San Francisco’s Crime & Housing Data Analysis

Team Vigilantes

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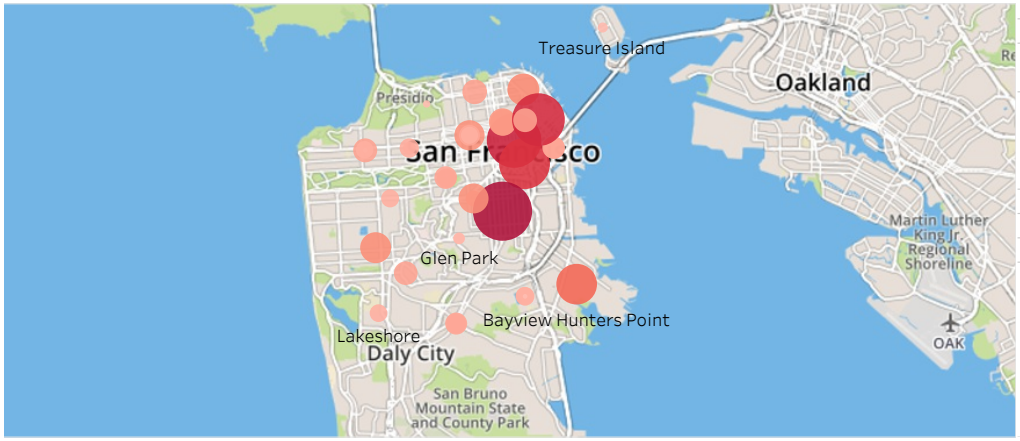
Introduction

Vigilantes is a site for buyers and renters to find homes and neighborhoods that are safe and affordable across San Francisco. It provides recommendations through map overlays that offer details on Crime, Crime trends, Housing, Rent and Schools for the neighborhood.

Goals

1. To analyze the crime rates and occurences in San Francisco
2. To help prospective buyers find the safest and most affordable place to buy/rent a house in San Francisco

Which area has maximum Crime Rate?



Incident Catego..	Incident Subcatego..	
Arson	Arson	297
Assault	Aggravated Assault	2,715
	Simple Assault	5,017
Burglary	Burglary - Commer..	745
	Burglary - Hot Prowl	688
	Burglary - Other	2,540
	Burglary - Resident..	2,020
Case Closure	Case Closure	541
Civil Sidewalks	Other	439
Courtesy Report	Courtesy Report	329
Disorderly Conduct	Disorderly Conduct	282
	Drug Violation	13
	Drunkenness	232
	Intimidation	1,298
	Loitering	29
	Other	267
	Trespass	5

No. of Incidents
97 — 14,922

Time of Crime

Incident Da..	4AM-6AM	6AM-8AM	8AM-10A..	10AM-12..	12PM-2PM	2PM-4PM	4PM-6PM	6PM-8PM	8PM-10PM	10PM-12..	12AM-2A..	2AM-4AM
Monday	492	797	1,443	1,725	2,144	1,861	2,141	2,052	1,597	1,257	1,247	599
Tuesday	437	775	1,500	1,678	2,154	2,021	2,096	2,279	1,736	1,259	1,095	596
Wednesday	459	839	1,538	1,876	2,245	1,966	2,251	2,177	1,812	1,368	1,068	533
Thursday	412	809	1,495	1,655	2,066	1,887	2,121	2,268	1,765	1,335	1,077	601
Friday	473	794	1,493	1,833	2,125	2,027	2,185	2,341	1,967	1,662	1,264	596
Saturday	433	563	1,190	1,628	1,910	1,876	2,121	2,108	1,803	1,742	1,591	833
Sunday	421	570	1,047	1,550	1,845	1,659	1,932	1,773	1,624	1,252	1,590	841

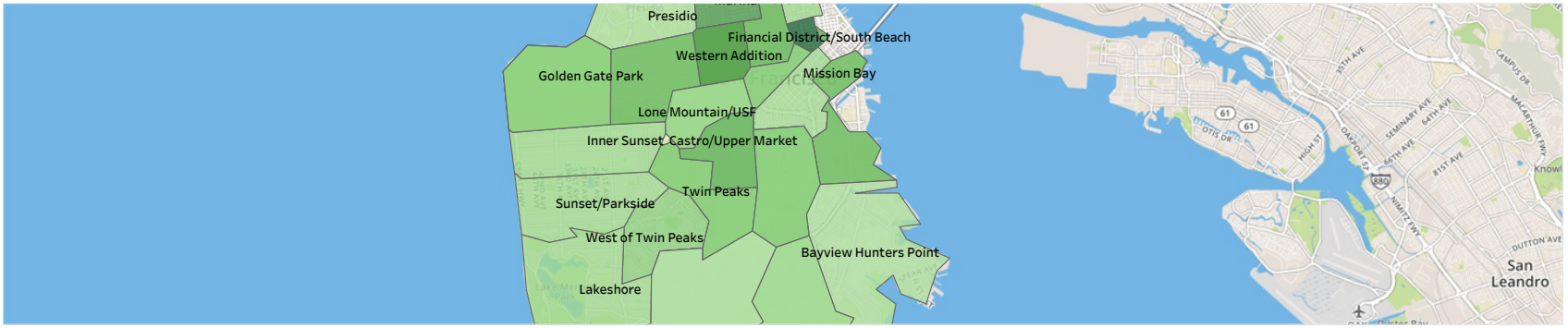
Incident Category

Neighborhood	Larceny Theft	Assault	Motor Vehicle Theft	Burglary	Offences Against The Family And Child..	Missing Person	Warrant	Robbery	Fraud	Drug Violation
Bayview Hunters Point	1,052	718	467	331	291	284	239	206	155	94
Bernal Heights	481	146	142	108	56	55	62	69	70	30
Castro/Upper Market	1,183	269	125	231	59	60	171	80	99	74
Chinatown	717	140	43	93	47	63	60	67	68	28
Excelsior	257	173	117	117	85	108	66	96	76	46
Financial District/Sout..	4,800	615	216	764	139	112	360	386	402	110
Glen Park	167	34	26	58	21	16	14	13	15	7
Golden Gate Park	508	50	47	37	11	67	36	14	22	22
Haight Ashbury	582	115	95	93	28	133	91	13	55	54
Hayes Valley	1,463	128	116	182	50	77	64	64	73	25
Inner Richmond	549	50	40	53	34	57	30	29	59	11
Inner Sunset	442	66	67	83	36	94	31	8	51	6
Japantown	738	40	15	31	13	18	19	29	36	4
Lakeshore	540	79	58	52	28	17	33	23	81	3
Lincoln Park	68			2	2		2		2	2
Lone Mountain/USF	465	63	72	79	62	203	45	24	41	8
Marina	1,108	109	73	229	26	20	45	53	97	10
McLaren Park	18	8	7	7			3	1	2	
Mission	3,641	1,219	561	472	330	376	790	396	314	412
Mission Bay	671	116	38	108	37	63	51	24	113	21
Nob Hill	1,057	183	140	209	53	55	101	79	119	28
Noe Valley	330	44	72	148	27	15	10	19	32	2
North Beach	2,239	160	86	138	53	36	107	73	117	33
Oceanview/Merced/Ing..	292	95	75	91	54	53	41	35	65	8
Outer Mission	255	109	76	109	58	97	50	62	46	27
Outer Richmond	867	89	120	94	81	82	42	29	108	21
Pacific Heights	738	55	78	173	32	51	29	21	56	4
Portola	326	76	88	79	39	39	31	75	30	17
Potrero Hill	768	86	98	123	49	37	60	35	52	19
Presidio										

Neighborhood
All

No. of Incidents
1 4,800

House Prices By Neighborhood



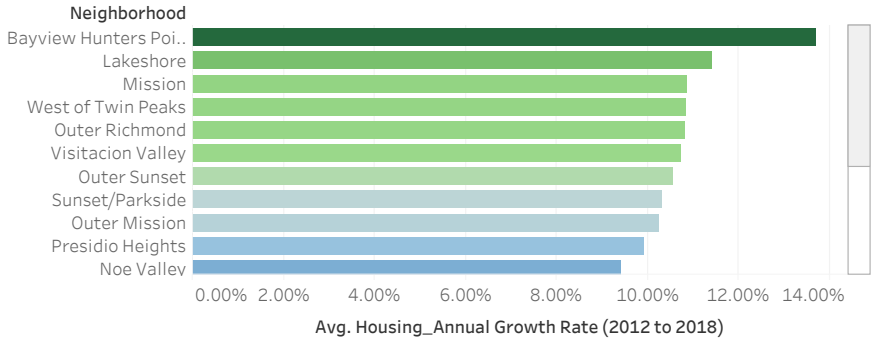
Commute Statistics

Neighborhood	Walk Score	Bike Score	Transit Score
Bayview Hunters Po..	84	70	70
Bernal Heights	97	99	85
Castro/Upper Market	96	60	90
Chinatown	97	64	100
Excelsior	85	65	91

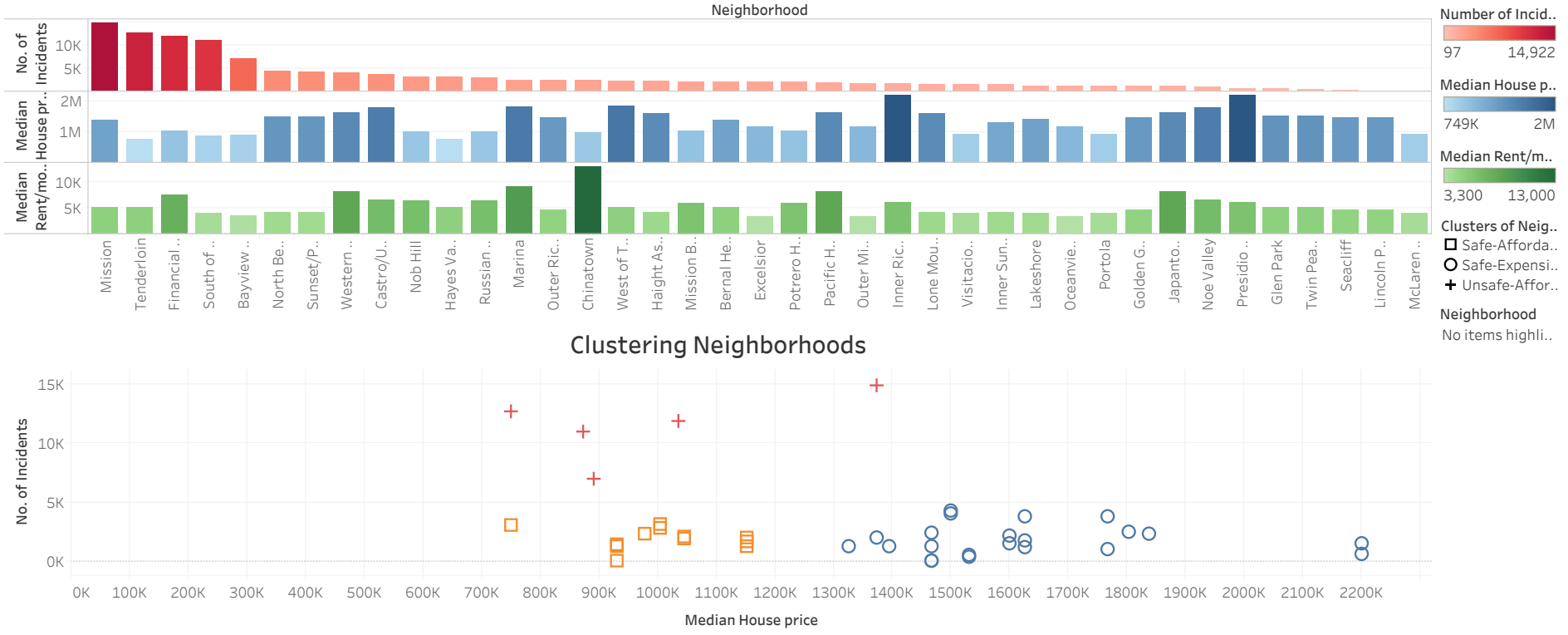
School Statistics

Neighborhood	Elementary Sch..	Middle School	High School
Bayview Hunters Po..	6	7	10
Bernal Heights	9	9	10
Castro/Upper Market	9	6	10
Chinatown	8	N/A	10
Excelsior	8	4	10

Change in Home Price



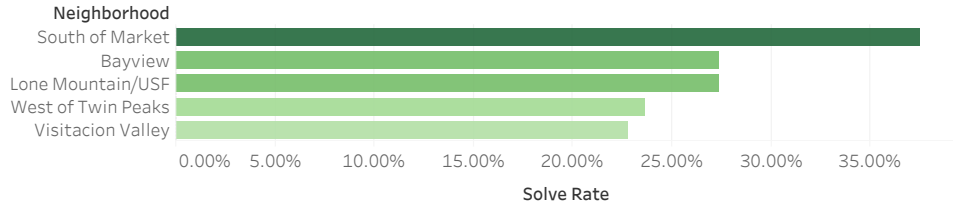
Relationship Between House Prices/Rent with Number of Incidents



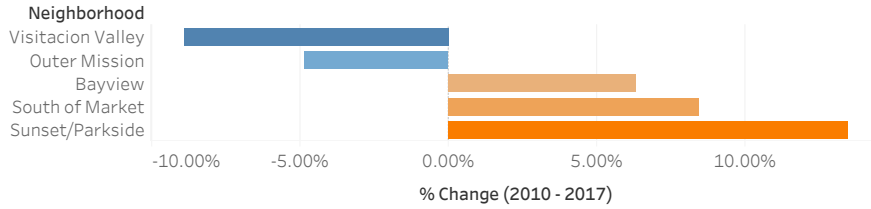
Clustering Neighborhoods

Solve Rate & Change in Crime

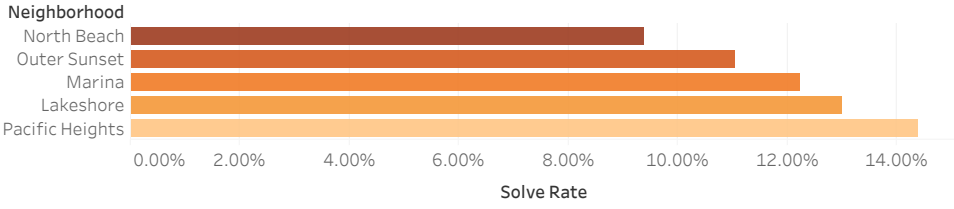
Solve Rate - Best Neighborhoods



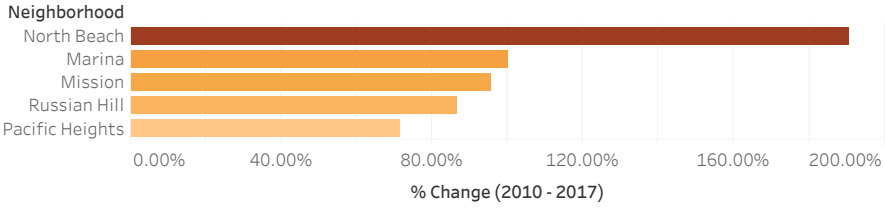
Change in Crime - Best Neighborhoods

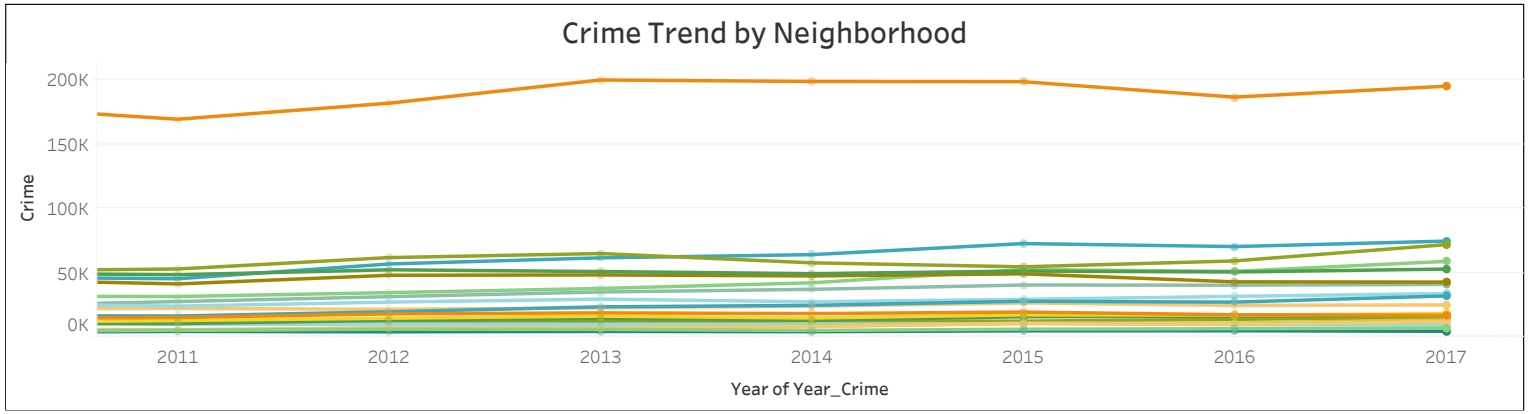


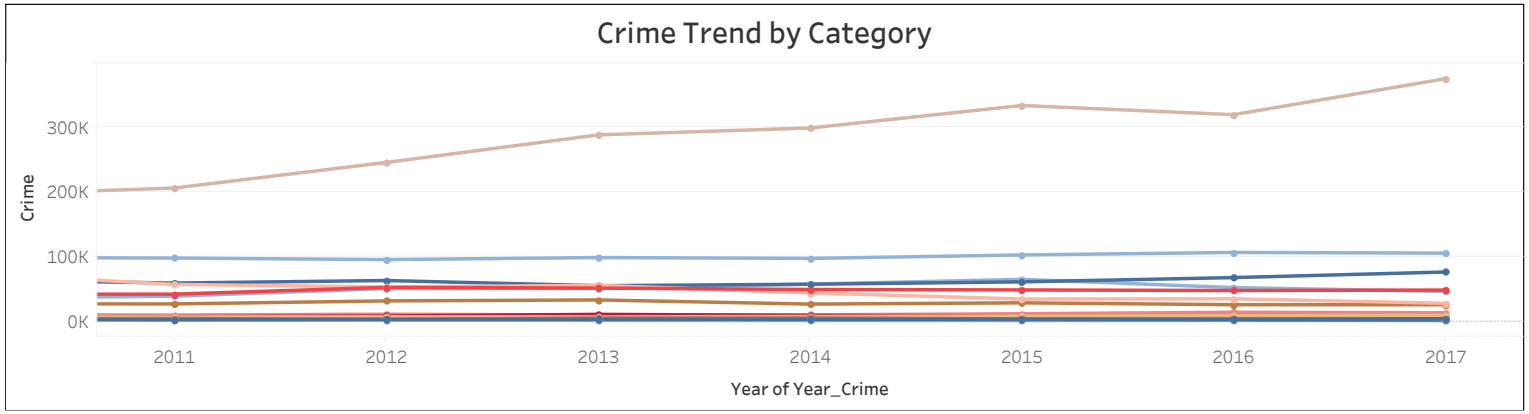
Solve Rate - Worst Neighborhoods



Change in Crime - Worst Neighborhoods







Year of Year_Crime
2017
Show history

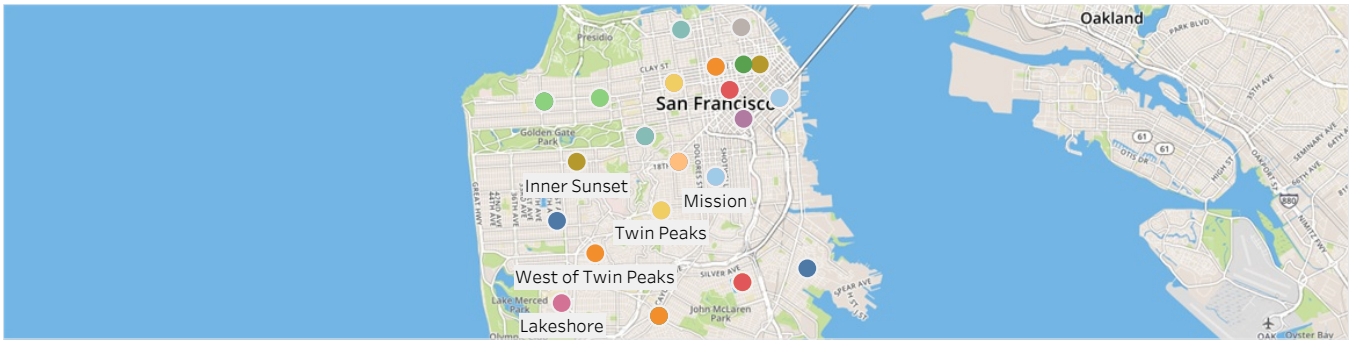
Neighborhood
All

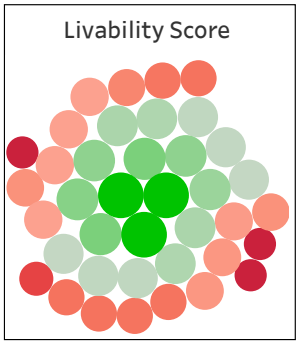
Neighborhood
Bayview
Lakeshore
Lone Mountai..
Marina
Mission
Mission Bay
Noe Valley
North Beach
Outer Mission
Outer Richmo..
Outer Sunset
Pacific Heights
Presidio Heigh..
Russian Hill
South of Mark..
Sunset/Parksi..
Tenderloin
Visitacion Vall..
West of Twin ..

Category
All

Category
ARSON
ASSAULT
BURGLARY
DRUG/NARCO..
KIDNAPPING
LARCENY/THE..
LIQUOR LAWS
LOITERING
ROBBERY
SEX OFFENSE..
STOLEN PROP..
TRESPASS
VANDALISM
VEHICLE THEFT

San Francisco Livability Info





Livability Score
49.740461132 to 100
and Null values

House price
749,000 to 2,200,000
and Null values

Rent Per Month
3,300 to 13,000
and Null values

High School Rating
All values

Middle School Rating
All values

Elementary School Rating
All values

Neighborhood
All

Neighborhood
- Bayview Hunters Point
- Bernal Heights
- Castro/Upper Market
- Chinatown
- Excelsior
- Financial District/Sou..

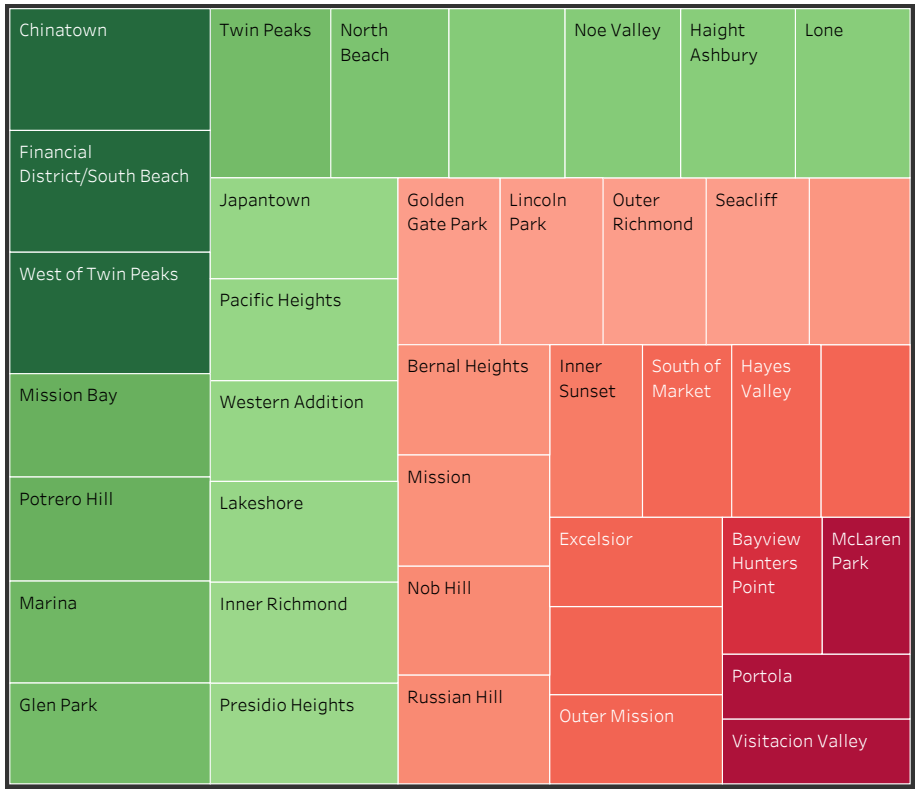
Housing Info

Neighborhood	House price	Price Per Sqft	Rent Per Month
Bayview Hunters Point	890,000	700	3,500
Bernal Heights	1,373,500	1,218	4,950
Castro/Upper Market	1,766,250	1,353	6,499
Chinatown	977,500	1,298	13,000
Excelsior	1,151,500	938	3,300
Financial District/South..	1,034,500	975	7,395
Glen Park	1,530,000	1,216	4,945
Golden Gate Park	1,466,000	982	4,680
Haight Ashbury	1,600,000	1,235	4,122
Hayes Valley	749,000	1,063	4,900
Inner Richmond	2,200,000	1,177	5,997
Inner Sunset	1,325,000	1,013	4,050
Japantown	1,625,000	1,197	8,100
Lakeshore	1,395,000	910	3,950

Neighborhood Info

d	Walk Score	Transit Score	High School	Middle School	Elementary School
B.	84	70	10	7	6
B.	97	85	10	9	9
C.	96	90	10	6	9
C.	97	100	10	Null	8
E.	85	91	10	4	8
F.	98	100	10	Null	9
.	72	70	10	Null	9
.	84	73	10	8	9
.	93	84	10	Null	9
.	92	100	10	Null	8
I..	92	79	10	8	9
I..	89	67	10	10	10
J.	98	83	10	8	9
L.	60	60	10	Null	10

Recommendations



Mclaren Park
Lincoln Park
Seacliff
Twin peaks
Glen Park
Presidio Heights

Most Economial neighborhoods to buy / rent

Tenderloin
Hayes Valley
SOMA
Bayview Hunters Point
Portola
Mclaren Park

Most liveable neighborhoods

Chinatown
Financial District
West of Twin Peaks
Mission Bay

Project Pipeline

Data Preparation:

> The crime dataset which we got didn't have zipcode associated with each record rather had the names of neighborhood.
> So while cleaning the dataset in python, we used pandas to map zipcode to each neighborhood using dummy variables.
> And finally we joined crime dataset and housing dataset.

Data Sources:

> We got the housing dataset from Trulia and Zillow.
Current Prices/Rent: https://www.trulia.com/real_estate/94134-San_Francisco/
Historical Data: https://www.zillow.com/research/data/

> For crime dataset we took Incident Reports: 2018 to Present dataset and Historical Incident Reports from 2003 from data.sfgov.org.
https://data.sfgov.org/Public-Safety/Police-Department-Incident-Reports-2018-to-Present/wg3w-h783
https://data.sfgov.org/Public-Safety/Police-Department-Incident-Reports-Historical-2003/tmnf-yvry