

University of California, Berkeley

## Evictions and Buyouts in San Francisco:

An In-Depth Analysis of the Relationship Between Buyouts and No-Fault Evictions

Daniel Campbell

City Planning 101

Professor Karen Chapple

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## I. Abstract

This paper analyzes evictions and buyouts in San Francisco, with a particular emphasis on no-fault evictions. Specifically, we explore two questions relating to evictions and buyouts. First, is there any evidence that landlords have attempted both an eviction and a buyout on the same unit? If so, what are we able to conclude about the nature and results of those attempts? Second, what can we conclude about the neighborhoods that see the highest frequency of evictions and buyouts? Are there specific features in common between these neighborhoods, and are landlords more likely to offer a buyout rather than pursuing an eviction in certain areas? These questions help us understand the nature of tenant displacement in San Francisco.

Utilizing open data from DataSF's San Francisco Open Data portal, we find significant evidence to show that eviction notices and buyout declarations occurring on the same block cannot be explained by chance, and there are likely to be hundreds of instances since 2016 where a landlord pursued both a buyout and an eviction. In these instances, the buyout declaration typically occurs first, and most of the time, an agreement is not reached. The eviction notice commonly lists a no-fault eviction reason such as owner move-in or Ellis Act withdrawal. From this, we can conclude that there have been many instances where a landlord resorted to using a no-fault eviction to vacate a unit after failing to secure a buyout. However, there are likely to be other reasons for a landlord to file both a buyout declaration and an eviction notice.

There are significant differences between the neighborhoods with the highest frequency of evictions and those with the highest frequency of buyouts. Evictions are more likely to occur in areas with a lower mean household income and a higher poverty and unemployment rate, while buyouts are more likely to occur in neighborhoods with high property values and rent prices. Neighborhoods with a high frequency of no-fault evictions closely resemble those with a high frequency of buyouts, indicating that landlords may have similar motives to pursue a buyout or no-fault eviction. In particular, high property values and high rental prices might incentivize landlords to vacate the unit in order to resell it or reset its rent control restrictions.

## II. Background

San Francisco has a long history of evictions. This has shaped the discussion of gentrification in the city, as displacement is often characterized by tenants being forced out by their landlords rather than choosing to move away. Currently, there is a moratorium on evictions during the COVID-19 crisis, which will last through at least July 22nd.<sup>1</sup> Tenants have also been given additional time to pay rent that was missed due to the crisis. Despite this moratorium, there is concern that evictions will soar after the health crisis ends, as many people will still be suffering from a loss of income and economic uncertainty.<sup>2</sup>

Some evictions are classified as “no-fault evictions,” meaning that the tenant is forced out through no fault of their own. The most common no-fault causes for eviction are owner move-in, Ellis Act withdrawal, capital improvement, and demolition. Other reasons for no-fault evictions are condo conversion, substantial rehabilitation of a building, lead abatement, and the end of Good Samaritan Occupancy Status, though these four eviction types are quite uncommon. Since eviction data became public in 1997, about 42.5% of all eviction notices filed in San Francisco have been due to one of these no-fault reasons, accounting for over 17,000 notices in total.

No-fault evictions come with certain restrictions for landlords and usually require the landlords to pay relocation payments to the evicted tenants. In some cases, the tenant also has a right to move back into the unit once it is relisted for rent, such as after capital improvement work is done.

For owner move-in evictions, an owner or relative of the owner “must move into the unit within three months and occupy the unit as that person’s principal residence for at least 36 continuous months.”<sup>3</sup> The landlord is also not allowed to use this eviction type to vacate a unit if they have a comparable unit that is vacant at the same time. There are other restrictions limiting the use of owner move-in evictions on elderly and disabled tenants, as well as tenants with minor children. The Rent Board checks a random sample of 10% of owner move-in eviction notices to ensure that the landlord is acting in good faith. Tenants are entitled to relocation payments of

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<sup>1</sup> City and County of San Francisco: About the residential eviction moratoriums due to COVID-19

<sup>2</sup> Curbed San Francisco: The next COVID-19 crisis: The coming tidal wave of evictions

<sup>3</sup> San Francisco Rent Board: Fact Sheet 4 - Eviction Issues

\$7,225 per tenant, plus extra for each elderly, disabled, or minor tenant, up to \$21,674 per unit. These same relocation payment amounts apply to demolition, capital improvement, and substantial rehabilitation evictions as well.

The Ellis Act “was enacted by the California legislature in 1986 to require municipalities to allow property owners to go out of the residential rental housing business.”<sup>1</sup> Landlords who evict tenants using an Ellis Act Withdrawal give up all vacancy control for 5 years, so they can no longer rent out any properties during this time. Tenants evicted through the Ellis Act are entitled to slightly higher payments than for other no-fault evictions.

Buyouts are agreements in which landlords pay tenants a certain amount in order to persuade them to vacate the unit. These agreements have only been tracked since March 2015, when a new ordinance was put in place requiring landlords to file them to the Rent Board.<sup>4</sup> Therefore, public data regarding buyout agreements in San Francisco are only available since this time, while the public data on evictions go back to 1997. Some landlords would prefer to use a buyout to vacate a unit rather than an eviction, even if the agreement amount is more than the eviction relocation payments would be, because this allows them to escape the restrictions that come with evicting tenants.

Rent control regulations in San Francisco state that rent amounts for continuing tenants can only increase by a certain percentage each year, which is usually set to around 2%. When renting out a vacant unit to a new tenant, however, there is no restriction on the maximum rent amount.<sup>5</sup> Thus, landlords might benefit from vacating units occupied by long-time tenants who are paying below-market-rate rents due to rent control. By vacating the unit through a buyout, the landlord is then able to re-list the unit for rent immediately, which is generally not true for a no-fault eviction. Landlords could also use a buyout to begin converting a rental unit to a condominium, though buyout agreements with certain tenants might not allow for condo conversions.

The San Francisco Tenants Union claims that “most tenants don’t understand their rights to stay and when the buyout is coupled with threats to evict, tenants are often intimidated into

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<sup>4</sup> San Francisco Rent Board: New Ordinance Amendment Regulating Buyout Agreements

<sup>5</sup> San Francisco Rent Board: Topic No. 051: This Year’s Annual Allowable Increase

taking the buyout.”<sup>6</sup> They also argue that “buyouts are antithetical to the mission of the San Francisco Tenants Union because buyouts decrease the supply of affordable housing, increase the wealth of already wealthy landlords and destroy the diversity of our community.”

In this paper, I analyze the relationship between buyouts agreements and eviction notices to look for evidence that some landlords use both buyouts and the threat of eviction to vacate their units. I also analyze the demographic and financial similarities of communities that are disproportionately subject to evictions and attempted buyouts.

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<sup>6</sup> San Francisco Tenants Union: Buyouts

### III. Data Acquisition and Cleaning

The data regarding eviction notices and buyouts were sourced from DataSF's Open Data portal. The Eviction Notices dataset includes the file date and reason listed for an eviction notice, as well as the block address of the unit. The full address of the unit is not listed. These notices only indicate that an eviction notice was filed with the San Francisco Rent Board, and do not necessarily represent actual evictions, since some may have been filed but never completed.

Buyout information is only available since March 2015. The DataSF buyout dataset includes all intended buyouts, including those where no agreement was reached. All attempted buyouts have a Pre Buyout Disclosure Declaration Date, but only completed buyouts have a Buyout Agreement Date and Buyout Amount listed. From this, we can tell whether a landlord seeking a buyout was able to reach an agreement with their tenant. Only about 34% of buyout declarations in the dataset resulted in an agreement. The median buyout amount was \$30,624, while the mean was \$43,747. The maximum buyout amount was \$325,000. In most completed buyouts, the tenant receives a larger payment than the maximum they could receive through relocation payments after a no-fault eviction.

In order to utilize these datasets, I had to perform a fair level of data cleaning and processing. I used string manipulation to extract the longitude and latitude information from the location, which was formatted as point information inside of a string. The date had to be converted to a datetime object. For evictions, each possible reason for eviction was listed as a column, and each eviction notice would have one of these columns with a "True" entry. I decoded this into a single "reason" column to be able to easily tell which reason was provided for a given eviction notice. This allows us to analyze and map the evictions data much more effectively. For buyouts, I added a "Completed" column to indicate whether a buyout was actually completed or not, which can be inferred from the other information in the dataset.

Since I wanted to be able to match up evictions and buyouts, I extracted the block number and street name from the buyout address. Then I merged the two datasets on the street and block to compile a list of all instances where an eviction notice and a buyout declaration occurred on the same block. Since buyout information is only available since March 2015, I

restricted this merged dataset to only include entries where both the eviction file date and the buyout declaration date fall on or after January 1, 2016. Further analysis of the time difference between the eviction notice and the buyout declaration was required to determine a relationship, as I will describe in the next section.

To analyze the neighborhoods that see a higher concentration of evictions and buyouts, I compiled data from the Census Bureau's American Community Survey. In particular, I took data from the following tables: S1902 (Mean Income in the Past 12 Months), S2301 (Employment Status), B25077 (Median Value), DP04 (Selected Housing Characteristics), and S1501 (Educational Attainment). I downloaded this information at a census tract level. The eviction and buyout datasets include neighborhood identifiers, so I had to map these census tracts to neighborhoods. In the DataSF Open Data Portal, there is a dataset that describes which census tracts are included in each neighborhood. Some smaller neighborhoods contain only one census tract, while the largest neighborhoods, the Sunset and Mission Districts, contain 14 and 13 census tracts, respectively.

Since the data needed to be aggregated across neighborhoods, I collected numeric data rather than rates or percentages. This also meant that I could not compare median values between neighborhoods. Where possible, I took the mean for certain statistics, but in some cases, only the median value was available. In these instances, I found the weighted average median value across the different census tracts. For example, to find the average median home value, I weighted the different median home values for each census tract by the number of owner-occupied housing units.

I collected most of my census data from the 2014-2018 American Community Survey, which provides a 5-year rolling average for the different census tracts in San Francisco. I also collected some information from the 2009-2013 American Community Survey to calculate the change in some statistics over this 5-year period. For example, I included the change in mean household income, average median home value, and average median rent. I believe that including some information on the nature of neighborhood change could provide context.



## IV. Analyzing the Relationship Between Evictions and Buyouts

As mentioned in Section III, I compiled a list of all instances where eviction notices and buyout declarations occurred on the same block since 2016. This list certainly does not provide any guarantees that the buyout and eviction instances on those blocks are connected. Since we do not have the exact address for evictions, it is impossible to know for sure that these occurred at the same address on the block. Therefore, in order to establish any sort of connection between eviction notices and buyout declarations, it is necessary to analyze the difference in time between the eviction notice file date and the buyout declaration date.

To remove duplicates, I only included one instance of an eviction-buyout pair for each unique buyout address. If we wanted to find the pairs that were most likely connected, we would take the pairs with the shortest time difference between the events. However, this would introduce bias into the sample since we are concerned about the randomness of the time difference. Instead, I randomized the order of the dataset and then took the first row that shows up in the dataset for each unique buyout address.

The dates of eviction notices and buyout declarations are roughly uniformly distributed since 2016, so if they are occurring on the same block simply due to random chance, we would expect the distribution of time differences between the pairs to roughly resemble a triangular distribution centered around a mean of zero. To test this hypothesis, I took two separate bootstrap samples of the eviction file dates and of the buyout declaration dates, and merged these into a single dataframe. Then I created a distribution plot of the time difference between these bootstrapped pairs, as well as the time difference between the pairs in our actual dataset.

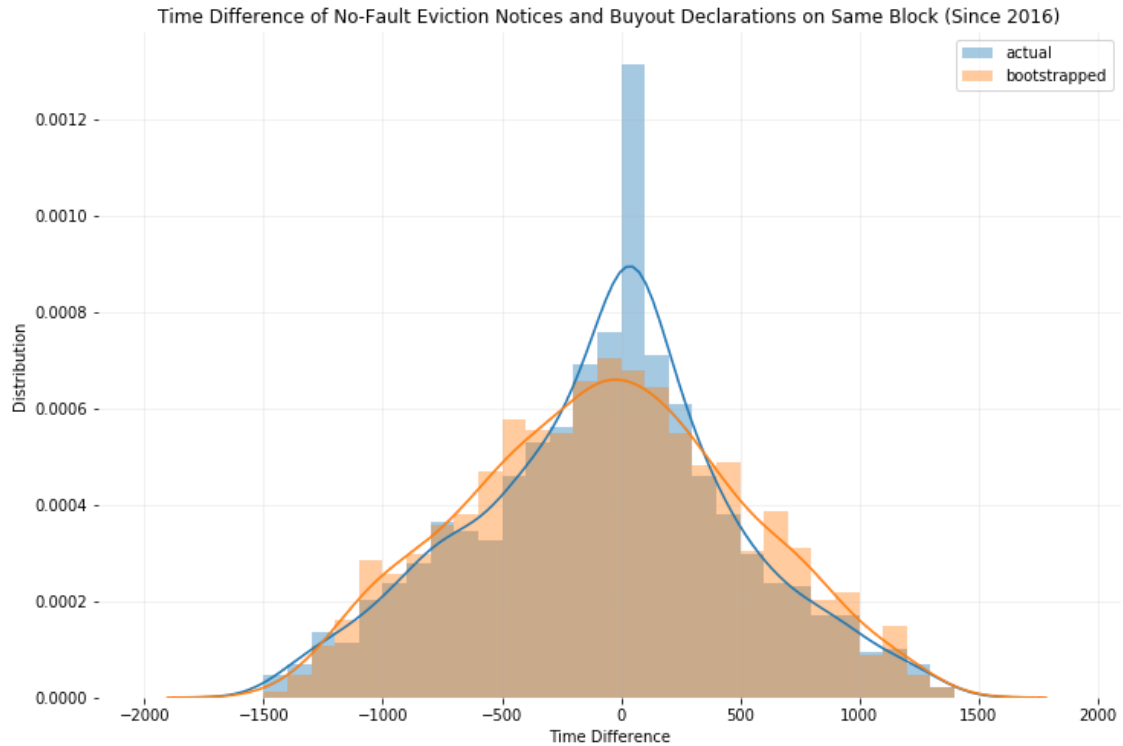


Figure 1: Distribution of Time Differences between Eviction Notices and Buyout Declarations on Same Block (Bootstrapped and Actual) (Since 2016)

As can be seen in Figure 1, the actual distribution of time differences between eviction notices and buyout declarations has a much higher peak around zero than the bootstrapped sample. The bootstrapped distribution appears to approximately match a triangular distribution with some level of noise, as we would expect. The fact that the actual pairs appear to be more likely to occur at almost the same time (with a time difference of close to zero) might indicate that at least some of these eviction-buyout pairs are related to one another. The distribution of the actual sample appears to be less symmetrical than the bootstrapped sample as well, with a denser left tail than right tail.

Using the Kolmogorov-Smirnov test to determine the probability that these two samples are drawn from the same continuous distribution, we find that the p-value is 0.0654, which means that we reject the null hypothesis at a confidence level of 0.10. This p-value tells us that if the two samples were drawn from the same distribution, we would see results at least this

extreme about 6.54% of the time. Therefore, it is relatively unlikely that eviction notices and buyout declarations are occurring on the same block simply due to chance.

The Kolmogorov-Smirnov test derives its statistic from the maximum difference in the cumulative distribution function of the two samples. Figure 2 shows the overlay of CDFs for the actual and bootstrapped samples. The CDF for the actual sample is steeper around a time difference of zero days, and the largest difference in the CDFs appears to fall around a time difference of just under 500 days.

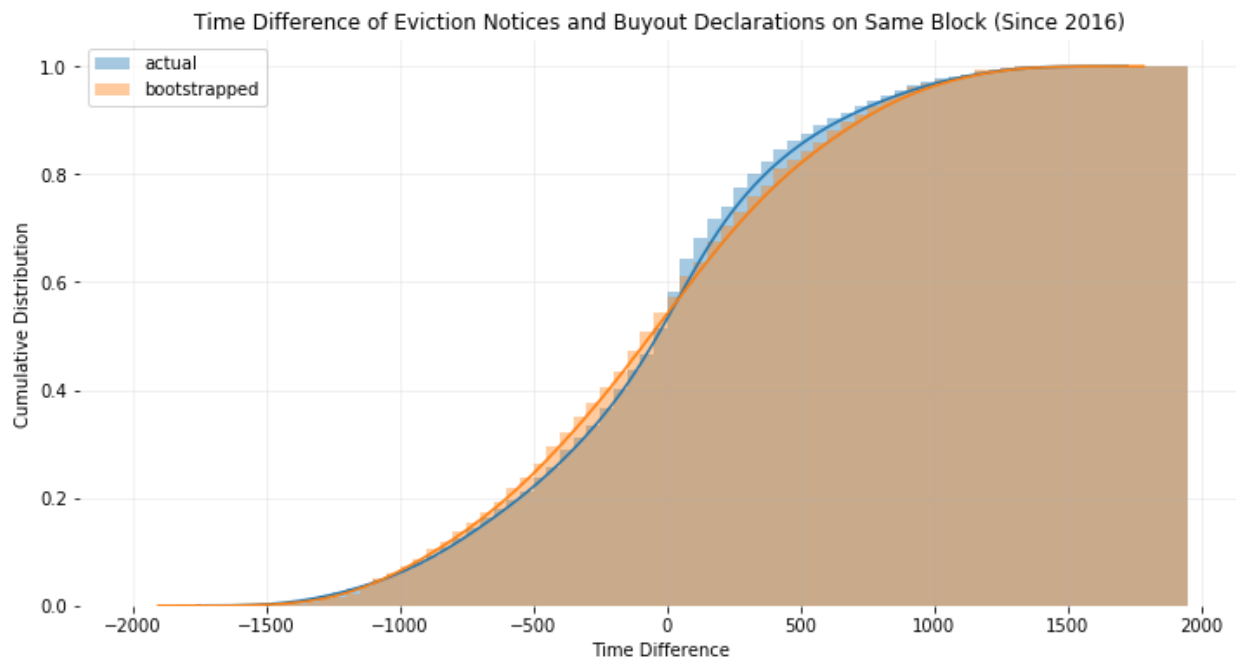


Figure 2: Cumulative Distribution Function of Time Differences between Eviction Notices and Buyout Declarations on Same Block (Bootstrapped and Actual) (Since 2016)

If we run the Kolmogorov-Smirnov test again only on eviction-buyout pairs where the buyout was completed (with bootstrapping run again to only include dates from this sample), we find a p-value of 0.3070, so we cannot reject the null hypothesis that eviction notices and completed buyouts are occurring on the same block simply due to random chance. However, on buyouts that were not completed, the Kolmogorov-Smirnov test produces a stronger result, with a p-value of 0.0069. This leads us to strongly conclude that there is some connection between eviction notices and uncompleted buyouts. Even though we cannot look at the exact addresses of

eviction notices and match them with buyout declarations, this statistical analysis shows that there are more than likely at least some instances where an eviction notice and a buyout declaration occurred at the same address. For uncompleted buyouts, the distribution of actual time differences is greater than the bootstrapped distribution within an absolute time difference of about 200 to 300 days. The highest peak in time differences, and the main differentiating factor between the actual and bootstrapped distributions, is when the eviction notice comes between 0 and 100 days after the buyout declaration for the failed buyout attempt, as can be seen in Figure 3. One hypothesis for why the peak is highest for these positive time difference values is that landlords may resort to trying to evict their tenants after failing to secure a buyout agreement. As the San Francisco Tenants Union argued, some landlords may also use eviction notices to try to persuade tenants to accept buyout agreements, though this analysis seems to show that eviction notices are more likely to be filed in instances where buyout agreements cannot be reached.

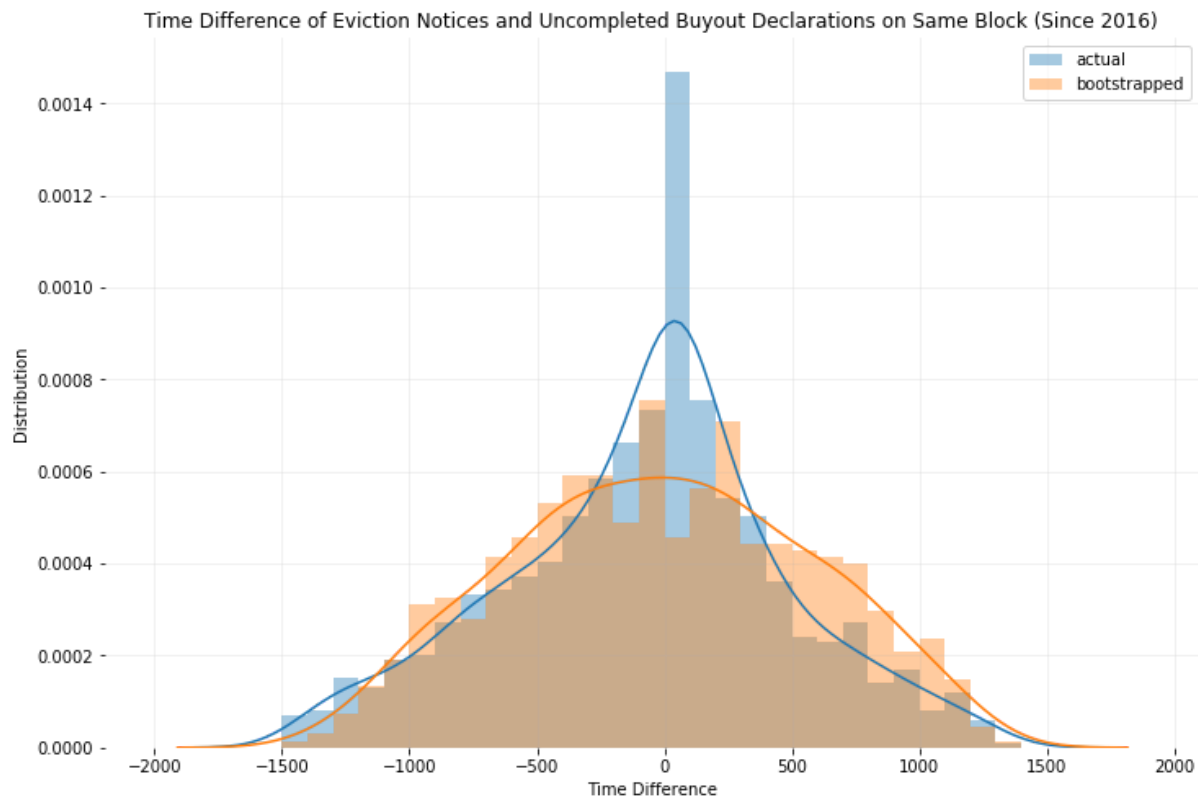


Figure 3: Distribution of Time Differences between Eviction Notices and Uncompleted Buyouts on Same Block (Bootstrapped and Actual) (Since 2016)

In addition, no-fault evictions are more likely to be linked to buyout declarations than evictions as a whole. Using the Kolmogorov-Smirnov test once again to compare actual and bootstrapped samples, we find a p-value of 0.00378 between all no-fault eviction notices and all buyout declarations, which is a much stronger conclusion than we found for all eviction types. The distribution of time differences also has a much higher peak just above zero, as can be seen in Figure 4. For completed buyouts, the K-S test gives us a p-value of 0.0296, while we get a p-value of  $2.682 \times 10^{-5}$  for uncompleted buyouts. Once again, we find a stronger link between eviction notices and buyouts that are not completed, but there is still enough evidence for us to establish a connection between no-fault eviction notices and completed buyouts on the same block.

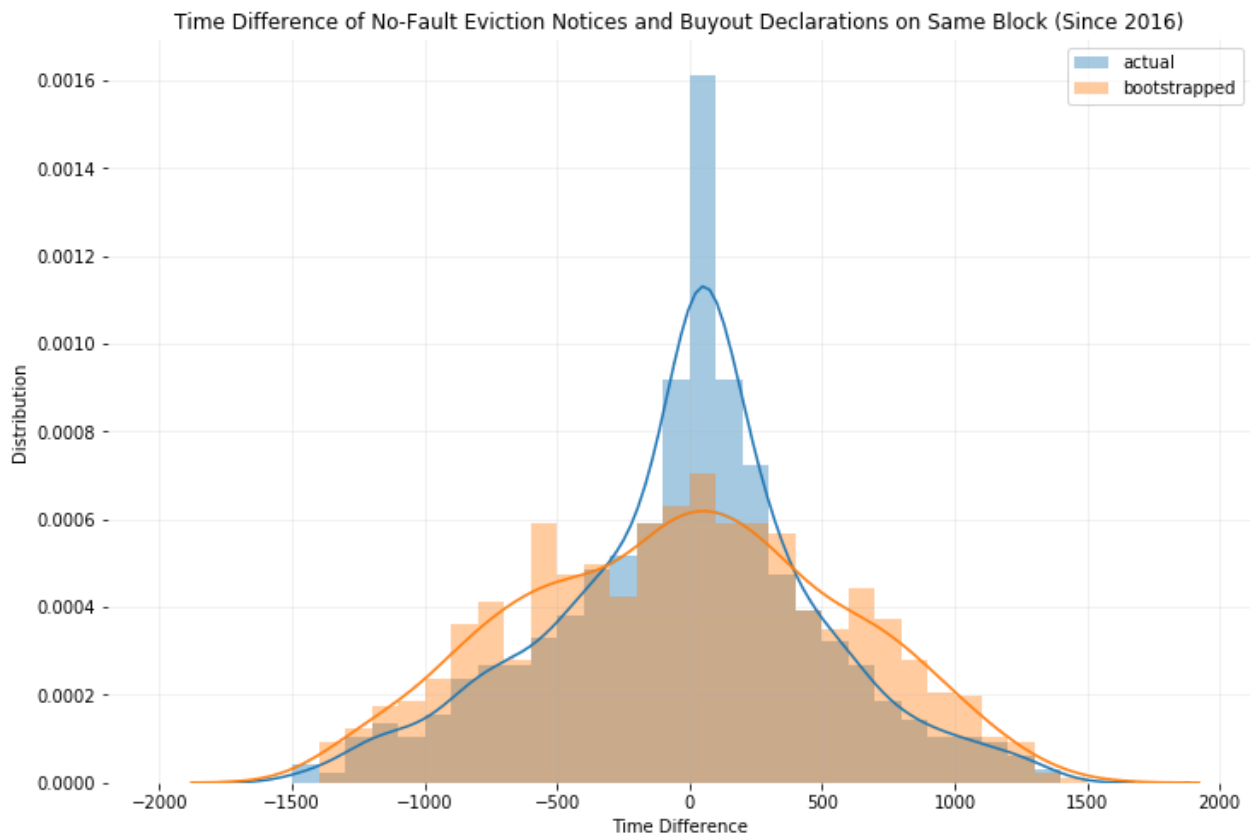


Figure 4: Distribution of Time Differences between No-Fault Eviction Notices and Buyouts on Same Block (Bootstrapped and Actual) (Since 2016)

To analyze where these eviction-buyout pairs are occurring across the city of San Francisco, I limited the dataset to only include rows with an absolute time difference of less than

six months, or 182 days. This should pick up the peak section of the distribution where we see more instances than we would expect given the bootstrapped sample. In addition, instead of randomly selecting the eviction notice on the same block as each unique buyout address, I matched buyouts with the eviction notice on their block with the smallest absolute time difference. The resulting distribution has an even higher peak close to zero.

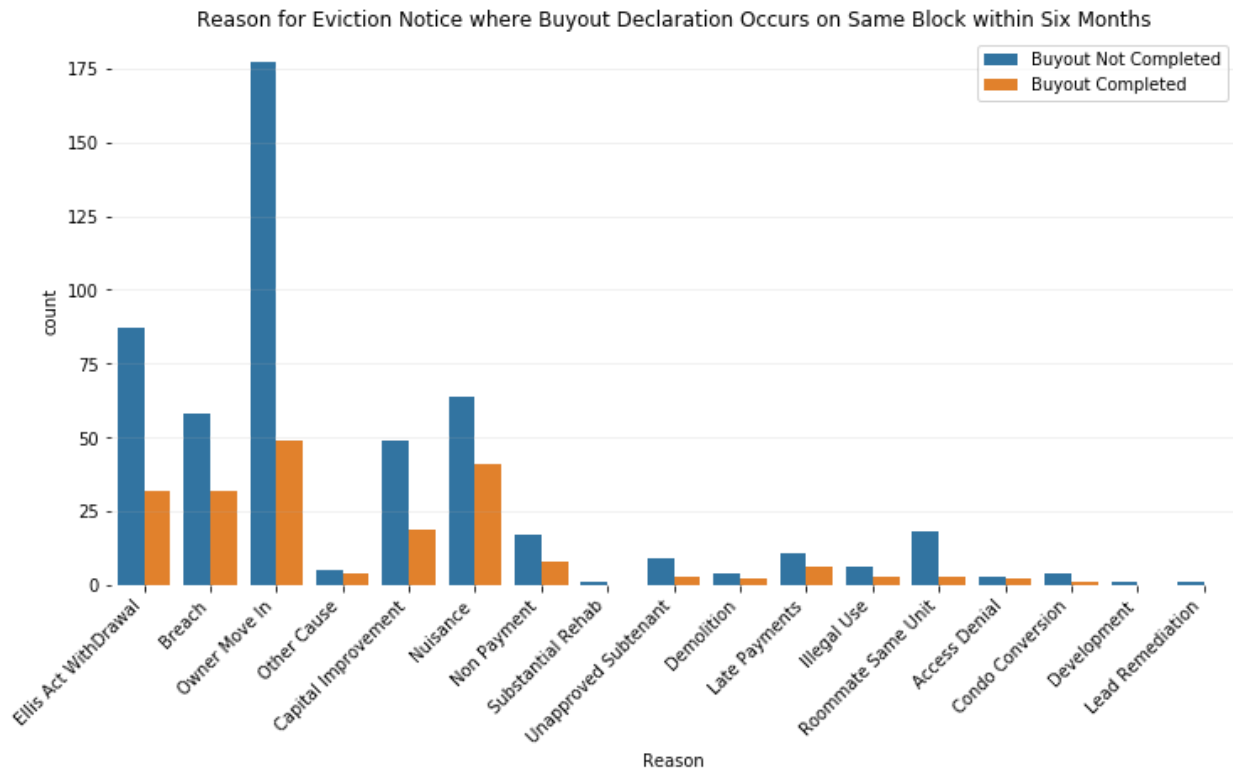


Figure 5: Reason for Eviction Notice where Buyout Declaration Occurs on Same Block within Six Months

In Figure 5, we can see the most common reasons listed on eviction notices where a buyout declaration also occurs on the same block within six months. For uncompleted buyouts, the most common eviction reasons are owner move-in and Ellis Act withdrawal, followed by at-fault eviction types nuisance and breach. These two eviction types are quite common across San Francisco, and since we found a much stronger relationship between no-fault eviction notices and buyout declarations, it is possible that at least some of these eviction notices are unrelated to the buyout declarations on the same block. Capital improvement is also a fairly

common eviction reason out of these instances. For completed buyouts, the same five eviction types are most common, but nuisance and breach show up relatively more often than for uncompleted buyouts. Overall, about 47.9% of all eviction notices that occur on the same block as a buyout declaration within six months are due to owner move-in or Ellis Act withdrawal, and about 59.3% are due to any no-fault eviction type. This compares to a 42.5% rate of evictions that are no-fault evictions in the city overall.

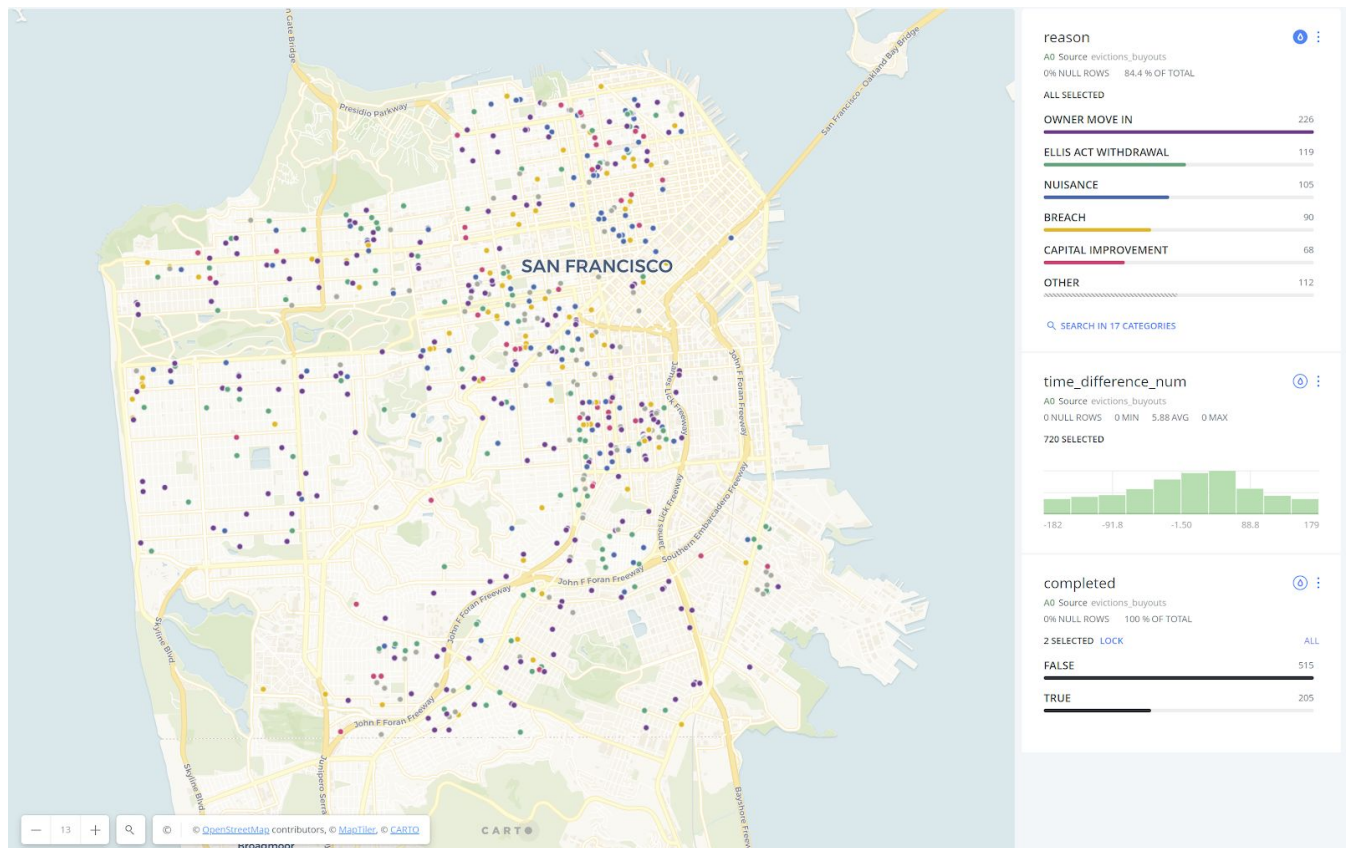


Figure 6: [Map of Eviction-Buyout Pairings in San Francisco](#)

Overall, we find 720 unique instances (i.e. at unique addresses) of eviction notices and buyout agreements occurring on the same block within six months of each other. The neighborhood with the highest number of instances by far is the Mission District, with 122 instances. Other neighborhoods with a high number of eviction-buyout pairings are the Sunset District, Russian Hill, the Castro District, and the Outer Richmond District.

From this analysis, we can conclude that eviction notices and buyout declarations are not simply occurring on the same block due to chance. In at least some of these instances, the landlord pursues both an eviction and a buyout as a means of vacating their unit. It seems that this is more common if the buyout is not completed, and the eviction notice is more commonly filed after the buyout is declared, so it is possible that some landlords resort to evictions after failing to reach a buyout agreement. In instances where a buyout may have been attempted, no-fault evictions appear to be more common than other eviction types, with owner move-in especially common. Since 2016, it is likely that there have been hundreds of instances where a tenant was evicted through no fault of their own after refusing to agree to a buyout of their lease.



## V. Neighborhood Analysis

To analyze the neighborhoods that are most commonly affected by evictions and buyouts, I sourced demographic, economic, and housing information from the American Community Survey. The neighborhoods I analyzed were defined by the San Francisco Department of Public Health and the Mayor's Office of Housing and Community Development.<sup>7</sup> There are 41 neighborhoods across the city, each including a group of 2010 Census tracts.

In particular, I wanted to look into whether any of the ACS neighborhood features show a relationship with the frequency of eviction notices and buyout declarations. Since some neighborhoods are much larger than others, I defined the frequency metrics as the number of instances divided by the number of housing units in the neighborhood.

The correlation coefficients between the different neighborhood features and the frequency of all eviction notices, no-fault eviction notices, and buyout declarations can be found in each column of Figure 7, respectively. The correlation coefficient between the frequency of all eviction notices and the frequency of buyout declarations is just 0.18, while the correlation coefficient between the frequency of just no-fault eviction notices and the frequency of buyout declarations is 0.74. This tells us that neighborhoods with a higher rate of buyout declarations generally also see a much higher rate of no-fault eviction notices, but the relationship with all eviction notices is not as strong.

The features that are most positively correlated with the frequency of eviction notices in a neighborhood are the unemployment rate, the poverty rate, the percentage of the population that is Hispanic or Latino, and the percentage of renters that moved in in 2017 or later. The average median age, the mean household income and the percentage of units that are detached single units are negatively correlated with eviction notice frequency. It seems that eviction notices are more likely to occur in areas of the city with more unemployment and poverty, so socioeconomic factors have a fairly large effect on where evictions are occurring.

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<sup>7</sup> DataSF: Analysis Neighborhoods - 2010 census tracts assigned to neighborhoods

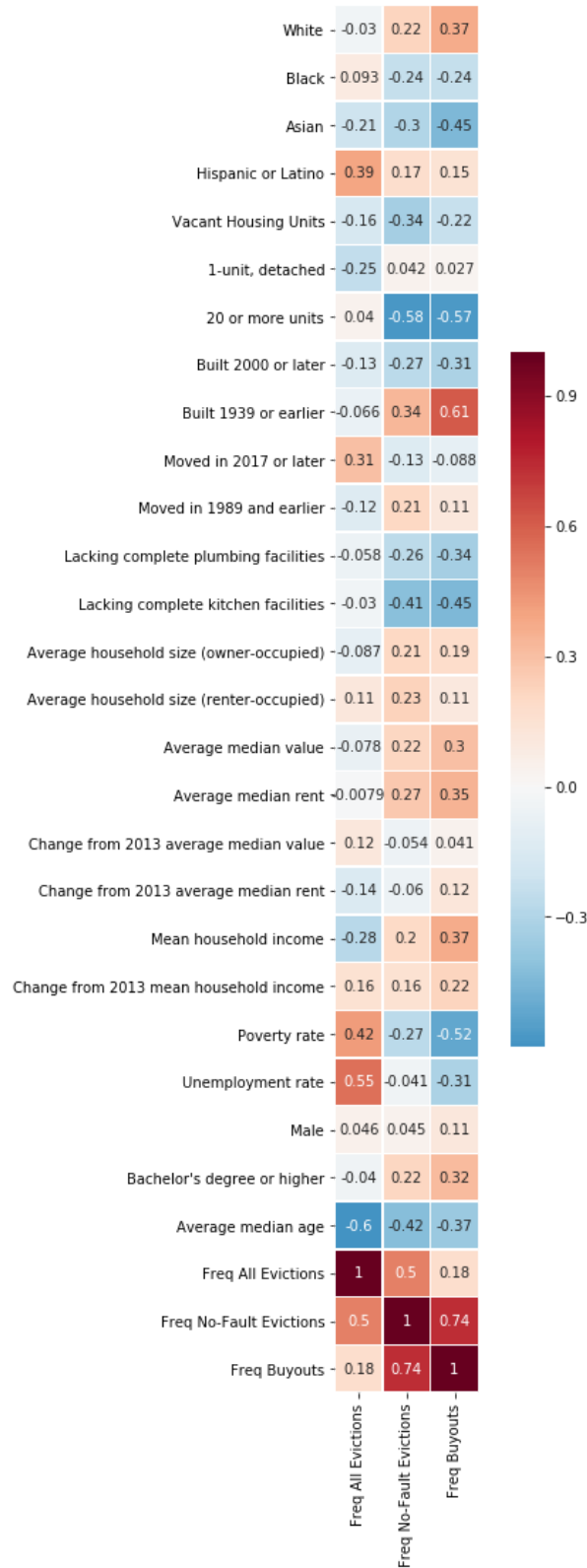


Figure 7: Correlation coefficients between the frequency of all evictions, no-fault evictions, and buyouts with select census information

For no-fault eviction notices and buyout declarations, the correlation coefficients tell a different story. A high rate of no-fault evictions and buyout declarations seem more likely to occur in areas with a lower poverty rate, higher mean household income, and higher median rent and median home value. Areas with a lot of large complexes (20 or more housing units in the building) and newer housing units are less likely to see high frequencies of no-fault evictions and buyouts. Given that a large percentage of no-fault evictions are due to owner move-in and Ellis Act withdrawal, it makes sense that this would be more likely to occur in areas with fewer units per building, since it would be less feasible for the owner of a large residential building to move in or go out of business. Areas with a higher property value are probably also more appealing to owners who are looking to either move into their unit or sell the unit, which could be accomplished after a buyout or after an Ellis Act eviction. Increasing rent prices in a neighborhood could also entice a landlord to pursue a buyout, though this is only slightly correlated with a higher rate of buyouts. Since eviction notices and buyout declarations are negatively correlated with the percentage of housing units built since 2000, we cannot use this information to argue that they are occurring mostly in areas with a lot of new condo construction.

I also ran regression models on the frequency of all eviction notices, no-fault eviction notices, and buyout declarations across the different neighborhoods. Since the feature data was normalized, the resulting model coefficients can be compared to determine the most important features. The features which most strongly positively predict eviction notice frequency are the neighborhood poverty rate, unemployment rate, and percentage of the population that is Hispanic or Latino. The features which most strongly negatively predict eviction notice frequency are the average median age, average household size in owner-occupied units, and the percentage of housing units built in 2000 or later. Since there are not a lot of neighborhoods to use as training data, however, we should be careful not to conclude that these features are certain to influence the rate of evictions.

For no-fault evictions, the most important features all have negative coefficients. Neighborhoods with a lower percentage of buildings containing 20 or more housing units, a lower average median age, a lower percentage of single-unit, detached homes, a lower increase in median home value, and a lower percentage of the population that is black are predicted to

have a higher frequency of no-fault evictions, according to our regression model. For buyouts, neighborhoods with a higher percentage of homes built in 1939 or earlier, a lower percentage of housing units contained in buildings with 20 or more units, a lower percentage of one-unit, detached homes, and a lower percentage of units lacking kitchen facilities are predicted to have a higher frequency of buyout declarations. The full coefficients from the three regression models can be found in the Appendix.

It does seem that demographic and socioeconomic factors could be influencing which areas are most affected by evictions and buyouts. Interestingly, the neighborhoods with the highest rate of all eviction notices generally exhibit different features than those with the highest rate of buyout declarations, while areas with a lot of no-fault evictions closely resemble those with a lot of buyouts. While evictions tend to happen more frequently in areas with more poverty and unemployment, buyouts are more frequent in areas with high property values and with older, less dense housing buildings. Neighborhoods with many large apartment complexes and with an older population are less likely to see a lot of both evictions and buyouts. Areas with a high percentage of the population that is Hispanic or Latino are also predicted to have higher rates of both evictions and buyouts. This is highlighted by the Mission District, which is San Francisco's neighborhood with the highest percentage of Hispanic and Latino people, at 36.78%. The Mission District has the second-highest frequency of eviction notices, the highest frequency of no-fault eviction notices, and the highest frequency of buyout declarations across all San Francisco neighborhoods.

Many of the neighborhoods with the highest frequency of evictions and buyouts line up with the Urban Displacement Project's assessment of areas that are experiencing displacement and gentrification in San Francisco.<sup>8</sup> Some indicators that the Urban Displacement Project looks for in identifying displacement are a change in low income households and the loss of affordable housing. For gentrification, they look for a change in income, a change in educational attainment, and rent increases, all relative to the regional median. In particular, the Urban Displacement Project notes the Mission District as a particularly concerning area, with all of its census tracts

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<sup>8</sup> Urban Displacement Project - Mapping Displacement and Gentrification in the San Francisco Bay Area

listed as experiencing ongoing or advanced gentrification. The full map of census tracts and their displacement typology, as defined by the Urban Displacement Project, can be found in Figure 7.

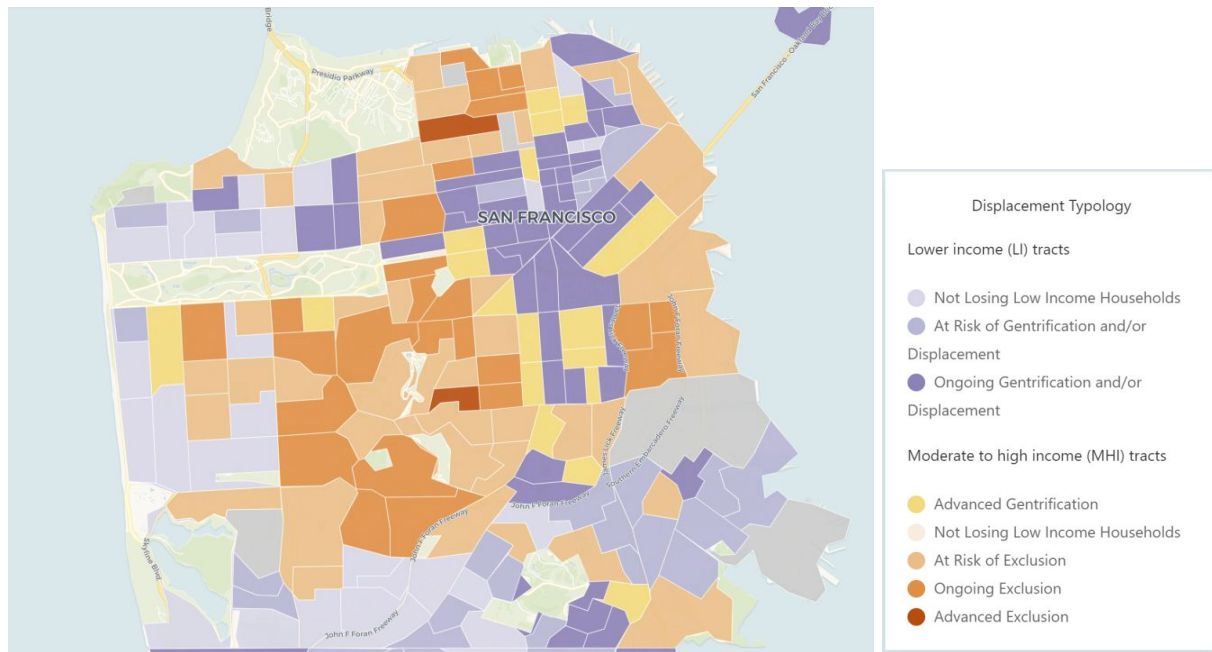


Figure 7: The Urban Displacement Project's map of displacement and gentrification in San Francisco

Since evictions and buyouts inherently lead to displacement, it is no surprise that areas where these are occurring most frequently are marked as experiencing gentrification. It is concerning that through no-fault evictions and buyouts, landlords can legally force out low income households and contribute to the changing socioeconomic and demographic makeup of neighborhoods across the city of San Francisco.

## VI. Ethical Concerns

In dealing with big and open data, it is important to consider the different ethical questions or concerns that could arise. In this case, one ethical concern is the privacy of individuals who may be connected to the data. The eviction and buyout datasets are anonymized, so there is no information listing the names of landlords or tenants. However, the buyout dataset does include the exact address of the unit (sans an apartment number, if applicable). The address and date of the buyout may be enough information to identify the tenant or landlord in some cases. The dataset also makes it public how much the landlord paid the tenant during a buyout. While making this information public is good for transparency and research purposes, it is concerning that it might be possible to link an individual to how much they were paid to vacate their unit, since some people would likely prefer to keep that information private. The eviction dataset attempts to anonymize the data further by only listing the block address of the unit, but there are some cases where the eviction can be linked to a buyout occurring around the same time on the same block. When publishing this information, DataSF and the Rent Board should consider how to “guard against the reidentification of data,”<sup>9</sup> since it cannot be assumed that a limited amount of anonymization will prevent reidentification. It seems that anonymizing the buyout information in the same way by only listing the block address could be one way to prevent people from finding the exact addresses of evictions.

There are also questions about whether the data used in this analysis are fully representative of evictions and buyouts in reality. Since the eviction dataset gives no indication of whether the evictions were actually carried out or if only a notice was filed, it is hard to know whether the dataset gives an accurate representation of actual evictions. To combat this, I attempted to convey in my analysis that I was looking at eviction notices rather than evictions themselves. It is likely common, however, that many people using this dataset will simply communicate the eviction notice instances as evictions. This could paint a misleading picture of the number of evictions occurring, as well as the areas where evictions are most frequent, if some areas see more evictions stopped after the file stage. Similarly, buyout declarations are an

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<sup>9</sup> Zook et al.: Ten simple rules for responsible big data research

interesting look at where landlords attempted to buy out their tenant's lease, but only a fraction of these declarations result in an actual buyout, so this should be noted when the dataset is used for analysis. It is also possible that some evictions or buyouts might not appear in the dataset if they are illegally carried out or done under the table. The City of San Francisco has only required landlords to report buyouts since 2015, so it would not be entirely surprising if some buyouts are still happening without being reported to the Rent Board.

Another ethical consideration is the uncertainty and margin of error associated with certain statistics. In running my linear regression models in Section V, I used 5-year estimates from the American Community Survey, but the models do not incorporate the margin of error, which can be quite large for certain statistics. This means that the regression results inherently have some uncertainty built into them. Due to this uncertainty and the fact that there are only around 40 neighborhoods to train the model on, we cannot come to any strong conclusions about the predictive strength of certain variables. In looking at correlation, we have to emphasize that correlation does not imply causation, and variables that are correlated with a higher frequency of eviction notices or buyout declarations do not necessarily influence those frequencies.

## VII. Conclusion

We found enough evidence to show that eviction notices and buyout declarations can be linked in some instances. It appears that when a landlord attempts a buyout and an eviction for the same unit, the buyout attempt more commonly occurs first, and usually fails to be completed. Most evictions in these cases are due to no-fault causes, especially owner move-in and Ellis Act withdrawal. Since most of these linked instances see a failed buyout (and a lower buyout completion rate than buyouts overall), it seems unlikely that landlords are commonly able to intimidate tenants into accepting a buyout agreement by serving an eviction notice. Instead, it seems more likely that landlords resort to evicting their tenants after they can't reach a buyout agreement. Buyout amounts are typically quite a bit larger than the maximum relocation payments for evictions, so I would guess that many of these tenants did not know about the possibility of eviction or were extremely unwilling to relocate. Either way, it is concerning that landlords who most likely were not planning to move into the unit or go out of business originally are able to use these reasons to clear their units and displace their tenants against their will.

On the whole, the neighborhoods facing the most eviction notices and buyout declarations have different characteristics. Neighborhoods with the most evictions are more likely to have high unemployment and poverty, a lower mean household income, more new residents, and a greater Hispanic or Latino population. Buyouts, on the other hand, are more likely to be common in neighborhoods with a higher mean household income, higher home values, older and less dense housing, and a greater white population. This sheds some light on the different groups of people that might be more likely to be affected by evictions and buyouts in San Francisco. Neighborhoods with the most no-fault evictions are similar to those with the most buyouts. It seems likely that landlords are hoping to take advantage of the high home values and rent prices in these neighborhoods by selling the unit or resetting its rent control restrictions.



It is important that tenants in San Francisco know their rights to stay and that landlords act “without ulterior reasons and with honest intent”<sup>10</sup> when they initiate an eviction or buyout. While rent control regulations might be successful in keeping rent prices for existing tenants at a reasonable rate, the displacement of thousands of tenants through evictions and buyouts means that not everyone is afforded the opportunity to live in the same place for an extended period of time. The City of San Francisco and the Rent Board should tighten regulations to ensure that landlords are not using unfounded threats of eviction to force out tenants or persuade them to accept a buyout agreement. In addition, there should be additional checks that landlords are abiding by the regulations set out for certain eviction types, especially in the case of no-fault evictions such as owner move-ins and Ellis Act withdrawals.

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<sup>10</sup> San Francisco Rent Board: Section 37.9(a)

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## IX. Appendix

Appendix 1.a: Feature Coefficients for Linear Regression Model on Neighborhood Eviction Notice Frequency

Feature	Coefficient
Average median age	-0.182127
Poverty rate	0.154380
Average household size (owner-occupied)	-0.140648
Built 2000 or later	-0.131523
Unemployment rate	0.130441
Hispanic or Latino	0.112011
Moved in 1989 and earlier	0.110263
Mean household income	-0.100676
Change from 2013 average median rent	-0.090963
Male	0.082144
Black	-0.081201
Moved in 2017 or later	0.073323
1-unit, detached	-0.061897
Asian	-0.060951
20 or more units	-0.057798
Average household size (renter-occupied)	0.040092
Average median value	-0.036393
Lacking complete plumbing facilities	-0.030177
White	0.029059
Built 1939 or earlier	0.027904
Vacant Housing Units	-0.024419
Lacking complete kitchen facilities	-0.020309
Bachelor's degree or higher	0.018927
Change from 2013 average median value	0.007286
Average median rent	-0.001346
Change from 2013 mean household income	-0.000900

Appendix 1.b: Feature Coefficients for Linear Regression Model on Neighborhood No-Fault  
Eviction Notice Frequency

<b>Feature</b>	<b>Coefficient</b>
20 or more units	-0.339016
Average median age	-0.201931
1-unit, detached	-0.200934
Change from 2013 average median value	-0.134482
Black	-0.133397
Built 1939 or earlier	0.131269
Change from 2013 average median rent	-0.121505
Male	0.121186
Average household size (renter-occupied)	0.113306
Lacking complete kitchen facilities	-0.109979
Hispanic or Latino	0.102480
Moved in 2017 or later	-0.101027
Poverty rate	0.082909
Change from 2013 mean household income	0.082505
Asian	-0.082359
Bachelor's degree or higher	0.065828
White	0.061431
Unemployment rate	0.059775
Average median value	0.058461
Vacant Housing Units	-0.054133
Average household size (owner-occupied)	0.051181
Built 2000 or later	-0.043053
Average median rent	-0.014906
Moved in 1989 and earlier	0.012267
Mean household income	-0.007037
Lacking complete plumbing facilities	0.006602

Appendix 1.c: Feature Coefficients for Linear Regression Model on Neighborhood Buyout  
Declaration Frequency

<b>Feature</b>	<b>Coefficient</b>
Built 1939 or earlier	0.382386
20 or more units	-0.273569
1-unit, detached	-0.167530
Lacking complete kitchen facilities	-0.161886
Hispanic or Latino	0.158566
Average median age	-0.157560
Change from 2013 average median value	-0.141389
Poverty rate	-0.127214
Male	0.106305
Asian	-0.103094
Change from 2013 average median rent	-0.098160
Vacant Housing Units	0.095075
Moved in 2017 or later	-0.083669
Average median value	-0.081559
Average median rent	-0.078802
Lacking complete plumbing facilities	-0.078000
Change from 2013 mean household income	0.068629
Average household size (owner-occupied)	0.060242
White	0.059639
Average household size (renter-occupied)	-0.056578
Black	-0.033316
Moved in 1989 and earlier	0.030095
Unemployment rate	0.018741
Bachelor's degree or higher	0.017483
Built 2000 or later	0.002391
Mean household income	-0.000216