

A map of the San Francisco Bay Area, showing the bay and surrounding land areas. The land is divided into various shades of gray, representing different jurisdictions or regions. The bay is a dark blue-gray color. The map is positioned on the right side of the slide, partially obscured by the text.

# Building Permit Metrics for the San Francisco Bay Area

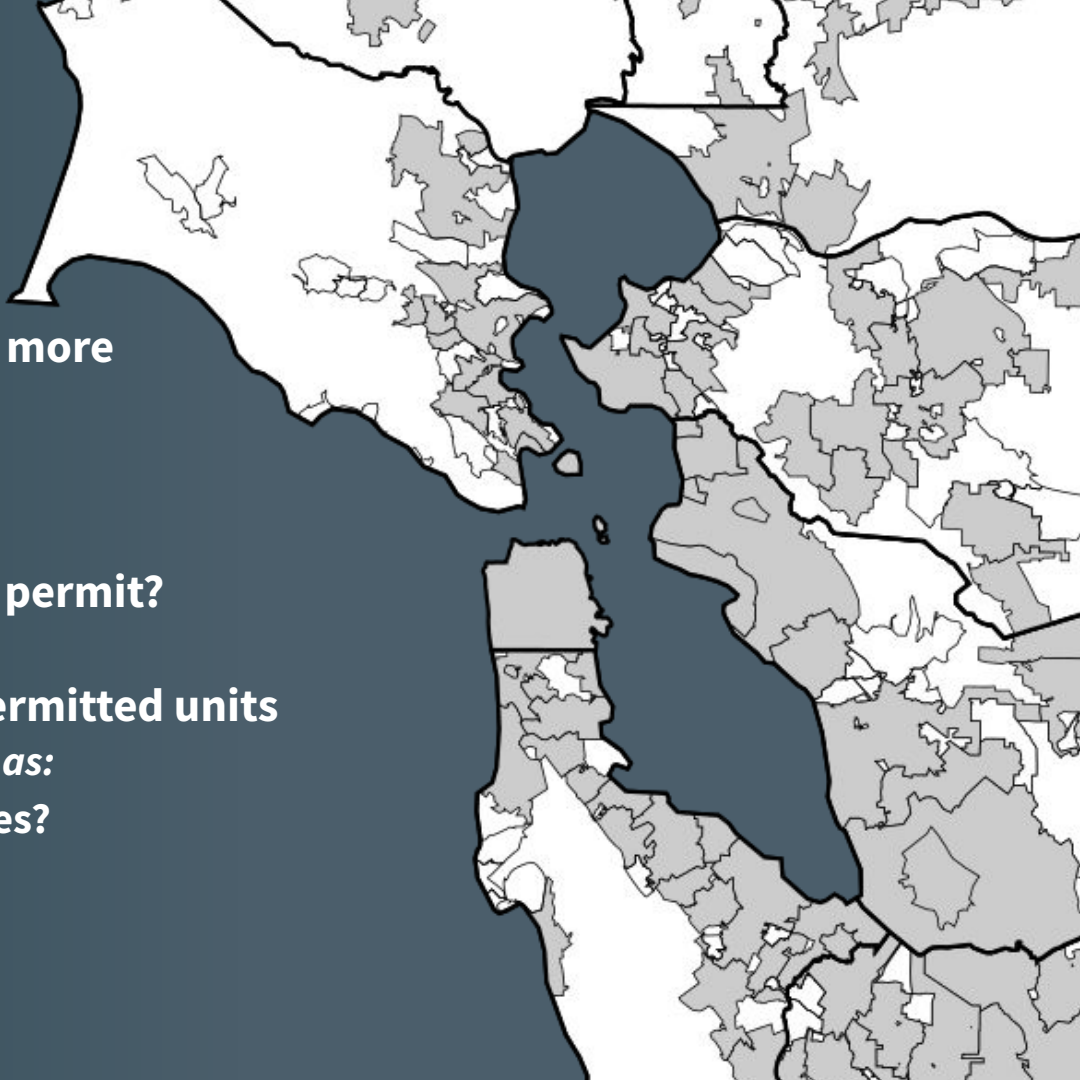
CPLN 680 – Mar 28th

by Alexander Nelms

[https://bit.ly/nelms\\_sfmetric\\_final](https://bit.ly/nelms_sfmetric_final)

## Research Questions

1. Which neighborhoods are seeing more permits housing units between 2015 to 2019?
2. Where is it more difficult to get a permit?
3. Are neighborhoods with more permitted units suffer more gentrification? *such as:*
  - significant demographic changes?
  - increasing income inequality?
  - historic discrimination?

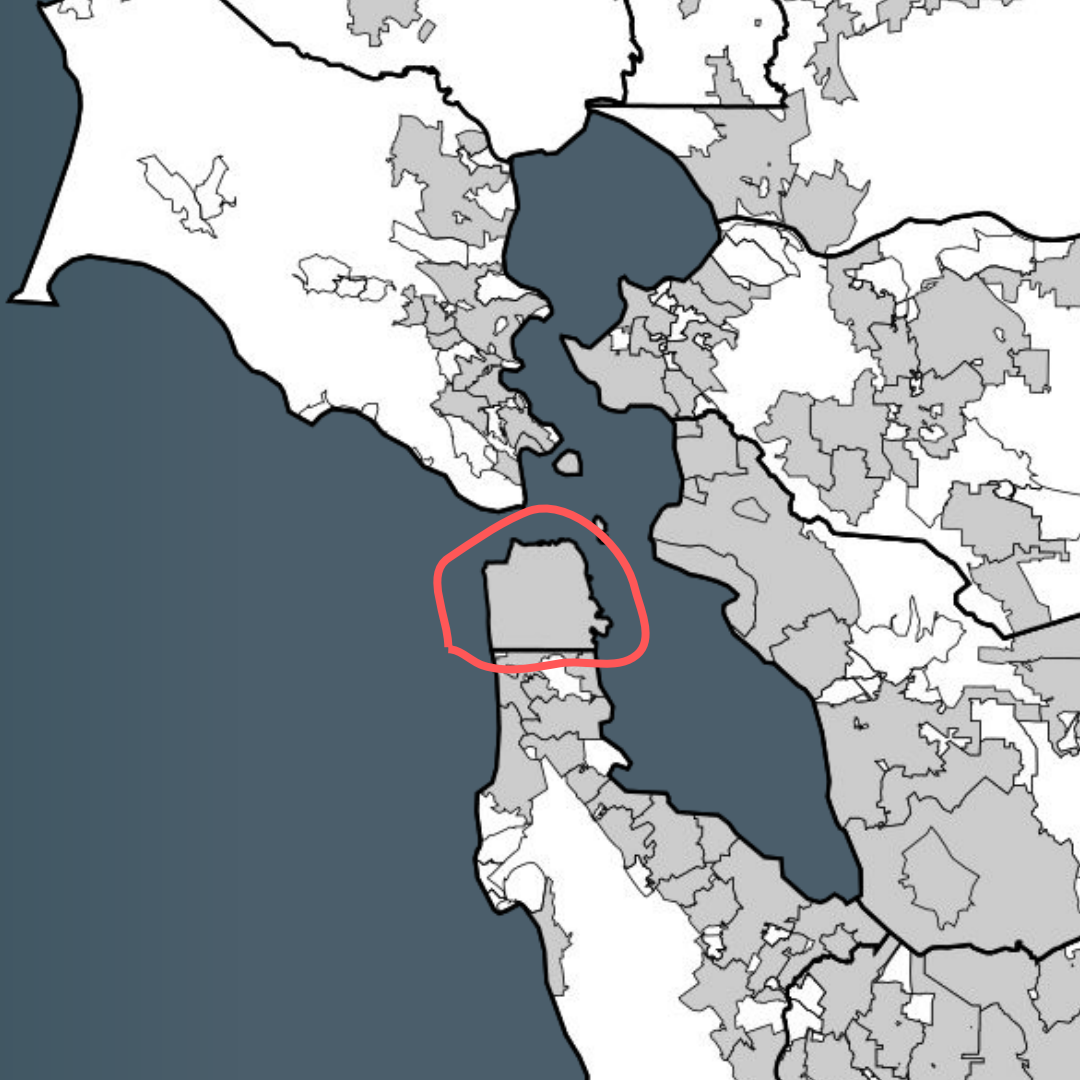


## Study Areas

### 1. San Francisco

*similar to Philly Center City, some of Manhattan*

- higher density, diverse city
- population of 874k





# A Housing Crisis?

1. Since 1990, 7 out of the 10 US Counties with the highest Housing Price Index are in the Bay Area
2. Oakland leads in homelessness rate at 742 unsheltered people per 100k
3. Bay Area cities set housing targets for 2040, if they remained at the same rate of the last 10 years, it would take:
  - a. San Francisco until 2063
  - b. Oakland until 2295
  - c. Berkeley until 2305



# Why does the Bay Area have a Housing Crisis?

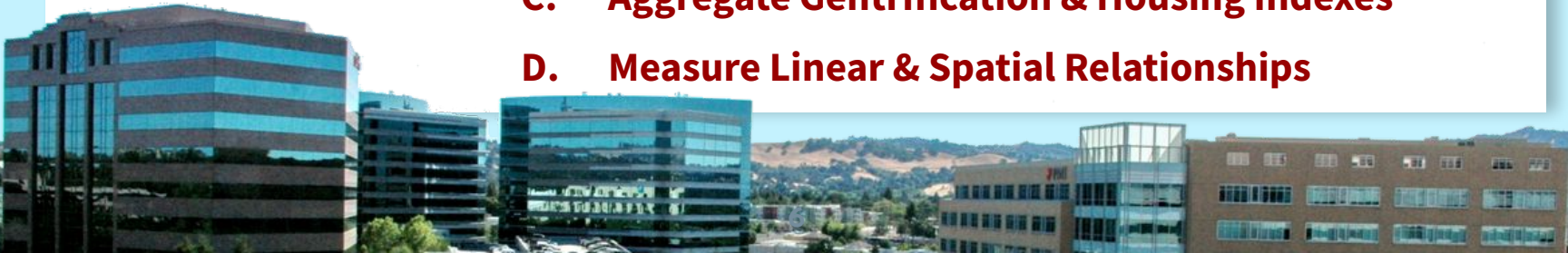
1. Many years of restrictive land use regulations & NIMBY residents prevented growth
2. The lack of a regional government to overrule selfish cities
3. Consistently explosive economy from the tech industry
4. A limited housing supply provides more opportunities for people to be priced out, evicted, and put on the streets

**Qualitatively notice the issue,  
Quantitatively solve the issue?**



# Project Steps

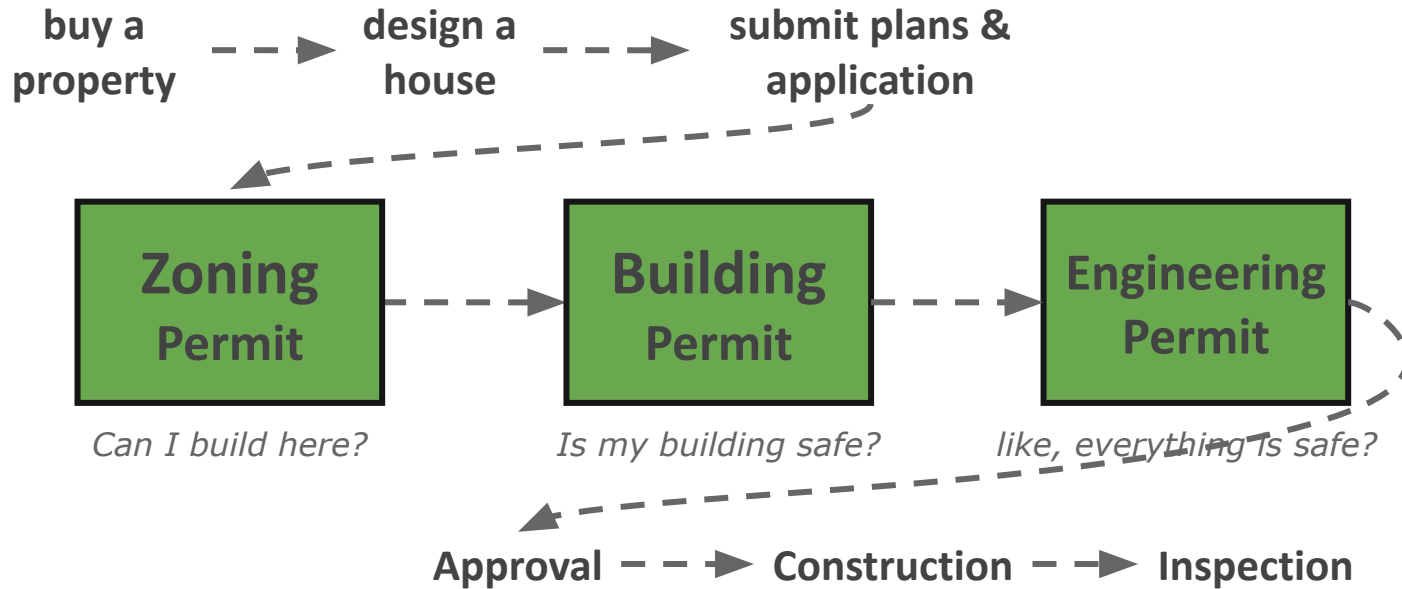
1. Which neighborhoods are seeing more building permits & housing units?
  - A. **Gather & Locate Building Permits**
2. Where is it more difficult to get a permit?
  - B. **Measure Permit Lengths**
3. Are neighborhoods with more permits suffer more gentrification?
  - C. **Aggregate Gentrification & Housing Indexes**
  - D. **Measure Linear & Spatial Relationships**





# ~~How Can I Obtain a Building Permit?~~

*how can i obtain a permit to build a building?*



# How Can I Obtain a Zoning Permit?



*APPLICANT (Developer or Homeowner)*

submit  
application

resubmit  
application

**INCOMPLETE**

Internal  
Review

Application  
Deemed  
Complete

Administrative  
Decision

**APPROVED**

Public Hearing  
Commission

**CITY GOVERNMENT**

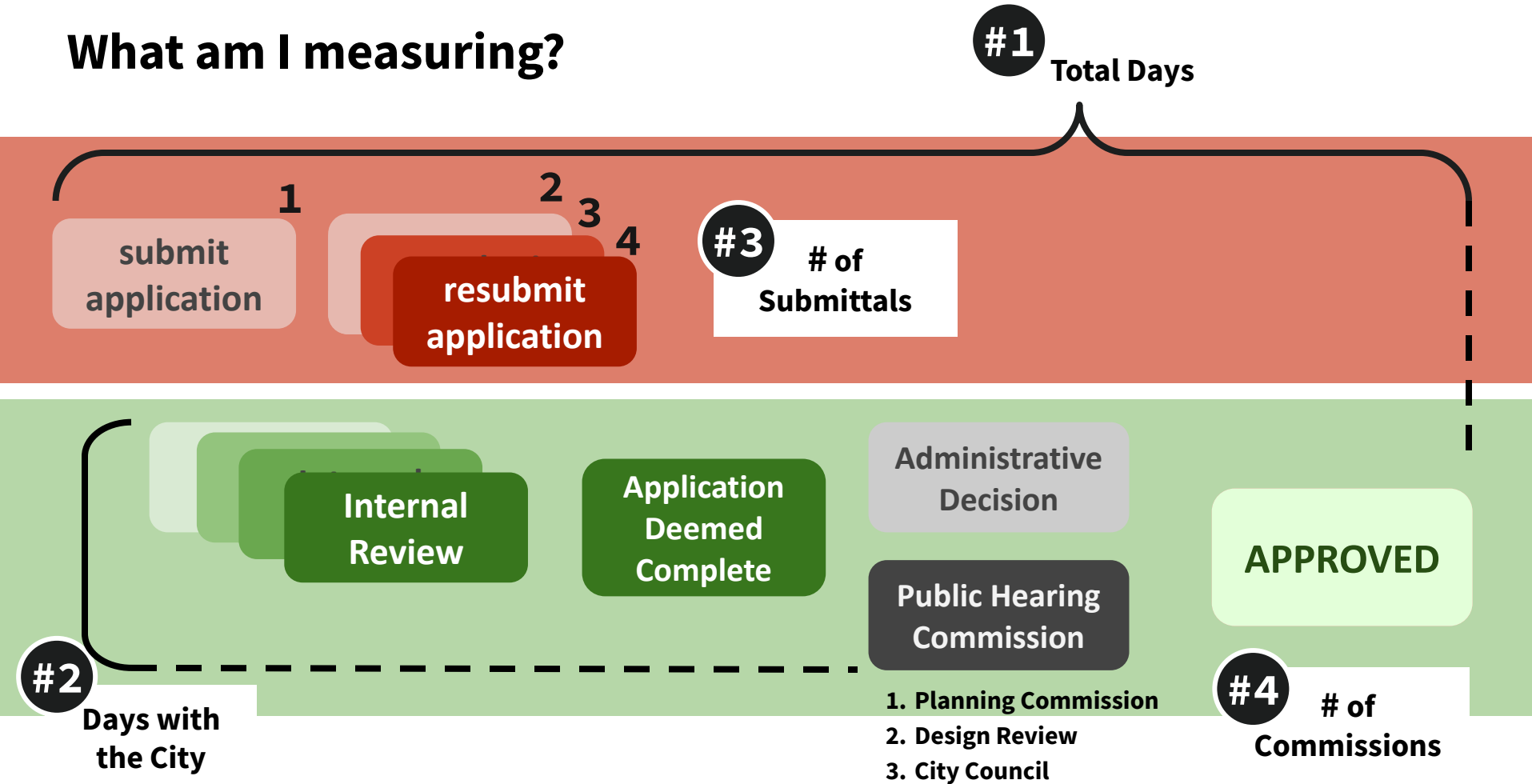
- Complete Application  
Compliant with Zoning?  
with other Departments?
- Planning? • County?
  - Building? • Environmental
  - Engineering? Agency?
  - Fire? • State?

- PC • Historic Preservation
- DRC • Public Works
- TC • City Council





# What am I measuring?



# What does the data look like?

## Permit Timeline

- from a Government Permitting Database
- Timeline of Tasks

## Permit Information

- Building Type
- Associated Permits
- Address



**#3**

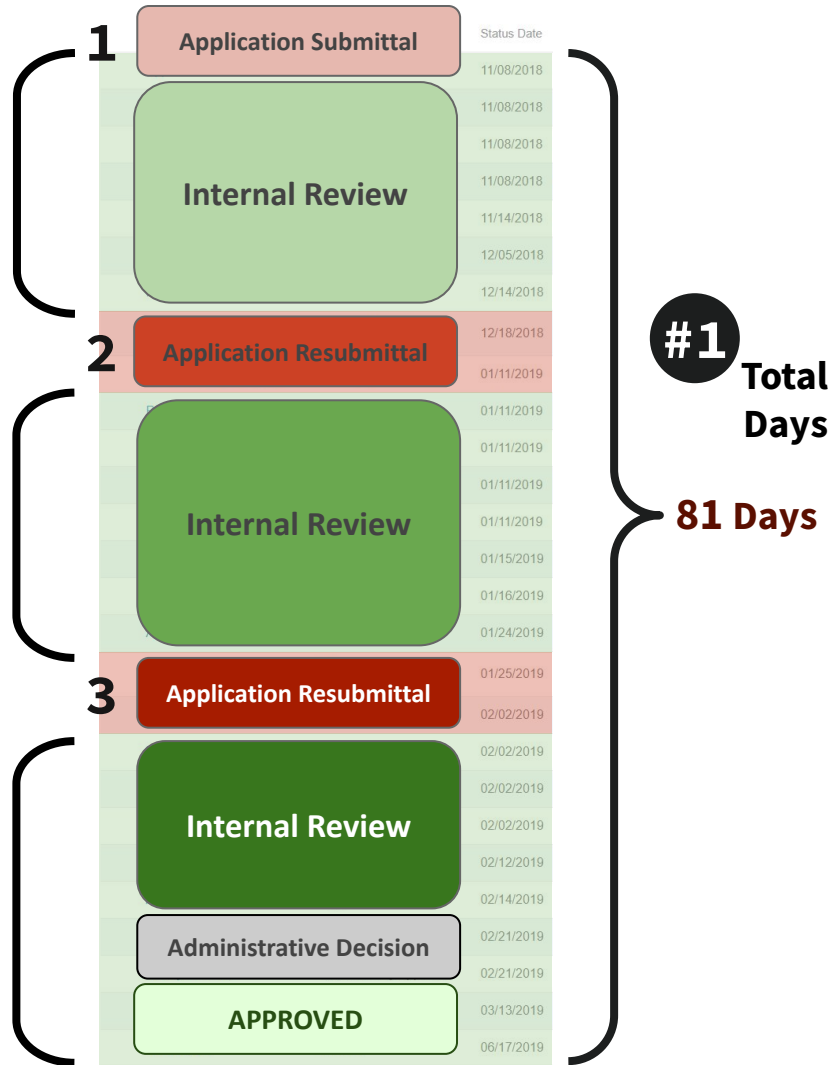
# of  
Submittals

**3 Submittals**

**#2**

Days with  
the City

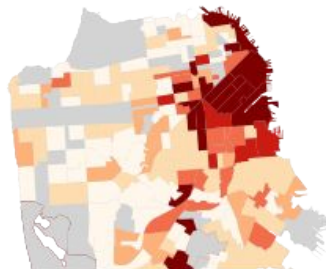
**52 Days**



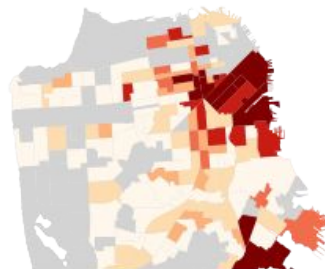


# San Francisco - Permitted Units

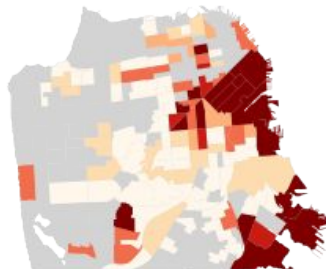
2000-04



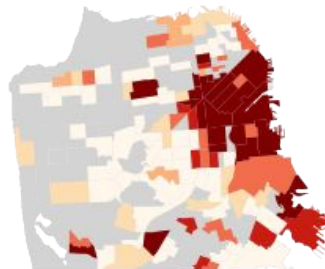
2005-09



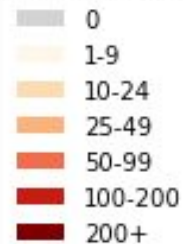
2010-14



2015-19

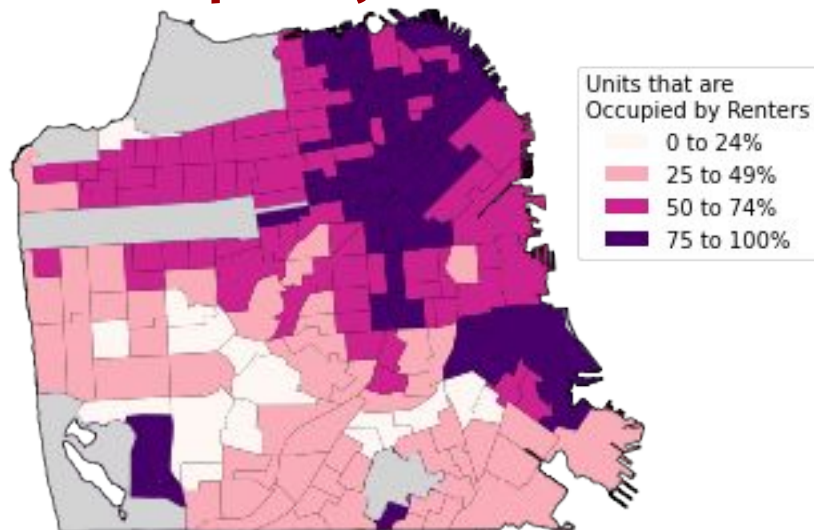


## Residential Units

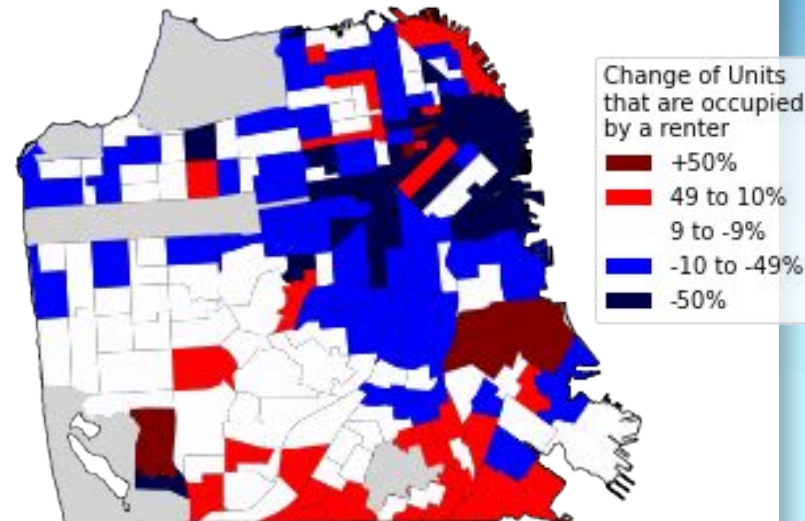




## % of Units Occupied by Renters (2018)



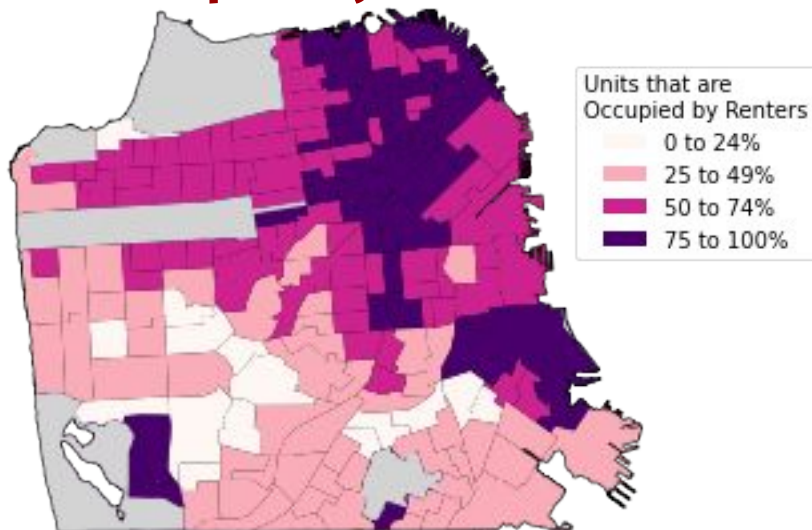
## Change in Rented Units (2010 - 2018)



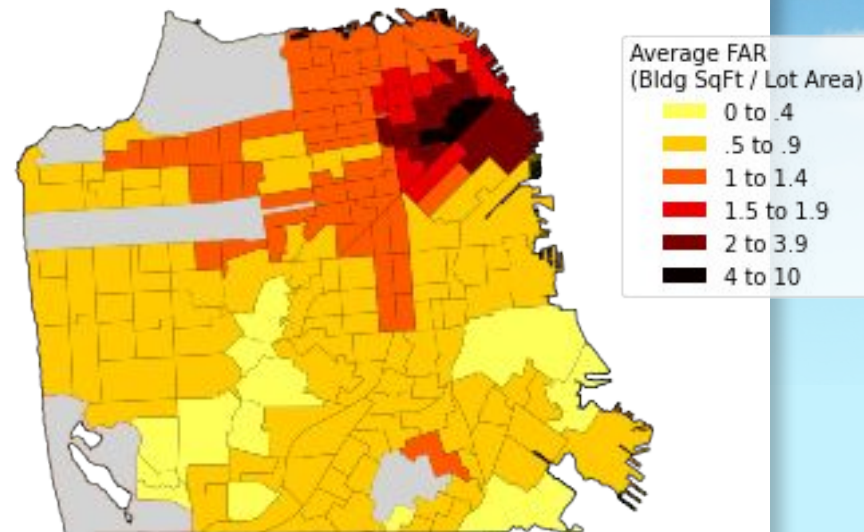




## % of Units Occupied by Renters (2018)



## Floor Area Ratio (2019)

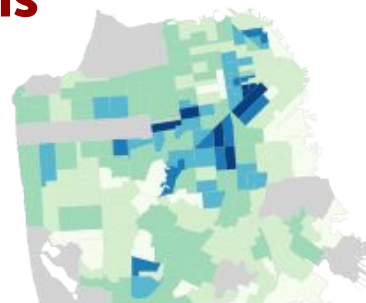
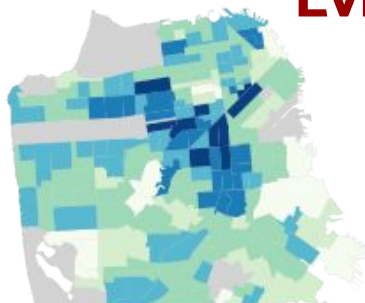




2000-04

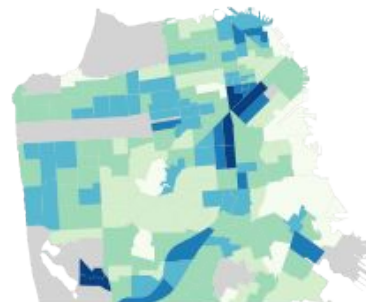
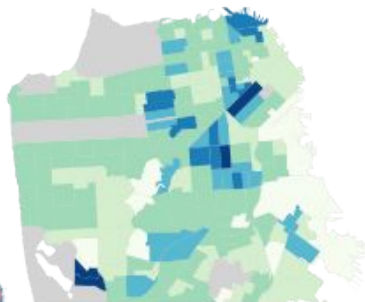
## Evictions

2005-09

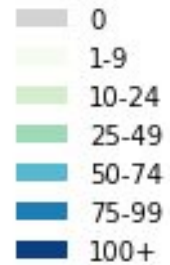


2010-14

2015-19



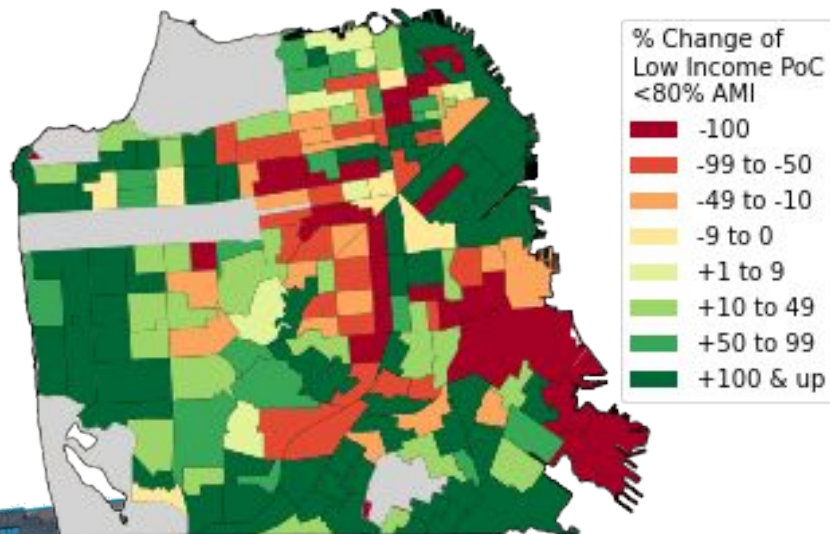
### Total Evictions



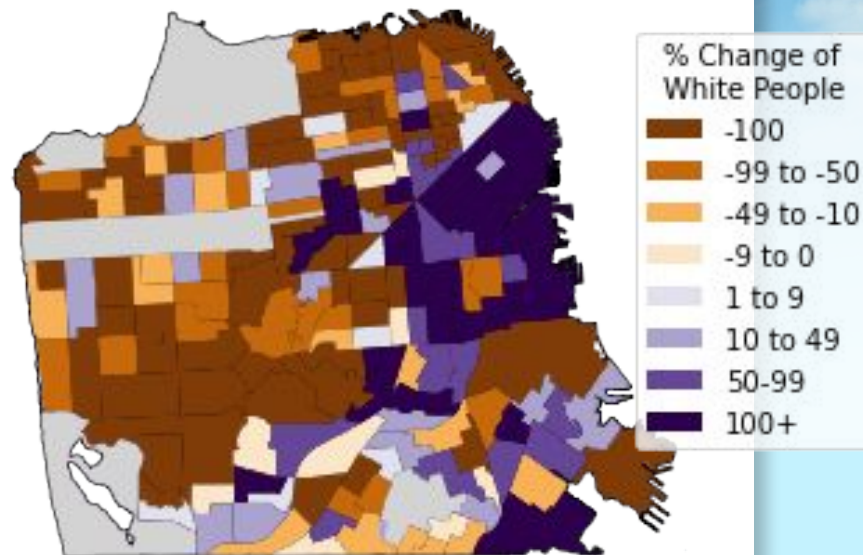




## Change of Low Income People of Color from 2010 to 2015



## SF Change of White People from 2010 to 2015







# Project Steps

## Permit Data *in Python*

1. Gather Permits
  - a. ~~San Francisco~~
  - b. Oakland
  - c. Berkeley
2. Locate Permits
3. Measure Permits

## Gentrification Data *in Python*

3. Gather Spatial Comparisons
  - Housing Market Increases – *via Home Prices, Rental Costs, Evictions*
  - Changing Demographics – *via Race, Income, Age, Employment, Education*
  - Historically Adverse Policies – *Exclusionary Zoning, Racial Discrimination*

## Analyzing & Comparing *in R*

4. Perform exploratory regressions comparing Permits & Variables
  - *What appears to be the biggest contributor to there being more permits in a neighborhood?*
  - *What are the trends over time?*