

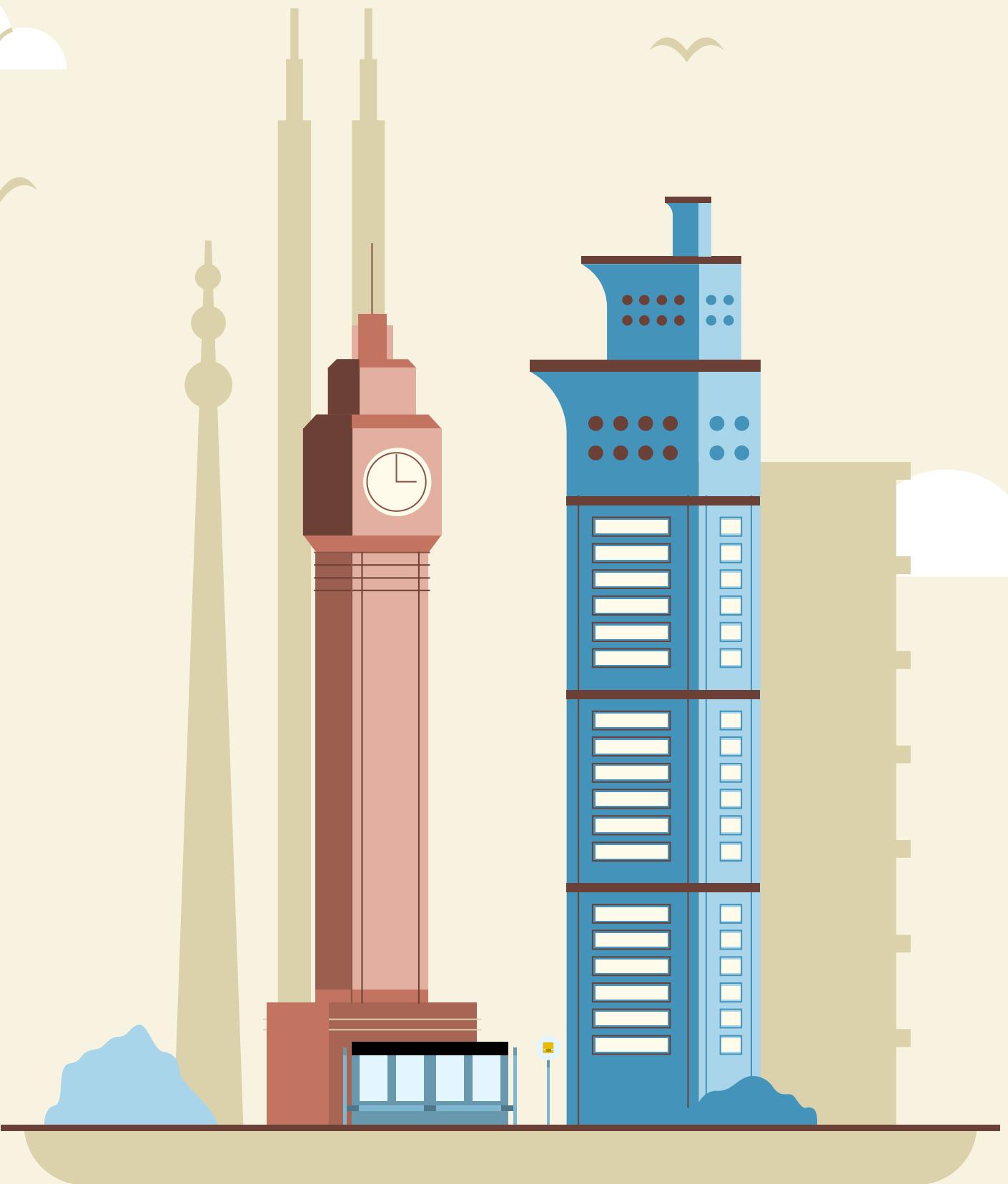
Building San Francisco

Shuteng, Jessica, Max, Schadrack



DRIVING QUESTION:

How can building permit trends help us forecast future urban growth in specific neighborhoods?





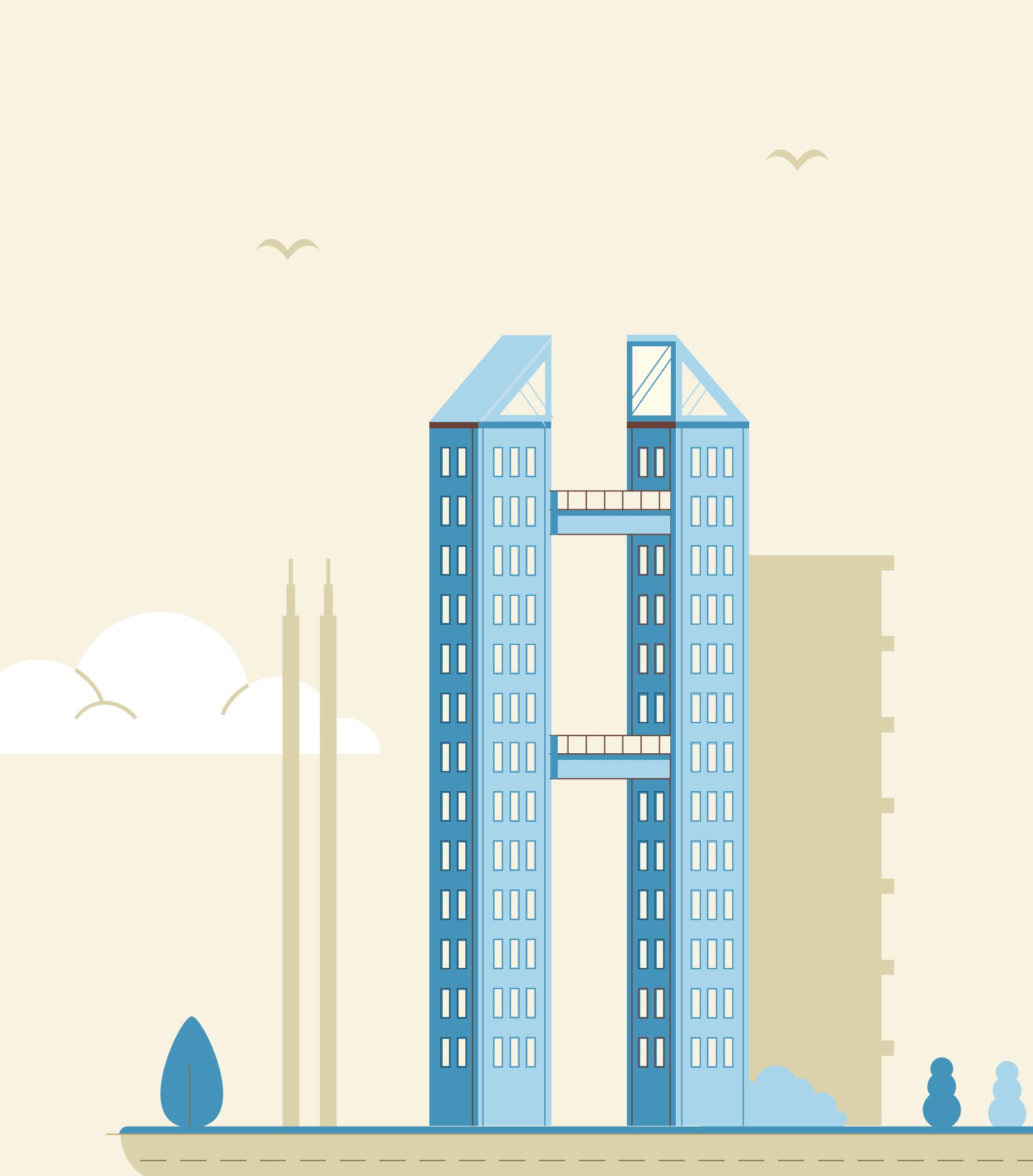
DATA OVERVIEW

- 200k building permits
- Originally - 2012-2018:
 - Jan 1st, 2013 - Dec 31st, 2017

SAN FRANCISCO RELEVANT INFORMATION

- 2nd most **densely populated** city in the US
- One of the most **expensive** cities for **construction**
- Strict **zoning laws & historical preservation** rules
- Sits on major fault lines = **strict seismic retrofit requirements**
- Severe **housing crisis**

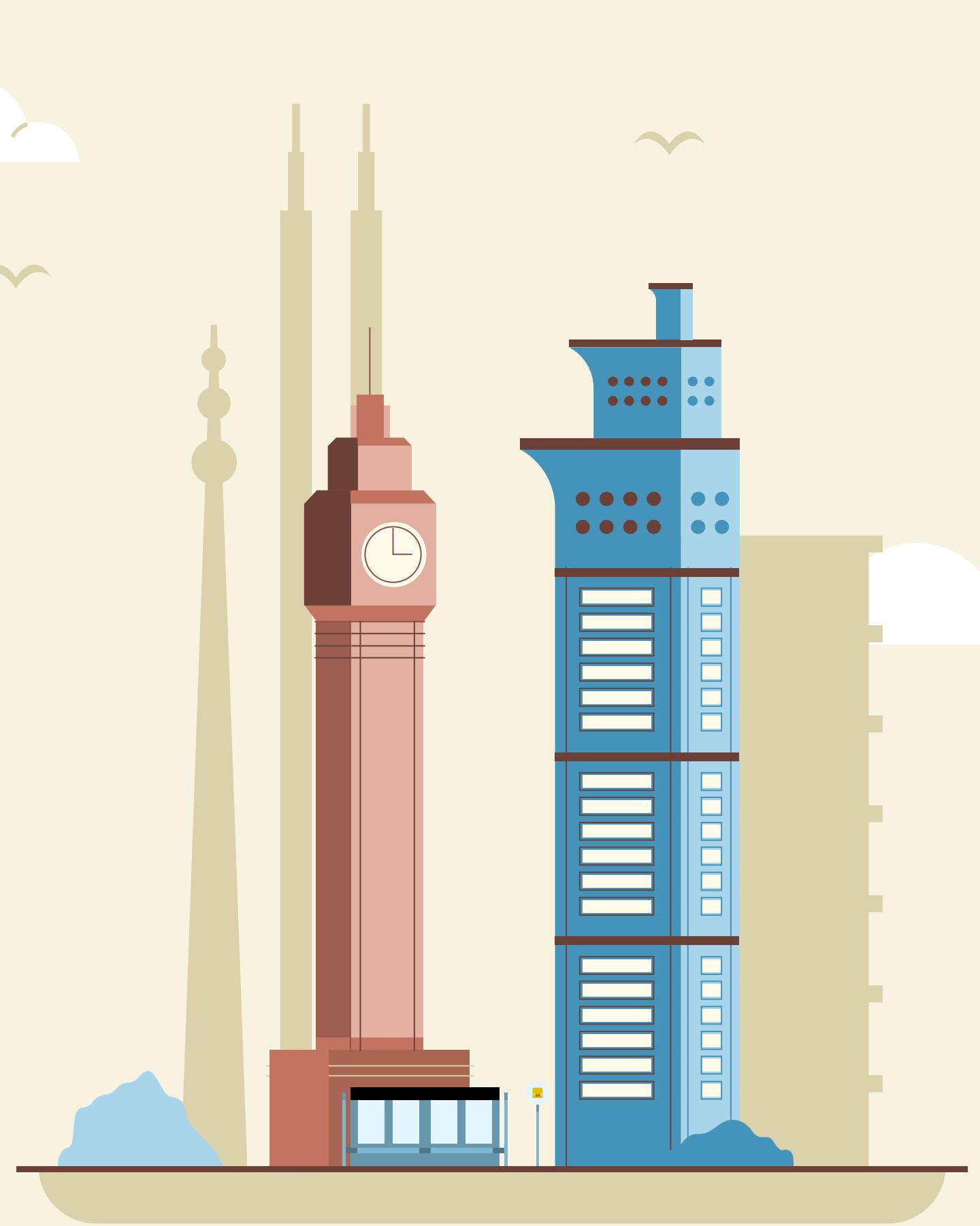




Building permit - government approval:

- to start construction or renovation
- Overseen by **San Francisco Department of Building Inspection (DBI)**
- **Over-the-counter** review & **in-house** review
- Examples:
 - Construction of apartment building
 - Building demolition
 - Reroofing
 - Home renovation

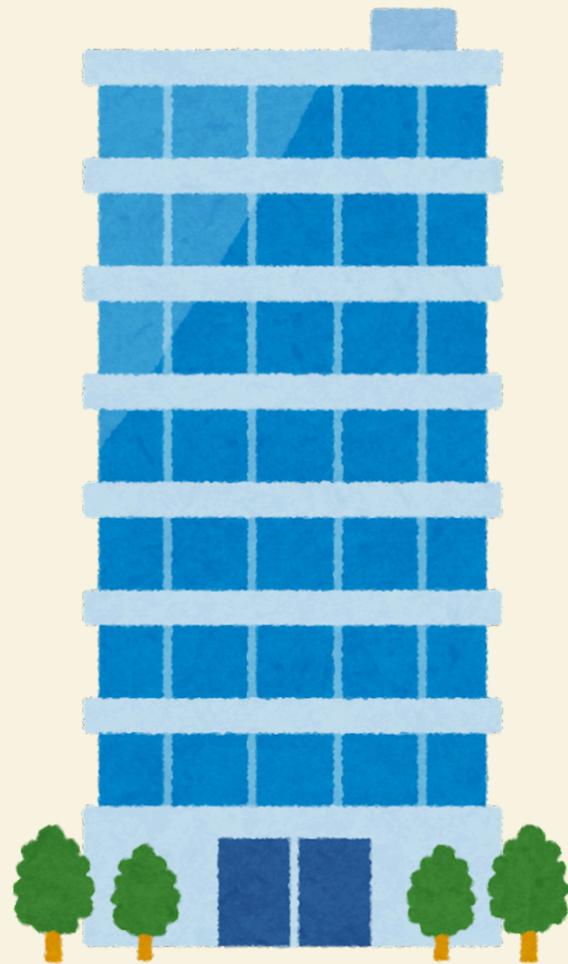
AUDIENCE:
City Planners &
Urban Developers



Building Permit Types

Relevant Permit Types:

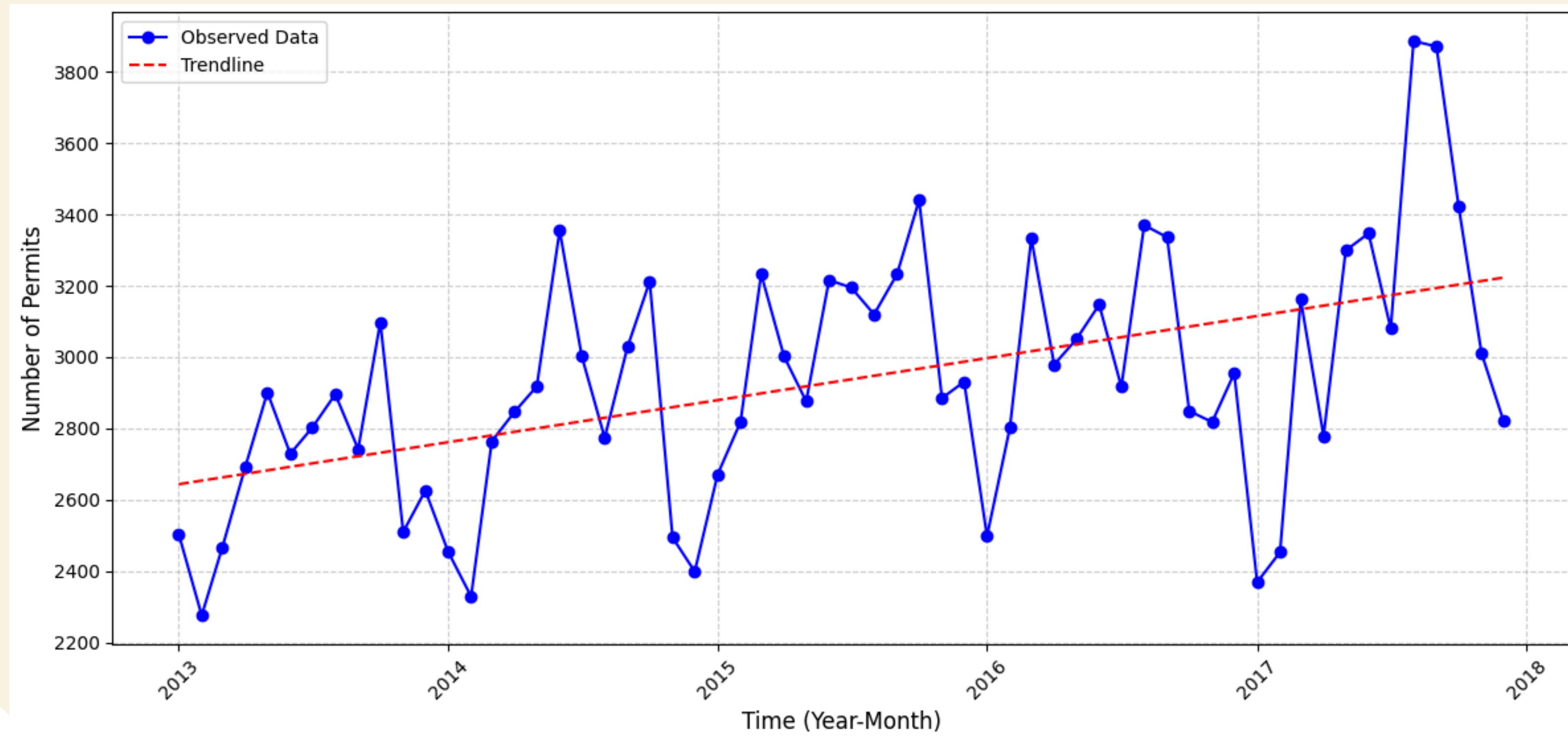
- **Building Construction**
 - Form 1 & 2
 - Wood framing & building



Other Permit Types

- **Demolition** - Form 6
- **Signs** - Form 4 & 7
 - Ex: put up retail signs, replacing banner
- **Reparations** - Form 3 & 5
 - Ex: home remodeling, install store inside existing retail store
- **Small Projects** - Form 8
 - Ex: Bathroom renovation, reroofing, window replacement

Number of Permits Created Over Time



SAN FRANCISCO



upper class
lower class

Upper Class vs Lower Class in San Francisco

Upper Class

- **7.5%** of SF's population
- Highest percentages of **households** with income **above \$200k**:
 - Presidio: 57.3%
 - Potrero Hill: 49.7%
 - Financial District/South Beach: 49.5%
 - Noe Valley: 48.4%



Lower Class

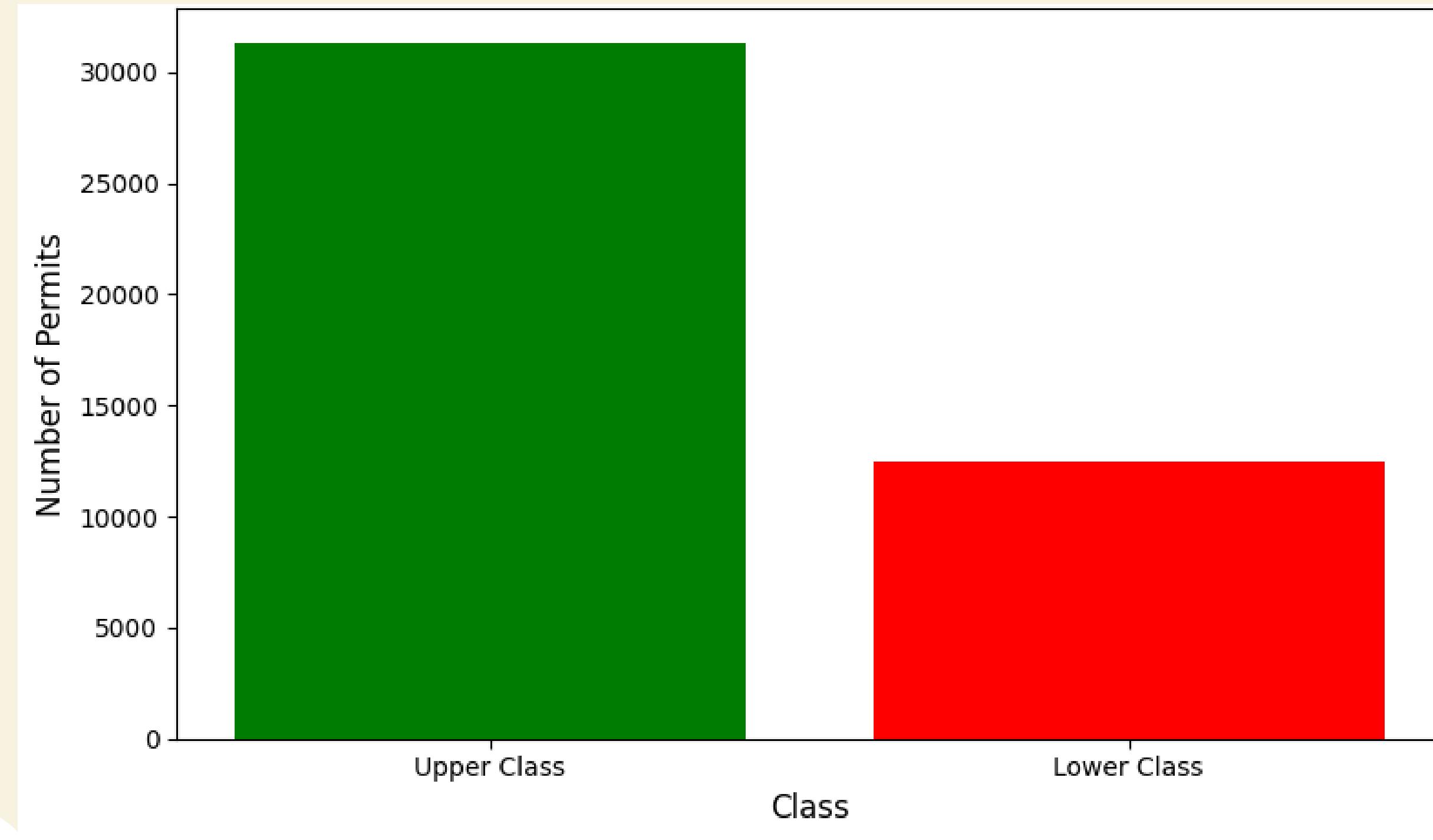
- **11%** of SF's population
- **Below National Poverty** in **1/5 of households**:
 - Chinatown: 32.9%
 - Tenderloin: 26.5%
 - Treasure Island: 22.9%
 - Bayview Hunters Point: 18.8%





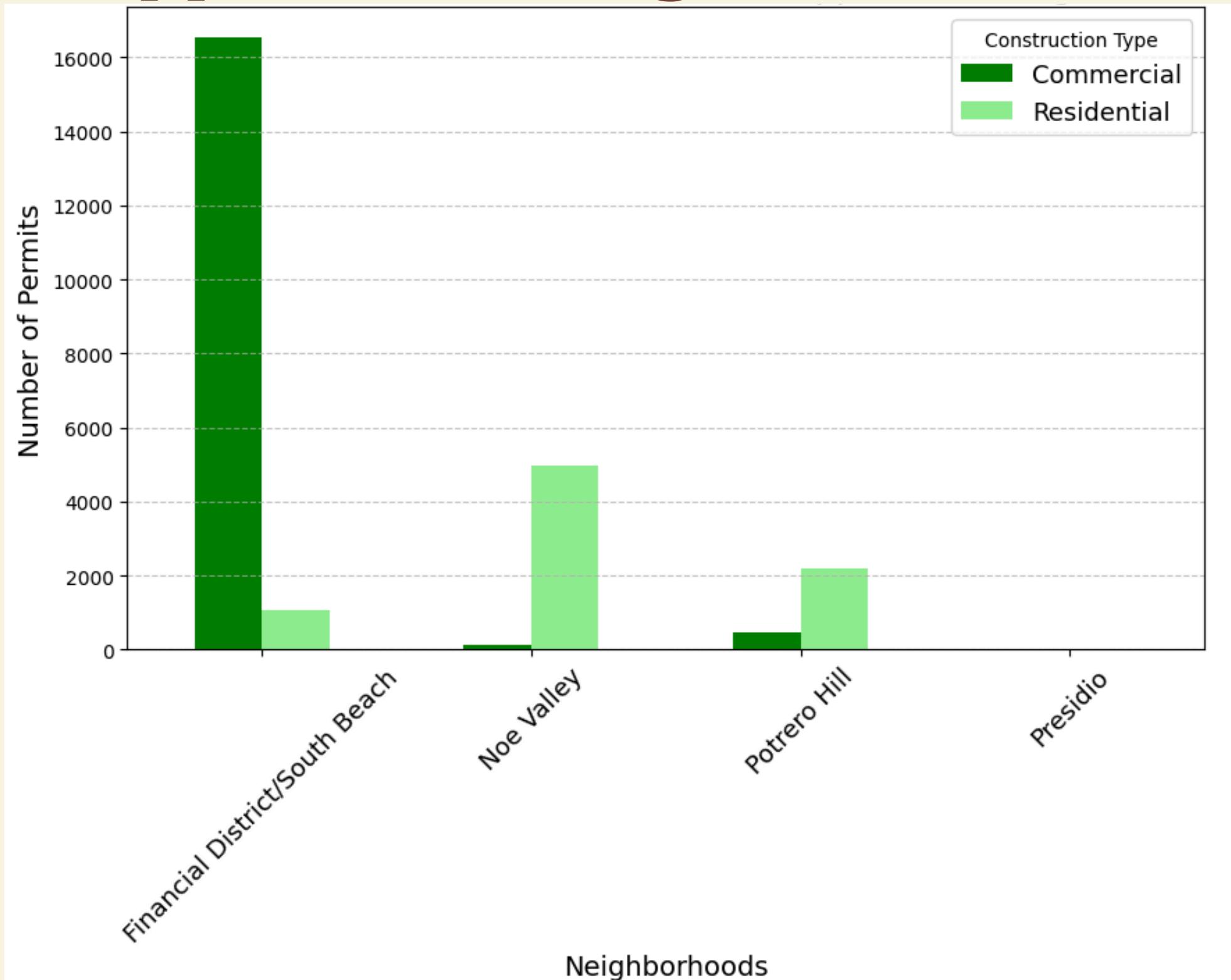
Permit Overview: Socioeconomic

Number of Permits by Socioeconomic Class



upper class requests
3x more permits
than lower class

Residential vs Commercial Building Permits in Upper Class Neighborhoods



- **Wall Street of the West** - Financial District
- **Family Neighborhoods**
 - Potrero & Noe Valley
- Presidio is **part of Golden Gate National Recreation Area**
- Much of **Presidio** - subject to environmental protection & conservation **efforts**

Upper Class Neighborhoods

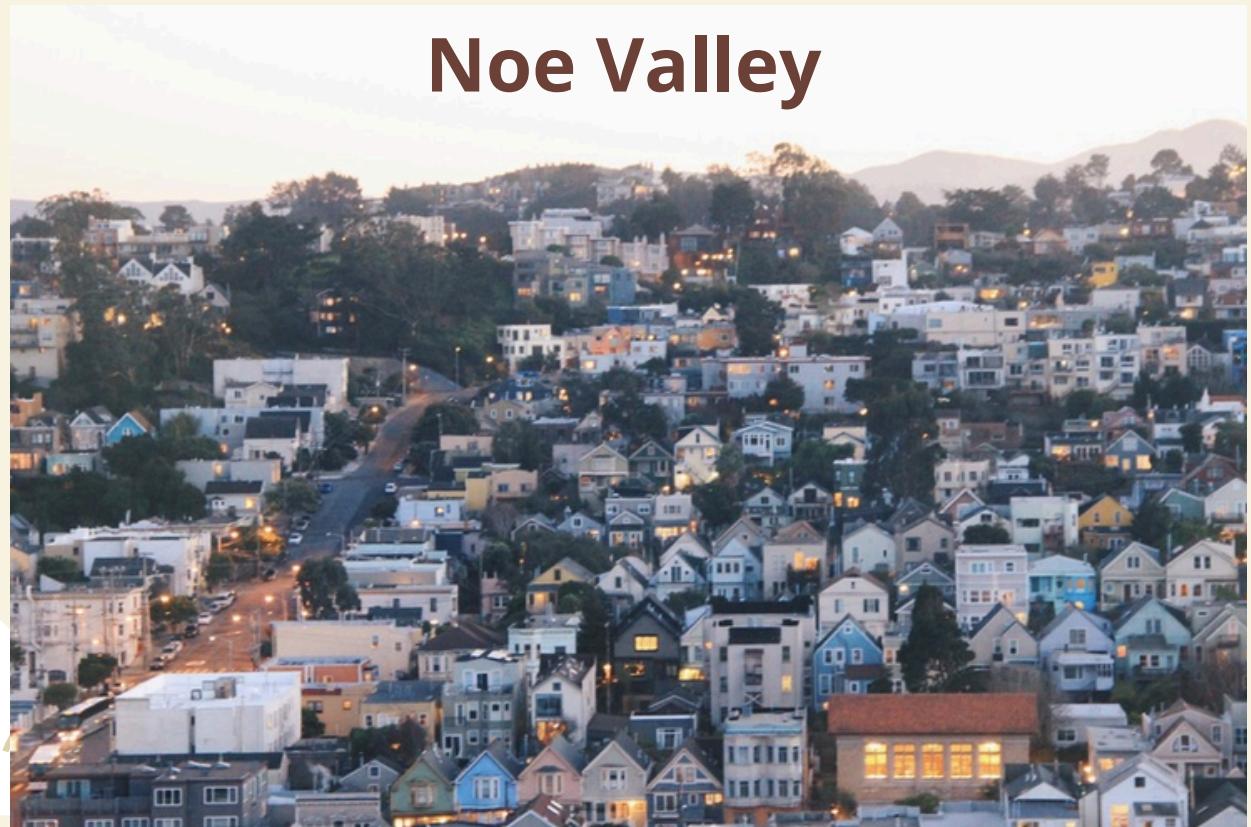
Financial District



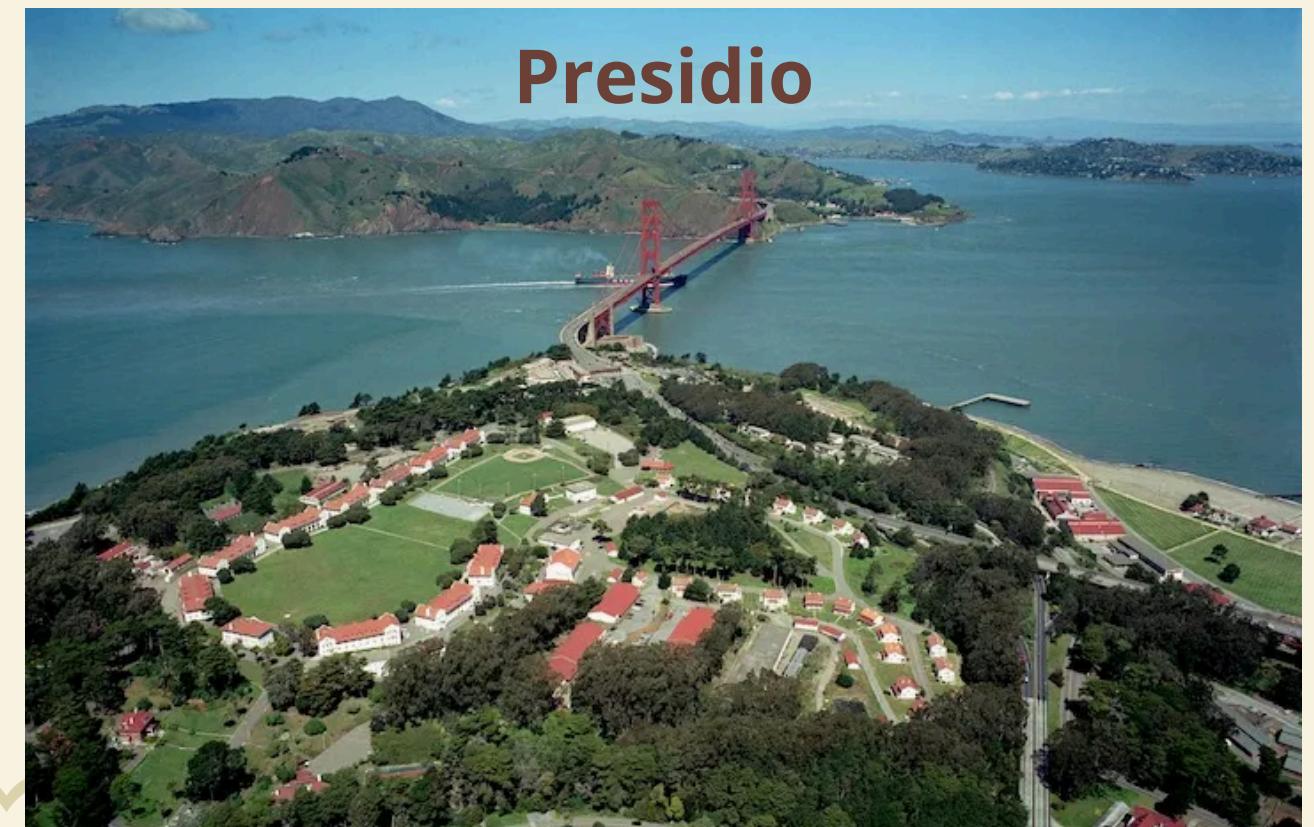
Portrero Hill



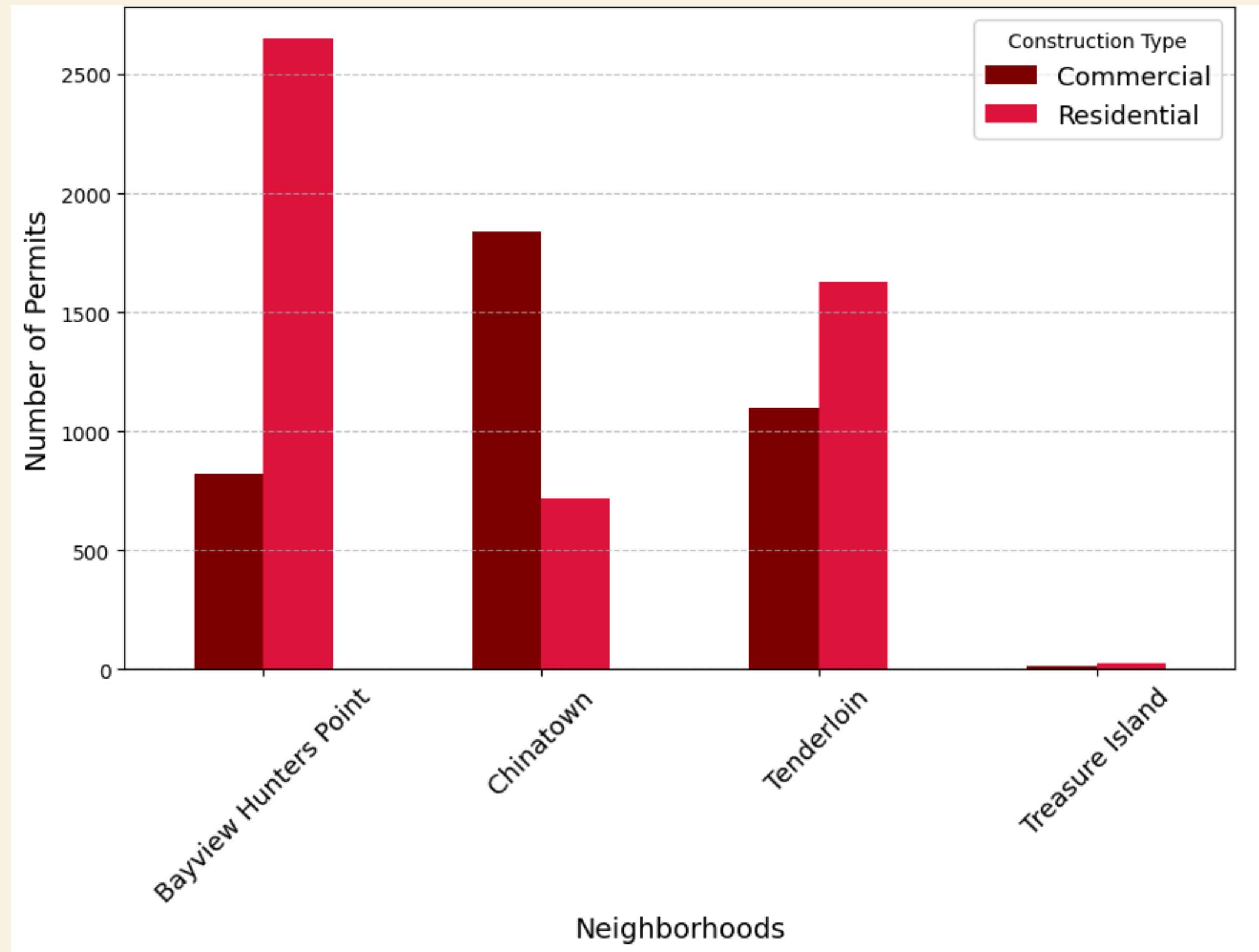
Noe Valley



Presidio



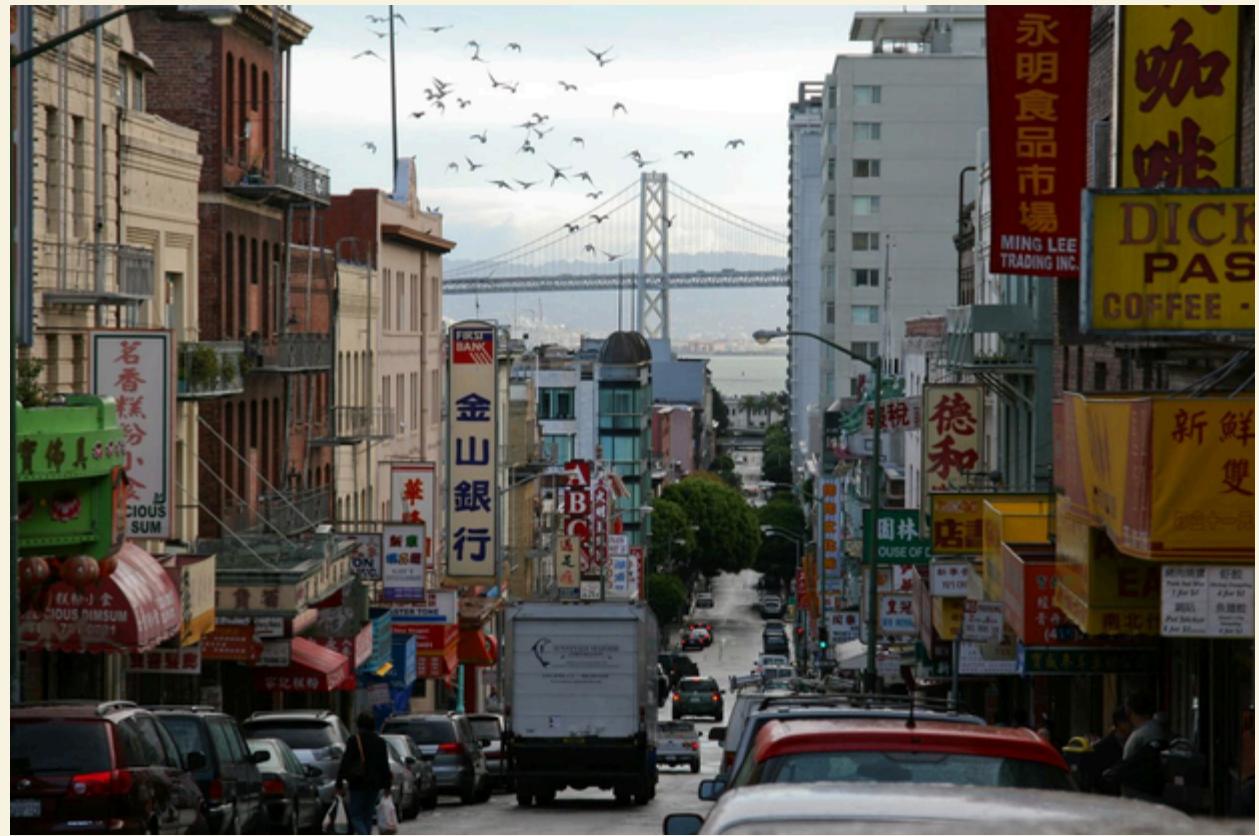
Residential vs Commercial Building Permits in Lower Class Neighborhoods



- Emerging Suburban Neighborhood - Bayview
 - Chinatown = High Tourism
- Densely Populated: Tenderloin, Chinatown
- Treasure Island is an Island ...

Lower Class Neighborhoods

Chinatown



Treasure Island



Tenderloin



Bayview-Hunters Point





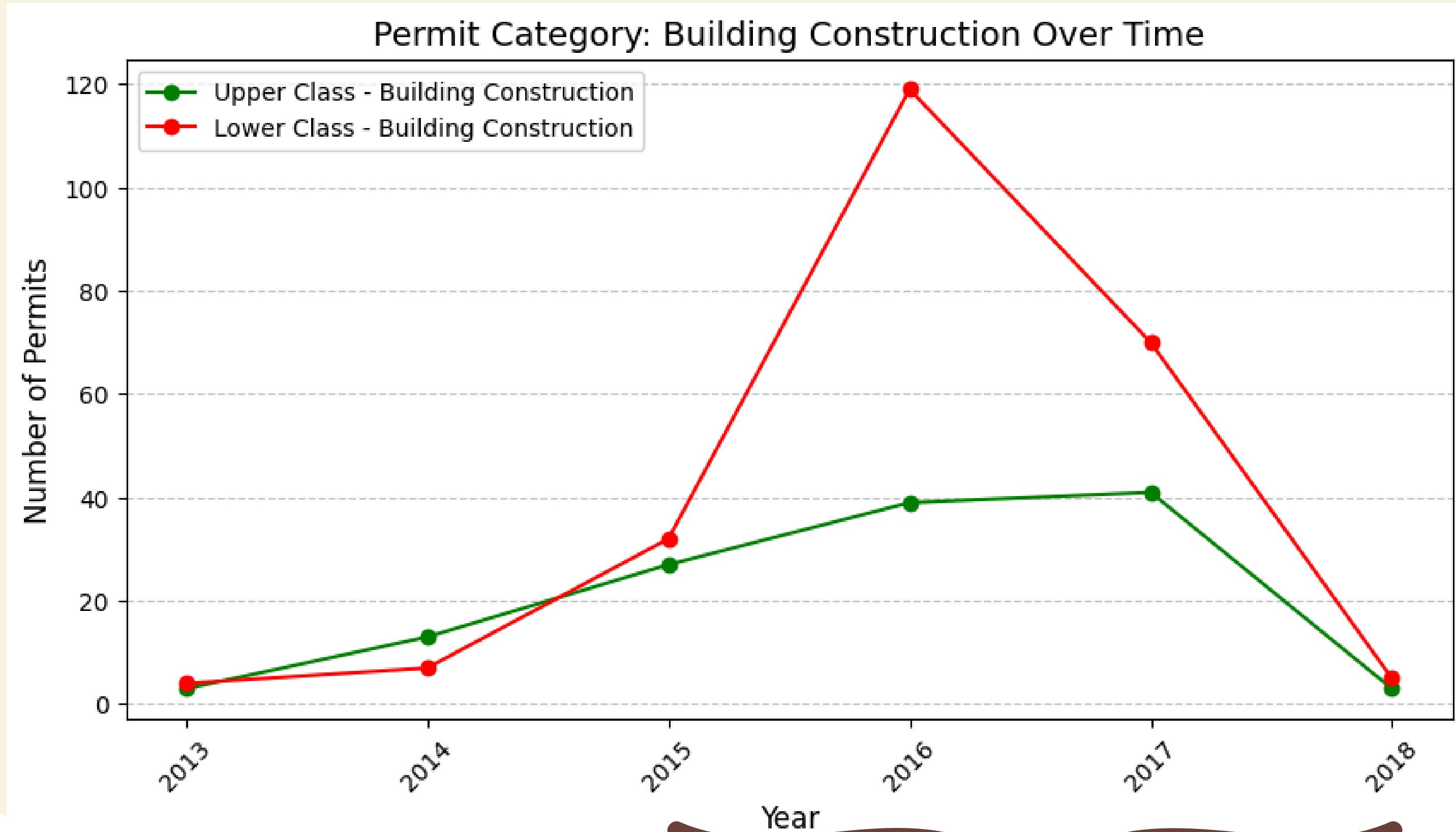
Building Costs

Total Count & Total Cost Percentages

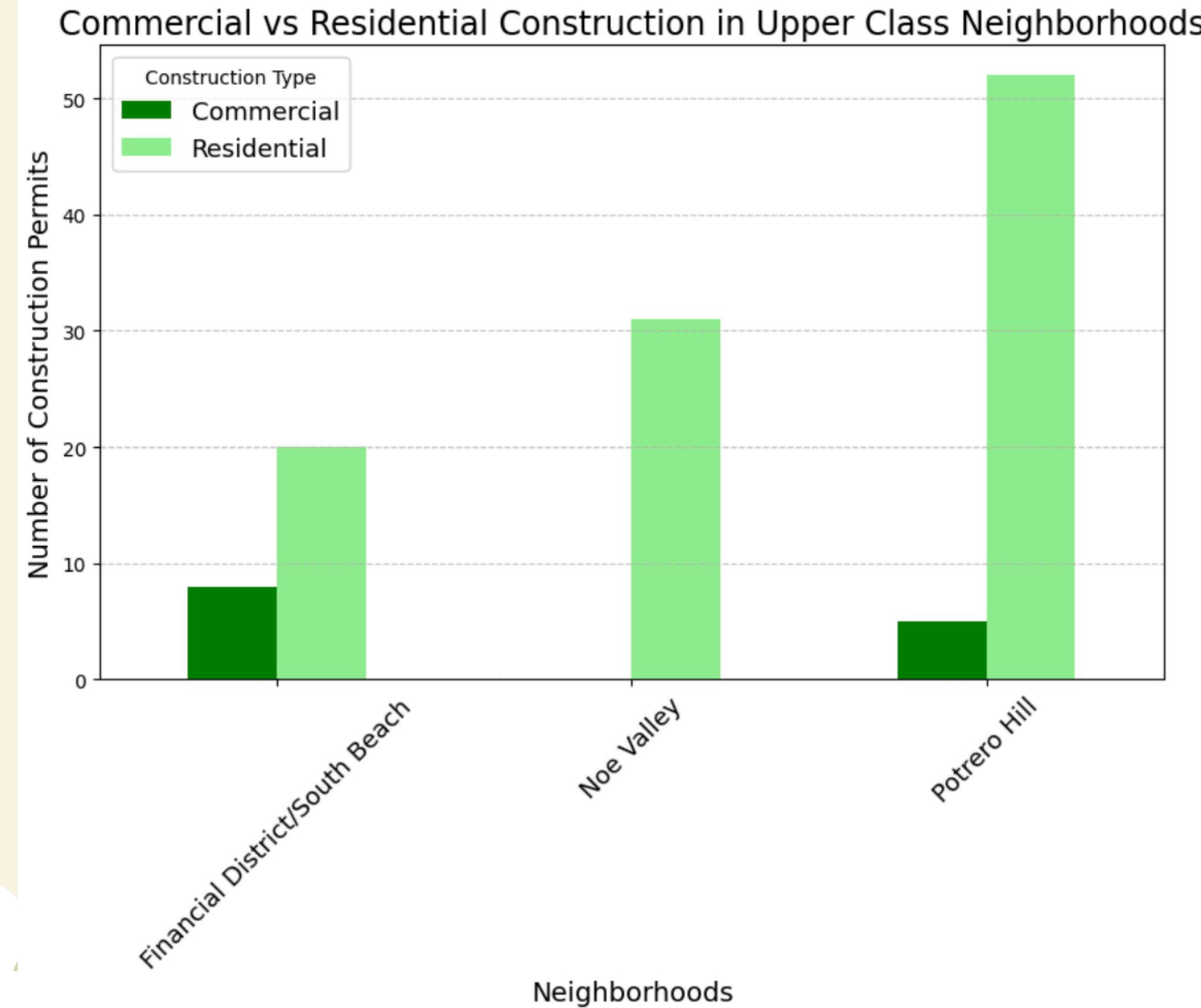
Permit Category	Lower Class: Permit Share	Upper Class: Permit Share	Lower Class: Total Cost %	Upper Class: Total Cost %
Demolition	0.7%	0.3%	0.6%	0.1%
Building Construction	1.9%	0.5%	50.6%	49.5%
Reparations	8.4%	6.4%	26.9%	12.9%
Small Projects	86%	90.4%	21.9%	37.5%
Signs	2.9%	2.4%	0.1%	0.1%



Number of Permits Construction

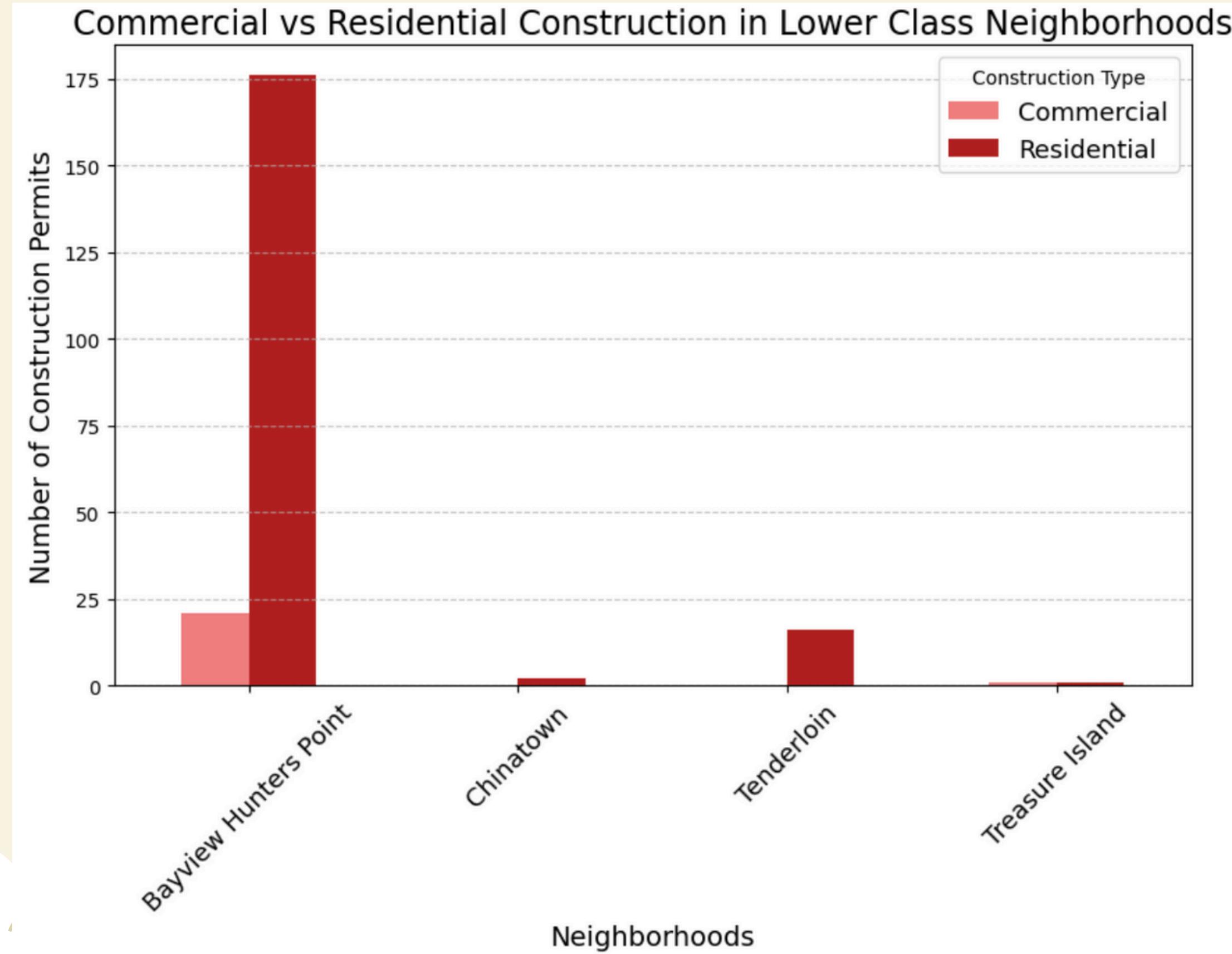


What is Being Built? (Upper Class)



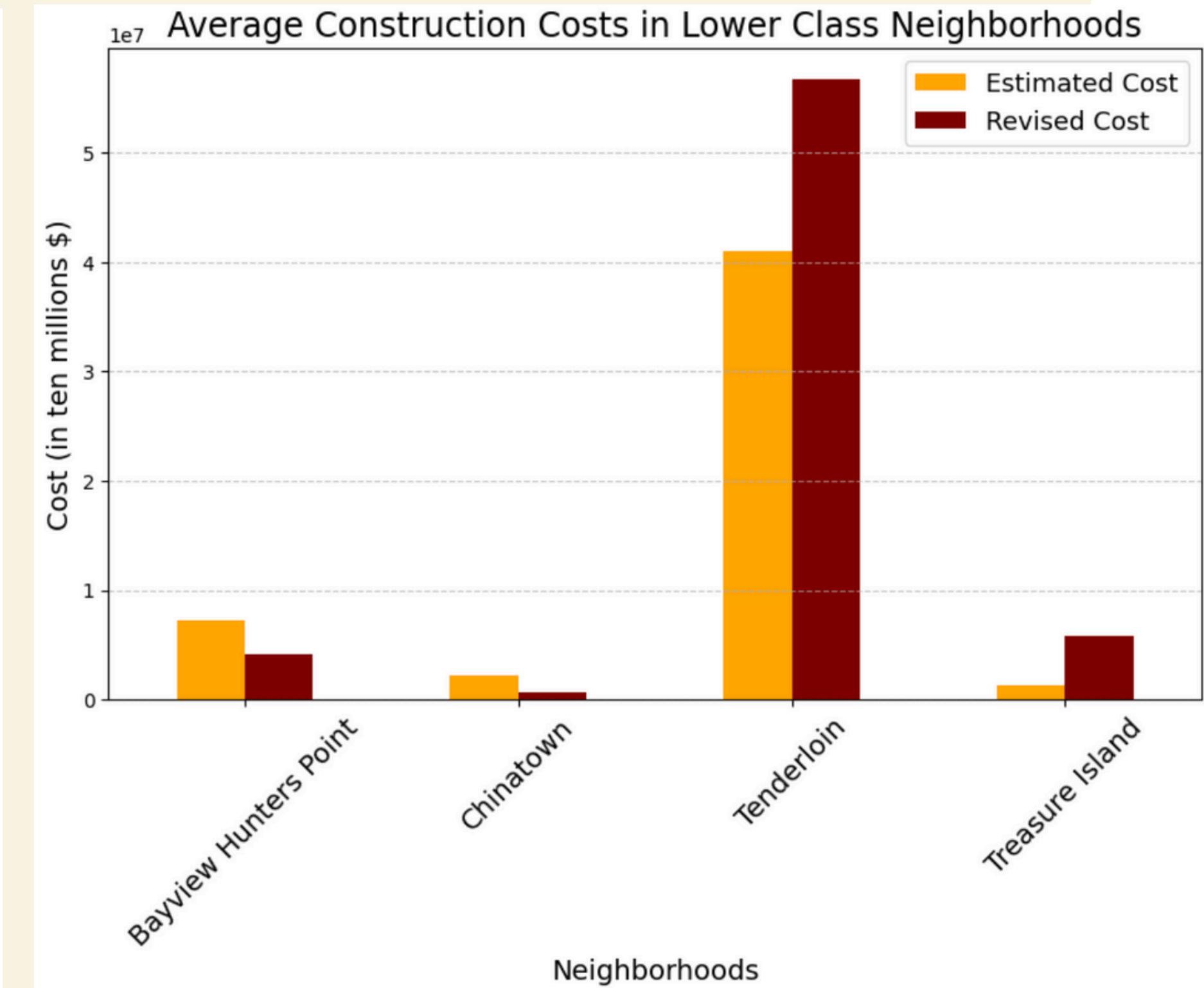
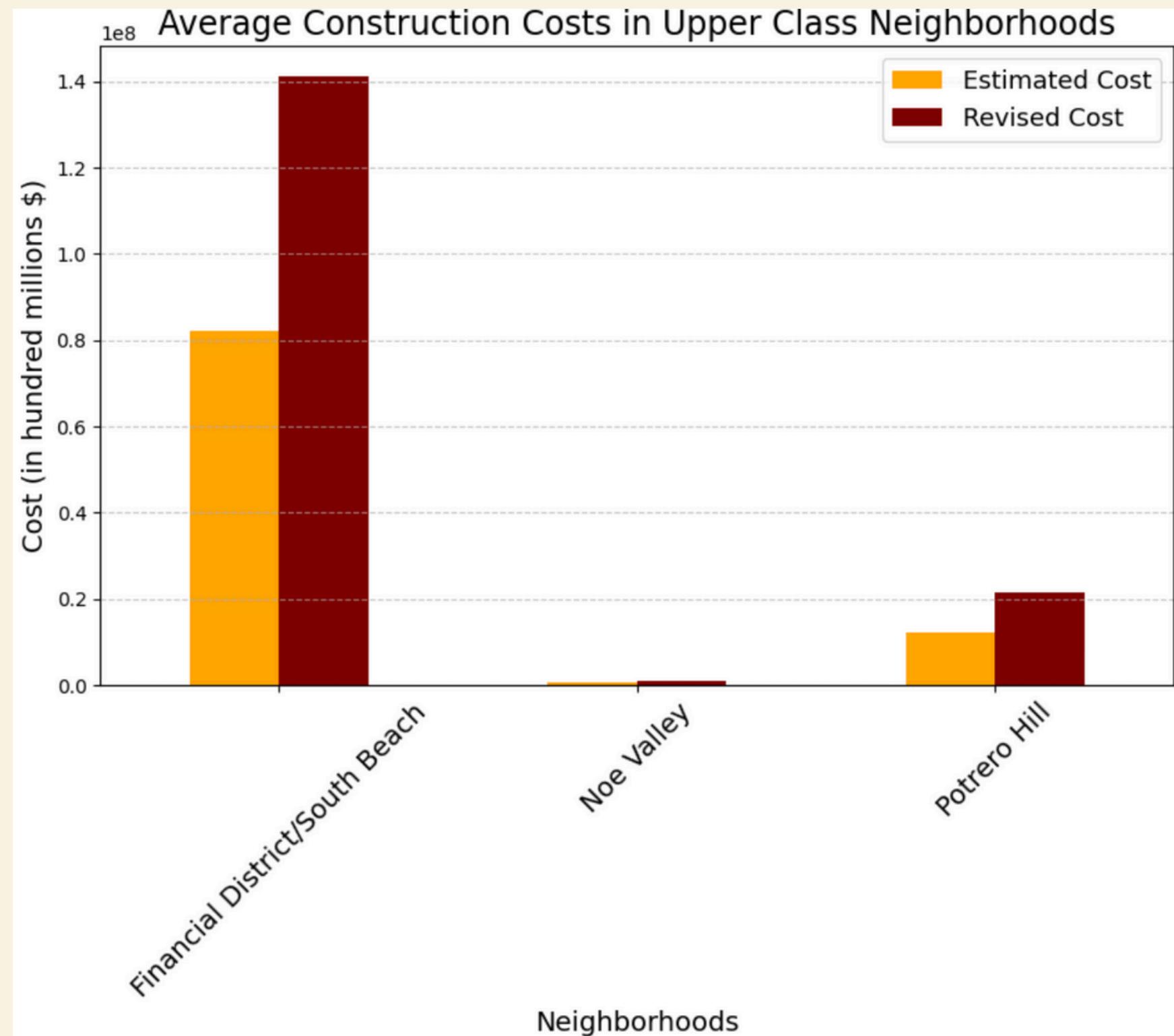
- **Residential construction >>> commercial built**
- Presidio is **part of Golden Gate National Recreation Area**
- Much of **Presidio - subject to environmental protection & conservation efforts**

What is Being Built? (Lower Class)



- **residential construction** >>> than commercial

Estimated and Revised Costs for Building Construction



Average Cost of Construction by Neighborhoods

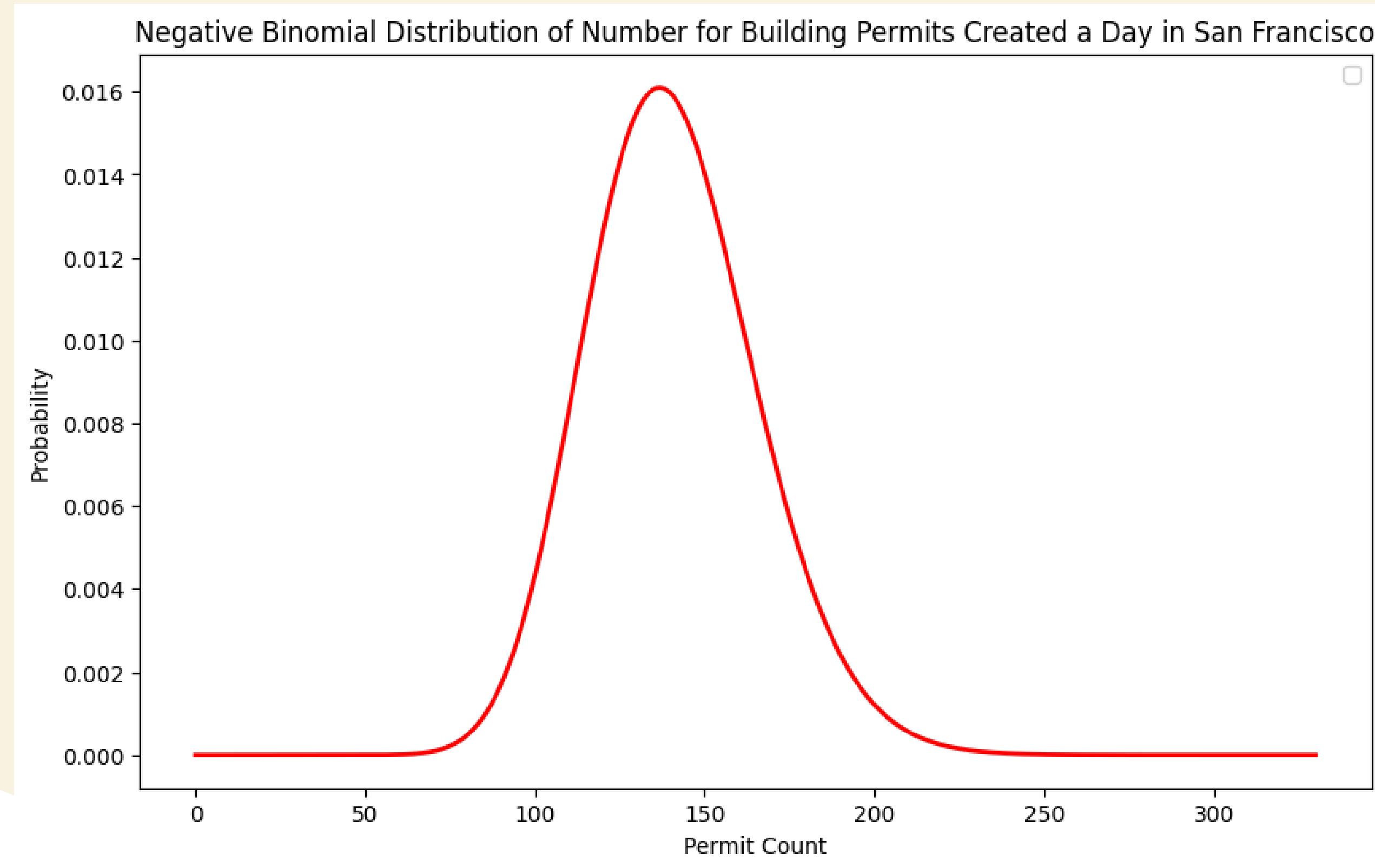
Construction Type	Presidio	Financial District/South Beach	Noe Valley	Potrero Hill
Residential	-	\$151.88M	\$0.97M	\$19.92M
Commerical	-	\$135.4M	-	\$50.14M

Construction Type	Tenderloin	Chinatown	Treasure Island	Bayview Hunters Point
Residential	\$50.48M	-	\$2M	\$3.97M
Commerical	-	-	-	\$4.32M



Permit Forecast

Probability Distribution of Number of Permits Created per Day



expect around
**100-200
permits**
created a day

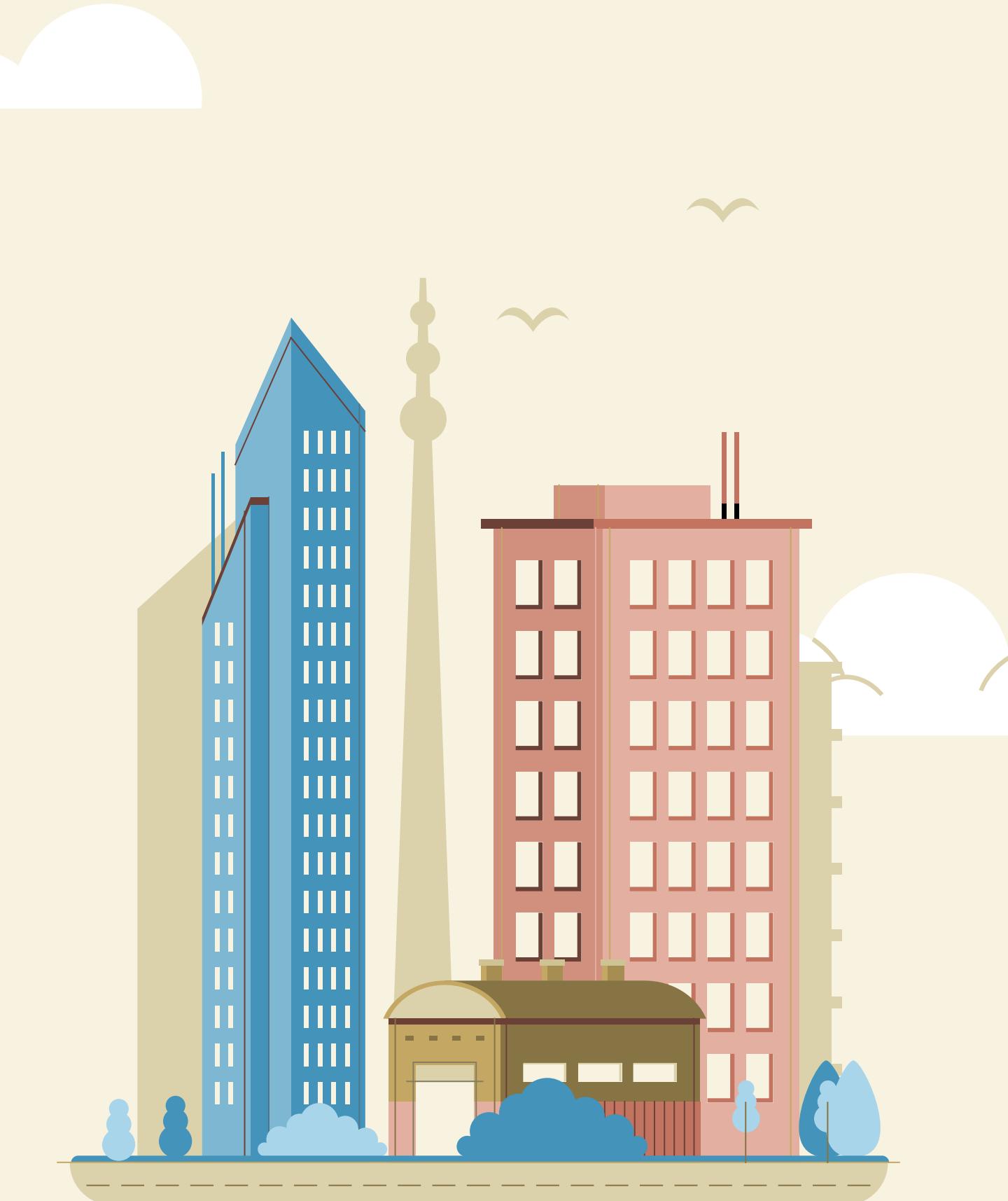
Conclusion

Overall Permits

- more building permits in upper than lower
- commercial in Financial District & Chinatown
- residential in Noe Valley, Potrero Hill, Bayview Hunters Point & Tenderloin
- not a lot in Presidio & Treasure Island

Building Construction Permits

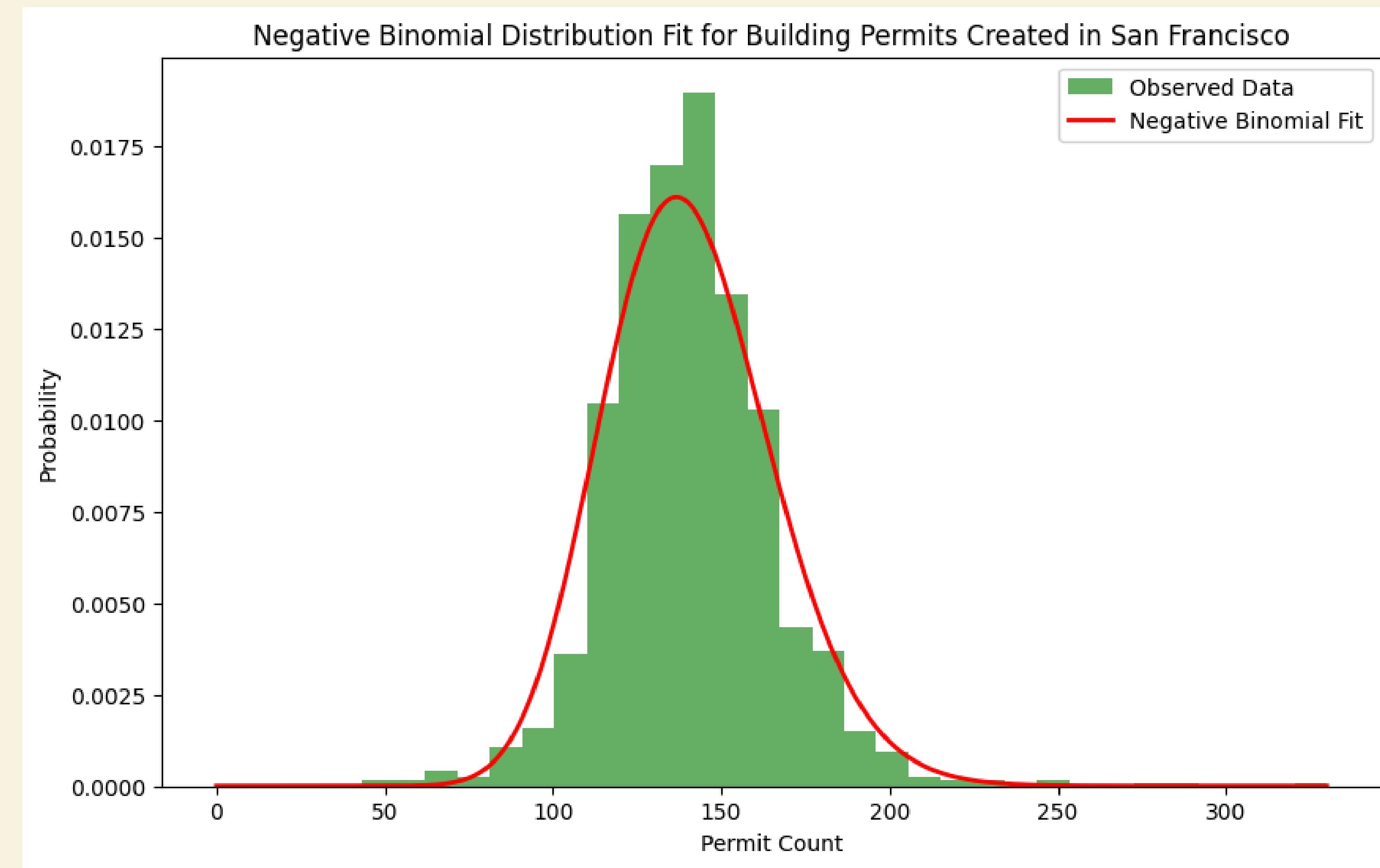
- more residential than commercial construction in all neighborhoods
- no construction at all in Presidio
- Financial District - highest average cost in upper class
- Tenderloin - highest average cost in lower class





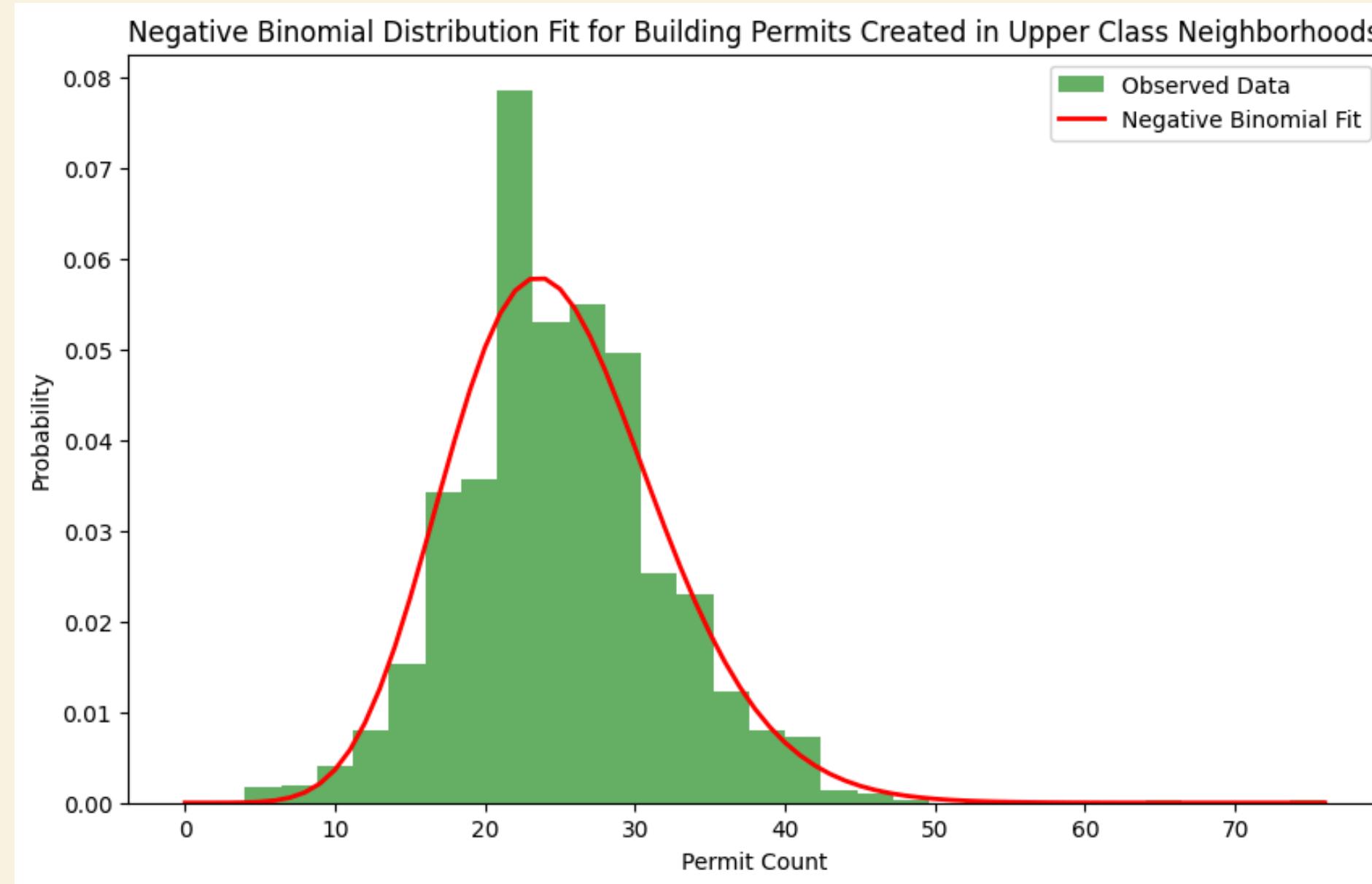
Thank you!

Probability Distribution of Number of Permits Created per Day



Probability Distribution of Number of Permits Created per Day

Upper Class



Lower Class

