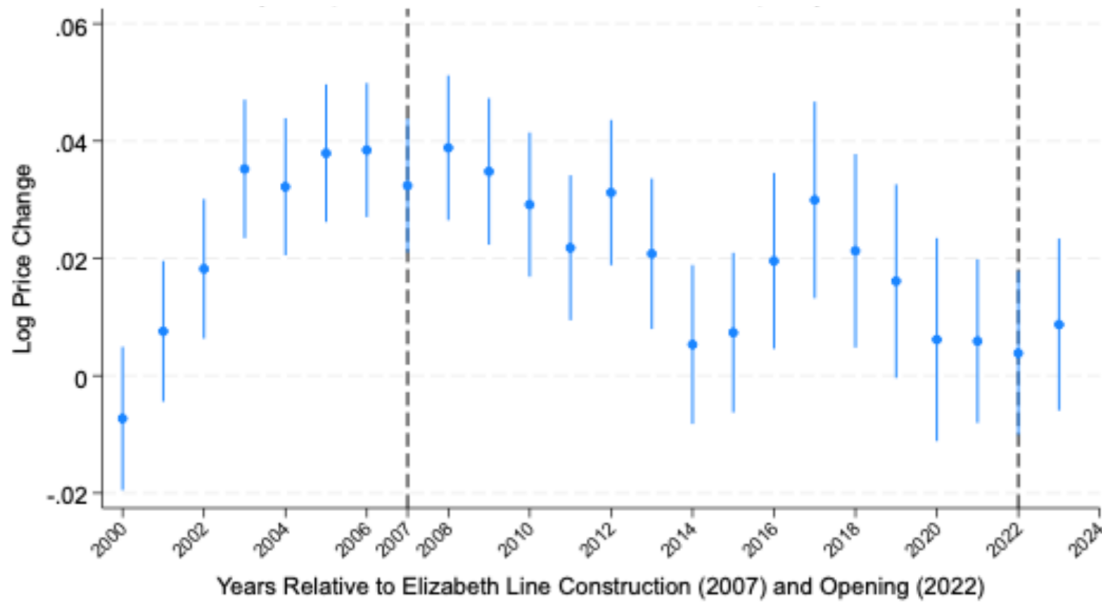


Figure 2: Event-study estimates for properties within 2 km of an Elizabeth Line station, 2000–2024. The y-axis is the year-specific log-price coefficient relative to the reference year (2006).

5.2 Post-Opening Phase, 2022–2024

Table 3 reports DiD estimates for the opening window. The binary specification in column (1) gives a coefficient of -0.014 ($p = 0.001$), indicating that prices within 2 km of a station are 1.4% lower than control prices following the May 2022 launch. Column (2) disaggregates by distance band: properties within 1 km

decline by 2.0% relative to the reference ($p = 0.005$); the 1–2 km band declines by 1.2% ($p = 0.024$). Coefficients for the 2–5 km and 5–10 km bands are statistically indistinguishable from zero. The post-opening profile is the spatial mirror of the construction-phase result: the correction is sharpest in the bands that experienced the largest pre-opening anticipation, particularly the inner bands where construction-disamenity offsets had limited the apparent uplift.

Table 3: DiD estimates: post-opening phase, 2022–2024

	Binary (1)	Distance bands (2)
Treated $\times$ Opening	−0.014 (0.004)	
Within 1 km $\times$ Opening		−0.020 (0.007)
1–2 km $\times$ Opening		−0.012 (0.005)
2–5 km $\times$ Opening		−0.001 (0.004)
5–10 km $\times$ Opening		−0.003 (0.004)
Inflation rate	−0.002 (0.001)	−0.002 (0.001)
Interest rate	0.019 (0.002)	0.019 (0.002)
GDP growth rate	0.014 (0.001)	0.014 (0.001)
Property and year fixed effects	Yes	Yes
Observations	170,093	170,093

Notes: Dependent variable is the natural logarithm of nominal sale price. Standard errors clustered at the property level shown in parentheses. Reference category in column (2) is properties more than 10 km from an Elizabeth Line station. The Opening indicator equals one from 2022 onwards.

The opening-phase event study confirms this interpretation. The treated–control gap, having peaked in 2014–2016, narrows steadily from 2017 onward and turns modestly negative for inner-band properties from 2022. By 2023–2024, treated coefficients are close to zero, consistent with the market settling at or slightly below the level implied by realised accessibility gains. The pattern is consistent with rational expectations and information efficiency: anticipated benefits were priced in well before service commenced, leaving little scope for further gains and some scope for correction of mid-2010s overshooting. Comparable post-opening reversion has been documented around Dubai Metro openings (Mohammad et al. 2017) and in commuter rail studies (Dubé et al. 2013).

5.3 Heterogeneity by Pre-existing Transport Access

A central question for value-capture and equity policy is whether the Elizabeth Line's price effects vary with pre-existing accessibility. Equation 4 tests this by adding interactions between the treatment and an indicator TfL_i for whether a property is within 1 km of a non-Elizabeth TfL station:

$$\ln(\text{Price})_{it} = \alpha + \beta_1(\text{Treated}_i \times \text{Post}_t) + \beta_2(\text{TfL}_i \times \text{Post}_t) + \beta_3(\text{Treated}_i \times \text{TfL}_i \times \text{Post}_t) + \gamma X_{it} + \delta_t + \eta_i + \varepsilon_{it} \quad (4)$$

Table 4 reports the construction-phase and opening-phase estimates from equation 4. For properties near new Elizabeth Line stations but without prior TfL coverage, the construction-period effect is negative (-0.038 , $p < 0.001$), indicating that early construction disruption was costly for these previously under-served locations. The triple interaction with prior TfL access is positive and significant (0.021 , $p < 0.001$), indicating that pre-existing TfL connectivity partly insulated nearby properties from construction-period disamenities. In the opening window, the triple interaction is positive but not statistically significant (0.015 , $p = 0.25$), indicating that by 2022 the marginal value of additional TfL access at Elizabeth Line stations had essentially dissipated.

Table 4: Heterogeneity by pre-existing TfL access

	Construction (1)	Opening (2)
Treated $\times$ Post	-0.038 (0.004)	-0.021 (0.010)
TfL $\times$ Post	0.105 (0.001)	-0.034 (0.003)
Treated $\times$ TfL $\times$ Post	0.021 (0.006)	0.015 (0.013)
Property and year fixed effects	Yes	Yes
Macro and amenity controls	Yes	Yes
Observations	541,796	170,093

Notes: TfL is an indicator equal to one for properties within 1 km of a non-Elizabeth TfL station. Treated indicates properties within 2 km of an Elizabeth Line station. Standard errors clustered at the property level shown in parentheses. Column (1) covers 2007–2015; column (2) covers 2022–2024.

Event-study estimates by sub-group reinforce this. Properties within 1 km of an Elizabeth Line station that were already well served by TfL show steady appreciation through 2004–2010 followed by gradual decline; the Elizabeth Line adds little marginal value, consistent with a saturation hypothesis. Properties within 1 km that were not previously connected to TfL show delayed but stronger growth, peaking around 2014 through 2018, before stabilising post-opening. The heterogeneity is consistent with diminishing marginal returns to accessibility and with international evidence that infrastructure adds the most value in previously under-served areas (Ahlfeldt & Wendland 2011; Koster et al. 2014).

5.4 Macroeconomic and Property-Level Controls

Macroeconomic controls perform consistently with theory but should be interpreted cautiously because year fixed effects absorb most national-level variation. Inflation and interest rates are negatively associated with prices in both windows; GDP growth is positively associated. Magnitudes are larger in the construction window, reflecting wider macroeconomic variation across 2000–2015 (including the 2008–2009 recession). In the post-2017 window, broader shocks—the Brexit referendum, the COVID-19 pandemic, and the 2022 monetary tightening—appear to have suppressed further appreciation in zones where anticipatory capitalisation had already occurred, consistent with Vergara-Perucich (2024) and Hilber & Vermeulen (2016).

Property-type controls cannot be identified in the FE specification because property type is time-invariant. In the RE specification estimated for the 2017–2024 sub-window for which all controls are observed, flats show the largest negative coefficient relative to the omitted base (-0.75 , $p = 0.003$), consistent with flats in already-dense central locations being most exposed to overshooting and subsequent correction. Detached homes show -0.63 ($p = 0.003$); terraced homes show -0.40 ($p = 0.002$). These results should be read as conditional comparisons rather than causal effects, given the omitted within-property variation in FE.

6 Discussion

The estimates support three substantive conclusions. First, the Elizabeth Line generated economically meaningful capitalisation effects, but these were concentrated in the construction phase rather than the operational phase. Forward-looking buyers priced expected accessibility gains long before service commenced, consistent with the rational-expectations capitalisation framework (Agostini & Palmucci 2008; Ahlfeldt 2013). Second, the spatial profile of anticipation is non-monotonic: mid-range zones (2–10 km) experienced the largest construction-period gains, plausibly because they combined expected accessibility benefits with limited exposure to construction disamenities. Third, the post-opening correction is concentrated in inner bands, suggesting that anticipation in those zones overshot the realised improvement in net accessibility once disamenities, congestion, and competing routes are taken into account. The overshooting–correction pattern echoes findings around Dubai Metro openings (Mohammad et al. 2017) and other rail studies (Dubé et al. 2013).

The heterogeneity by pre-existing TfL access has direct implications for transport-led equity and value-capture policy. The Elizabeth Line generated larger and more durable price responses in zones not previously served by TfL, consistent with the diminishing marginal returns to accessibility predicted by bid-rent theory and confirmed in international evidence (Ahlfeldt & Wendland 2011; Koster et al. 2014). This argues for prioritising future transit investment in under-served catchments where capitalisation effects—and the social welfare gains they signal—are largest. Three caveats are important. First, distance-based

treatment definitions cannot fully capture exposure to a project with such a long planning horizon; some “control” properties may have been indirectly affected via spillovers in expectations or general-equilibrium effects, biasing estimates toward zero. Second, the Land Registry data lack interior characteristics (quality, age, condition), which may bias estimates if these are correlated with proximity. Third, the post-2024 horizon is too short to capture the full long-run adjustment, particularly given the persistence of effects documented in earlier transit studies (Dubé et al. 2013).

7 Conclusion and Policy Implications

This paper estimates the causal impact of London’s Elizabeth Line on residential property prices using a Difference-in-Differences design applied to over 1.6 million transactions across 24 years. By separately analysing the construction phase (2007–2015) and the post-opening phase (2022–2024), and by exploiting variation across five distance bands, the analysis identifies three patterns. First, anticipatory capitalisation is sizeable: prices within 1 km of stations rose by 4.9% during construction, with even larger gains of 7.7–8.1% in the 2–10 km bands, indicating spillovers and avoidance of construction disamenities. Second, the post-opening period brings a moderate correction in inner bands—prices within 1 km decline by 2.0% relative to control—while outer bands are unchanged. Third, effects are concentrated in zones not previously served by TfL.

These findings carry several policy implications. Cost-benefit analyses for major transit projects should incorporate anticipation effects explicitly, since most price-based capitalisation occurs before opening; appraisal frameworks that focus only on post-opening data will systematically understate accessibility benefits. Value-capture mechanisms (such as Mayoral CIL and station-area betterment levies) should be timed to capture pre-opening capitalisation, not post-opening. Transit investment delivers the largest marginal accessibility gains in previously under-served catchments, supporting an equity-oriented prioritisation of future projects. Finally, the post-opening correction in inner bands, combined with affordability pressures around major hubs, motivates complementary mixed-tenure and affordable housing policies (Cheshire et al. 2015) to manage displacement risk.

Future research could extend the analysis in several directions. Synthetic-control methods (Abadie & Gardeazabal 2003) could provide tighter counterfactuals for individual station catchments. Repeat-sales designs (Dubé et al. 2013) could refine within-property identification using the subset of multiple-sale properties. Web-scraped rental data could complement transaction prices and capture short-run adjustments more precisely. Longer-horizon updates beyond 2024 will be essential to characterise the full post-opening trajectory. The analytical framework developed here—long-horizon DiD with spatial distance bands, formal parallel-trend testing, and heterogeneity by pre-existing access—provides a transferable template for evaluating other major transit projects, including those underway in emerging-market metropolitan systems where comparable natural experiments are now becoming available.

Conflict of interest statement

The author declares none.

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