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Valuing Public Transit: The L-Train Shutdown

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Working Paper 23-06

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Abstract

In this paper, I quantify the value of access to public transit in New York using the surprise, hurricane-related announcement of the temporary shutdown of an important piece of transportation infrastructure: the L-train connecting Brooklyn and Manhattan. My approach allows me to measure changes in housing sales prices by using a change in public transit infrastructure that is (a) temporary, and (b) not an outcome of city transit planning, but rather an unexpected consequence of a natural disaster. I find that the L-train's shutdown announcement caused a temporary decrease in sales prices for affected housing units of 6.4 percent. This estimate suggests a monthly capitalization rate of public transit access of around $863 for housing units where the L-train is the nearest subway stop, demonstrating that households in New York City ascribe a high value to transit access. Using these estimates, the benefits of the repair outweigh the costs, with the benefit-to-cost ratio of the repairs ranging from 2.76 to 2.78.

Keywords: Transportation · House Prices · Natural Disaster Risk

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1. Introduction

Americans traveled 58.6 billion miles on public transit in 2015 at a cost to taxpayers of $38.5 billion in public funds (American Public Transportation Association 2018). Are the benefits of subsidizing public transit worth the costs? Some approaches to answering that question compare property values for housing close to and far from public transit, or before and after public transit access is improved. Both approaches can suffer from the same problem: reverse causality. City planners make transit investments based on property values or expected changes in property values. So, does public transit improve property values, or do cities build public transit where property values were already high or expected to increase?

One challenge in valuing public transit is transit prices do not necessarily reflect a user's willingness to pay. One alternative is to use changes in home prices to value goods without explicit market prices, which is known as hedonic evaluation (Rosen 1974). Rosen's model supposes that the price of a housing unit is comprised of all of its different characteristics, including structural attributes as well as local amenities or disamenities. Economists frequently use hedonics to estimate the value of environmental amenities without formal markets, such as air quality or park access. For example, Chay and Greenstone (2005) uses a capitalization framework to estimate whether improvements in air quality are capitalized into home prices. The capitalization literature, discussed in Kuminoff and Pope (2014), attempts to estimates household willingness to pay for particular amenities, typically leveraging a natural experiment and a differences-in-differences or regression discontinuity approach. However, Kuminoff and Pope (2014) and Bishop et al. (2020) note that using estimates from a differences-in-differences approach may only correspond to household's willingness to pay for that amenity under strong assumptions. Thus, such estimates should be interpreted as capitalization effects, rather than willingness to pay.[1]

Similar to environmental amenities, urban economists have used the same capitalization approach to estimate the value of access to public transportation (Baum-Snow and Kahn 2000; McMillen and McDonald 2004; Brandt and Maennig 2012). Studies on transit typically cannot disentangle the value of transit from other neighborhood characteristics, such as the

1. Banzhaf (2021) notes that three conditions must be met for differences-in-differences estimates to approximate a lower bound on a second order approximation to a Hicksian measure of welfare, however these conditions are unlikely to be met in the context of this study. Therefore, all estimates are interpreted as a capitalization effect.

potential for growth.

In this paper, I seek to measure the value of public transit using a natural experiment and hedonic analysis. I leverage the sudden announcement of the temporary removal of an important piece of transportation infrastructure: the shutdown of the tunnel carrying New York City's L-train from Brooklyn to Manhattan. In October of 2012, Hurricane Sandy hit New York City and flooded many of the city's subway tunnels. The water that flooded the tunnels was salt water, which is corrosive and caused additional damage even after the water had been pumped out and the subway was once more operational. One of the worst-affected tunnels was the Canarsie Tunnel: the tunnel that carries the L-train under the East River from Brooklyn into Manhattan. Four years later, in July of 2016, the Metropolitan Transportation Authority (MTA) announced that the L-train connection from Brooklyn to Manhattan would be closed for 18 months to make extensive repairs to the tunnel. The tunnel was scheduled to close in April 2019, but in January 2019, the shutdown was reversed. I use this shutdown announcement, and its subsequent reversal, to evaluate the resulting housing market impacts of the sudden loss of access to the L-train. Figure 1 shows the timeline of the shutdown announcement. Importantly, the shutdown was scheduled for over six years after hurricane Sandy hit, thus removing any direct effects from Sandy on house prices.

This paper uses data from four different Multiple Listing Services (MLS) to estimate the effects of the L-train shutdown on properties close to L-train stations that were anticipated to be adversely affected by the line's closure. I evaluate five different outcomes using a differences-in-differences approach: sales prices, list prices, the sales-to-list ratio, the number of days it takes a property to sell (days on market), and the number of listings nearby the L-train. Treated housing units are those where the nearest subway stop is serviced by the L-train. Control units are other housing units in New York where the nearest subway stop is not on the L-train.[2]

Using this approach, I find that sales prices for units on the L-train fell by 6.5 percent following the shutdown announcement. Relative to average pre-announcement sales prices of $547,654, this indicates a decrease of around $32,234 on average for homes nearby the L-train that were sold after the shutdown announcement relative to other listings in NYC.

2. These treatment and control groups are mutually exclusive. It is important to note that there may be some spillover effects of the closure of the L to increased congestion on other lines. I will discuss this further in the empirical section of the paper.

I find that there is not a statistically significant change in the number of listings nearby the L-train following the shutdown announcement. These two results together suggest that there was not a large change in the supply of residential property near the L-train, but that decreased demand for property near the L-train lead to lower sales prices.

Next, I use a simple valuation model following Giglio, Maggiori, and Stroebel 2015 to calculate the present discounted monthly value of subway access using those empirical estimates. The model considers two different types of housing: those expected to be impacted by the shutdown for 18 months and those that were not. The model takes into account the value of the stream of housing services, growth rates in rental prices, the discount factor, and the value of transit access. Using this model, I find that the sales prices decrease of 6.5 percent corresponds to a $863 present discounted value of monthly access to public transit.

Last, I compare the expected costs of the repair to the monthly benefits of access estimated above. The costs considered are the *direct costs* of the subway repair including labor, time, and materials. These costs do not include indirect costs to subway customers such as the costs of alternative transit options, increased road congestion, and increased congestion on other lines. I use two alternative approaches and find that the ratio of the benefits of the repairs to the cost of the repairs ranges from 2.76 to 2.78. This finding suggests that the benefits of access to the L-train far outweigh the costs of the repairs.

My empirical approach avoids the problems faced by most prior empirical studies evaluating public transportation. First, public buses and subways are frequently subsidized by local governments, so their fares may not represent riders' willingness to pay for rides. Second, I avoid the reverse causality problem, where the locations of bus and subway stops are chosen by city planners based on population characteristics and expected development. Subway placement affects property values, but property values also affect subway locations. Chin, Kahn, and Moon (2017) use the construction of a new high-speed rail in South Korea to estimate how housing values change in response to the railway, finding that some apartments with access appreciate in value while others with access depreciate in value. However, their estimates do not account for the strategic location of the stops, which introduces the possibility of the reverse causality problem. Third, the supply of housing adjusts to the placement of transit stops, in turn affecting property values (Anderson 2014). Because the closure of the L-train is temporary, it is less likely that the long-term supply of housing in the areas

surrounding the L-train will change in response. This project avoids all three problems by examining how property sales and list prices respond to a change that is (a) temporary, and (b) not an outcome of city transit planning, but rather an unexpected and unavoidable consequence of a natural disaster.

Gupta, Van Nieuwerburgh, and Kontokosta (2022) measures the benefit of New York City's new Second Avenue Subway line extension. This paper finds 8 percent increases in prices for properties nearby the planned, and completed, Second Avenue line extension. The increase in property values in their baseline model is around 5.53 billion dollars and the cost of the extension was 4.5 billion dollars, or a benefit cost ratio of 1.23. However, the authors note that most of this increase in value will not be recovered by the government and that the government will only recoup around 30 percent of the increase in value via property sales taxes.

Breidenbach, Cohen, and Schaffner (2022) uses the unexpected delay of the opening of Berlin's new Berlin-Brandenburg airport to evaluate the relationship between rental prices and noise pollution from the existing Berlin-Tegel airport. Tegel was scheduled to close upon the opening of the new Brandenburg airport. Breidenbach, Cohen, and Schaffner (2022) finds a 2-5 percent noise discount for rental units nearby the Tegel airport and 1-3 percent positive effects for the proximity to the airport. Gibbons, Heblich, and Pinchbeck (2018) investigates the removal of public railway in Britain from the 1950s through the 1970s on population growth. The authors find that the population growth elasticity with respect to changes in access are around 0.3. The authors note that the removal of the train lines are an important determinant in population decline. In addition, Coury et al. (2023) evaluates the land price effects of the expansion of Chicago's piped water and sewer system using a natural experiment resulting form variation in elevation that directly impacted construction costs. The authors find that piped water and sewer access more than doubles land prices, and that the benefits from expanding the city's infrastructure exceed the costs by a factor of 60. That paper is related to the current one both in the empirical approach but also in that it evaluates the effect of a public infrastructure project on local land prices. This paper finds that the benefits from expanding the piped water and sewer infrastructure far exceed the costs.

Other papers estimate how access to transport changes employment outcomes. Heuermann

and Schmieder (2018) use the expansion of the high-speed railway in Germany to estimate labor market outcomes. They find that a reduction in travel time between two locations increases the number of commuters between those places by 0.25 percent. Brooks and Lutz (2019) show that areas with better access to public transportation are more densely populated.

2. Background: The L-Train and Hurricane Sandy

About 275,000 passengers ride the L-train each weekday between Brooklyn and Manhattan, through the Canarsie tunnel underneath New York's East River (Metropolitan Transportation Authority 2018). If that short stretch of track were its own transit system, it would be the 10th largest by passenger volume in North America, slightly smaller than San Francisco's entire BART system.

In 2012, Hurricane Sandy flooded the Canarsie tunnel. To repair the damage, in July 2016 the city announced that the Canarsie tunnel, which provides the Brooklyn-to-Manhattan connection for the L-train, would be closed for 18 months beginning in April 2019. Notably, these repairs were scheduled to take place many years after hurricane Sandy, when presumably any price effects of the hurricane would have already been experienced in this housing market. At that time, news media outlets widely published stories about the impending shutdown. The New York Post even proclaimed "2019 is the year Williamsburg Dies" (Furfaro and Keil 2016). The plan to shut down the tunnel abruptly reversed on January 3rd 2019, when Governor Andrew Cuomo announced an alternative plan that would allow extensive repairs to the infrastructure of the L-train without closing the line completely (Fitzsimmons 2019). Figure 1 shows the timeline for the shutdown announcement, the anticipated timeline for the closure, and the subsequent reversal.

Figure 2 shows a map of all subway lines in New York City. The L-line travels through lower Manhattan, through Brooklyn, and into Queens. The map shows that there are few other options for households living along the L-line to travel to Manhattan through certain neighborhoods in Brooklyn. For example, to travel from northern points in Williamsburg, Brooklyn to Grand Central Station in Manhattan when the L-train is running takes about 22 minutes. When the L-train is not running, that same trip takes 48 minutes using alternative public transit options.

The initial announcement of the closure of the L-train affected housing markets in Brooklyn. Monthly rents near L-train stops declined by $250 in 2019 relative to 2018 (Wu 2018). This simple comparison between rents before and after the closure suggests that the effects of the closure may be large, but it likely does not capture other aspects of the complex New York housing market that could also affect house prices. A more recent report suggests that the L-train closure announcement, and its subsequent reversal, cost landlords that signed leases in 2018 in Brooklyn around $26.5 million dollars (Long 2019). While the shutdown is no longer planned, these reports indicate the large impact of the anticipated closure of the Canarsie tunnel years before it was scheduled to occur.

3. Data

To evaluate the effects of Hurricane Sandy on sales prices and listings, I use three sources of data. The first is Multiple Listing Service (MLS) data, which is a database of property listings generated by real estate brokers. I use data from four listing services: Brooklyn New York, Greater Hudson Valley, Long Island, and the Staten Island Board of Realtors. The datasets generated by these listing services include detailed property-level data such as address, building type, and other housing unit characteristics such as square footage, year built, number of bedrooms, and number of bathrooms. The sample contains 774,477 property listings in New York City from January 1st 2010 through February 29th 2020.

The second data source is subway stop location data from NYCOpenData. The city reports geospatial data on each subway stop location throughout the city. This subway location information enables me to calculate how far each property listing is from its nearest subway stop.

Figure 3 shows a map of the listings data in Brooklyn, Manhattan, and Queens. Each point on the map represents a property listing. Panel (a) represents sales listings and panel (b) represents rental listings. The darker the dot, the higher the list price (listed rent or sales). Prices have been adjusted to reflect $2018 real prices. Listing prices are higher, on average, in Manhattan than in Brooklyn and Queens.

The third data set I incorporate into the analysis is data from the census. I use data from census block-group boundaries from the 2010 Census and data from the 2019 American Community Survey. These data allow me to control for local demographic characteristics,

such as income and age, as well as information on commuting behaviors, such as the share of households that take public transit to commute to work.[3]

3.1 Descriptive Statistics

A property listing is defined as being affected by the L-train shutdown if its closest subway stop is on the L-train. Figure 4 shows all of the property listings in the sample. The darker dots represent the properties defined as being affected by the shutdown announcement. Notably, there is a wider swath of housing in Brooklyn and Queens that will be affected than housing in Manhattan. This is a result of there being few alternative subway options in the area around the L-train in Brooklyn and Queens relative to Manhattan.

Table 1 displays summary statistics for property sales and census block-groups in Brooklyn and Queens in two different time periods: before the shutdown announcement and during the announcement.[4] The remainder of the analysis in this paper will focus on the property listings for sale (rather than the rental data). The average list price of a unit along the L-train before the announcement was $547,382 while the average sale price of a unit not on the L-train was $491,145 before the shutdown announcement. The units are of roughly the same size (around 1,400 square feet versus 1,300), built around the late 1940s, and are around the same distance to the closest subway stop (1,200 meters versus 950 meters). When weighted by sales, census block-groups closer to the L-train have slightly higher median incomes, tend to be younger, have more renters, and more households that commute on public transit.

The unconditional differences-in-differences approach would compare average sales prices for L-train properties versus non L-train properties before versus after the shutdown announcement, prior to the reversal of the shutdown. The final column in 1 shows the simple, unconditional, differences-in-differences estimate for several of the outcome variables. The first row suggests an average list price effect of around $-47,000. This analysis would indicate a price effect of $-37,754 resulting from the shutdown announcement.[5] This estimate suggests that house price appreciation for properties on the L-train was lower, on average, than for properties not on the L-train following the shut down announcement. However, this simple comparison in pre- and post-announcement sales prices does not control for any other features

3. I downloaded Census data from Manson, Schroeder, and Riper (2019).

4. Appendix Table I.1 shows the same summary statistics including Manhattan.

5. The average change in sales prices for L-train properties before versus after the announcement was $92,206 versus $129,861 for non-L-train properties. The gap in appreciation between the two is $37,754.

or characteristics of these properties. In the next section, I estimate the conditional differences in sales prices for affected versus unaffected counties using a differences-in-differences approach.

For any further empirical analysis to be valid, I must compare listings and sales nearby L-train stops to similar listings and sales not on L-train stops. To make the appropriate comparison, I calculate t-tests and standardized percent differences between pre-announcement period variables for L-train properties in comparison to non-L-train properties. The other train lines considered are the C, the 4, the J, the M, and the J and M properties combined. Figure 2 shows the New York City Subway system. All lines selected as potential controls cross the east river and travel through nearby neighborhoods in Brooklyn and Queens. This leads to a set of six possible controls: all other properties, properties close to the C, properties close to the 4, properties close to the J, properties close to the M, and properties close to the J or M train. I complete these comparisons for all properties in Manhattan, Brooklyn, and Queens, and again only for properties in Brooklyn or Queens, leading to 12 possible options.

I compare t-tests and standardized percent differences in the pre-announcement period between L-train properties and each potential control group. Table 2 shows one of these balance tests for all properties in Manhattan, Brooklyn, and Queens for L-train versus non-L-train properties. The balance tests are estimates on two sets of variables: property-level attributes and census-block-group attributes. Property-level attributes such as square feet, year built, number of bedrooms, and number of bathrooms are important determinants in sales and list prices. In addition, I include information on the distance to the two nearest subway stops to the property listing. Census-block group level attributes provide detailed information on the demographic characteristics of the area surrounding the property, such as median household income, median age, the share white, the share black, and commuting behavior.

The tables including Manhattan can be seen in Appendix Tables I.2 through I.7 and the tables including only Brooklyn and Queens can be seen in Appendix Tables I.9 through I.14. The four control groups with the smallest average standardized percent difference, in order, are the L-train properties versus all properties in Manhattan, Brooklyn, and Queens (8.20 percent); L-train properties versus all properties in Brooklyn and Queens (8.23 percent); L-train properties versus all properties on the M-train in Manhattan, Brooklyn, and Queens (10.44 percent); and L-train properties versus all properties on the M-train in Brooklyn and

Queens (10.49 percent).[6] These four comparisons will be the primary groups used in analysis.

4. Estimating the Market Effects of the L-Train Shutdown

I use a differences-in-differences approach to estimate the conditional differences in list prices, sales prices, the ratio of sales prices to list prices, and the number of days a property is on the market. I compare outcomes for properties affected and not affected by the shutdown before and after the announcement of the shutdown. The resulting estimate is the average effect of the announcement of the L-train shutdown on properties near the L-train. I define a property as being "affected" if the closest subway station to that property is on the L-train.[7] During the announcement period, from July 2016 through January 3rd 2019, households believed that the L-train would be closed from April 2019 through September 2020. The announcement period is the "post" period in all subsequent empirical specifications. However, it is important to note that it's possible that households did not credibly believe that the shutdown would only last for 18 months. A recent example in New York is the construction of the Second Avenue line, which was not completed until 4 years after the expected completion date (Metropolitan Transportation Authority 2018).

I estimate the average effect of the subway closing on housing market variables using the following equation:

$$Y_{it} = \beta_0 + \beta_1 \mathbb{1}\left[\text{L-train}\right] + \beta_2 \mathbb{1}\left[\text{L-train} * \text{Announcement}\right] + \beta_3 X_{it} + \tau_t + \gamma_z + \epsilon_{it} \qquad (1)$$

where Y_{it} is one of four outcome variables: the sale price in 2018 real dollars, the list price in

6. As a robustness test to confirm the focus on these comparison groups I doubly weighted the estimates of standardized percent bias for: square feet, year built, number of bedrooms, distance to nearest subway station, median household income, median age, and share that have a commute > 30 minutes. The ranking of the groups in terms of weighted average minimum percent standardized bias remains the same: L-train properties versus all properties in Manhattan, Brooklyn, and Queens (7.2 percent); L-train properties versus all properties in Brooklyn and Queens (7.9 percent); L-train properties versus all properties on the M-train in Manhattan, Brooklyn, and Queens (15.54 percent); and L-train properties versus all properties on the M-train in Brooklyn and Queens (15.55 percent).

7. I use a differences-in-differences approach rather than a regression discontinuity design in time as in Anderson (2014) because there are not enough observations just before versus just after the annoucement to implement this approach.

2018 dollars, the ratio of sales prices to list prices, and the number of days a property is on the market. The outcome variables of real sale price and real list price are right-skewed, and therefore I take the natural log of these variables and us the natural log of sales prices and list prices as the outcome variable. $\mathbb{1}$ [L-train] is an indicator equal to 1 if the closest subway stop to a property is on the L-train, $\mathbb{1}$ [L-train $*$ Announcement] is an indicator that a property close to the L-train was listed or sold during the announcement period, the announcement period is from July 2016 to January 3rd 2019, X_{it} represent housing and census-block-group characteristics, τ_t are month-of-sample fixed effects, γ_z are zip code fixed effects, and ϵ_{it} is an error term with mean zero. The treatment effect, β_2, represents the average change in sales prices, list prices, the ratio of sales and list prices, or the number of days a property is on the market for properties affected by the announcement of the L-train shutdown.

I estimate equation (1) with various combinations of covariates and fixed effects to determine how the anticipated shutdown affected properties. This empirical specification relies on the assumption that in the absence of the announcement of the shutdown, trends in list prices, sales prices, the ratio of sales price to list prices, and the days on market for the affected and unaffected properties would have been parallel.

The six images in Figure 5 show outcome variables of interest for properties in Manhattan, Brooklyn, and Queens for properties nearest the L-train versus properties nearest the M-Train through the sample and shutdown announcement period. The variables have been either averaged or aggregated to the monthly level for representation. The portion of the figure with the grey background represents the shutdown announcement period. These figures provide some visual evidence for the parallel trends assumption in the pre period, though at the monthly level, the data are still a bit noisy. Notably, there is more variation in the figures for L-train properties than for M-Train properties. This is a result of the smaller number of listings and ultimate sales for properties nearby the L-train.

There are several factors that may bias estimates using equation (1). The first is that Stable Unit Treatment Value Assumption (SUTVA) may be violated. SUTVA requires that there be no un-modeled spillover effects of treatment for control units. However, it is possible that households where the nearest subway is not the L-train, may still take the L-train on occasion. Similarly, during the shutdown it is possible that former L-train riders will switch to riding other nearby trains, increasing congestion on those lines. Therefore, control

properties may also be impacted by the L-train shutdown. This may bias sales price and list price estimates toward zero if properties in the control sample also experience negative price impacts of the L-train shutdown announcement. Second, it is possible that the *types* of properties that are listed during the shutdown announcement period are different from properties that would have been listed if the shutdown had not occurred. For example, a seller who needed to sell their home would not have had the option to wait until the L-train shutdown was over.

Unfortunately, it is not possible to fully rule out that SUTVA is a problem in this context. One potential spillover would be that depressed prices along the L-train also reduce prices for properties along the M-train because they are relatively nearby in New York. Typically, real estate markets are very local and lower prices around the L-train could lead to lower prices for properties along the M-train. This would bias estimates of the sales price effect toward zero. On the other hand, it might be the case that would-be L-train property buyers ultimately purchase properties along the M-train, which could potentially cause more price appreciation of M-train properties in the treatment period. This would lead to a downward biased estimate of treatment effects on the sale price. However, in Figure 5, there does not appear to be visual evidence of large changes in the price of M-train properties during the announcement period.

I control for census block group characteristics, as well as month-of-sample and ZIP code fixed effects. Month-of-sample fixed effects control for average changes across New York City occurring within each month. ZIP code fixed effects control for average differences between neighborhoods and census block group controls control for differences between block-group level characteristics such as share of individuals who commute on public transit.

4.1 Results: The Effect of the Shutdown on Sales Prices

Tables 3 through 7 show the results for the log of sales prices, log of list prices, the sales to list price ratio, and the number of days on the market for six alternative control groups. Column (1) shows results for all properties in Manhattan, Brooklyn, and Queens; Column (2) shows results for all properties in Brooklyn and Queens; Column (3) shows results for control properties in Manhattan, Brooklyn, and Queens nearest the M-Train; Column (4) shows results for control properties in Brooklyn and Queens nearest the M-Train; Column (5) shows results for control properties in Brooklyn and Queens nearest the J-train or M-train; Column (6) shows results for control properties in Brooklyn and Queens nearest the

J-train.

Table 3 shows the primary coefficient of interest on $\mathbb{1}$ [L-train $*$ Announcement] for all four outcomes. Column (3) across all outcome variables is my preferred specification. Of properties along various combinations of other lines running from Queens and Brooklyn into Manhattan, the M-train properties are those that are the most similar to the L-train properties. For that reason, I will focus on the results from Column (3) in all of the tables, but results across the alternative samples are qualitatively similar.

Table 4 shows that following the shutdown announcement, sales prices for properties on the L-train fell by 6.4 percent. The average pre-period sale price for a property on the L-train was $503,654.60 (Table 2). This indicates that closing prices fell by $32,234, on average, following the announcement that the L-train would be shutdown.

Similarly, Table 5 shows that listing prices fell by 7.5 percent following the announcement that the L-train would be shutdown. Relative to the average pre-period list price of $547,654 this is a decrease of around $41,074 for properties that were listed after the L-train shutdown announcement was made.

Given that list prices decreased by relatively more than closing prices, it is no surprise then that the ratio of closing prices to list prices shows a slightly positive effect in Table 6. The list price effects are slightly higher than the sales price effects, as shown in the difference between Table 3 and Table 4. These point estimates are not statistically distinguishable from one another. The bigger list price discount relative to the sale price discount suggest that it might be difficult for sellers and real estate agents to value this change in infrastructure when listing these properties. It is difficult to rule out that real estate agents may be listing properties at slightly lower prices to encourage bidding wars. The results for the sales to list price ratio potentially support this hypothesis. Following the announcement of the L-train shutdown, the sales to list price ratio increased by 0.013. The average pre-period sales to list price ratio was 0.925, suggesting an increase to 0.938 during the announcement period. However, these results are not robust across different control groups and therefore I will not focus on these results.

Table 7 shows that the average number of days that an L-train property sat on the market

before closing decreased by around 13 days. This finding suggests that L-train properties during the shutdown period sold slightly faster in the post period than M-Train properties. The average time on market for L-train properties in the pre period was 194 days. The 13 day decrease in time on market represents only 6.7 percent of the pre-period mean. This change is unlikely to be economically significant.

4.2 Robustness Tests

To confirm the results above, I complete placebo tests assuming that the shutdown announcement period was from July 25th 2014 through January 1st 2016 (rather than July 25th 2016 through January 1st 2019). Appendix tables I.15 through I.18 show the results of these placebo tests. For example, Appendix Table I.15 shows the results from the placebo test on the log of the sale price. All results show statistically insignificant results apart from column (6) using the J-Train in Brooklyn and Queens as the control group. The subsequent tables show results for other outcome variables such as log of list price, sales-to-list price ratio, days on market, and the number of listings. Generally, the results are not statistically significant. The exception is Appendix Table I.18, which looks at time on the market and finds that L-train properties, during the placebo period, experienced an increase in the number of days on the market. The average time on market for L-train properties in the pre period was 194 days. The result in column (3) of table I.18 shows an estimate of 16.7 days on market. While statistically significant, this represents only 8 percent of the pre-period mean.

A property listing or a sale is included in the treatment group if the nearest subway stop is on the L-Train. However, New York City has a dense public transportation network. To test whether the results are robust to this assumption I complete two alternative robustness tests: (1) I estimate the same specification as in equation (1) excluding treated observations that are along the L-train where there are transfer points and (2) I estimate the same specification where I define treatment as having the L-train be either the nearest or second nearest subway stop to the property. For the first approach, specifically, I exclude observations nearby three stations: Lorimer Street (with transfers to G-train), Myrtle Ave (with transfers to the M-Train), and Broadway Junction (with transfers to the JZ-trains and AC-trains). The results dropping these property sales are shown in Appendix Table I.20. In all specifications, the average sales price effects of the shutdown announcement are larger when properties nearby transfer stations are not included. These findings suggest that properties with fewer transfer options along the L-train are more negatively impacted by the shutdown announcement than properties with more transfer options. In the second approach, the treatment group is

expanded to include both properties where the nearest subway stop is the L-train and/or the second nearest stop is on the L-train. The results from this expanded treatment definition are reported in Appendix Table I.21. The point estimates for this specification are, in absolute terms, smaller and more often not statistically distinguishable from zero. In comparison to the main results, this suggests that there is little to no sales price effect for properties where at least one of the two nearest subway stops to the property is on the L-train. What this suggests is that properties with an alternative nearby subway stop are less likely to be affected by the L-train shutdown announcement and that the sales price effects are limited to those properties where the nearest stop is along the L-train.

4.3 Results: The Effect of the Shutdown on Sales Volume

The results from Equation 1 show that both listing prices and sales prices fell during the announcement period. If we imagine a simple economics model of supply and demand for L-train housing, a shock to the transit infrastructure may have caused a shift in either the supply of housing being listed for sale and the demand for housing near the L-train. The negative results for sales prices suggest that there was a negative demand shock for L-train housing. However, it is also possible that the L-train shutdown announcement led to a shock in the supply of housing listed.

It is possible that a change in the volume of sales changed in response to the announcement that the L-train would be closing. For example, a homeowner could choose to wait to sell their property until after the shutdown is over. Or, a buyer may wait to buy in the area until the shutdown is over. Or, some buyers may recognize that prices in the expensive neighborhoods are lower than they otherwise would be and be induced to buy, even through the train is supposed to be closing for a period of time. Thus, I investigate changes in listings by zip code to determine whether the decrease in sales prices could be driven by a decrease in sales volume.

I aggregate the number of listings in zip code in each month. Then, I estimate:

$$N_{jt} = \beta_0 + \beta_1 \mathbb{1}\left[\text{L-train}\right] + \beta_2 \mathbb{1}\left[\text{Announcement} * \text{L-train}\right] + \beta_3 X_j + \tau_t + \gamma_z + \epsilon_{it} \qquad (2)$$

where N_{jt} represents the number of listings by zip code j in month-of-sample t, $\mathbb{1}\left[\text{L-train}\right]$ is

an indicator equal to one if the property is on the L-train, $\mathbb{1}$ [Announcement $*$ L-train] is an indicator equal to one if the property is on the L-train and it is during the announcement period, X_j represents census block-group characteristics, τ_t represents a month-of-sample fixed effect, and γ_z represents a zip code fixed effect.

Table I.19 shows the point estimates from equation (2). Estimates range from 2.8 additional listings on the L-train within a zipcode within a month to 1.7. However, in the preferred specification in column (3) the estimate is statistically indistinguishable from zero. These results suggest that the supply effect within a zip code on an L-train is negligible to slightly positive. These results suggest that total quantity of properties listed remained roughly constant after the announcement that the L-train would be shutdown.

5. Valuing Public Transit Access

A very simple calculation of the monthly value of access to public transportation could take the price discount between L-train and non L-train housing units, and divide that by the number of months the L-train would be closed. In this instance, I estimate the the change in the sales price following the shutdown announcement corresponds to $32,234. Dividing by 18 months would yield an estimate of $1,790 per month. However, this estimate does not take into account the fact that the shutdown is expected to happen in the future, and that this value should be discounted into the present. Similarly, it does not capture growth in house prices or rental rates that would occur over the same time period. This value of $1,790 is an over estimate of the value that a household ascribes to the L-train.

I develop a simple model to calculate the monthly value of subway access using my empirical estimates. The pricing model is based on Giglio, Maggiori, and Stroebel (2015), adapted for the context of the L-train shutdown. The model considers two different types of housing in New York City: houses affected by the shutdown and houses that are not. I assume that any housing unit has some future value of housing services, valued at D_t, that all residents discount at some constant rate r. This future benefit, which could be thought of as the rental value of a home, is expected to grow at some constant rate g.

The present value of unaffected housing is in infinite geometric series where the individual receives the housing benefits D_t in each period, which grows at a rate g each period, discounted back to the present day with the discount rate r. It can be expressed in present

value as:

$$P_{t_u} = \frac{D_t(1+r)}{r-g} \tag{3}$$

The present value of housing affected by the shutdown is similar to the unaffected housing with a minor modification: I subtract the value of the access to public transportation, q, for the months that the housing is affected. The calculation for the present value of the affected housing can be thought of as three separate parts. The first part is the months between the purchase date and the date of the announced shutdown, s, where the owner enjoys the full value of the home, D_t, which includes transit benefits. The second part is when the tunnel from Brooklyn to Manhattan is closed, so for the months that the subway is closed, x, the owner receives the monthly value minus the value of the subway access, $D_t - q$. The third part is when the subway re-opens and the owner again enjoys the full value, D_t, in perpetuity. Summing these three components yields the present value of affected housing:[8]

$$\begin{aligned} P_{t_a} = &\sum_{t=0}^{t=s-1} D_t \left(\frac{1+g}{1+r}\right)^t + \sum_{t=s}^{t=s+x} (D_t - q) \left(\frac{1+g}{1+r}\right)^t \\ &+ \sum_{t=s+x+1}^{\infty} D_t \left(\frac{1+g}{1+r}\right)^t \end{aligned} \tag{4}$$

which simplifies to:

$$P_{t_a} = \frac{(1+r)}{(r-g)} \left[D_t - \left(\frac{1+g}{1+r}\right)^s q \left(1 - \left(\frac{1+g}{1+r}\right)^{x+1}\right)\right] \tag{5}$$

The difference in the value between the values of housing affected by the L-train shutdown and those that are not is:

8. The derivation of the present value of the affected housing is in Appendix 10.

$$Discount_t = \frac{1+r}{r-g}\left(\left(\frac{1+g}{1+r}\right)^s q(1-\left(\frac{1+g}{1+r}\right)^{x+1}\right) \tag{6}$$

Where $Discount_t$ is the reduction in present value caused by the anticipated L-train shutdown, which corresponds to the empirical estimates from equation (1) calculated in levels.

I can then use my empirical estimates and parameters taken from the data and literature to calculate q, the value of public transit access. The average growth rate, g, of rental values in Brooklyn during this time period was 5.89 percent (Neighborhood Scout 2019). I compute the average time between the property purchase date and the anticipated closure date (April 2019), s, from the property sales data, to be 15 months. I use the current interest rate from this time period on a 30 year treasury bond of 2.993 percent as the discount rate, r (White House 1994; CNBC 2019). The shutdown was anticipated to close the L-train for around 18 months, and x here is equal to 18. Using my estimate of \$32,234 from Equation (1) in Table 4 Column (3) of $Discount_t$ and the parameters listed above for s, g, x, and r, this calculation implies a value of \$862.84 for monthly access to the subway. The average rent in Brooklyn during this time was around \$2,700 per month, suggesting that around one third of that value could be ascribed to monthly access to public transportation (Turner 2018).

Here it is important to note that it's unlikely that households believed that the shutdown would only last for 18 months. Take, for example, the extension of the Second Avenue line in New York. Construction of the first three stations on the line began in 2007 and was supposed to be completed in 2013 (Gelinas 2016). However, those three stations did not open until January 1$^{\text{th}}$, 2017, 4 years after their projected completion date (Metropolitan Transportation Authority 2017). New Yorkers have little reason to trust that projected timelines are accurate for transportation projects. If, for example, Brooklyn residents believe that the train would open just 6 months after its anticipated completion date (or that the renovations would take 24 months rather than 18 months), that monthly value for public transit drops to \$597.65.

A range of estimates for the monthly value of public transit access are shown in Table 9. Estimates range from \$1,599.69 per month using the top of the 95th percent confidence interval for the baseline estimate to \$122.71 per month using the bottom of the 95th percent

confidence interval for the baseline estimate.

6. Benefit-Cost Analysis

One question that is often asked, is are the societal benefits of public transit worth the costs? A simple benefit-cost analysis compares the costs of given project in the present day relative to the benefits of that project. Here, I use two alternative approaches to estimating a benefit-cost ratio. Both approaches will use the *direct costs* of the L-train repair budget. These costs include labor, time, and materials. It is important to note that these costs do not use other *indirect* costs such as temporary increases in congestion during the shutdown period, potential declines in air quality from increased vehicle traffic, time costs, and other indirect costs of the L-train shutdown. The estimate of benefits I use is the one calculated in the previous section. I am assuming that homeowners and renters value access to the L-train the same and that the change in house prices captures the benefits that a household experiences from having access to the L-train. This approach investigates whether the direct property value benefits outweigh the direct costs of the L-train shutdown. The first approach uses aggregate estimates of the repair costs and property value benefits and the second approach uses a per-trip repair cost and benefit.

First, I will estimate a benefit cost ratio using aggregate benefits and costs. The original budget for the L-train shutdown was $926 million dollars for the 18 month shutdown and repair.[9] In my sample, there are 5,925 census block groups represented. Of those, 284 have at least one housing unit where the L-train is the nearest subway option.

The census block group data used in this study provides estimates of the total number of housing units in a census block. I aggregate across all census block groups where at least one housing unit's nearest subway option is the L-train. In this case, there are 165,639 housing units in census block groups expected to be impacted by the shutdown. If each of those units values the L-train access at the monthly value calculated in Section 5. of 862.84 for 18 months, the benefit to each unit, on average, for the 18 months would be $15,531. Multiplying that by the 165,639 housing units yields a total estimate of $2,572,559,186 in benefits during that 18 month period. This yields a benefit-cost ratio of 2.78, suggesting that the benefits to repairing the subway outweigh the costs of the 18 month repair. For the benefit cost ratio to be equal to one, or for the benefits to exactly match the costs, costs

9. Estimates from the MTA capital oversight report (Link here to the report).

would have to be around 2.56 billion dollars, which is 2.7 times more than the original cost estimates of 926 million dollars.

It is important to note, in addition, that the 18 month repair is expected to help maintain the functioning of the L-train far beyond 18 months and quite likely other households outside of the immediate census block groups around the L-train occasionally take the L-train. Suggesting that the benefits of the L-train may be larger than those estimated above. The estimates here take into account the direct property value benefits rather than these other, indirect, benefits from the L-train repairs.

Using the range of estimates in Table 9 if the L-train was closed for 24 months instead of 18 months, the monthly value would be $597.65, leading to a benefit cost ration of 1.92. On the low-end, if the estimate were the low end of the 95 percent confidence interval, that would yield a monthly value of $122.71 and a benefit cost ratio of 0.40. On the high end, if the estimate were instead at the top of the 95th percent confidence interval the monthly value would be $1599.59 and the benefit cost ratio would be 5.15. Using the 95th percent confidence interval estimates yields a wide potential range of benefit cost ratios.

Second, an alternative approach to calculating the benefit-cost ratio of the L-train repairs estimates per trip costs. Dividing the estimated repair costs by the number of months yields an average expense of $51,444,444 per month in repair costs. Prior to the shutdown, around 250,000 passengers took the L-train each day. If, conservatively, that estimate applies to 28 days in a month, that would lead to around 7 million rides per month. Dividing the repair costs per month by the estimated number of rides per month yields a repair cost per ride during that period to be $7.35.

I use the same approach as above to estimate the total population in census block groups expected to be estimated by L-train shutdown. The total population in those census blocks is 378,799; dividing by the number of housing units yields the average number of individuals per unit: 2.3. Next, I calculate the typical number of subway rides per person. In 2018, around 275,000 passengers took the L-train each day (Metropolitan Transportation Authority (2018)). If conservatively, that estimate applies to 28 days in the month, that would be 7 million passenger rides per month on the L-train. The population in census block groups nearby the L-train is 378,799 individuals. Thus, the typical household could be expected to

take around 18.48 rides per person per month. There are 2.3 people per housing unit living nearby the L-train, which yields 42.5 rides per household per month.

Next, I divide the monthly value of subway access 862.84, by the number of rides per household per month, 40, yields a per ride benefit of $20.30. Dividing that benefit by the cost per ride, $7.35, yields a benefit cost ratio of 2.76, which very closely aligns with the benefit cost ratio of 2.78 found using the first method.[10]

Using both approaches, the benefit-cost ratio of the L-train repairs ranges from 2.76 to 2.78, suggesting that the benefits from the repairs far outweigh the costs. A very pertinent point of comparison is Gupta, Van Nieuwerburgh, and Kontokosta (2022), which estimates a change in sale prices of properties in New York of 8 percent, a similar order of magnitude to the estimates in this paper. In addition, they report the aggregate increase in property values as a result of the line's extension to be 5.53 billion dollars. The cost estimate for the second avenue extension was 4.5 billion dollars, suggesting a benefit-cost ratio of 1.23. Both the costs and the benefits of the second avenue line are larger than reported by this paper, which is likely due to the fact that this was a permanent extension of the second avenue line, rather than a temporary closure. But in aggregate both papers find that this work on New York's subway system pass a simple benefit cost analysis.

7. Conclusion

This paper uses the surprise, hurricane related, shutdown announcement of the L-train connection from Brooklyn to Manhattan to estimate the sales price effects of the removal of that important piece of transportation infrastructure. I use a differences-in-differences approach to compare sales prices, list prices, sales-to-list ratios, time on market, and the number of listings for affecting housing units. I compare sales and listings of L-train properties in Manhattan, Brooklyn, and Queens to sales and listings of properties along the M-train. I identify M-train properties as a potential control group using t-tests and estimates of standardized percent differences between the two groups.

10. I complete this same calcluation using information on subway ridership for all of NYC rather than just the L-train: In 2016, there were 1,756,814,800 rides taken on the NYC subway.[11] The estimated population of New York City in 2016 was 8.469 million. That yields an estimated 207 rides per New Yorker per year, or 17.3 rides per month. For the 2.3 people living in housing units in census blocks nearby the L-train, that yields around 40 rides per household per month. Dividing the estimated monthly value of subway access, 862.84, by the number of rides per household per month, 40, yields a per ride benefit of $21.82. Dividing that benefit per ride by the cost per ride, $7.35, yields a benefit cost ratio of 2.97.

Using the differences-in-differences approach, I find that sales prices fell by 6.4 percent for properties along the L-train that were expected to be impacted by the shutdown. Next, the paper uses a simple valuation model to show that the price decreases from the L-train shutdown announcement correspond to a monthly value of $863 to public transportation access in New York City. During this time period, monthly rents in affected areas were around $2,700, suggesting that almost one third of the monthly rental value could be ascribed to transit access. Last, I complete a simple benefit cost analysis, which indicates that the benefits of repairing the L-train far outweigh the costs, by a ratio of almost three to one.

While this paper focuses on the extensive repairs for the L-train in New York City in 2019 and 2020, many other transit authorities have had to contend with extensive line closures. For example, in 1992 Chicago's entire subway system flooded and closed for 18 days. This water was freshwater, rather than saltwater, and thus the damage was less extensive. A recent study of New York City's subway entrances found that in heavy rains, over 20 percent of the city's subway stations would flood and be unusable. Better understanding how much value this transit access has to users will enable local transit authorities to better understand the trade-offs between making extensive repairs, line upgrades and extensions, and other investment decisions.

8. Tables and Figures

Figure 1: L-Train Shutdown Announcement Timeline

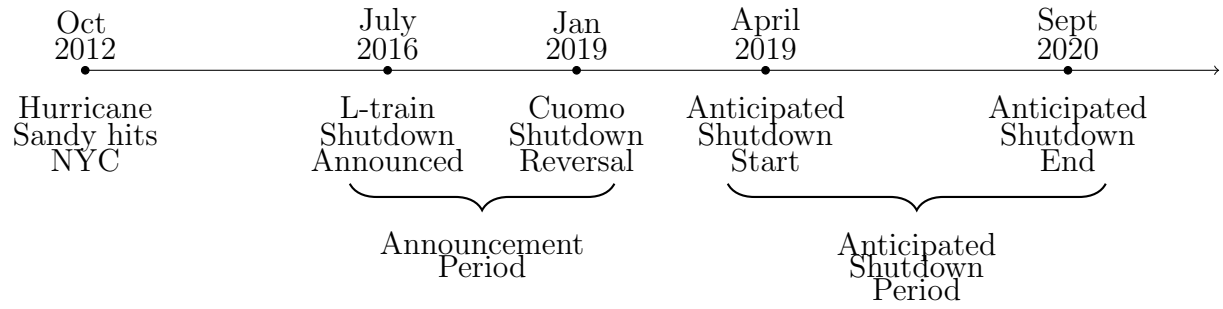
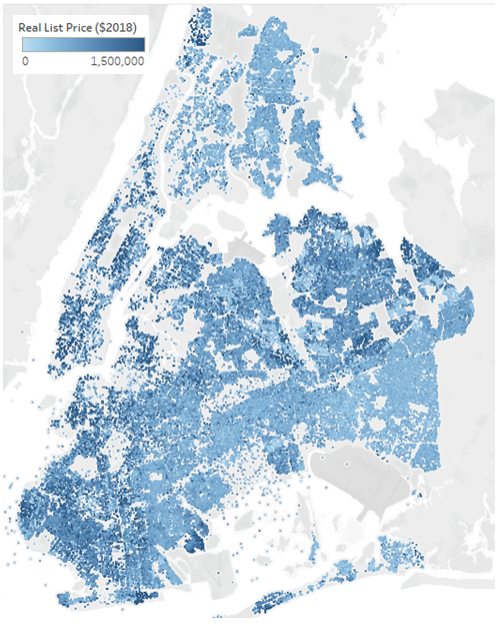


Figure 2: NYC's Subway Map

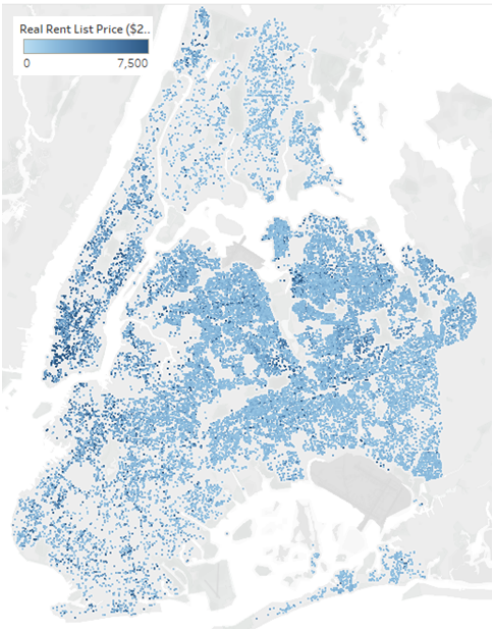
Note: The figure shows New York City's subway map. The gray line is the L-line.

Figure 3: Property Listings in NYC ($2018)

(a) Sales Listings

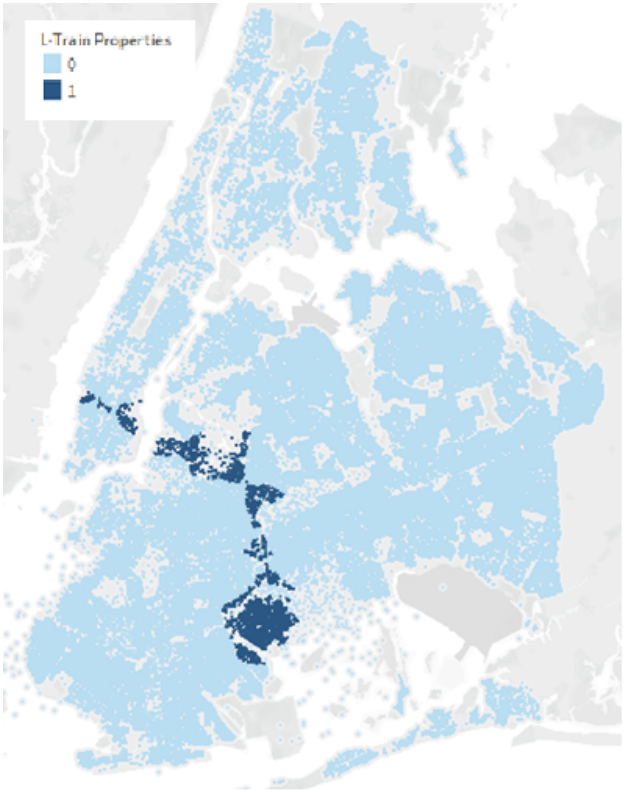


(b) Rental Listings



Note: Each subfigure shows the distribution of property listings for sales and rentals, respectively, in New York City. Source: MLS.

Figure 4: L-Train Property Indicator



Note: The figure shows the distribution of property listings for sales and rentals, and whether the closest subway is the L-train. The dark dots represent properties for which the closest subway is the L-Train, and thus, they are defined as "treated" properties. Source: MLS.

Table 1: Summary Statistics by L-Train Shutdown Status

	Mean L-Train Pre-Ann.	Mean Non-L-Train Pre-Ann.	Mean L-Train Post-Ann.	Mean Non-L-Train Post-Ann.	Simple Diff-in-Diff
List Price ($2018)	547382.28	491144.99	629290.67	620963.26	−47909.88
	(256312.22)	(306504.32)	(280250.91)	(366922.19)	
Sales Price ($2018)	503195.23	457589.81	595301.58	587450.85	−37754.69
	(222659.63)	(278514.80)	(253972.63)	(332716.71)	
Sales Price / Sqft. ($2018)	502.17	506.24	653.16	648.59	8.64
	(233.58)	(4709.55)	(1345.09)	(7840.45)	
Days on Market	230.29	194.49	204.98	175.49	−6.31
	(154.78)	(127.28)	(175.41)	(115.35)	
Sales Price / List Price	0.92	0.94	0.95	0.96	0.01
	(0.11)	(0.09)	(0.09)	(0.08)	
Square Feet	1405.38	1261.86	1329.88	1437.73	
	(6854.19)	(3358.86)	(2847.08)	(7958.97)	
Year Built (Effective)	1947.09	1948.35	1954.96	1949.22	
	(27.47)	(24.27)	(30.80)	(25.28)	
No. Baths	2.44	1.89	2.45	1.95	
	(1.23)	(1.06)	(1.03)	(1.10)	
No. Bedrooms	4.23	2.82	3.67	2.83	
	(2.34)	(1.75)	(1.69)	(1.67)	
No. Stories	2.22	3.71	2.12	3.63	
	(1.15)	(4.50)	(0.73)	(4.52)	
Dist. Nearest Subway (M.)	1220.99	956.16	1245.08	993.07	
	(769.26)	(734.44)	(764.74)	(751.06)	
Dist. 2nd Nearest Subway (M.)	1379.02	1162.69	1399.74	1183.11	
	(708.75)	(684.45)	(706.43)	(682.31)	
Median Household Income	74637.54	73786.20	73766.78	74690.68	
	(21348.60)	(28879.81)	(21586.44)	(28613.27)	
Median Age	37.95	42.70	38.63	42.76	
	(5.48)	(8.04)	(5.93)	(7.98)	
Share White	0.28	0.43	0.24	0.43	
	(0.31)	(0.28)	(0.29)	(0.28)	
Share Black	0.59	0.18	0.63	0.19	
	(0.36)	(0.29)	(0.35)	(0.30)	
Share Hispanic	0.19	0.20	0.17	0.19	
	(0.22)	(0.17)	(0.20)	(0.17)	
Share Non-Hispanic White	0.18	0.34	0.17	0.34	
	(0.23)	(0.27)	(0.23)	(0.27)	
Share Commute on Public Transit	0.53	0.47	0.53	0.46	
	(0.16)	(0.18)	(0.15)	(0.17)	
Commute < 30 Minutes	0.20	0.25	0.19	0.26	
	(0.09)	(0.11)	(0.08)	(0.11)	
Commute > 30 Minutes	0.77	0.72	0.77	0.71	
	(0.09)	(0.11)	(0.09)	(0.11)	
N	2199	109013	945	44176	

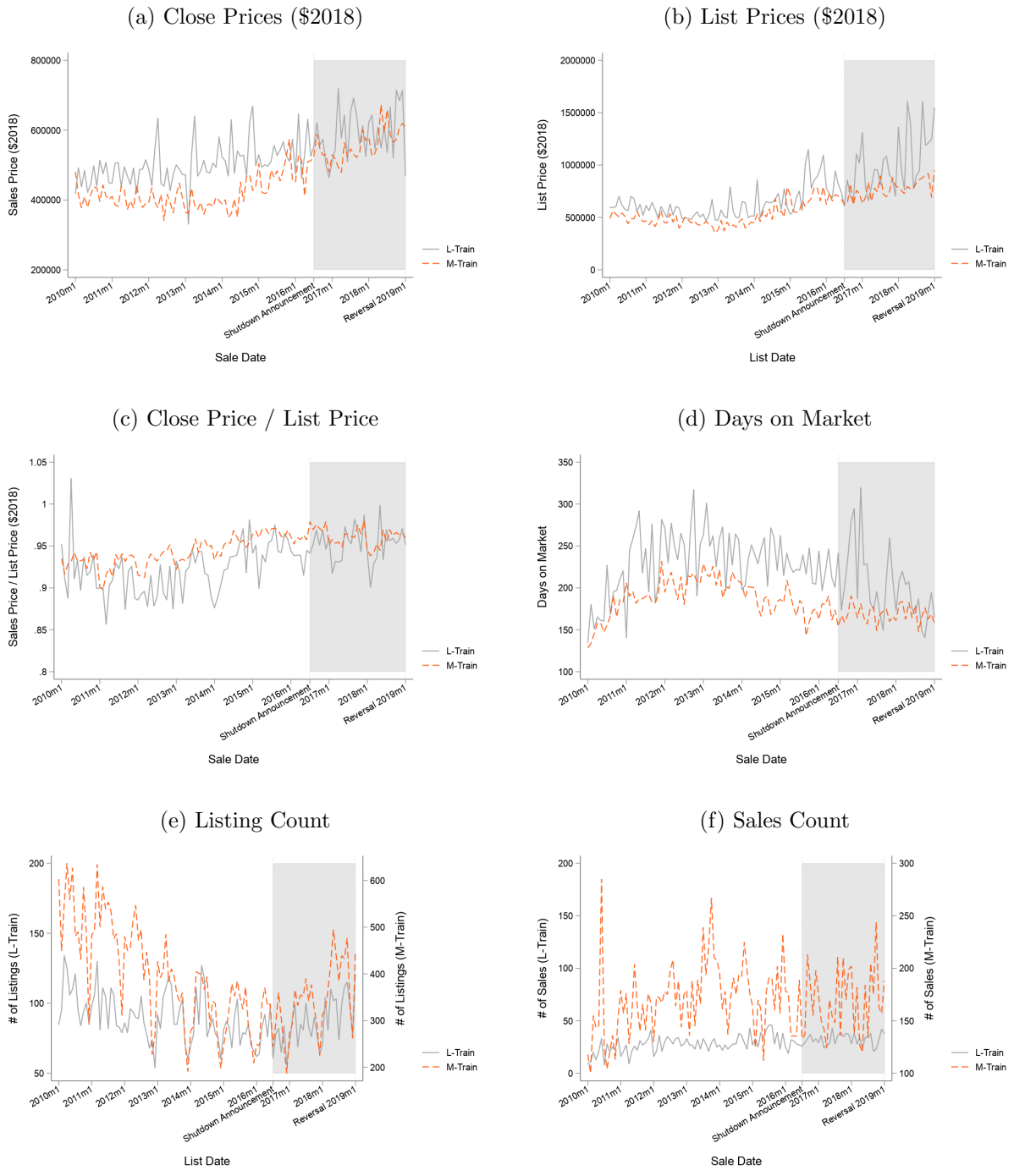
Standard deviations are reported in parenthesis. Each column reports the annual average and the standard deviation over three time periods–before the shutdown announcement, during the shutdown announcement, and after the reversal of the shutdown. The Non-L-Train properties are listings from Brooklyn and Queens where the nearest subway stop is not on the L-Train.

Table 2: L-Train Versus Non-L-Train Balance Test

	Mean L-Train Pre-Ann.	Mean Non-L-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	492587.739	−55066.036*	6582.432	−19.452
Sales Price ($2018)	503654.601	458982.302	−44672.300*	5980.774	−17.672
Sales Price / Sqft. ($2018)	505.765	508.302	2.537	121.949	0.076
Days on Market	229.516	194.579	−34.937*	2.745	−24.680
Sales Price / List Price	0.925	0.938	0.013*	0.002	13.667
Square Feet	1400.875	1259.653	−141.221	90.681	−2.627
Year Built (Effective)	1947.095	1948.350	1.255*	0.618	4.830
No. Baths	2.425	1.882	−0.543*	0.024	−47.149
No. Bedrooms	4.207	2.811	−1.396*	0.039	−67.375
No. Stories	2.248	3.755	1.508*	0.127	44.512
Dist. Nearest Subway (M.)	1213.638	949.585	−264.052*	15.838	−35.083
Dist. 2nd Nearest Subway (M.)	1370.730	1155.556	−215.174*	15.321	−30.815
Median Household Income	74942.569	73980.166	−962.403	624.922	−3.711
Median Age	37.975	42.690	4.714*	0.172	68.272
Share White	0.282	0.436	0.154*	0.006	52.363
Share Black	0.585	0.175	−0.410*	0.006	−125.615
Share Hispanic	0.194	0.196	0.003	0.004	1.287
Share Non-Hispanic White	0.188	0.340	0.153*	0.006	60.612
Share Commute on Public Transit	0.534	0.469	−0.066*	0.004	−39.101
Commute < 30 Minutes	0.198	0.255	0.056*	0.002	55.094
Commute > 30 Minutes	0.769	0.714	−0.055*	0.002	−51.281
N	111985				

Each column reports the annual average for L-Train and Non-L-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * $p<0.05$ indicates statistically significant differences between L-Train and Non-L-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Figure 5: Outcomes for L-Train and M-Train Properties



Note: Each subfigure shows different outcomes for properties in Manhattan, Brooklyn, and Queens nearest the L-Train and properties nearest the M-Train. The first vertical dashed grey line represents the dates after the shutdown announcement was made and the second vertical dashed grey line represents dates after the shutdown announcement was reversed. Source: MLS and author's calculations.

Table 3: Main Results Table($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
Ln(Sales Price$_{it}$): 1[L-Train*Post]	−0.072*	−0.074*	−0.064*	−0.065*	−0.106*	−0.176*
	(0.030)	(0.030)	(0.028)	(0.028)	(0.034)	(0.044)
Ln(List Price$_{it}$): 1[L-Train*Post]	−0.080*	−0.083*	−0.075*	−0.074*	−0.114*	−0.180*
	(0.031)	(0.031)	(0.028)	(0.029)	(0.034)	(0.043)
Sales Price$_{it}$ / List Price$_{it}$: 1[L-Train*Post]	0.009	0.010	0.013*	0.013*	0.010	0.005
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Days on Market$_{it}$: 1[L-Train*Post]	−11.064*	−11.463*	−12.995*	−12.879*	−12.248*	−11.255*
	(3.726)	(3.661)	(3.884)	(3.861)	(3.707)	(5.105)
Subway Distance Controls	Y	Y	Y	Y	Y	Y
Census Block Group Controls	Y	Y	Y	Y	Y	Y
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	100843	99833	20810	20741	30103	12357

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level. This table shows the coefficient of interest across four outcome variables: Ln(Sales Price$_{it}$), Ln(List Price$_{it}$), Sales Price$_{it}$ / List Price$_{it}$, and Days on Market$_{it}$. The coefficients for all other controls included in these specifications are shown in the subsequent four tables.

Table 4: Sales Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	0.014	0.017	−0.024	−0.027	0.005	0.029
	(0.031)	(0.031)	(0.055)	(0.054)	(0.060)	(0.109)
1[Post]	−0.054	−0.059	−0.170	−0.173	−0.192*	−0.260*
	(0.049)	(0.049)	(0.097)	(0.099)	(0.075)	(0.102)
1[L-Train*Post]	−0.072*	−0.074*	−0.064*	−0.065*	−0.106*	−0.176*
	(0.030)	(0.030)	(0.028)	(0.028)	(0.034)	(0.044)
Median Household Income	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.005*	−0.006*	0.002	0.001	0.000	0.000
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Share White	−0.330	−0.334	−0.104	−0.103	−0.108	−0.143
	(0.198)	(0.201)	(0.311)	(0.312)	(0.205)	(0.130)
Share Black	−0.448*	−0.458*	−0.665*	−0.664*	−0.562*	−0.476*
	(0.141)	(0.142)	(0.181)	(0.182)	(0.177)	(0.157)
Share Hispanic	0.058	0.058	−0.091	−0.092	0.068	−0.067
	(0.134)	(0.135)	(0.228)	(0.228)	(0.193)	(0.145)
Share Non-Hispanic White	0.176	0.177	−0.309	−0.310	−0.511*	−0.730
	(0.252)	(0.255)	(0.361)	(0.362)	(0.239)	(0.362)
Share Owner Occupied	−0.457*	−0.462*	−0.382*	−0.383*	−0.366*	−0.425*
	(0.103)	(0.104)	(0.115)	(0.116)	(0.099)	(0.183)
Share Commute on Public Transit	−0.480*	−0.477*	0.032	0.031	−0.170	−0.231
	(0.171)	(0.173)	(0.156)	(0.157)	(0.192)	(0.292)
Commute < 30 Minutes	−0.282	−0.268	−0.454	−0.430	−0.394	0.938*
	(0.244)	(0.252)	(0.525)	(0.540)	(0.523)	(0.443)
Commute > 30 Minutes	−0.191	−0.183	−0.505	−0.477	−0.327	0.996
	(0.343)	(0.351)	(0.488)	(0.502)	(0.536)	(0.566)
Dist. Nearest Subway (M.)	0.000	0.000	0.000*	0.000*	0.000	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	13.759*	13.750*	13.364*	13.339*	13.484*	12.585*
	(0.252)	(0.258)	(0.456)	(0.467)	(0.389)	(0.468)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	100843	99833	20810	20741	30103	12357

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table 5: List Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	0.022	0.025	−0.026	−0.030	0.003	0.020
	(0.027)	(0.028)	(0.051)	(0.050)	(0.057)	(0.105)
1[Post]	0.011	0.011	0.018	0.019	0.002	−0.012
	(0.024)	(0.025)	(0.048)	(0.048)	(0.034)	(0.032)
1[L-Train*Post]	−0.080*	−0.083*	−0.075*	−0.074*	−0.114*	−0.180*
	(0.031)	(0.031)	(0.028)	(0.029)	(0.034)	(0.043)
Median Household Income	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.006*	−0.006*	0.002	0.001	0.000	−0.001
	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)
Share White	−0.330	−0.334	−0.118	−0.117	−0.113	−0.131
	(0.198)	(0.200)	(0.296)	(0.298)	(0.197)	(0.123)
Share Black	−0.444*	−0.455*	−0.680*	−0.679*	−0.567*	−0.467*
	(0.138)	(0.139)	(0.179)	(0.180)	(0.177)	(0.163)
Share Hispanic	0.074	0.075	−0.065	−0.065	0.080	−0.048
	(0.133)	(0.134)	(0.225)	(0.226)	(0.195)	(0.164)
Share Non-Hispanic White	0.178	0.180	−0.304	−0.307	−0.513*	−0.715*
	(0.252)	(0.255)	(0.351)	(0.352)	(0.236)	(0.328)
Share Owner Occupied	−0.472*	−0.476*	−0.391*	−0.392*	−0.377*	−0.419*
	(0.103)	(0.104)	(0.120)	(0.121)	(0.102)	(0.177)
Share Commute on Public Transit	−0.498*	−0.494*	0.014	0.013	−0.175	−0.224
	(0.169)	(0.171)	(0.160)	(0.160)	(0.193)	(0.298)
Commute < 30 Minutes	−0.295	−0.278	−0.456	−0.428	−0.415	0.892*
	(0.243)	(0.251)	(0.512)	(0.528)	(0.509)	(0.434)
Commute > 30 Minutes	−0.209	−0.199	−0.494	−0.462	−0.347	0.941
	(0.339)	(0.347)	(0.473)	(0.488)	(0.520)	(0.539)
Dist. Nearest Subway (M.)	0.000	0.000	0.000*	0.000*	0.000	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	13.833*	13.822*	13.386*	13.357*	13.522*	12.635*
	(0.250)	(0.256)	(0.447)	(0.458)	(0.384)	(0.470)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	100850	99840	20812	20743	30105	12359

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table 6: Sales Price/List Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	−0.008	−0.008	−0.004	−0.004	−0.002	0.003
	(0.005)	(0.006)	(0.006)	(0.006)	(0.005)	(0.004)
1[Post]	0.000	−0.001	−0.007	−0.009	−0.013	−0.033
	(0.007)	(0.007)	(0.016)	(0.016)	(0.012)	(0.021)
1[L-Train*Post]	0.009	0.010	0.013*	0.013*	0.010	0.005
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Median Household Income	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Share White	0.005	0.006	0.010	0.010	0.005	0.000
	(0.006)	(0.006)	(0.010)	(0.010)	(0.008)	(0.015)
Share Black	−0.003	−0.003	0.026*	0.025*	0.014	0.004
	(0.006)	(0.006)	(0.010)	(0.010)	(0.010)	(0.019)
Share Hispanic	−0.015*	−0.015*	−0.010	−0.010	−0.006	−0.012
	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.019)
Share Non-Hispanic White	−0.008	−0.009	0.006	0.006	0.005	−0.008
	(0.007)	(0.007)	(0.009)	(0.009)	(0.010)	(0.021)
Share Owner Occupied	0.011*	0.011*	0.022*	0.022*	0.018*	−0.006
	(0.004)	(0.004)	(0.006)	(0.006)	(0.005)	(0.010)
Share Commute on Public Transit	0.020*	0.020*	0.012*	0.012*	0.011	−0.010
	(0.005)	(0.006)	(0.005)	(0.005)	(0.007)	(0.019)
Commute < 30 Minutes	0.009	0.008	0.028	0.027	0.028	0.038
	(0.014)	(0.014)	(0.026)	(0.026)	(0.021)	(0.047)
Commute > 30 Minutes	0.010	0.009	0.017	0.016	0.024	0.042
	(0.013)	(0.014)	(0.020)	(0.020)	(0.019)	(0.045)
Dist. Nearest Subway (M.)	0.000*	0.000*	0.000	0.000	0.000	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000*	0.000	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.917*	0.918*	0.914*	0.915*	0.915*	0.923*
	(0.013)	(0.013)	(0.022)	(0.022)	(0.019)	(0.042)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	100843	99833	20810	20741	30103	12357

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table 7: Days on Market

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	13.487	14.261	7.918	9.015	7.645	5.880
	(7.083)	(7.188)	(9.683)	(9.405)	(8.055)	(13.016)
1[Post]	12.988	14.235	21.221	21.612	8.059	−16.207
	(14.275)	(14.525)	(27.906)	(28.551)	(24.452)	(40.795)
1[L-Train*Post]	−11.064*	−11.463*	−12.995*	−12.879*	−12.248*	−11.255*
	(3.726)	(3.661)	(3.884)	(3.861)	(3.707)	(5.105)
Median Household Income	0.000*	0.000*	0.000*	0.000*	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	0.204	0.198	0.419	0.411	0.405	−0.544
	(0.159)	(0.161)	(0.484)	(0.491)	(0.422)	(0.547)
Share White	13.365	14.834	26.516	26.784	27.294	41.591
	(15.780)	(15.970)	(18.827)	(18.990)	(15.635)	(26.040)
Share Black	30.543*	30.644*	29.393	29.692	16.961	11.987
	(13.490)	(13.610)	(17.635)	(17.580)	(15.474)	(21.637)
Share Hispanic	22.840*	21.998*	27.610	27.374	13.352	−0.588
	(9.987)	(10.039)	(14.100)	(14.235)	(12.640)	(21.474)
Share Non-Hispanic White	−2.436	−3.268	−2.363	−1.046	1.586	5.246
	(16.605)	(16.793)	(17.636)	(17.920)	(15.267)	(37.547)
Share Owner Occupied	1.998	2.044	−0.201	−0.077	−5.861	−14.831
	(5.941)	(5.976)	(12.106)	(12.171)	(9.964)	(14.256)
Share Commute on Public Transit	10.751	10.680	21.323	21.963	24.970	31.527
	(10.016)	(10.143)	(16.153)	(16.264)	(13.691)	(20.397)
Commute < 30 Minutes	−54.572*	−60.084*	−64.982*	−68.319*	−56.788	−39.658
	(21.407)	(21.530)	(30.279)	(29.998)	(33.154)	(78.441)
Commute > 30 Minutes	−52.354*	−57.821*	−72.996*	−77.188*	−87.639*	−106.440
	(20.463)	(20.577)	(24.028)	(24.083)	(34.622)	(91.567)
Dist. Nearest Subway (M.)	0.005	0.005	0.023	0.023	0.018	−0.002
	(0.011)	(0.011)	(0.013)	(0.013)	(0.011)	(0.014)
Dist. 2nd Nearest Subway (M.)	−0.010	−0.010	−0.033	−0.033	−0.026	0.002
	(0.013)	(0.013)	(0.016)	(0.016)	(0.014)	(0.013)
Constant	223.008*	228.521*	226.429*	229.618*	238.448*	287.402*
	(19.563)	(19.828)	(24.601)	(25.402)	(32.355)	(87.463)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	100850	99840	20811	20742	30105	12359

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table 8: Listing Count

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	−12.006	−12.570	−7.290*	−7.693*	−8.832*	−3.228*
	(6.202)	(6.590)	(2.436)	(2.509)	(2.594)	(1.330)
1[L-Train*Post]	2.491*	2.818*	2.730	2.897	2.643*	1.700
	(1.169)	(1.166)	(1.789)	(1.969)	(1.296)	(0.920)
Median Household Income	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.133	−0.294	0.096	0.180	0.283*	0.089
	(0.185)	(0.346)	(0.067)	(0.090)	(0.102)	(0.072)
Share White	−7.784	−15.591	−13.109*	−12.993*	−14.300	6.310
	(9.043)	(14.272)	(4.206)	(4.334)	(8.894)	(5.259)
Share Black	−0.380	−4.597	3.398	4.212	0.820	−1.784
	(4.065)	(6.616)	(4.589)	(5.535)	(4.894)	(3.889)
Share Hispanic	−10.212	−15.685	−1.897	−1.148	−5.017	−8.588
	(6.319)	(11.451)	(4.621)	(5.421)	(5.575)	(6.115)
Share Non-Hispanic White	2.352	3.737	17.063*	17.798*	20.305	−8.242
	(12.374)	(19.980)	(7.805)	(8.249)	(14.867)	(8.450)
Share Owner Occupied	4.511	7.061	−1.945	−2.865	−6.841	−2.568
	(7.415)	(10.836)	(4.416)	(5.210)	(5.013)	(2.467)
Share Commute on Public Transit	−3.346	−7.815	11.175*	10.820*	3.216	−1.601
	(8.089)	(15.212)	(4.186)	(5.188)	(4.711)	(2.803)
Commute < 30 Minutes	5.590	18.465	−7.019	−5.243	0.122	−1.923
	(7.213)	(15.441)	(5.601)	(7.788)	(7.327)	(5.787)
Commute > 30 Minutes	10.799	30.072	−10.615*	−11.462	−3.549	−1.162
	(9.049)	(20.633)	(5.044)	(7.362)	(7.688)	(6.158)
Dist. Nearest Subway (M.)	−0.007	−0.008	−0.003	−0.003	0.000	−0.003
	(0.006)	(0.007)	(0.004)	(0.004)	(0.004)	(0.003)
Dist. 2nd Nearest Subway (M.)	0.001	0.001	0.003	0.002	0.001	0.001
	(0.005)	(0.005)	(0.003)	(0.004)	(0.003)	(0.002)
Constant	31.981*	30.789*	18.843*	16.863*	13.082	17.119*
	(6.487)	(11.844)	(6.501)	(7.661)	(7.971)	(6.717)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	11918	10075	3110	2886	4292	2935

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table 9: Monthly Capitalization Rate of Transit Access ($2018)

Robustness Test	Discount Estimate	Months of Closure	Monthly Value Estimate
Baseline	32234	18	862.84
Baseline, longer closure	32234	24	597.65
Baseline, top 95th percentile	59874	18	1599.69
Baseline, bottom 95th percentile	4593	18	122.71
L-train Versus All NYC	36263	18	968.86

The estimates in the table above correspond to: (1) the baseline specification in Column (3) of table 4, (2) the same estimate with a longer expected shutdown period, (3) the same estimate and the top 95th percentile confidence interval, (4) the same estimate and the bottom 95th percentile confidence interval, and (5) column (1) of table 4 for the L-train versus all other properties in NYC.

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9. Appendix Tables and Figures

10. Present Value Derivations

Derivation for the value of an unaffected housing unit in perpetuity. The present value of a unit of housing unaffected by the announcement of the L-train shutdown can be represented as:

$$\begin{aligned} P_{t_u} &= D_t + D_t\frac{(1+g)}{(1+r)} + D_t\frac{(1+g)^2}{(1+r)^2} + D_t\frac{(1+g)^3}{(1+r)^3} + ... \\ &= D_t\left(1 + \frac{(1+g)}{(1+r)} + \frac{(1+g)^2}{(1+r)^2} + \frac{(1+g)^3}{(1+r)^3} + ...\right) \end{aligned} \tag{7}$$

which is an infinite geometric series with the factor $\frac{(1+g)}{(1+r)}$. The present value is then:

$$P_{t_u} = \frac{D_t(1+r)}{r-g} \tag{8}$$

Derivation for the value of an affected housing unit in perpetuity. Suppose that the subway station is closing s months after you purchase the house. The announcement at the time of purchase is that the subway will be closed for x months. The monthly value of subway access, q is assumed to be constant over time and across all households. Then, the present value of a housing unit that is affected by the shutdown is:

$$\begin{aligned} P_{t_a} &= \sum_{t=0}^{t=s-1} D_t\left(\frac{1+g}{1+r}\right)^t + \sum_{t=s}^{t=s+x}(D_t - q)\left(\frac{1+g}{1+r}\right)^t \\ &+ \sum_{t=s+x+1}^{\infty} D_t\left(\frac{1+g}{1+r}\right)^t \\ &= \sum_{t=0}^{t=s-1} D_t\left(\frac{1+g}{1+r}\right)^t + \left(\frac{1+g}{1+r}\right)^s \sum_{t=0}^{t=x}(D_t - q)\left(\frac{1+g}{1+r}\right)^t \\ &+ \left(\frac{1+g}{1+r}\right)^{s+x+1} \sum_{t=0}^{\infty} D_t\left(\frac{1+g}{1+r}\right)^t \end{aligned} \tag{9}$$

which using the formulas for finite and infinite geometric series and simplifying can be

Table I.1: Summary Statistics by L-Train Shutdown Status

	Mean L-Train Pre-Ann.	Mean Non-L-Train Pre-Ann.	Mean L-Train Post-Ann.	Mean Non-L-Train Post-Ann.
List Price ($2018)	547653.77	492587.74	629290.67	621666.60
	(256086.70)	(307719.98)	(280250.91)	(367268.46)
Sales Price ($2018)	503654.60	458982.30	595301.58	588124.15
	(222635.37)	(279694.99)	(253972.63)	(333014.31)
Sales Price / Sqft. ($2018)	505.77	508.30	653.16	651.25
	(238.93)	(4684.89)	(1345.09)	(7789.76)
Days on Market	229.52	194.58	204.98	175.50
	(154.46)	(127.36)	(175.41)	(115.20)
Sales Price / List Price	0.92	0.94	0.95	0.96
	(0.11)	(0.09)	(0.09)	(0.08)
Square Feet	1400.87	1259.65	1329.88	1437.33
	(6829.86)	(3342.20)	(2847.08)	(7937.80)
Year Built (Effective)	1947.09	1948.35	1954.96	1949.24
	(27.53)	(24.37)	(30.80)	(25.38)
No. Baths	2.43	1.88	2.45	1.94
	(1.23)	(1.06)	(1.03)	(1.10)
No. Bedrooms	4.21	2.81	3.67	2.82
	(2.35)	(1.75)	(1.69)	(1.67)
No. Stories	2.25	3.76	2.12	3.68
	(1.29)	(4.61)	(0.73)	(4.65)
Dist. Nearest Subway (M.)	1213.64	949.59	1245.08	986.05
	(770.95)	(733.88)	(764.74)	(750.63)
Dist. 2nd Nearest Subway (M.)	1370.73	1155.56	1399.74	1175.60
	(711.77)	(684.54)	(706.43)	(682.65)
Median Household Income	74942.57	73980.17	73766.78	74885.93
	(22132.05)	(29241.72)	(21586.44)	(29063.00)
Median Age	37.98	42.69	38.63	42.75
	(5.54)	(8.04)	(5.93)	(7.99)
Share White	0.28	0.44	0.24	0.43
	(0.31)	(0.28)	(0.29)	(0.28)
Share Black	0.59	0.17	0.63	0.19
	(0.36)	(0.29)	(0.35)	(0.30)
Share Hispanic	0.19	0.20	0.17	0.19
	(0.22)	(0.18)	(0.20)	(0.17)
Share Non-Hispanic White	0.19	0.34	0.17	0.34
	(0.24)	(0.27)	(0.23)	(0.27)
Share Commute on Public Transit	0.53	0.47	0.53	0.46
	(0.16)	(0.18)	(0.15)	(0.17)
Commute < 30 Minutes	0.20	0.25	0.19	0.26
	(0.09)	(0.11)	(0.08)	(0.11)
Commute > 30 Minutes	0.77	0.71	0.77	0.71
	(0.10)	(0.11)	(0.09)	(0.11)
N	2216	109769	945	44484

Standard deviations are reported in parenthesis. Each column reports the annual average and the standard deviation over three time periods–before the shutdown announcement and during the shutdown annoucement. The Non-L-Train properties are listings from Manhattan, Brooklyn, and Queens where the nearest subway stop is not on the L-Train.

Table I.2: L-Train Versus C-Train Balance Test

	Mean L-Train Pre-Ann.	Mean C-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	519307.843	−28345.932*	9389.862	−10.188
Sales Price ($2018)	503654.601	481050.393	−22604.208*	8508.459	−8.875
Sales Price / Sqft. ($2018)	505.765	475.813	−29.952	28.771	−3.915
Days on Market	229.516	214.004	−15.513*	5.434	−9.744
Sales Price / List Price	0.925	0.934	0.009	0.005	5.391
Square Feet	1400.875	1457.238	56.364	246.752	1.147
Year Built (Effective)	1947.095	1933.146	−13.949*	1.284	−40.904
No. Baths	2.425	2.515	0.090	0.046	6.865
No. Bedrooms	4.207	4.565	0.358*	0.084	15.322
No. Stories	2.248	3.093	0.845*	0.094	37.949
Dist. Nearest Subway (M.)	1213.638	382.221	−831.417*	21.355	−146.662
Dist. 2nd Nearest Subway (M.)	1370.730	593.620	−777.109*	19.701	−149.037
Median Household Income	74942.569	53714.162	−21228.407*	963.340	−71.692
Median Age	37.975	35.954	−2.021*	0.205	−33.195
Share White	0.282	0.205	−0.077*	0.009	−30.942
Share Black	0.585	0.654	0.069*	0.011	22.888
Share Hispanic	0.194	0.213	0.019*	0.007	10.103
Share Non-Hispanic White	0.188	0.133	−0.055*	0.007	−26.809
Share Commute on Public Transit	0.534	0.682	0.148*	0.005	101.727
Commute < 30 Minutes	0.198	0.190	−0.008*	0.003	−8.272
Commute > 30 Minutes	0.769	0.769	−0.001	0.004	−0.524
N	3585				

Each column reports the annual average for L-Train and C-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and C-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.3: L-Train Versus 4-Train Balance Test

	Mean L-Train Pre-Ann.	Mean 4-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	521853.961	−25799.813*	9741.683	−9.014
Sales Price ($2018)	503654.601	476724.780	−26929.821*	8430.277	−10.891
Sales Price / Sqft. ($2018)	505.765	457.642	−48.123*	11.140	−18.139
Days on Market	229.516	224.636	−4.880	5.698	−2.941
Sales Price / List Price	0.925	0.924	−0.001	0.004	−0.548
Square Feet	1400.875	1315.384	−85.491	235.590	−1.754
Year Built (Effective)	1947.095	1944.295	−2.799*	1.222	−8.964
No. Baths	2.425	2.399	−0.026	0.047	−1.953
No. Bedrooms	4.207	4.306	0.098	0.089	3.934
No. Stories	2.248	3.258	1.010*	0.133	30.410
Dist. Nearest Subway (M.)	1213.638	579.767	−633.871*	23.017	−103.318
Dist. 2nd Nearest Subway (M.)	1370.730	750.658	−620.071*	21.488	−108.523
Median Household Income	74942.569	53390.618	−21551.951*	1058.902	−65.918
Median Age	37.975	38.462	0.486*	0.218	7.534
Share White	0.282	0.178	−0.104*	0.010	−37.699
Share Black	0.585	0.731	0.146*	0.012	45.014
Share Hispanic	0.194	0.124	−0.070*	0.007	−39.890
Share Non-Hispanic White	0.188	0.137	−0.051*	0.008	−21.945
Share Commute on Public Transit	0.534	0.639	0.105*	0.005	69.791
Commute < 30 Minutes	0.198	0.206	0.007	0.004	5.927
Commute > 30 Minutes	0.769	0.755	−0.014*	0.004	−10.541
N	3513				

Each column reports the annual average for L-Train and 4-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * $p<0.05$ indicates statistically significant differences between L-Train and 4-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.4: L-Train Versus 4C-Train Balance Test

	Mean L-Train Pre-Ann.	Mean 4C-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	520546.521	−27107.254*	8175.141	−9.609
Sales Price ($2018)	503654.601	478946.831	−24707.771*	7289.900	−9.841
Sales Price / Sqft. ($2018)	505.765	466.336	−39.429	20.629	−7.007
Days on Market	229.516	219.176	−10.340*	4.693	−6.362
Sales Price / List Price	0.925	0.929	0.004	0.004	2.998
Square Feet	1400.875	1383.307	−17.568	171.570	−0.359
Year Built (Effective)	1947.095	1938.392	−8.702*	1.116	−26.360
No. Baths	2.425	2.458	0.033	0.039	2.514
No. Bedrooms	4.207	4.437	0.230*	0.072	9.506
No. Stories	2.248	3.180	0.932*	0.111	32.599
Dist. Nearest Subway (M.)	1213.638	478.326	−735.312*	16.532	−123.761
Dist. 2nd Nearest Subway (M.)	1370.730	670.019	−700.711*	15.390	−127.613
Median Household Income	74942.569	53556.759	−21385.810*	915.516	−68.665
Median Age	37.975	37.174	−0.801*	0.184	−12.655
Share White	0.282	0.192	−0.090*	0.007	−34.337
Share Black	0.585	0.692	0.106*	0.009	33.927
Share Hispanic	0.194	0.170	−0.024*	0.005	−12.865
Share Non-Hispanic White	0.188	0.135	−0.053*	0.006	−24.227
Share Commute on Public Transit	0.534	0.661	0.127*	0.004	85.444
Commute < 30 Minutes	0.198	0.198	−0.001	0.003	−0.571
Commute > 30 Minutes	0.769	0.762	−0.007*	0.004	−5.814
N	4882				

Each column reports the annual average for L-Train and 4C-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and 4C-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.5: L-Train Versus J-Train Balance Test

	Mean L-Train Pre-Ann.	Mean J-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	412723.273	−134930.502*	5417.536	−57.571
Sales Price ($2018)	503654.601	384585.262	−119069.339*	4906.633	−57.022
Sales Price / Sqft. ($2018)	505.765	329.903	−175.862*	16.749	−37.875
Days on Market	229.516	189.458	−40.058*	3.537	−27.000
Sales Price / List Price	0.925	0.938	0.013*	0.003	11.900
Square Feet	1400.875	1667.193	266.318	182.913	4.699
Year Built (Effective)	1947.095	1933.243	−13.852*	0.729	−51.995
No. Baths	2.425	2.153	−0.272*	0.027	−23.741
No. Bedrooms	4.207	3.577	−0.631*	0.049	−30.154
No. Stories	2.248	3.605	1.357*	0.115	45.338
Dist. Nearest Subway (M.)	1213.638	998.979	−214.658*	18.841	−27.795
Dist. 2nd Nearest Subway (M.)	1370.730	1150.597	−220.133*	17.873	−30.945
Median Household Income	74942.569	67394.508	−7548.061*	517.049	−35.056
Median Age	37.975	37.348	−0.628*	0.132	−11.510
Share White	0.282	0.318	0.036*	0.007	12.575
Share Black	0.585	0.344	−0.242*	0.008	−71.012
Share Hispanic	0.194	0.326	0.133*	0.005	59.186
Share Non-Hispanic White	0.188	0.180	−0.008	0.006	−3.584
Share Commute on Public Transit	0.534	0.538	0.003	0.003	2.144
Commute < 30 Minutes	0.198	0.210	0.012*	0.002	12.463
Commute > 30 Minutes	0.769	0.764	−0.005*	0.003	−5.148
N	9216				

Each column reports the annual average for L-Train and J-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and J-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.6: L-Train Versus M-Train Balance Test

	Mean L-Train Pre-Ann.	Mean M-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	447739.968	−99913.807*	6485.439	−36.719
Sales Price ($2018)	503654.601	421218.005	−82436.596*	5951.242	−33.665
Sales Price / Sqft. ($2018)	505.765	469.854	−35.911	167.840	−0.787
Days on Market	229.516	186.997	−42.520*	2.657	−31.865
Sales Price / List Price	0.925	0.944	0.020*	0.002	22.691
Square Feet	1400.875	1155.398	−245.477*	88.750	−5.048
Year Built (Effective)	1947.095	1950.835	3.740*	0.584	15.239
No. Baths	2.425	1.631	−0.794*	0.025	−69.857
No. Bedrooms	4.207	2.215	−1.992*	0.046	−94.101
No. Stories	2.248	5.369	3.121*	0.162	73.715
Dist. Nearest Subway (M.)	1213.638	610.275	−603.363*	10.940	−97.714
Dist. 2nd Nearest Subway (M.)	1370.730	884.512	−486.218*	10.401	−85.128
Median Household Income	74942.569	73136.322	−1806.247*	631.946	−7.099
Median Age	37.975	43.126	5.151*	0.158	81.084
Share White	0.282	0.563	0.281*	0.005	105.257
Share Black	0.585	0.044	−0.541*	0.003	−207.398
Share Hispanic	0.194	0.219	0.026*	0.004	13.253
Share Non-Hispanic White	0.188	0.431	0.243*	0.005	109.394
Share Commute on Public Transit	0.534	0.598	0.063*	0.003	43.386
Commute < 30 Minutes	0.198	0.203	0.005*	0.002	5.316
Commute > 30 Minutes	0.769	0.760	−0.009*	0.002	−9.529
N	15788				

Each column reports the annual average for L-Train and M-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * $p<0.05$ indicates statistically significant differences between L-Train and M-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.7: L-Train Versus JM-Train Balance Test

	Mean L-Train Pre-Ann.	Mean JM-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	434562.929	−113090.846*	5867.042	−43.570
Sales Price ($2018)	503654.601	407707.394	−95947.207*	5394.057	−41.167
Sales Price / Sqft. ($2018)	505.765	433.462	−72.303	146.018	−1.821
Days on Market	229.516	187.695	−41.821*	2.773	−30.218
Sales Price / List Price	0.925	0.942	0.018*	0.002	18.506
Square Feet	1400.875	1283.918	−116.956	94.321	−2.301
Year Built (Effective)	1947.095	1944.891	−2.204*	0.638	−8.512
No. Baths	2.425	1.803	−0.622*	0.025	−54.010
No. Bedrooms	4.207	2.665	−1.542*	0.046	−71.610
No. Stories	2.248	5.016	2.768*	0.154	68.387
Dist. Nearest Subway (M.)	1213.638	744.293	−469.344*	13.676	−68.303
Dist. 2nd Nearest Subway (M.)	1370.730	976.185	−394.545*	12.748	−62.789
Median Household Income	74942.569	71238.054	−3704.515*	577.345	−15.281
Median Age	37.975	41.208	3.233*	0.155	50.995
Share White	0.282	0.480	0.198*	0.006	68.945
Share Black	0.585	0.145	−0.440*	0.006	−143.273
Share Hispanic	0.194	0.256	0.062*	0.004	29.999
Share Non-Hispanic White	0.188	0.345	0.157*	0.005	65.485
Share Commute on Public Transit	0.534	0.577	0.042*	0.003	28.640
Commute < 30 Minutes	0.198	0.206	0.007*	0.002	7.702
Commute > 30 Minutes	0.769	0.762	−0.008*	0.002	−7.654
N	22648				

Each column reports the annual average for L-Train and JM-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and JM-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.8: L-Train Versus Non-L-Train Balance Test

	Mean L-Train Pre-Ann.	Mean Non-L-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547382.278	491144.990	−56237.288*	6582.127	−19.905
Sales Price ($2018)	503195.232	457589.806	−45605.426*	5978.823	−18.087
Sales Price / Sqft. ($2018)	502.173	506.244	4.071	123.050	0.122
Days on Market	230.293	194.489	−35.804*	2.754	−25.269
Sales Price / List Price	0.924	0.938	0.013*	0.002	13.925
Square Feet	1405.377	1261.856	−143.520	91.463	−2.659
Year Built (Effective)	1947.093	1948.351	1.258*	0.618	4.855
No. Baths	2.435	1.886	−0.550*	0.024	−47.747
No. Bedrooms	4.228	2.819	−1.409*	0.039	−68.141
No. Stories	2.222	3.709	1.487*	0.125	45.324
Dist. Nearest Subway (M.)	1220.988	956.160	−264.829*	15.910	−35.214
Dist. 2nd Nearest Subway (M.)	1379.022	1162.691	−216.331*	15.382	−31.050
Median Household Income	74637.536	73786.204	−851.332	619.397	−3.352
Median Age	37.949	42.700	4.751*	0.172	69.064
Share White	0.277	0.435	0.157*	0.006	53.722
Share Black	0.589	0.175	−0.414*	0.006	−127.114
Share Hispanic	0.195	0.196	0.001	0.004	0.735
Share Non-Hispanic White	0.183	0.339	0.156*	0.006	62.697
Share Commute on Public Transit	0.535	0.468	−0.067*	0.004	−39.801
Commute < 30 Minutes	0.196	0.254	0.058*	0.002	58.263
Commute > 30 Minutes	0.772	0.716	−0.057*	0.002	−54.882
N	111212				

Each column reports the annual average for L-Train and Non-L-Train properties in Brooklyn and Queens prior to the shutdown shutdown announcement. In column Diff. * $p<0.05$ indicates statistically significant differences between L-Train and Non-L-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.9: L-Train Versus C-Train Balance Test

	Mean L-Train Pre-Ann.	Mean C-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547382.278	491138.736	−56243.541*	9359.753	−21.249
Sales Price ($2018)	503195.232	453978.728	−49216.504*	8417.257	−20.424
Sales Price / Sqft. ($2018)	502.173	454.547	−47.626	30.199	−5.961
Days on Market	230.293	211.283	−19.010*	5.630	−11.956
Sales Price / List Price	0.924	0.933	0.009	0.006	5.019
Square Feet	1405.377	1487.889	82.512	261.059	1.672
Year Built (Effective)	1947.093	1932.422	−14.671*	1.334	−42.599
No. Baths	2.435	2.652	0.216*	0.048	16.474
No. Bedrooms	4.228	4.903	0.675*	0.086	29.573
No. Stories	2.222	2.601	0.379*	0.070	25.032
Dist. Nearest Subway (M.)	1220.988	401.341	−819.647*	22.513	−144.754
Dist. 2nd Nearest Subway (M.)	1379.022	607.098	−771.924*	20.739	−148.405
Median Household Income	74637.536	49148.150	−25489.386*	928.719	−92.084
Median Age	37.949	35.148	−2.801*	0.199	−49.861
Share White	0.277	0.172	−0.105*	0.009	−44.499
Share Black	0.589	0.695	0.106*	0.011	36.778
Share Hispanic	0.195	0.213	0.018*	0.007	9.251
Share Non-Hispanic White	0.183	0.099	−0.084*	0.007	−45.207
Share Commute on Public Transit	0.535	0.685	0.150*	0.005	103.052
Commute < 30 Minutes	0.196	0.175	−0.021*	0.003	−24.054
Commute > 30 Minutes	0.772	0.792	0.019*	0.003	20.191
N	3421				

Each column reports the annual average for L-Train and C-Train properties in Brooklyn and Queens prior to the shutdown shutdown announcement. In column Diff. * $p<0.05$ indicates statistically significant differences between L-Train and C-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.10: L-Train Versus 4-Train Balance Test

	Mean L-Train Pre-Ann.	Mean 4-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547382.278	502300.746	−45081.532*	9808.035	−16.236
Sales Price ($2018)	503195.232	457734.285	−45460.947*	8430.528	−19.134
Sales Price / Sqft. ($2018)	502.173	418.556	−83.617*	10.730	−34.374
Days on Market	230.293	228.041	−2.252	5.955	−1.333
Sales Price / List Price	0.924	0.923	−0.001	0.004	−1.050
Square Feet	1405.377	1367.919	−37.458	249.160	−0.766
Year Built (Effective)	1947.093	1942.540	−4.553*	1.250	−14.753
No. Baths	2.435	2.519	0.084	0.048	6.359
No. Bedrooms	4.228	4.636	0.408*	0.090	16.716
No. Stories	2.222	2.497	0.275*	0.068	17.773
Dist. Nearest Subway (M.)	1220.988	608.058	−612.930*	24.054	−99.723
Dist. 2nd Nearest Subway (M.)	1379.022	783.918	−595.104*	22.359	−104.448
Median Household Income	74637.536	46292.359	−28345.177*	891.781	−109.060
Median Age	37.949	38.431	0.482*	0.217	7.728
Share White	0.277	0.122	−0.156*	0.010	−63.984
Share Black	0.589	0.801	0.211*	0.011	73.499
Share Hispanic	0.195	0.123	−0.071*	0.007	−41.347
Share Non-Hispanic White	0.183	0.084	−0.100*	0.007	−50.907
Share Commute on Public Transit	0.535	0.651	0.116*	0.005	79.099
Commute < 30 Minutes	0.196	0.175	−0.021*	0.003	−21.823
Commute > 30 Minutes	0.772	0.790	0.017*	0.004	16.715
N	3373				

Each column reports the annual average for L-Train and 4-Train properties in Brooklyn and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and 4-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.11: L-Train Versus 4C-Train Balance Test

	Mean L-Train Pre-Ann.	Mean 4C-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547653.774	520546.521	−27107.254*	8175.141	−9.609
Sales Price ($2018)	503654.601	478946.831	−24707.771*	7289.900	−9.841
Sales Price / Sqft. ($2018)	505.765	466.336	−39.429	20.629	−7.007
Days on Market	229.516	219.176	−10.340*	4.693	−6.362
Sales Price / List Price	0.925	0.929	0.004	0.004	2.998
Square Feet	1400.875	1383.307	−17.568	171.570	−0.359
Year Built (Effective)	1947.095	1938.392	−8.702*	1.116	−26.360
No. Baths	2.425	2.458	0.033	0.039	2.514
No. Bedrooms	4.207	4.437	0.230*	0.072	9.506
No. Stories	2.248	3.180	0.932*	0.111	32.599
Dist. Nearest Subway (M.)	1213.638	478.326	−735.312*	16.532	−123.761
Dist. 2nd Nearest Subway (M.)	1370.730	670.019	−700.711*	15.390	−127.613
Median Household Income	74942.569	53556.759	−21385.810*	915.516	−68.665
Median Age	37.975	37.174	−0.801*	0.184	−12.655
Share White	0.282	0.192	−0.090*	0.007	−34.337
Share Black	0.585	0.692	0.106*	0.009	33.927
Share Hispanic	0.194	0.170	−0.024*	0.005	−12.865
Share Non-Hispanic White	0.188	0.135	−0.053*	0.006	−24.227
Share Commute on Public Transit	0.534	0.661	0.127*	0.004	85.444
Commute < 30 Minutes	0.198	0.198	−0.001	0.003	−0.571
Commute > 30 Minutes	0.769	0.762	−0.007*	0.004	−5.814
N	4882				

Each column reports the annual average for L-Train and 4C-Train properties in Manhattan, Brooklyn, and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and 4C-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.12: L-Train Versus J-Train Balance Test

	Mean L-Train Pre-Ann.	Mean J-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547382.278	411084.827	−136297.451*	5413.660	−58.275
Sales Price ($2018)	503195.232	382933.599	−120261.633*	4895.523	−57.791
Sales Price / Sqft. ($2018)	502.173	322.221	−179.951*	16.789	−38.851
Days on Market	230.293	189.398	−40.895*	3.553	−27.525
Sales Price / List Price	0.924	0.938	0.013*	0.003	12.062
Square Feet	1405.377	1678.785	273.408	184.861	4.802
Year Built (Effective)	1947.093	1933.059	−14.034*	0.728	−52.890
No. Baths	2.435	2.158	−0.277*	0.028	−24.234
No. Bedrooms	4.228	3.587	−0.642*	0.049	−30.754
No. Stories	2.222	3.445	1.223*	0.096	49.198
Dist. Nearest Subway (M.)	1220.988	1002.152	−218.836*	18.903	−28.361
Dist. 2nd Nearest Subway (M.)	1379.022	1154.285	−224.738*	17.915	−31.669
Median Household Income	74637.536	67242.055	−7395.481*	502.071	−35.536
Median Age	37.949	37.324	−0.625*	0.132	−11.550
Share White	0.277	0.317	0.040*	0.007	13.805
Share Black	0.589	0.345	−0.244*	0.008	−72.011
Share Hispanic	0.195	0.328	0.133*	0.005	59.132
Share Non-Hispanic White	0.183	0.178	−0.005	0.005	−2.191
Share Commute on Public Transit	0.535	0.537	0.003	0.003	1.925
Commute < 30 Minutes	0.196	0.209	0.013*	0.002	14.553
Commute > 30 Minutes	0.772	0.765	−0.007*	0.002	−7.227
N	9165				

Each column reports the annual average for L-Train and J-Train properties in Brooklyn and Queens prior to the shutdown shutdown announcement. In column Diff. * $p<0.05$ indicates statistically significant differences between L-Train and J-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.13: L-Train Versus M-Train Balance Test

	Mean L-Train Pre-Ann.	Mean M-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547382.278	446801.756	−100580.521*	6495.772	−36.999
Sales Price ($2018)	503195.232	420301.431	−82893.801*	5957.530	−33.907
Sales Price / Sqft. ($2018)	502.173	468.487	−33.685	168.886	−0.737
Days on Market	230.293	187.048	−43.245*	2.669	−32.357
Sales Price / List Price	0.924	0.944	0.020*	0.002	23.019
Square Feet	1405.377	1156.393	−248.984*	89.285	−5.102
Year Built (Effective)	1947.093	1950.825	3.732*	0.585	15.236
No. Baths	2.435	1.631	−0.804*	0.025	−70.753
No. Bedrooms	4.228	2.218	−2.011*	0.046	−95.125
No. Stories	2.222	5.352	3.130*	0.162	74.580
Dist. Nearest Subway (M.)	1220.988	610.840	−610.148*	10.970	−98.964
Dist. 2nd Nearest Subway (M.)	1379.022	885.598	−493.424*	10.418	−86.680
Median Household Income	74637.536	73026.466	−1611.070*	627.674	−6.449
Median Age	37.949	43.108	5.159*	0.158	81.633
Share White	0.277	0.563	0.285*	0.005	107.417
Share Black	0.589	0.044	−0.545*	0.003	−209.988
Share Hispanic	0.195	0.220	0.025*	0.004	12.909
Share Non-Hispanic White	0.183	0.431	0.247*	0.005	112.839
Share Commute on Public Transit	0.535	0.598	0.064*	0.003	43.609
Commute < 30 Minutes	0.196	0.203	0.007*	0.002	7.608
Commute > 30 Minutes	0.772	0.761	−0.011*	0.002	−12.274
N	15729				

Each column reports the annual average for L-Train and M-Train properties in Brooklyn and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and M-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.14: L-Train Versus JM-Train Balance Test

	Mean L-Train Pre-Ann.	Mean JM-Train Pre-Ann.	Diff.	Std. Error	Std. Diff (%)
List Price ($2018)	547382.278	433585.829	−113796.448*	5873.538	−43.887
Sales Price ($2018)	503195.232	406750.907	−96444.325*	5396.983	−41.455
Sales Price / Sqft. ($2018)	502.173	431.184	−70.988	146.997	−1.783
Days on Market	230.293	187.717	−42.576*	2.784	−30.720
Sales Price / List Price	0.924	0.942	0.018*	0.002	18.793
Square Feet	1405.377	1286.131	−119.246	94.935	−2.338
Year Built (Effective)	1947.093	1944.843	−2.250*	0.639	−8.708
No. Baths	2.435	1.805	−0.631*	0.025	−54.819
No. Bedrooms	4.228	2.669	−1.560*	0.046	−72.534
No. Stories	2.222	4.978	2.756*	0.152	69.664
Dist. Nearest Subway (M.)	1220.988	745.429	−475.559*	13.726	−69.286
Dist. 2nd Nearest Subway (M.)	1379.022	977.734	−401.288*	12.785	−64.042
Median Household Income	74637.536	71114.255	−3523.280*	571.245	−14.861
Median Age	37.949	41.193	3.243*	0.155	51.436
Share White	0.277	0.479	0.202*	0.006	70.706
Share Black	0.589	0.146	−0.444*	0.006	−144.974
Share Hispanic	0.195	0.256	0.062*	0.004	29.714
Share Non-Hispanic White	0.183	0.344	0.161*	0.005	68.003
Share Commute on Public Transit	0.535	0.577	0.043*	0.003	28.711
Commute < 30 Minutes	0.196	0.205	0.009*	0.002	9.977
Commute > 30 Minutes	0.772	0.763	−0.010*	0.002	−10.239
N	22571				

Each column reports the annual average for L-Train and JM-Train properties in Brooklyn and Queens prior to the shutdown shutdown announcement. In column Diff. * p<0.05 indicates statistically significant differences between L-Train and JM-Train properties. Column Std. Diff (%) average sample variance. While there is no optimal level of standardized bias, empirical presents the standardized percent bias which is defined as the difference in the sample means between two groups as a percentage of the square root of the researchers often consider a standardized bias of 3–5% to be sufficient Caliendo and Kopeinig (2008).

Table I.15: Sales Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	0.002	0.006	−0.022	−0.021	0.009	0.033
	(0.032)	(0.031)	(0.047)	(0.047)	(0.050)	(0.109)
1[Post]	−0.043	−0.044	−0.187*	−0.186*	−0.107	−0.004
	(0.041)	(0.041)	(0.055)	(0.056)	(0.056)	(0.087)
1[L-Train*Post]	−0.002	−0.004	−0.028	−0.027	−0.052	−0.093*
	(0.038)	(0.038)	(0.039)	(0.039)	(0.039)	(0.044)
Median Household Income	0.000*	0.000*	0.000	0.000	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.004*	−0.005*	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)	(0.003)
Share White	−0.293	−0.286	0.042	0.047	0.000	−0.162
	(0.212)	(0.215)	(0.275)	(0.276)	(0.194)	(0.152)
Share Black	−0.433*	−0.438*	−0.617*	−0.614*	−0.513*	−0.449*
	(0.143)	(0.143)	(0.205)	(0.207)	(0.173)	(0.142)
Share Hispanic	0.079	0.077	−0.092	−0.094	0.045	−0.066
	(0.129)	(0.130)	(0.202)	(0.203)	(0.181)	(0.127)
Share Non-Hispanic White	0.180	0.172	−0.380	−0.378	−0.517*	−0.613
	(0.268)	(0.271)	(0.343)	(0.346)	(0.233)	(0.400)
Share Owner Occupied	−0.459*	−0.462*	−0.394*	−0.394*	−0.392*	−0.424*
	(0.098)	(0.098)	(0.114)	(0.115)	(0.097)	(0.180)
Share Commute on Public Transit	−0.465*	−0.455*	−0.018	−0.017	−0.161	−0.215
	(0.180)	(0.183)	(0.198)	(0.198)	(0.215)	(0.296)
Commute < 30 Minutes	−0.369	−0.332	−0.362	−0.340	−0.299	0.826
	(0.228)	(0.236)	(0.541)	(0.553)	(0.550)	(0.436)
Commute > 30 Minutes	−0.300	−0.274	−0.316	−0.289	−0.205	0.838
	(0.352)	(0.360)	(0.553)	(0.564)	(0.574)	(0.587)
Dist. Nearest Subway (M.)	0.000	0.000	0.000*	0.000*	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	13.698*	13.666*	13.138*	13.108*	13.193*	12.483*
	(0.262)	(0.268)	(0.416)	(0.427)	(0.353)	(0.435)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	65598	64942	13928	13880	19904	7971

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table I.16: List Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	0.012	0.016	−0.018	−0.018	0.010	0.031
	(0.029)	(0.029)	(0.040)	(0.040)	(0.047)	(0.106)
1[Post]	−0.090*	−0.088*	−0.069*	−0.069*	−0.076*	−0.066
	(0.021)	(0.021)	(0.033)	(0.033)	(0.025)	(0.044)
1[L-Train*Post]	−0.008	−0.010	−0.025	−0.025	−0.051	−0.100*
	(0.038)	(0.037)	(0.037)	(0.037)	(0.036)	(0.041)
Median Household Income	0.000*	0.000*	0.000	0.000	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.004*	−0.005*	0.001	0.001	0.001	0.000
	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)	(0.003)
Share White	−0.299	−0.291	0.019	0.023	−0.020	−0.152
	(0.211)	(0.213)	(0.251)	(0.252)	(0.183)	(0.151)
Share Black	−0.422*	−0.428*	−0.621*	−0.617*	−0.517*	−0.435*
	(0.138)	(0.139)	(0.199)	(0.201)	(0.176)	(0.143)
Share Hispanic	0.103	0.101	−0.069	−0.071	0.064	−0.020
	(0.129)	(0.130)	(0.208)	(0.209)	(0.187)	(0.147)
Share Non-Hispanic White	0.190	0.182	−0.368	−0.368	−0.515*	−0.593
	(0.268)	(0.271)	(0.328)	(0.331)	(0.226)	(0.375)
Share Owner Occupied	−0.467*	−0.469*	−0.396*	−0.395*	−0.394*	−0.410*
	(0.096)	(0.097)	(0.120)	(0.121)	(0.100)	(0.169)
Share Commute on Public Transit	−0.475*	−0.465*	−0.007	−0.005	−0.156	−0.230
	(0.175)	(0.178)	(0.191)	(0.192)	(0.211)	(0.301)
Commute < 30 Minutes	−0.409	−0.371	−0.426	−0.398	−0.383	0.715
	(0.223)	(0.231)	(0.519)	(0.533)	(0.527)	(0.427)
Commute > 30 Minutes	−0.347	−0.320	−0.374	−0.340	−0.278	0.762
	(0.342)	(0.351)	(0.535)	(0.547)	(0.549)	(0.555)
Dist. Nearest Subway (M.)	0.000	0.000	0.000*	0.000*	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	13.828*	13.794*	13.224*	13.188*	13.325*	12.653*
	(0.259)	(0.266)	(0.402)	(0.412)	(0.340)	(0.440)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	65605	64949	13929	13881	19906	7973

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table I.17: Sales Price/List Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	−0.009*	−0.009*	−0.009*	−0.009*	−0.004	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
1[Post]	0.021*	0.021*	0.009	0.009	0.017	0.022
	(0.008)	(0.008)	(0.020)	(0.021)	(0.016)	(0.021)
1[L-Train*Post]	0.014*	0.014*	0.014	0.014	0.014*	0.012
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Median Household Income	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Share White	0.010	0.010	0.004	0.004	0.003	−0.004
	(0.008)	(0.008)	(0.015)	(0.015)	(0.013)	(0.020)
Share Black	−0.014	−0.014	0.022	0.021	0.012	0.000
	(0.009)	(0.009)	(0.015)	(0.015)	(0.015)	(0.025)
Share Hispanic	−0.022*	−0.021*	−0.004	−0.005	−0.007	−0.022
	(0.007)	(0.007)	(0.009)	(0.009)	(0.011)	(0.026)
Share Non-Hispanic White	−0.016	−0.016	0.013	0.013	0.011	0.004
	(0.009)	(0.009)	(0.013)	(0.013)	(0.012)	(0.027)
Share Owner Occupied	0.009*	0.009*	0.021*	0.021*	0.015*	−0.020
	(0.004)	(0.004)	(0.007)	(0.007)	(0.007)	(0.010)
Share Commute on Public Transit	0.016*	0.015*	0.006	0.006	0.004	−0.013
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.016)
Commute < 30 Minutes	0.025	0.024	0.073*	0.072*	0.071*	0.074
	(0.016)	(0.016)	(0.029)	(0.029)	(0.026)	(0.055)
Commute > 30 Minutes	0.029	0.028	0.061*	0.062*	0.062*	0.070
	(0.016)	(0.016)	(0.026)	(0.026)	(0.026)	(0.055)
Dist. Nearest Subway (M.)	0.000	0.000	0.000	0.000	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.894*	0.895*	0.875*	0.875*	0.878*	0.891*
	(0.016)	(0.016)	(0.028)	(0.028)	(0.027)	(0.058)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	65598	64942	13928	13880	19904	7971

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table I.18: Days on Market ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	12.032	12.392	11.269	11.402	9.031	10.529
	(7.348)	(7.492)	(6.008)	(6.019)	(7.174)	(13.015)
1[Post]	6.727	6.455	−14.416	−14.426	2.072	26.923
	(12.112)	(12.234)	(12.067)	(12.108)	(14.031)	(22.898)
1[L-Train*Post]	13.345*	13.411*	16.732*	16.892*	11.195*	0.007
	(4.887)	(4.819)	(5.487)	(5.532)	(5.492)	(8.475)
Median Household Income	0.000*	0.000*	0.000*	0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	0.174	0.165	0.593	0.583	0.455	−0.627
	(0.172)	(0.174)	(0.453)	(0.458)	(0.424)	(0.597)
Share White	11.719	13.595	10.770	10.426	12.042	37.144
	(18.732)	(18.968)	(18.335)	(18.537)	(18.708)	(33.797)
Share Black	21.141	20.292	37.003*	36.825*	16.482	12.114
	(10.729)	(10.876)	(16.826)	(16.899)	(19.904)	(29.149)
Share Hispanic	26.442*	24.880*	43.214*	43.008*	25.095	12.850
	(11.943)	(11.967)	(20.121)	(20.241)	(16.317)	(30.088)
Share Non-Hispanic White	−3.349	−4.711	6.242	7.299	11.471	12.491
	(21.362)	(21.594)	(19.381)	(19.471)	(19.058)	(44.347)
Share Owner Occupied	6.658	6.749	4.155	4.017	−0.960	−11.278
	(7.138)	(7.161)	(12.974)	(13.059)	(11.098)	(14.051)
Share Commute on Public Transit	16.186	15.639	24.911	25.500	29.162	44.714*
	(14.081)	(14.269)	(23.213)	(23.390)	(16.489)	(19.965)
Commute < 30 Minutes	−50.690*	−58.479*	−67.119	−68.438	−71.312	−117.937
	(25.306)	(25.499)	(34.041)	(34.598)	(43.961)	(95.356)
Commute > 30 Minutes	−50.833*	−57.766*	−59.040	−61.900	−92.448	−176.713
	(23.863)	(24.096)	(30.553)	(31.183)	(51.051)	(120.638)
Dist. Nearest Subway (M.)	−0.002	−0.001	0.020	0.021	0.015	−0.011
	(0.007)	(0.007)	(0.016)	(0.016)	(0.013)	(0.016)
Dist. 2nd Nearest Subway (M.)	0.000	−0.001	−0.029	−0.030	−0.023	0.019
	(0.008)	(0.008)	(0.021)	(0.021)	(0.017)	(0.015)
Constant	223.702*	232.126*	218.852*	221.720*	244.829*	318.050*
	(23.058)	(23.432)	(23.572)	(24.337)	(46.384)	(112.857)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	65605	64949	13929	13881	19906	7973

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table I.19: Listing Count

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	−12.006	−12.570	−7.290*	−7.693*	−8.832*	−3.228*
	(6.202)	(6.590)	(2.436)	(2.509)	(2.594)	(1.330)
1[L-Train*Post]	2.491*	2.818*	2.730	2.897	2.643*	1.700
	(1.169)	(1.166)	(1.789)	(1.969)	(1.296)	(0.920)
Median Household Income	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.133	−0.294	0.096	0.180	0.283*	0.089
	(0.185)	(0.346)	(0.067)	(0.090)	(0.102)	(0.072)
Share White	−7.784	−15.591	−13.109*	−12.993*	−14.300	6.310
	(9.043)	(14.272)	(4.206)	(4.334)	(8.894)	(5.259)
Share Black	−0.380	−4.597	3.398	4.212	0.820	−1.784
	(4.065)	(6.616)	(4.589)	(5.535)	(4.894)	(3.889)
Share Hispanic	−10.212	−15.685	−1.897	−1.148	−5.017	−8.588
	(6.319)	(11.451)	(4.621)	(5.421)	(5.575)	(6.115)
Share Non-Hispanic White	2.352	3.737	17.063*	17.798*	20.305	−8.242
	(12.374)	(19.980)	(7.805)	(8.249)	(14.867)	(8.450)
Share Owner Occupied	4.511	7.061	−1.945	−2.865	−6.841	−2.568
	(7.415)	(10.836)	(4.416)	(5.210)	(5.013)	(2.467)
Share Commute on Public Transit	−3.346	−7.815	11.175*	10.820*	3.216	−1.601
	(8.089)	(15.212)	(4.186)	(5.188)	(4.711)	(2.803)
Commute < 30 Minutes	5.590	18.465	−7.019	−5.243	0.122	−1.923
	(7.213)	(15.441)	(5.601)	(7.788)	(7.327)	(5.787)
Commute > 30 Minutes	10.799	30.072	−10.615*	−11.462	−3.549	−1.162
	(9.049)	(20.633)	(5.044)	(7.362)	(7.688)	(6.158)
Dist. Nearest Subway (M.)	−0.007	−0.008	−0.003	−0.003	0.000	−0.003
	(0.006)	(0.007)	(0.004)	(0.004)	(0.004)	(0.003)
Dist. 2nd Nearest Subway (M.)	0.001	0.001	0.003	0.002	0.001	0.001
	(0.005)	(0.005)	(0.003)	(0.004)	(0.003)	(0.002)
Constant	31.981*	30.789*	18.843*	16.863*	13.082	17.119*
	(6.487)	(11.844)	(6.501)	(7.661)	(7.971)	(6.717)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	11918	10075	3110	2886	4292	2935

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table I.20: Sales Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train]	0.011	0.013	−0.030	−0.034	0.002	0.028
	(0.030)	(0.030)	(0.057)	(0.056)	(0.060)	(0.109)
1[Post]	−0.054	−0.059	−0.171	−0.173	−0.192*	−0.259*
	(0.049)	(0.049)	(0.097)	(0.099)	(0.075)	(0.102)
1[L-Train*Post]	−0.073*	−0.076*	−0.066*	−0.067*	−0.108*	−0.178*
	(0.030)	(0.029)	(0.027)	(0.028)	(0.034)	(0.044)
Median Household Income	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.005*	−0.006*	0.002	0.001	0.000	0.000
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Share White	−0.330	−0.334	−0.098	−0.098	−0.103	−0.128
	(0.199)	(0.201)	(0.312)	(0.314)	(0.205)	(0.131)
Share Black	−0.448*	−0.458*	−0.663*	−0.662*	−0.561*	−0.474*
	(0.141)	(0.142)	(0.181)	(0.182)	(0.177)	(0.156)
Share Hispanic	0.058	0.059	−0.089	−0.090	0.069	−0.066
	(0.134)	(0.135)	(0.229)	(0.230)	(0.194)	(0.144)
Share Non-Hispanic White	0.176	0.177	−0.314	−0.315	−0.515*	−0.745*
	(0.253)	(0.255)	(0.362)	(0.363)	(0.239)	(0.362)
Share Owner Occupied	−0.457*	−0.462*	−0.380*	−0.382*	−0.365*	−0.424*
	(0.103)	(0.104)	(0.114)	(0.115)	(0.099)	(0.184)
Share Commute on Public Transit	−0.481*	−0.477*	0.031	0.029	−0.171	−0.229
	(0.170)	(0.173)	(0.155)	(0.156)	(0.192)	(0.292)
Commute < 30 Minutes	−0.281	−0.266	−0.448	−0.424	−0.390	0.948*
	(0.244)	(0.252)	(0.527)	(0.541)	(0.524)	(0.441)
Commute > 30 Minutes	−0.190	−0.182	−0.498	−0.470	−0.323	1.003
	(0.343)	(0.351)	(0.489)	(0.503)	(0.537)	(0.565)
Dist. Nearest Subway (M.)	0.000	0.000	0.000*	0.000*	0.000	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	13.757*	13.748*	13.355*	13.330*	13.478*	12.571*
	(0.252)	(0.258)	(0.457)	(0.468)	(0.389)	(0.467)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	100800	99790	20767	20698	30060	12314

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

Table I.21: Sales Price ($2018)

	(1) All Properties	(2) Brooklyn & Queens	(3) M-Train	(4) M-Train Bklyn. & Queens	(5) JM-Train Bklyn. & Queens	(6) J-Train Bklyn.& Queens
1[L-Train Stop 1 or 2]	0.041	0.040	−0.050	−0.051	0.006	0.026
	(0.037)	(0.038)	(0.037)	(0.037)	(0.060)	(0.099)
1[Post]	−0.054	−0.059	−0.175	−0.177	−0.193*	−0.221*
	(0.049)	(0.049)	(0.096)	(0.099)	(0.075)	(0.082)
1[L-Train (Stop 1 or 2) *Post]	−0.060	−0.062	−0.052	−0.051	−0.093*	−0.164*
	(0.034)	(0.035)	(0.032)	(0.033)	(0.037)	(0.046)
Median Household Income	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median Age	−0.005*	−0.006*	0.002	0.002	0.000	0.000
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Share White	−0.333	−0.337	−0.103	−0.103	−0.110	−0.135
	(0.198)	(0.201)	(0.298)	(0.300)	(0.202)	(0.150)
Share Black	−0.448*	−0.458*	−0.616*	−0.614*	−0.549*	−0.455*
	(0.141)	(0.142)	(0.161)	(0.163)	(0.167)	(0.160)
Share Hispanic	0.057	0.058	−0.082	−0.083	0.068	−0.085
	(0.134)	(0.135)	(0.215)	(0.216)	(0.190)	(0.153)
Share Non-Hispanic White	0.180	0.180	−0.319	−0.317	−0.508*	−0.710
	(0.252)	(0.255)	(0.348)	(0.350)	(0.242)	(0.368)
Share Owner Occupied	−0.457*	−0.461*	−0.381*	−0.382*	−0.370*	−0.456*
	(0.103)	(0.104)	(0.111)	(0.113)	(0.098)	(0.170)
Share Commute on Public Transit	−0.481*	−0.477*	0.046	0.045	−0.162	−0.218
	(0.170)	(0.173)	(0.154)	(0.155)	(0.190)	(0.273)
Commute < 30 Minutes	−0.280	−0.266	−0.434	−0.402	−0.390	0.873
	(0.244)	(0.252)	(0.525)	(0.543)	(0.520)	(0.432)
Commute > 30 Minutes	−0.189	−0.181	−0.503	−0.468	−0.333	0.950
	(0.343)	(0.350)	(0.486)	(0.503)	(0.532)	(0.546)
Dist. Nearest Subway (M.)	0.000	0.000	0.000*	0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dist. 2nd Nearest Subway (M.)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	13.756*	13.748*	13.357*	13.322*	13.483*	12.642*
	(0.252)	(0.258)	(0.449)	(0.463)	(0.385)	(0.467)
Month-of-Sample FE	Y	Y	Y	Y	Y	Y
ZIP code FE	Y	Y	Y	Y	Y	Y
N	100843	99833	21148	21055	30338	12819

* p<0.05. The standard errors reported in parenthesis have been clustered at the zip-code level.

expressed as:

$$P_{t_a} = \frac{(1+r)}{(r-g)} \left[D_t - \left(\frac{1+g}{1+r} \right)^s q \left(1 - \left(\frac{1+g}{1+r} \right)^{x+1} \right) \right] \tag{10}$$