



The Effect of Construction on Local Businesses

Controller's Office
City and County of San Francisco
November 21, 2017

The Question: How Do City Construction Projects Affect Local Businesses?

- Using sales tax data on individual businesses, we compared retail sales in 11 construction zones with retail sales in appropriate benchmark areas.
- Our findings based on these 11 construction zones are mixed:
 - Retailers in five of the construction zones suffered an average decrease in taxable sales of between 9% and 19%. There was no significant effect during construction in the other six zones.
 - After construction, retailers in three zones remained below their pre-construction level sales. Four zones showed increased sales for retailers in the years after construction. The remaining zones were not significantly different from their pre-construction levels.
- We also estimated the rate at which businesses closed in three of the construction zones and found no significant difference from citywide average closure rates.

The Effect of Construction on Neighborhoods: Two Previous Studies

- SFMTA sponsored a study in 2014 that analyzed how construction affected neighborhoods.
 - The authors compared changes in sales tax revenue in the construction zones to changes in nearby, comparable areas not affected by construction.
 - They found that there was little difference in sales tax revenue between pre-construction and the first year post-construction.
 - In the second and third years after construction, however, sales tax revenues were about 5% higher than the pre-construction time period.
- New York City performed an analysis with the same methodology, and found similar results.
- Neither study looked at the effect on businesses *during* construction.

The Effect of Construction on Sales Tax Revenue from Individual Businesses

- The SFMTA and NYC studies looked at total tax revenue in construction zones, but they do not directly measure the effect on individual businesses.
 - Using neighborhood totals, results are driven by the effects on large retailers.
 - Effects on individual businesses can be obscured by looking at neighborhood totals. For example, a neighborhood booming after construction could attract new businesses that compete with established ones.
- In contrast, we analyze sales tax data at the level of individual businesses, which allows us to estimate specifically how construction affects local businesses on average, regardless of business size.
- The Controller's Office's confidentiality agreement with the State Board of Equalization prohibits us from releasing any information that would disclose the amount of tax paid by any particular business.

Limitations of the Sales Tax Analysis

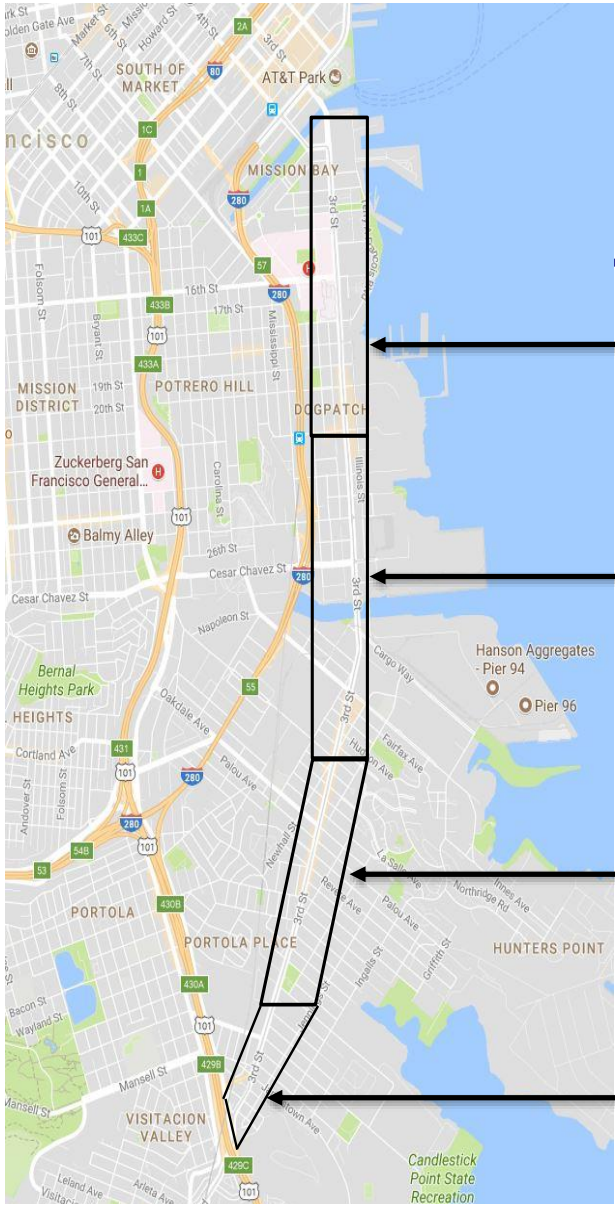
- The data used in the analysis is limited to taxable sales. To the extent that taxable and non-taxable sales react differently to construction, our analysis would not account for those differences.
- This analysis does not consider the short or long-term impacts if construction had not taken place.
- Because the analysis estimates the average effect on individual businesses, it does not capture how the neighborhood as a whole may grow or decline from new businesses entering the neighborhood or established businesses leaving.
- Further out in the post-construction period, the results are increasingly likely to be affected by factors other than construction.

Characteristics of the Construction Zones Included in the Analysis

- To be included in our analysis, a construction zone must be a well-defined geographic area with accurate start and end dates. It must also be large enough to give reliable statistical conclusions.
- We identified 11 construction zones. The Third Street Rail project was divided into four separate regions based on construction dates.

	Balboa St.	Castro St.	Jefferson St.	Polk (2000)	Polk (2009)	West Portal	Stockton
Dates of Construction	August 2013 - March 2014	February 2014 - December 2014	January 2013 - June 2013	January 2000 - June 2000	April 2009 - September 2009	March 2015 - June 2016	April 2014 - Present
Project Details	Bulb-outs, revised traffic and parking layouts, light fixtures	Bulb-outs, trees, curb ramps, paving, Muni overhead wiring	Pedestrian improvements: ADA, corner plazas, shorter road crossings, lighting	A southbound lane removed, bike lanes installed	Lighting upgrades, trees, planters	Sewer main, bulb-outs, resurfacing and paving	Central Subway station

T-Third Construction Dates



May 2002 – May 2006 (Zone A)

January 2003 – August 2006 (Zone B)

December 2002 – May 2006 (Zone C)

December 2002 – June 2005 (Zone D)

The Methodology: Choosing a Benchmark for the Sales Tax Analysis

- We use a regression analysis to estimate how businesses in the construction zone fared on average during and after construction relative to the three year period prior to construction.
- For each construction zone, we select an area not affected by construction that serves as the "benchmark" for how businesses in the construction zone would have performed but for the construction.
- Our work looks at three different benchmarks: (1) the zip code where the construction was located; (2) the zip code and all adjacent zip codes; and (3) all of San Francisco.
- For the Central Subway on Stockton, benchmark (1) is inappropriate since the zip code is comprised of only Chinatown and Union Square, which was also affected by Central Subway construction. Otherwise, the choice of benchmark had little effect. The results that follow come only from benchmark (2).
- We also control for industry and time period, so the comparison between the construction zone and the benchmark reflects differences in the distribution of industries over time.

The Average Change in Sales Tax Revenue During Construction

Construction Zone	Estimated Average Change in Sales Tax Revenue During Construction	Margin of Error	Duration of Construction (months)
Third - A	-9%	±5%	49
Third - B	-		44
Third - C	-11%	±7%	41
Stockton	-		38
Third - D	-19%	±10%	30
West Portal	-12%	±6%	16
Castro	-13%	±6%	11
Balboa	-	-	8
Jefferson	-	-	6
Polk (2000)	-	-	6
Polk (2009)	-	-	6

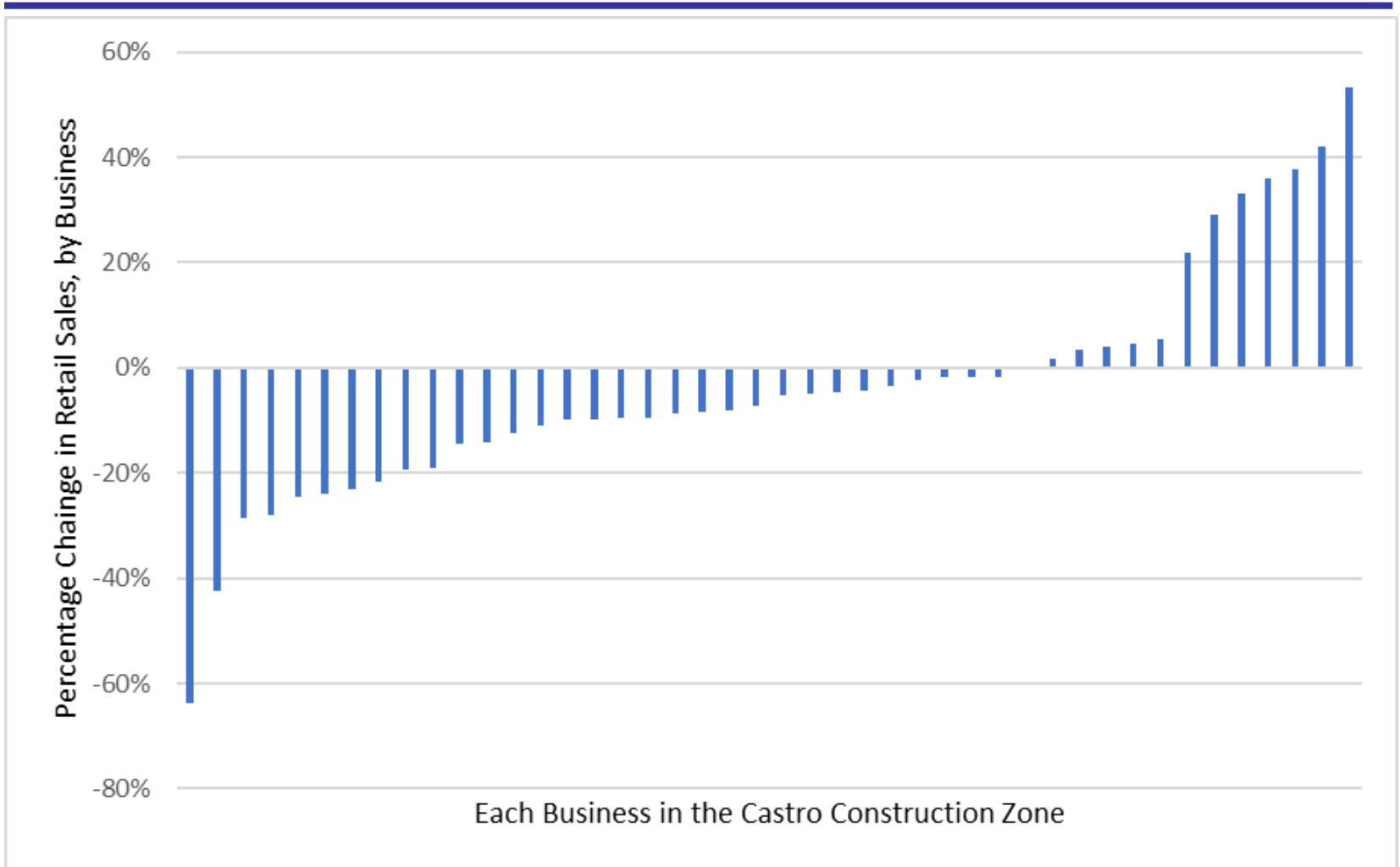
Note: Dashes indicate the estimated average change was not statistically significant.

The Experience of Individual Businesses Can Vary Widely

- The regression analysis estimates the average effect of construction, but the effect on individual businesses will vary.
- Some of the observed differences between businesses reflect differences in how they were impacted by construction. For example, a sewer line replacement on one side of the street could significantly affect retailers on that side while leaving retailers on the other side unaffected.
- Sales at businesses vary for many reasons unrelated to construction. An individual business could see sales increase because it received a good review in the newspaper, or fall because it shortened its hours of operation. The regression analysis sifts through these differences to isolate the average effect of construction.
- The following slide shows how taxable sales changed at each business in the Castro before and during construction, a construction zone that had a significant, negative estimated average effect.

Change in Taxable Sales for Castro Street Businesses

One Year Prior to Construction to the First Full Quarter of Construction



The Average Change in Sales Tax after Construction Relative to Pre-Construction Levels

- We also estimated how taxable sales changed in the years following construction relative to the pre-construction levels.
- We found that post-construction sales remained below their pre-construction levels for at least one year in three zones, Castro, Third-D, and Third-C. Five zones had increased sales in the years following construction.
- The observed changes in sales after construction may not be directly caused by completion of the project, especially in the later years after construction. Other factors unique to the geographic zone could affect sales in later years. For example, the opening of the T-Third line could be the cause of the increase in sales rather than the end of disruptions caused by construction.
- The following two slides show the estimated changes in sales tax in each construction zone for three years after construction ended.

The Average Change in Sales Tax after Construction Relative to Pre-Construction Levels

Construction Zone	One Year		Two Years		Three Years	
	Estimated Effect	Margin of Error	Estimated Effect	Margin of Error	Estimated Effect	Margin of Error
Balboa	11%	±9%	18%	±9%	14%	±9%
Castro	-15%	±6%	-15%	±4%		
Jefferson	-	-	-	-	-	-
Polk (2000)	-	-	7%	±5%	11%	±5%
Polk (2009)	10%	±6%	6%	±6%	11%	±7%
West Portal	-	-				

Note: Dashes indicate the estimated average change was not statistically significant. The later years for Castro and West Portal are not estimated because the end dates for construction are 2014 and 2016, respectively.

The Average Change in Sales Tax after Construction Relative to Pre-Construction Levels

Third Street Rail

Construction Zone	One Year		Two Years		Three Years	
	Estimated Effect	Margin of Error	Estimated Effect	Margin of Error	Estimated Effect	Margin of Error
Third - A	-	-	-	-	26%	±14
Third - B	-	-	-	-	11%	±10
Third - C	-13%	±10	-	-	-	-
Third - D	-35%	±11	-44%	±11	-44%	±11

The T-Third line began operating during the second year post-construction for zones A, B, and C, and the third year for zone D.

Central Subway Construction

- Central Subway construction on Stockton is unique in the analysis in that construction is still on-going.
- Moreover, construction started in 2014, and the extended length of time makes it more likely that there could be variations in the effect of construction over time.
- To test this, we estimated separate effects for each year of construction.
- We found that there was no significant decline in taxable sales for the first two years of construction. However, in the third year of construction (2016 Q3 to 2017 Q2) there was a statistically significant decline in taxable sales of 11.9%.

Business Closures During Construction

- While the sales tax regression analysis captures a decline in sales that may precede a business closure, it does not specifically account for business closures.
- The Treasurer-Tax Collector maintains a database of *all* business locations that pay taxes to the City, including those that are not retail-focused.
- Using this database, we calculated the rate at which business locations closed citywide in each quarter since 2014. We also calculated the business closure rates in the three construction zones active since 2014, Stockton, Castro, and West Portal.
- As shown on the following slide, it does not appear that business locations closed at a higher rate in the construction zones compared to the citywide rate. The observed differences quarter-by-quarter are not statistically significant.

Citywide Business Location Closure Rates Compared to Three Construction Zones

	Citywide	Stockton	Castro	West Portal
2014 - Q1	2.2%	0.0%	2.3%	2.2%
2014 - Q2	2.7%	2.3%	1.6%	1.9%
2014 - Q3	1.6%	1.1%	1.6%	1.4%
2014 - Q4	3.0%	2.9%	2.9%	3.5%
2015 - Q1	2.4%	5.7%	3.8%	1.4%
2015 - Q2	4.3%	4.7%	4.6%	2.8%
2015 - Q3	1.7%	0.6%	1.1%	0.9%
2015 - Q4	3.0%	3.5%	2.9%	3.5%
2016 - Q1	2.0%	1.1%	2.3%	0.9%
2016 - Q2	3.3%	2.8%	4.1%	2.1%
2016 - Q3	1.6%	1.1%	1.8%	1.2%
2016 - Q4	1.9%	0.5%	1.7%	1.6%
2017 - Q1	1.6%	0.0%	0.8%	0.9%
2017 - Q2	3.4%	2.1%	2.5%	1.6%

Shading indicates construction dates in each zone. Bolded numbers indicate when the rate of business closures in the zone exceeded the citywide rate.

Business Closures During Construction—Retail and Food Services

- Construction could be more likely to affect businesses that are focused on consumers. The business registration database includes basic information on the type of business. Although the reported information is incomplete, we used the available data to study closure rates for two consumer oriented sectors, retail and food services.
- The sample size is too small to do a quarter-by-quarter analysis with only these sectors. Our analysis here looked at closure rates across the entire time period of construction.
- Even in retail and food services, it does not appear that closure rates are higher during construction relative to citywide closure rates.

Construction Period	Retail Trade		Food Services	
	Citywide	Construction Zone	Citywide	Construction Zone
Stockton (4/14-6/17)	17.2%	11.8%	18.1%	10.0%
Castro (2/14 - 12/14)	3.6%	4.0%	3.0%	4.8%
West Portal (3/15 - 6/16)	8.1%	2.4%	8.6%	4.0%

Note: Closure rates cannot be compared between zones because construction duration varies. For example, closure rates are highest on Stockton because it covers more than three years.

Conclusions

- Our review shows that the effect construction has on local businesses varies by project. Five zones had reduced taxable sales during constructions while the other zones had no significant impact.
- Retailers were more likely to be negatively impacted in projects with longer durations, but these effects may vary over time depending on the intensity of construction.
- Likewise, the analysis suggested mixed results for retailers in the years after construction finished. Businesses in three zones had improved sales after construction relative to pre-construction levels, four zones had reduced sales, and the remaining four had no significant difference in sales.
- Closure rates during construction do not significantly differ from citywide closure rates over the same time period, even for the consumer oriented industries of retail and food services.

Report Authors

Ben Rosenfield, Controller, ben.rosenfield@sfgov.org

Michael Mitton, Analyst, Controller's Office, michael.mitton@sfgov.org