

An Empirical Test of Anti-Muslim Bias: Evidence from Property Values

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Abstract

We examine whether mosques depress home values in Michigan, which forms the basis for opposition to new mosques. We link administrative data on the universe of property transactions in Detroit and Hamtramck to the opening dates of new mosques. We then compare sales prices over time for properties closer to newly opened mosques to properties that are slightly farther away. Unlike related studies using data from other settings, our results show that new mosque openings do not significantly depress housing prices, implying weak evidence for religious discrimination, if it exists.

1 Introduction

The Muslim population in the US is growing at a fast pace. It is projected that Islam will overtake Judaism as the second-largest religion in the United States by 2040, in large part due to immigration from Muslim-majority countries (Pew Research Center, 2018). The growth of the Muslim population has been associated with a perceived rise in anti-Muslim sentiment. The American Civil Liberties Union (ACLU) has been tracking anti-mosque incidents since 2005. During the five-year period 2005-2009, anti-Mosque incidents averaged 6 per year. In the last five years, this has increased to 48 incidents per year. The animosity is most apparent in debates about the construction of new mosques.

Places of worship contribute to immigrants' adjustment to their new surroundings (Tsang, 2015). Mosques, like other churches, provide not only a place of worship, but also social networks through which Muslims can meet other people, and access assistance with employment, housing, schooling, and social services. Despite these benefits, opponents of mosques cite traffic, lack of parking, crime, and noise levels as reasons to block mosques being built in their neighborhood. In a hedonic pricing framework, these changes that mosque openings bring about will be captured in property prices. The net effect of new mosques on property prices will depend on the extent to which the benefits offset the projected costs.

The purpose of this study is to determine whether new mosque openings reduce housing prices, which would provide evidence in favor of religious discrimination against Muslims. We do so using administrative data on property transactions from 2002 to 2019 in Detroit and Hamtramck, in Michigan, linked to the opening dates of all places of worship in those two cities. The Detroit area, and Hamtramck in particular, experienced a sustained increase in their Muslim population, necessitating the construction of new mosques within existing neighborhoods.¹

¹Mostly Bangladeshis, Bosnians, and Yemenis. Hamtramck became the first Muslim-majority city in the US in 2013 (NPR, 2017).

To address concerns about the potential endogeneity in the placement and timing of new mosque construction, we exploit the granular nature of our data, which allows for a spatial difference-in-differences research design. In particular, because our data consist of the addresses of all property transactions, we are able to compare outcomes for areas very close to a new mosque, to areas that are only slightly farther away. We also make use of the time span of our data to show that outcomes trend similarly for these areas before the construction of new mosques. The identifying assumption is that the change in the housing prices of areas slightly farther away from new mosques provide a valid counterfactual for the change that would have been observed in the areas very close to the new mosques, had the new mosques not been built.

Our results provide evidence against the hypothesis that mosques negatively affect housing prices. In our baseline specification, we rule out negative effects greater than 2 percent for properties within walking distance (around 0.2 mile) from a new mosque. Using a wild cluster bootstrap, we are able to rule out even smaller negative effects. Our results are robust to accounting for property characteristics that may affect sales prices, and to restricting to repeated sales. Moreover, we see no divergence in housing prices before the construction of new mosques, supporting the validity of our empirical strategy.

Additional analysis shows that the null effect of new mosques on housing prices is mirrored by a similar null effect from new churches. This implies that the effects of new mosques are no different from the effects of churches. Taken together, our results suggest that there is little evidence that mosques, or churches, have negative effects on neighborhoods, as captured by housing prices.

It is important to note that we are unable to disentangle the offsetting effects of demand for housing near mosques by Muslims from existing residents wanting to move away from those areas. We interpret our null result to mean that if religious discrimination against Muslims exists, it is not strong enough to offset increased demand for properties near

mosques.

These findings contribute to an emerging literature that tests the effects of places of worship. Our paper is most closely related to a working paper by Brandt, Maennig, and Richter (2013). They find that places of worship in Hamburg, Germany cause an increase in housing prices, and that the effect of mosques is not different from that of other churches. We also contribute to an existing body of research that use hedonic pricing models to quantify the contribution of places of worship to housing values (e.g., Do, Wilbur, and Short, 1994, Carroll, Clauretje, and Jensen, 1996; Ottensmann, Bielefeld, and Payton, 2006).

More broadly, in addressing the effects of mosque openings, this paper speaks to the literature on the impact of undesirable facilities on housing prices. For example, Dröes and Koster (2016) examined the effects of wind turbines on housing prices and estimated a decrease of 1.4 percent in housing prices. Daams, Proietti, and Veneri (2019) studied the impact of asylum seekers' reception centers and found that the openings of these centers resulted in a drop of as much as 9.3 percent in house prices. Chirakijja (2018) studied the impact of prison openings and estimated that prisons decrease housing values by 2-4 percent. As our lower bound estimates allow us to rule out decreases larger than 2 percent in housing prices, it would seem that although some people may have concerns and prejudice against mosques, they are not nearly as large as those against prisons and asylum seekers' reception centers.

The rest of the paper proceeds as follows. Section 2 provides a background of the two cities we consider. Section 3 introduces the data and empirical strategy that we use, and Section 4 discusses our results. Section 5 concludes.

2 Muslims and Mosques in the US

2.1 Growth of the Muslim Population

Although Muslims still form only about 1% of the population, immigration from countries with significant Muslim populations makes Islam among the fastest growing religion in the US. Muslims tend to be more concentrated in some parts of the country. States such as New Jersey, New York, and Arkansas have a greater share of Muslims in the adult population than other states.² There is also variation within states, with metro areas like Detroit and its enclave Hamtramck having a significant share of Muslims among their adult populations.

In Figure 1, we plot the log number of anti-mosque incidents over the period 2005-2019 against the log number of mosques, as enumerated in 2001 and 2011. We observe a general upward trend in anti-mosque incidents, tracking the growth of the Muslim population as proxied for by the number of mosques.

The two cities we examine in this paper, Detroit and Hamtramck, are two of the most densely populated cities in Michigan. Detroit is the largest city in the state, while Hamtramck is essentially an enclave of Detroit. While still majority Christian, both cities have large Muslim populations. Hamtramck in particular, after decades of being comprised of mostly Catholic Polish immigrants, has a large Muslim population due to immigration from countries such as Bangladesh, Yemen, and Bosnia (Perkins, 2010). The Muslim population is ethnically diverse, with almost equal parts South Asian, Middle Eastern, and European. In 2013, Hamtramck became the first Muslim-majority city in the country. The combination of all these factors makes Detroit and Hamtramck uniquely suited to an examination of the effects of mosques on housing prices.

²<https://www.pewforum.org/religious-landscape-study/religious-tradition/muslim/>

2.2 Potential Effects of Mosques

Areas where Muslims are concentrated are associated with the provision of religion-specific services, such as mosques or Islamic centers. These places provide religious services, but also playgrounds, etc., a place for social gatherings among people who may have different ethnic backgrounds but a common religious identity. Similar to churches, mosques have several distinctive features that identify it as a Muslim place of worship. These include a spire and the use of speakers to broadcast the Adhan, or the call to prayer, several times a day.

The construction of mosques has proved to be a controversial issue. In Hamtramck, some residents have complained about the externality effects of mosques, especially the daily Adhan, which starts at sunrise and repeats several times until the evening (Bailey, 2015). The city of Hamtramck has allowed the broadcast since 2004. Some have also voiced fears over Islam becoming a state religion, as some Muslim immigrants come from countries where Islam is a state religion (Barro and McCleary, 2005).

Because mosques necessarily become a neighborhood feature, we focus on their effect on housing prices. There is established empirical literature that examines the extent to which neighborhood attributes are capitalized into housing prices. as with this literature, we rely on the framework introduced by Rosen (1974) and adapt it to study the effect of mosques.

3 Data and Empirical Strategy

3.1 Data

We rely on administrative data for our key variables. To determine the location, as well as the opening dates of the mosques and churches in Detroit and Hamtramck, we queried the Corporations Online Filing System on the Department of Licensing and Regulatory Affairs website.³ This gave us the universe of mosque and church openings during the time period 2002-2018. Table 1 summarizes the mosque and church openings that occur within the

³See <https://cofs.lara.state.mi.us/SearchApi/Search/Search>. We used the keywords masjid, mosque, Islamic Center, Muslim, Muslem, church, and synagogue.

time span of our data. We observe 10 mosque openings and 13 church openings between 2002 and 2018.

To measure this, we construct a variable based on property sales price. We restrict to arms length sales to focus our attention on “real” estate transactions, as opposed to intra-family exchanges or other token sales. The outcome data are summarized in Table 2, which summarizes data on all property sales, and Table 3, which summarizes data on repeat sales. The full data contain almost 12,000 property sales. Repeat sales are properties that were sold more than once during our study period. They comprise 73 percent of all property sales we observe. We use repeat sales to account for time invariant property-level characteristics. In our primary specification, we only include properties that sold within a 0.4 mile radius of a new mosque opening. The mean sales price is under \$60,000, and most properties within the study zone are residential. Our primary sub-sample thus contains around 8,500 sales.

3.2 Empirical Strategy

We base our empirical strategy on the standard hedonic pricing approach developed by Rosen (1974), and applied in the empirical literature in studies such as Pope and Pope (2015), McMillen (2004), Zabel (2008) among many others. We modify the standard model by incorporating a spatial difference-in-differences design, exploiting the plausibly exogenous location of the new mosques, shown in Figure 2. The modified hedonic model is of the form :

$$\log(P_{it}) = \alpha_t + \gamma\mathbf{X} + \beta \cdot \text{post mosque opening} \times \text{treated zone}_{it} + \epsilon_{it} \quad (1)$$

where $\log(P_{iq})$ is the log of the sales price of property i in zone z that sold in quarter q in year y , α_t represents year-month fixed effects, which captures period specific shocks common to all properties, and \mathbf{X} is a set of controls for property-level characteristics. $\text{post mosque opening} \times \text{treated zone}_{it}$ is a binary variable indicating that property i is in the treated zone, i.e. located within 0.2 miles of a new mosque, and that the transaction in

year-month t occurred after the associate mosque’s opening. Figure 2 illustrates this treatment assignment for a particular mosque neighborhood. The neighborhood is defined to be twice the distance, in this case, 0.4 mile around the new mosque. The coefficient of interest here is β , which measures the effect of mosque openings on property prices.

Ideally, Equation 1 would include a rich set of controls for property-level characteristics. Due to data limitations, the set of property characteristics we observe may not capture all the important differences between properties that drive sales prices.⁴ Our main estimating equation is instead based on having panel data on property sales of properties that were sold more than one time between 2002 and 2018. Formally, we estimate the effects of mosque opening using the following model:

$$\log(P_{it}) = \alpha_i + \alpha_t + \beta \cdot \text{post mosque opening} \times \text{treated zone}_{it} + \epsilon_{it} \quad (2)$$

where α_i represents property fixed effects, which captures time-invariant property-level characteristics that contribute to the sales price. As in Equation 1, t is year-month fixed effects. $\text{post mosque opening} \times \text{treated zone}_{it}$ is a binary variable indicating that property i is in the treated zone and that the transaction in year-month t occurred after the associate mosque’s opening. The coefficient of interest is still β , which measures the effect of mosque openings on property prices, accounting for the time-invariant property-level characteristics.

The inclusion of property fixed effects helps us account for differences we cannot observe in the data, such as the number of bedrooms and bathrooms, the general condition of the house, among others. The identifying assumption is that the change in the sales price experienced by the properties slightly farther away from the new mosque provides a valid counterfactual for the change in sales prices that the treated properties would have experienced had the new mosque not opened. Because properties within neighborhoods

⁴In the Appendix, we show that our results are similar when we instead use the full sample of property sales and include controls for property characteristics that we do observe, in lieu of property fixed effects.

surrounding a newly opened mosque may be exposed to general neighborhood shocks in a year, we also allow for a neighborhood-year fixed effect. This allows neighborhoods to follow different trajectories from each other over time. Robust standard errors are clustered at the level of the neighborhood surrounding the newly opened mosque. We also use a wild cluster bootstrap to account for the possibility that we may have too few treated clusters.

To assess the validity of our identifying assumption, as well as to visualize the dynamics of the response of house prices, we also estimate a dynamic version of Equation 2:

$$\log(P_{it}) = \sum_l \delta_l \cdot I[t - mosque\ opening\ date_i = l] \times treated\ zone_i + \alpha_i + \alpha_t + \varepsilon_{it} \quad (3)$$

where t is the sale date of property i . $mosque\ opening\ date_i$ is the opening date of property i 's associated new mosque. l signifies the lead or lag quarter, of property's i transaction date relative to the associated mosque's opening date. $treated\ zone_i$ again indicates whether property i is in the treated zone. α_i is property fixed effects and α_t is year-month fixed effects. Here, Equation 3 estimates the dynamic effects (δ_l) at each point in time of mosque openings on property prices. The validity of the research design would be supported by estimating null effects for the leading terms.

4 Results

4.1 The Effect of Mosque Openings vs Church Openings

First, we examine the validity of the parallel trends assumption required for a difference-in-differences method. To do so, we estimate a dynamic difference-in-differences model as shown in Equation 3. Figure 3 shows the dynamic difference-in-differences estimates when the treated properties are defined to be those within 0.2 mile distance from the newly opened mosque. The comparison properties are those that are twice the distance away. The cutoff was chosen to approximate a mosque being walking distance to a

property.⁵ Figure 3 shows that there is little evidence of divergence in property prices before a new mosque opens in the neighborhood, providing some evidence in favor of our identifying assumption. Moreover, there does not appear to be a significant effect of new mosques on property prices.

This is borne out by the estimates presented in Table 4, which reports the average treatment effects of new mosque openings. Specifically, each column presents the estimate of the coefficient on our variable of interest, $post\ mosque\ opening \times treated\ zone_{it}$, from the model in Equation 2. Across specifications, there appears to be no significant negative effect of mosque openings, in contrast to what detractors of mosques suggest. Columns 1 and 3 report the estimates from the preferred specification, i.e. exactly Equation 2, for all property sales and only residential sales, respectively. Both estimates indicate an insignificant increase of approximately 6 percent in property prices. Importantly, the lower bound estimates here allow us to rule out negative effects larger than 2 percent, while our 95% confidence interval based on a wild cluster bootstrap rules out any meaningful negative effects. Columns 2 and 4 report the estimates from the specification that also allows for neighborhood-year specific shocks by including neighborhood-year fixed effects. Accounting for these shocks does not significantly change the estimates.

Although our results show insignificant effects of mosque openings on property prices, we cannot simply conclude that this is evidence of no religious discrimination, especially if church openings result in significant increases in property prices. We assess the possibility that church openings may affect property prices differently from mosque openings by estimating the impact of church opening on property prices. The estimated effects of church openings are reported in Table 5 and are similar, though less precise, to the estimates of mosque opening in Table 4. The similarity in magnitude of these estimates is more easily seen in Figure 4, which graphs the estimated coefficient for our variables of interest, $post\ mosque\ opening \times$

⁵Figure A.1 shows the dynamic difference-in-differences estimates for alternative definitions of the treated zone: 0.15 mile, 0.25 mile, and 0.30 mile distance from the newly opened mosque.

$treated\ zone_{it}$ and $post\ church\ opening \times treated\ zone_{it}$, across different possible definitions of the treated and comparison zones.

4.2 Robustness Checks

As our main estimates rely on a definition of the treated zone of properties being within 0.2 mile of a new mosque, we examine the sensitivity of our estimates to changing this cutoff. We start by defining the treated zone as being within 0.15 mile, and then increasing by 0.05 mile increments until 0.3 mile. With each definition of the treated zone, we define the comparison zone as being twice the distance to the mosque (i.e., comparison zone for the 0.15 mile definition is greater than 0.15 mile but less than or equal to 0.30 mile to the new mosque). We also do this exercise for church openings. The results are presented in Tables 6 and 7.

Specifically, Tables 6 and 7 report the effects of mosque and church openings, i.e. the coefficient of variables $post\ mosque\ opening \times treated\ zone_{it}$ and $post\ church\ opening \times treated\ zone_{it}$, respectively, for different constructed treated zones. Columns 3 and 4 in Tables 6 and 7 reproduce Columns 1 and 3 from Tables 4 and 5, respectively, with the treated zone defined as being 0.2 mile from the new mosque or church. The other columns present the estimates for differently constructed treated zones. The estimated coefficients are not significantly different from our main estimate, indicating that our results are not sensitive to arbitrarily small changes in how we define the properties treated by the new mosque or church.

In the Appendix, we also estimate Equation 1 directly, using data on all property sales, instead of just properties that sold multiple times. Instead of property fixed effects, we control for all property characteristics that we can observe in the data. We use two sets of property characteristics, grouped by data availability, since data on some property characteristics is sometimes available only for a subset of property sales. Our estimates are qualitatively similar.

5 Conclusion

We combine a spatial difference-in-differences framework with a standard hedonic price model to determine the impact of new mosques on property values. Using panel data, and in alternative specifications a set of property-level controls, finding a negative effect on property values would have indicated that new mosques cause property values to fall as a result of religious discrimination.

Given the rhetoric surrounding new mosque openings, one would expect that they would bring such disamenities as to significantly reduce property values. However, the results presented in this paper provide little evidence of this. Using a spatial difference-in-differences research design on property sales data from Detroit and Hamtramck, we are able to rule out negative effects larger than 2 percent. These results are robust to differently constructed treated zones and allowing for neighborhoods to follow different trajectories over time.

Taken together, our findings of the effects of mosque and church openings suggest that even if existing residents choose to move away from the neighborhood as a result of a new mosque opening, it appears that this response is not strong enough to offset demand for these properties. While our estimates rule out reductions in housing prices of greater than two percent, Daams, Proietti, and Veneri (2019) and Chirakijja (2018) estimated much larger negative effects of asylum seekers reception center and prisons, respectively. We interpret this to mean that mosques do not appear to have the same negative impact on housing prices that the literature on the impact of undesirable facilities, such as prisons or asylum seekers' reception centers, finds.

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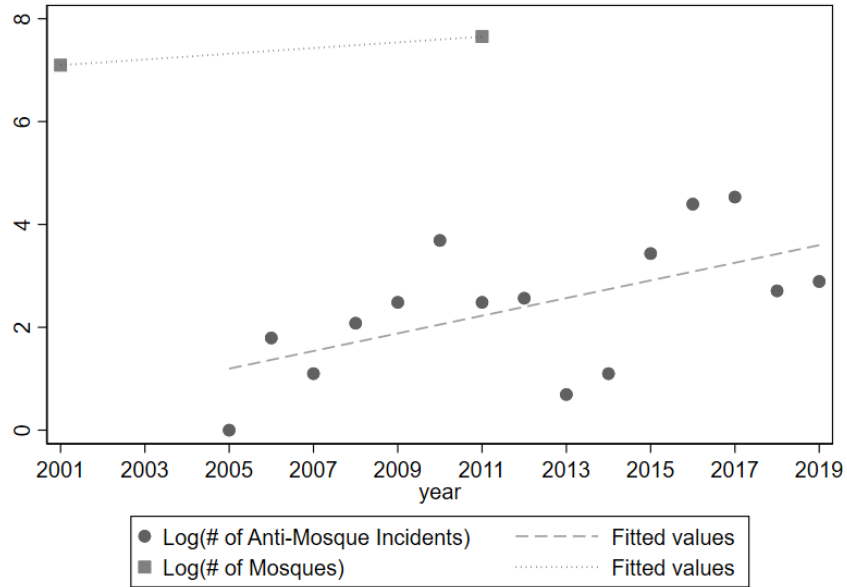
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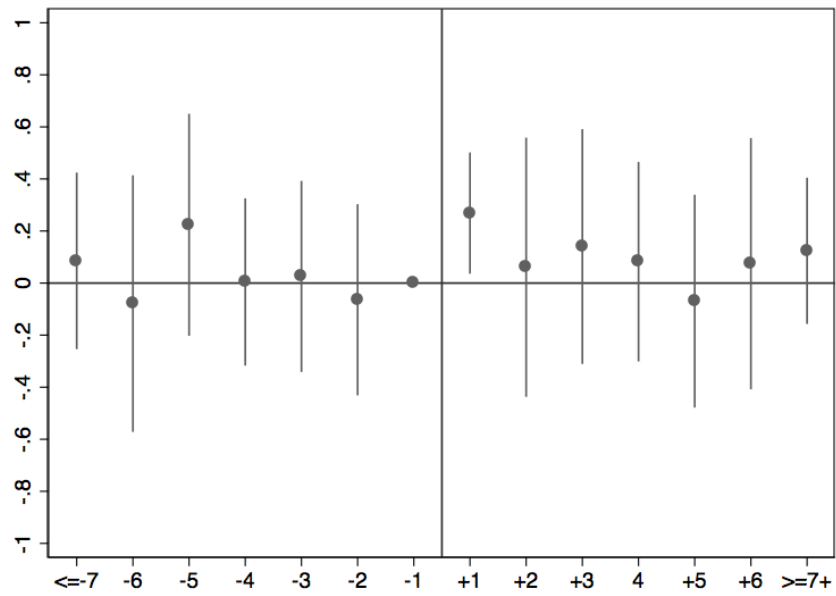
Figures

Figure 1: Number of Anti-Mosque Incidents



Notes: The figure plots both the log number of mosques as reported in the 2001 and 2011 US Mosque Surveys, and the log count of anti-mosque incidents by year, compiled by the ACLU for 2005-2019.

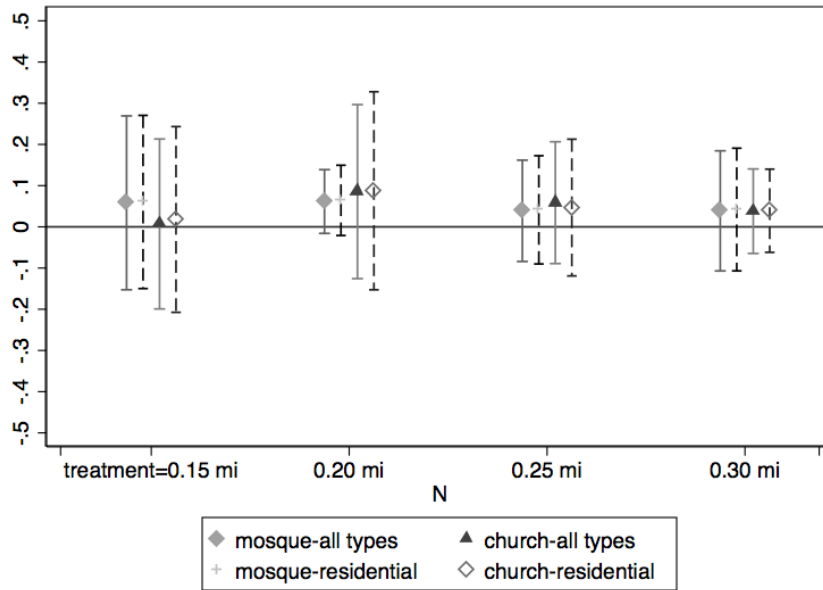
Figure 3: Estimated Divergence in Property Values After a Mosque Opening



Treated Radius = 0.20 mile

Notes: This figure plots estimates of δ_l from Equation 3. Treated Radius = 0.20 mile

Figure 4: Estimated Effect of Mosque and Church Openings, by Definition of Treated Radius and Type of Property



Notes: This figure shows different estimates of β from Equation 2, with different treated radii and by type of property.

Tables

Table 1: Mosque and Church Openings between 2002-2018

Mosque		Church	
Year	Openings	Year	Openings
2003	2	2002	1
2004	1	2003	2
2005	1	2004	2
2006	1	2005	2
2008	1	2006	1
2010	1	2007	1
2011	1	2008	1
2012	1	2011	1
2016	1	2013	1
		2014	1
Total	10	Total	13

Notes: The table shows the number of mosque and church openings each year during the study period.

Table 2: Property Sales Data

	All		Controls		Treated	
	mean	sd	mean	sd	mean	sd
sale price	58660.09	(206872.89)	51550.32	(149947.56)	68855.76	(267878.54)
residential	0.97	(0.18)	0.97	(0.17)	0.96	(0.19)
acreage	0.13	(1.01)	0.10	(0.64)	0.18	(1.38)
front	32.00	(45.80)	29.79	(29.24)	35.18	(62.15)
depth	90.99	(52.86)	89.80	(47.86)	92.70	(59.26)
floor area	1563.25	(5192.65)	1527.27	(2853.93)	1614.97	(7350.03)
Observations	11771		6935		4836	

Notes: Summary statistics of properties within the 0.4 mile radius. Treated properties are those within the treatment radius which is 0.2 miles, while the comparison properties are between 0.2 and 0.4 mile from the mosque (or church).

Table 3: Property Sales Data, Repeated Sales Only

	All		Controls		Treated	
	mean	sd	mean	sd	mean	sd
sale price	60278.95	(238829.22)	52325.91	(171705.99)	71716.25	(310590.37)
residential	0.98	(0.14)	0.98	(0.14)	0.98	(0.14)
acreage	0.13	(1.12)	0.10	(0.74)	0.19	(1.50)
front	31.33	(43.95)	29.35	(29.77)	34.19	(58.50)
depth	90.00	(51.43)	89.04	(47.22)	91.39	(56.91)
floor area	1549.24	(5624.59)	1510.11	(2470.09)	1605.34	(8262.06)
Observations	8548		5042		3506	

Notes: Summary statistics of properties within the 0.4 mile radius that were sold at least twice. Treated properties are those within the treatment radius which is 0.2 miles, while the comparison properties are between 0.2 and 0.4 mile from the mosque (or church).

Table 4: Effects of Mosque Openings on Property Prices

	(1) All	(2) All	(3) Residential	(4) Residential
<i>post mosque opening</i> × <i>treated zone</i>	0.0614 (0.0395)	0.0164 (0.0438)	0.0642 (0.0435)	0.00675 (0.0460)
95% Confidence Interval	[-0.0196,0.142]	[-0.0735,0.106]	[-0.0250,0.153]	[-0.0877,0.101]
Bootstrap 95% Confidence Interval	[-.0009684, .1393]	[-.06314, .08397]	[-.0073, .1454]	[-.08011, .07837]
Year-month fixed effects		Yes	Yes	Yes
Property fixed effects		Yes	Yes	Yes
Area-year fixed effects		Yes		Yes
N	8548	8548	8379	8379

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.010

Notes: Each column reports the estimated effect of mosque openings, using different specifications of Equation 2. The treatment radius is set at 0.2 miles and the sample radius is set at 0.4 miles.

Table 5: Effects of Church Openings on Property Prices

	(1) All	(2) All	(3) Residential	(4) Residential
<i>post church opening</i> × <i>treated zone</i>	0.0855 (0.108)	-0.0265 (0.0692)	0.0875 (0.123)	-0.0167 (0.0887)
95% Confidence Interval	[-0.149,0.320]	[-0.177,0.124]	[-0.180,0.355]	[-0.210,0.177]
Bootstrap 95% Confidence Interval	[-.1155, .3596]	[-.1242, .1522]	[-.1317, .389]	[-.1547, .2143]
Year-month fixed effects	Yes	Yes	Yes	Yes
Property fixed effects	Yes	Yes	Yes	Yes
Area-year fixed effects		Yes		Yes
N	7969	7969	7431	7431

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.010

Notes: Each column reports the estimated effect of church openings, using different specifications of Equation 2. The treatment radius is set at 0.2 miles and the sample radius is set at 0.4 miles.

Table 6: Effects of mosque openings on property prices by treatment radius (repeated sales)

	treated radius=0.15 miles		0.20 miles		0.25 miles		0.30 miles	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	all properties	residential properties	all properties	residential properties	all properties	residential properties	all properties	residential properties
treated x post	0.0583 (0.108)	0.0604 (0.107)	0.0614 (0.0395)	0.0642 (0.0435)	0.0388 (0.0627)	0.0412 (0.0670)	0.0388 (0.0744)	0.0420 (0.0760)
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6373	6257	8548	8379	10543	10284	11879	11537

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.010

Table 7: Effects of church openings on property prices by treatment radius (repeated sales)

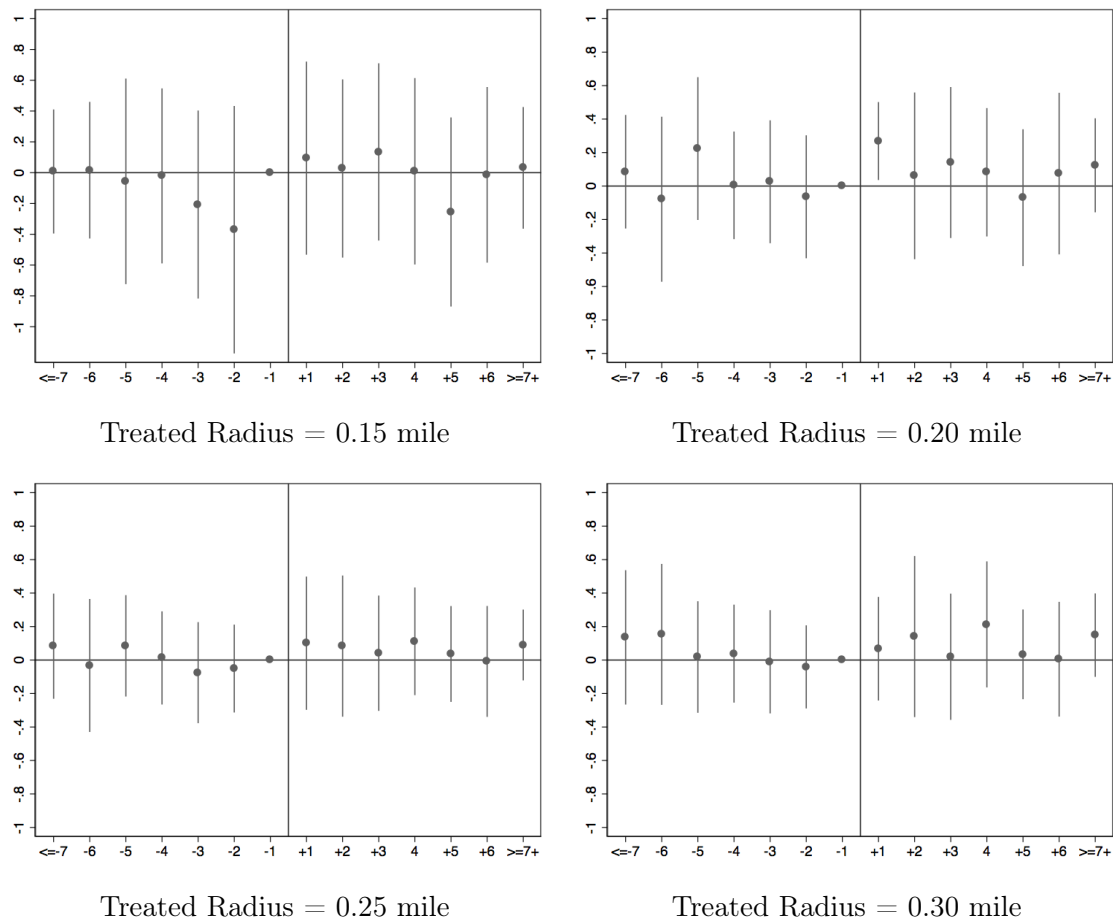
	treated radius=0.15 miles		0.20 miles		0.25 miles		0.30 miles	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	all properties	residential properties	all properties	residential properties	all properties	residential properties	all properties	residential properties
treated x post	0.00697 (0.105)	0.0179 (0.115)	0.0855 (0.108)	0.0875 (0.123)	0.0587 (0.0754)	0.0468 (0.0847)	0.0380 (0.0523)	0.0391 (0.0515)
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4563	4238	7969	7431	12397	11582	18062	16909

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.010

Appendix

Figure A.1: Estimated Divergence in Property Values After a Mosque Opening



Notes: This figure plots estimates of δ_l from Equation 3.

Table A.1: Effects of Mosque Openings on Property Prices by Specification (All property types)

	treated radius=0.15 miles			0.20 miles			0.25 miles			0.30 miles		
	(1) repeated sales	(2) all sales	(3) all sales	(4) repeated sales	(5) all sales	(6) all sales	(7) repeated sales	(8) all sales	(9) all sales	(10) repeated sales	(11) all sales	(12) all sales
treated x post	0.0583 (0.108)	0.159* (0.0921)	0.0637 (0.0711)	0.0614 (0.0395)	0.103* (0.0546)	0.0547 (0.0373)	0.0388 (0.0627)	0.00118 (0.0386)	0.00101 (0.0324)	0.0388 (0.0744)	-0.0131 (0.0375)	-0.0292 (0.0345)
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property fixed effects	Yes			Yes			Yes			Yes		
Controls 1		Yes			Yes			Yes			Yes	
Controls 2			Yes			Yes			Yes			Yes
N	6373	8788	5558	8548	11771	7432	10543	14560	9271	11879	16552	10736

Standard errors in parentheses

Notes: Control 1 each property's include acreage, front, depth, and associated mosque. Control 2 include floor area and year built in addition to the characteristics included in Control 1.

* p<0.10, ** p<0.05, *** p<0.010

Table A.2: Effects of Mosque Openings on Property Prices by Specification (Residential Properties)

	treated radius=0.15 miles			0.20 miles			0.25 miles			0.30 miles		
	(1) repeated sales	(2) all sales	(3) all sales	(4) repeated sales	(5) all sales	(6) all sales	(7) repeated sales	(8) all sales	(9) all sales	(10) repeated sales	(11) all sales	(12) all sales
treated x post	0.0604 (0.107)	0.155 (0.0968)	0.0531 (0.0716)	0.0642 (0.0435)	0.0903 (0.0539)	0.0491 (0.0359)	0.0412 (0.0670)	0.0105 (0.0362)	0.0152 (0.0340)	0.0420 (0.0760)	-0.00365 (0.0328)	-0.00362 (0.0353)
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property fixed effects	Yes			Yes			Yes			Yes		
Controls 1		Yes			Yes			Yes			Yes	
Controls 2			Yes			Yes			Yes			Yes
N	6257	8507	5406	8379	11382	7202	10284	14012	8948	11537	15826	10302

Standard errors in parentheses

Notes: Control 1 each property's include acreage, front, depth, and associated mosque. Control 2 include floor area and year built in addition to the characteristics included in Control 1.

* p<0.10, ** p<0.05, *** p<0.010

Table A.3: Effects of Church Openings on Property Prices by Specification (All property types)

	treated radius=0.15 miles			0.20 miles			0.25 miles			0.30 miles		
	(1) repeated sales	(2) all sales	(3) all sales	(4) repeated sales	(5) all sales	(6) all sales	(7) repeated sales	(8) all sales	(9) all sales	(10) repeated sales	(11) all sales	(12) all sales
treated x post	0.00697 (0.105)	0.00729 (0.0305)	-0.00437 (0.0204)	0.0855 (0.108)	0.0553* (0.0273)	0.0318* (0.0161)	0.0587 (0.0754)	0.0275 (0.0354)	0.00477 (0.0309)	0.0380 (0.0523)	0.0267 (0.0345)	0.0149 (0.0271)
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property fixed effects	Yes			Yes			Yes			Yes		
Controls 1		Yes			Yes			Yes			Yes	
Controls 2			Yes			Yes			Yes			Yes
N	4563	7030	5375	7969	12086	9358	12397	18463	14430	18062	26509	21033

Standard errors in parentheses

Notes: Control 1 each property's include acreage, front, depth, and associated mosque. Control 2 include floor area and year built in addition to the characteristics included in Control 1.

* p<0.10, ** p<0.05, *** p<0.010

Table A.4: Effects of Church Openings on Property Prices by Specification (Residential Properties)

	treated radius=0.15 miles			0.20 miles			0.25 miles			0.30 miles		
	(1) repeated sales	(2) all sales	(3) all sales	(4) repeated sales	(5) all sales	(6) all sales	(7) repeated sales	(8) all sales	(9) all sales	(10) repeated sales	(11) all sales	(12) all sales
treated x post	0.0179 (0.115)	0.00173 (0.0382)	0.00247 (0.0350)	0.0875 (0.123)	0.0358 (0.0280)	0.0280 (0.0165)	0.0468 (0.0847)	0.0203 (0.0302)	0.000642 (0.0222)	0.0391 (0.0515)	0.0142 (0.0270)	0.00411 (0.0217)
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property fixed effects	Yes			Yes			Yes			Yes		
Controls 1		Yes			Yes			Yes			Yes	
Controls 2			Yes			Yes			Yes			Yes
N	4238	6210	4897	7431	10807	8585	11582	16659	13339	16909	24060	19514

Standard errors in parentheses

Notes: Control 1 each property's include acreage, front, depth, and associated mosque. Control 2 include floor area and year built in addition to the characteristics included in Control 1.

* p<0.10, ** p<0.05, *** p<0.010