Further Study on San Francisco Affordable Housing Pipeline Dataset

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1 Introduction

The purpose of the dataset research is to further understand the affordable housing market by studying the affordable housing pipeline dataset released by the Mayor's Office of Housing and Community Development (MOHCD) and the Office of Community Investment and Infrastructure (OCII) in San Francisco county. The projects listed are in the process of development–or are anticipated to be developed–in partnership with non-profit or for-profit developers and financed through city funding agreements, ground leases, disposition and participation agreements and conduit bond financing. The Affordable Housing Pipeline also includes housing units produced by private developers through the Inclusionary Affordable Housing Program. Data reflects all projects as of June 30, 2020. (Data SF, 2020)

The Bay Area has been experiencing a significant shortage of affordable housing for many years. In San Francisco metropolitan areas, 45 percent of renter households pay more than 30 percent of their income on housing, and for many, homeownership in the area is out of reach. The shortage of affordable housing has led to a surge in the number of commuters who travel 90 minutes or more each way to and from their jobs. Only 2 percent and 3 percent of low-wage workers employed in the San Francisco and San Jose metropolitan areas, respectively, reside in census tracts where they can afford the median monthly rent. In 2017, in most ZIP codes in the Bay Area, there were more low-wage jobs than job seekers within a reasonable distance. (Zonta, 2020)

This study will conduct SQL analytics on the dataset to extract more insights from the current affordable housing pipeline plan, so as to gain a high level understandings that how San Francisco will address the current housing shortage and high housing cost challenges.

2 Analysis Methods and Goals

This study will conduct SQL queries using the tool Mode Analysis, and also conduct data visualization by generating charts and tables for the query results

using the tool Mode Analysis.

The study goal will be obtained by conducting multiple queries to answer the following questions: 1) project status; 2) project Location Zip Code; 3) project location neighborhood; 4) project program area; 5) project type; 6) project lead sponsors; 7) project pipeline completion year; 8) top 10 projects by the number of total units; 9) project by affordable rate;10) total number of units by purpose.

All these questions will provide us different angles to understand the affordable housing pipeline plan in a higher level and to gain a better understanding of San Francisco real estate market.

3 Study Findings

3.1 Affordable Housing Project Pipeline Overview AS of June 30 2020

- **Affordable Housing Projects Type Overview**

	project_type	total_count
1	New Construction	286
2	Rehabilitation	77

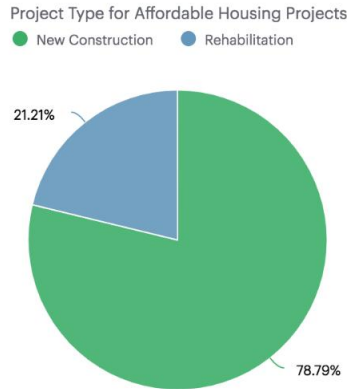Figure 1: Total Number By Affordable Housing Project Type

Figure 2: Total Number By Affordable Housing Project Type

Among all 363 projects, there are 286 new construction projects accounting for 78.79% of the total, and 77 rehabilitation projects accounting for 21.21% of the total, which tells us in San Francisco,the project sponsors and real estate developers prefer to build new projects instead of rehabilitation of existing affordable housing, the city also encourages the new

construction for affordable housing so that it is relatively not too difficult to obtain entitlement and approval for new construction.

- **Affordable Housing Projects Status Overview**

project_status	total_count
(5) First Construction Document Issued	97
(3) Design with Entitlements Approved	73
(6) Complete	57
(4) Site Work Permit Issued	53
(2) Predevelopment Feasibility	39
(1) Preliminary Phase	38
(7) On-Hold / Planning Approval Expired	3
(8) Cancelled	3

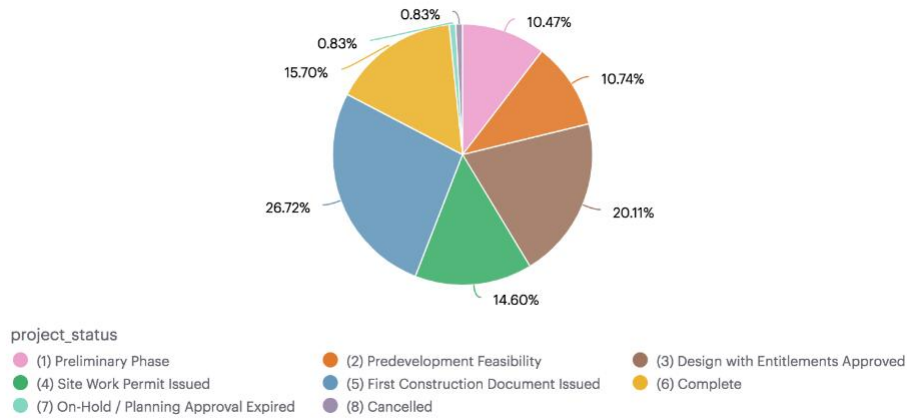Figure 3: Affordable Housing Projects Status Table Overview

Figure 4: Project Status Pie Chart As of June 30 2020

As we can see from both the table and the pie chart, as of June 30 2020,only 59 projects are completed and ready to open to the public, which only accounts for 15.70% of total 363 projects. 53 projects, accounting for 14.60% of the pipeline, issued site work permits which means that those projects have been under construction. 97 projects, accounting for 26.72% of the pipeline, just issued first construction documents, and 73 projects, accounting for 20.11% of the pipeline, approved their entitlement, meaning that roughly 50% of the pipeline are still in the beginning stages.

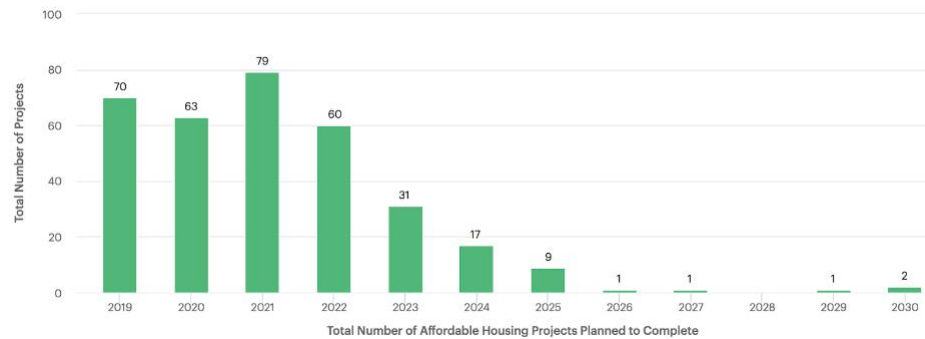- **Affordable Housing Projects Planned Completion Year Overview**

Figure 5: Affordable Housing Projects Planned Completion Year Overview

Combing with previous project status, it is expected to see that most of projects will be completed in next couple of years. From the above bar chart, it is noticeable that from the plan, there should be 70 projects completed in 2019 and 63 projects completed in 2020. However, from previous project status, we learnt that, as of June 30 2020, there are only 59 projects completed, and 53 projects under construction, therefore, we may guess that, due to Covid-19 in 2020, most projects got delayed. From this plan,we can also learn that all the 363 affordable housing pipeline will be expected to be completed and ready to the public in the year of 2030.

- **Affordable Housing Projects Program Overview**

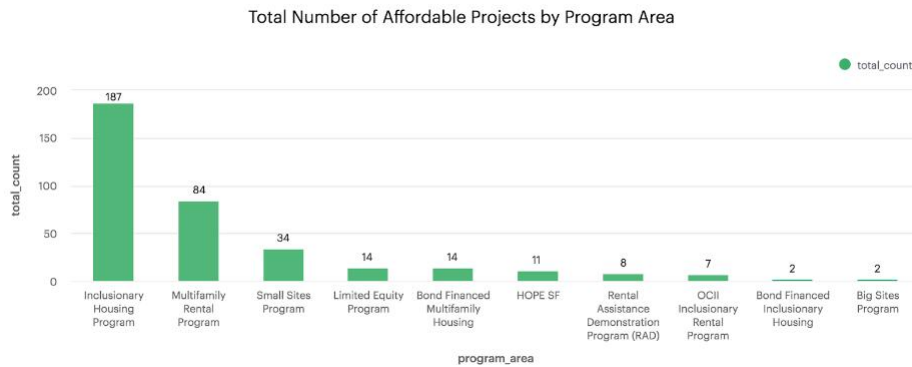Figure 6: Affordable Housing Project Program Area Overview

Almost half of the pipeline are the Inclusionary Housing Program projects - Projects subject to Planning Code Section 415, the City's Inclusionary Affordable Housing Program. 84 projects are Multifamily Rental Program projects - Projects developed with financial assistance from MOHCD or OCII. And only 11 projects are HOPE SF projects - Public housing

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projects planned for full-scale revitalization into mixed-income communities under the City's HOPE SF program.

- **Affordable Housing Projects Tenure Overview**

	housing_tenure	total_count
1	Rental	236
2	Ownership	71
3	Unknown	54
4	Ownership, Rental	2

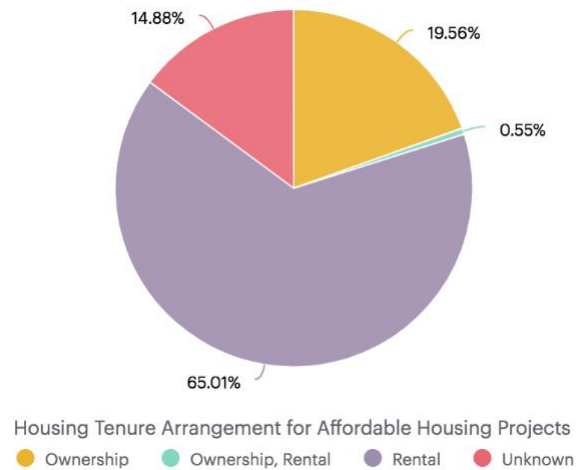Figure 7: Affordable Housing Project Tenure Overview Table

Figure 8: Affordable Housing Project Tenure Overview Pie Chart

Among all the 363 affordable housing projects, 236 projects, accounting for 65.01% of the total, are projects for rental.71 Projects, accounting for 19.56% of the total, are projects to be sold for ownership. Only 2 projects are planned for both rental and ownership. And there are 54 projects which haven't identified its tenureship yet.

3.2   Affordable Housing Project Geography Overview

To find out where the majority affordable housing projects are located in San Francisco, I conducted a query on the zipcode with more than 10 projects and also the top 10 neighborhood by the number of affordable projects. From the

	zip_code	total_count
1	94103	70
2	94102	46
3	94110	46
4	94107	43
5	94124	36
6	94105	21
7	94109	16

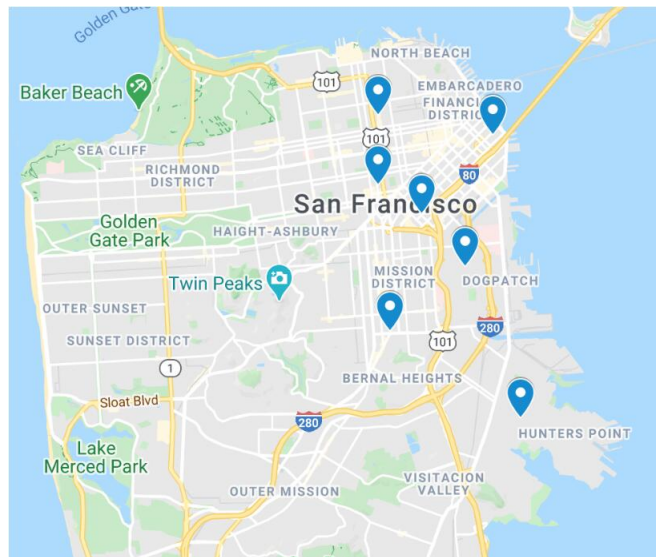Figure 9: Zip Code With More Than 10 Affordable Projects

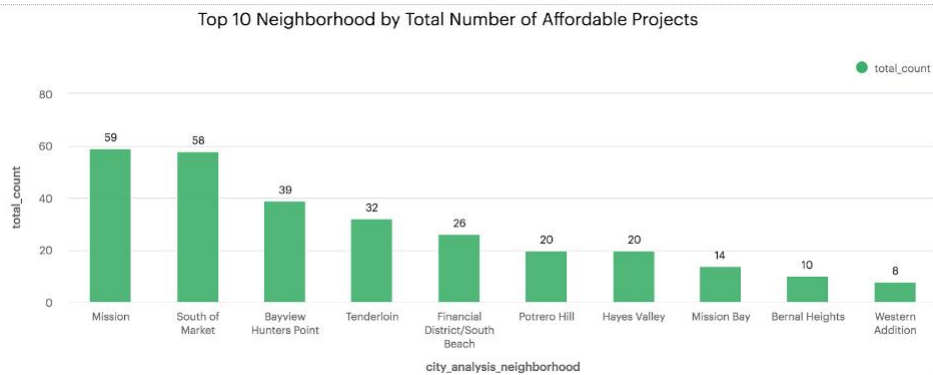Figure 10: Map for Zip Code With More Than 10 Affordable Projects

Figure 11: Top 10 Neighborhood for Affordable Projects in San Francisco

zipcode query results and its geographic location in San Francisco map, we can see that, most of projects are located in the core areas on the east side of San Francisco including Financial District, Mission District and Dogpatch where have Bart or Caltrain stations nearby. Especially there are 70 projects in the zip code 94103 SOMA/Sout of Market district, which are not far from the Caltrain Station on 4th Street. From the top 10 neighborhood by number of projects, it is even more obvious to know that majority projects are located in the areas where either there are or near to public transportation system. There are 59 projects in mission, and 58 projects in SOMA. Though less public transportation lines to the Hunter Points, the land cost is relatively cheaper than other areas in San Francisco, therefore, we can see that there are still 39 projects in Bayview Hunter Points. Also obviously, less affordable housing projects in the "rich areas" in San Francisco - only Potrero Hill neighborhood with 20 projects ranked in Top 10 by the number of affordable housing projects.

3.3 Affordable Housing Project Major Sponsors Overview
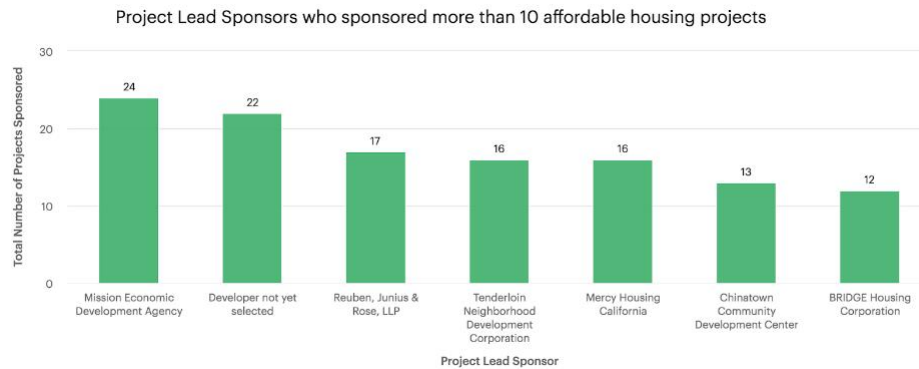
Figure 12: Major Project Sponsors which sponsored more than 10 projects

There are 6 project lead sponsors which are sponsoring and responsible for more than 10 affordable housing projects in the pipeline. Top 1 is Mission Economic Development Agency which is project lead sponsor for 24 projects. Mission Economic Development Agency (MEDA) is a nonprofit organization,rooted in the Mission District, and its mission is to strengthen low- and moderate-income Latino families by promoting economic equity and social justice through asset building and community development. Besides MEDA, among all Top 6 project lead sponsors, Tenderloin Neighborhood Development Corporation, Chinatown Community Development Center, Mercy Housing and BRIDGE Housing Corporation are also nonprofit organization.

3.4 Affordable Housing Project Affordable Arrangement Overview

- **Affordable Housing Projects Affordable Rate Overview**

	affordable_rate	total_number
1	100	67
2	99	63
3	98	11
4	97	5
5	94	1
6	50	1

Figure 13: Affordable Rate Table

In terms of percentage of affordable units in a project, after conducting the query on projects with more than 50% affordable rate, we can learn that there are 67 projects which supply 100% of all units for affordable housing, 63 projects has affordable percentage of 99% and 11 projects has affordable percentage of 98%. Over 1/3 of all projects supply over 95% of its units for affordable housing.

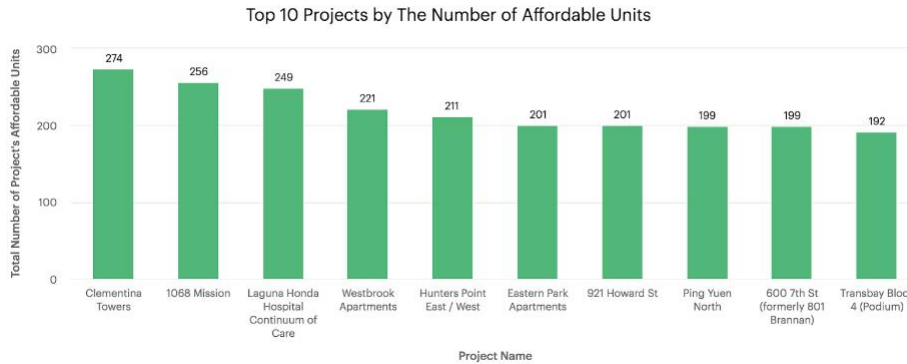- **Top 10 project by the number of affordable units**

Figure 14: Affordable Housing Type Overview

All top 10 projects in terms of affordable units will supply over 190 units for affordable housing purposes per project. Among them, Top 2

Clementina Towers in Tenderloin District and 1068 Mission in Mission District will supply over 250 units per project.

- **Affordable Housing Size Overview**

Total Number Units for Each Housing Size

no_1bd	no_2bd	no_studio	no_3bd	no_sro	no_4bd	no_5bd	no_total_afford_units
3459	3100	2539	1379	1175	240	27	15509

Figure 15: Affordable Housing Size Overview

From above table, we can learn that, among all 15509 affordable units, 1 bedroom unit type is the most supply which has 3459 units supplies in total. Both 2 bedrooms and studio unit type are also planed for a big portion of the pipeline, both exceeded 2500 units. That's to say, the city planner plans the affordable housing to support more low income young/senior people or new families.

- **Affordable Housing Projects Affordable Rate Overview**

Total Number of Affordable Units by Purpose

no_family	no_senior	homeless	no_tay	no_dis
12952	2323	1876	71	73

Figure 16: Affordable Housing Usage Purposes Overview

From above table, we can learn that, majority of affordable units are planned for family units - housing units whose occupancy is not restricted by age, disability or other special needs. Only 2323 units are planned for senior units - housing units whose occupancy is restricted by age; typically one household and 1876 units are planned for homeless units - housing units occupied by homeless or formerly homeless households; could be for homeless families, homeless singles, homeless seniors, or homeless transition-age youth.

4 Conclusion

4.1 Insights

By conducting SQL analysis and data visualization in the tool of Mode Analytics, we can have a better understanding of U.S. metropolitan city San Francisco Affordable Housing Project Pipeline Plan released on June 30 2020, especially for the readers who has little knowledge about affordable housing, they can get some insights from this study, include:

- Majority affordable housing projects are new construction projects.

- Around half of affordable housing projects are planned in the areas where close to public transportation hub in the city.

- Majority affordable housing projects are not located in the "rich and nice" neighborhood.

- Majority affordable housing projects are for rental instead of selling to own.

- Major project lead sponsors for affordable housing projects are non profit organizations.

- Affordable housing projects are planned and designed to supply more smaller size units including studio, 1 bedroom unit and 2 bedroom unit, so as to support more low-income families.

4.2   Limitation & Future Work

This study is only based on the affordable housing project pipeline dataset, without considering previous affordable housing projects and the evolving history of affordable housing planning policies. To better understand affordable housing plans and how to relieve current high price and low supply housing challenges in San Francisco, continuous updates of the affordable housing project pipeline shall be closely watched and followed, and more studies shall be conducted,including but not limited to, San Francisco strategic planing, transportation sustainability program, and neighborhood community development plan.

5   Appendix A: Glossary

6   Appendix B: SQL Analysis Queries & Outputs

References

DataSF. October 6 2020. Affordable Housing Pipeline. Retrieved from https://data.sfgov.org/Housing-and-Buildings/Affordable-Housing-Pipeline/aaxw-2cb8

Zonta, M. August 10 2020. Expanding the Supply of Affordable Housing for Low-Wage Workers. Retrieved from https://www.americanprogress.org/issues/economy/reports/2020/08/10/4 supply-affordable-housing-low-wage-workers/

Appendix A - Glossary

- Bonds Only - Projects for which MOHCD's involvement is limited to issuing the multifamily housing revenue bonds for the project and monitoring the project's compliance with its bond regulatory agreement.
- HOPE SF - Public housing projects planned for full-scale revitalization into mixed-income communities under the City's HOPE SF program.
- Inclusionary - Projects subject to Planning Code Section 415, the City's Inclusionary Affordable Housing Program.
- Inclusionary-OCII - Projects subject to the Office of Community Investment and Infrastructure's Inclusionary Housing requirements.
- Multifamily - Projects developed with financial assistance from MOHCD or OCII.
- RAD Phase 1 - Projects in the 1st phase that are being rehabilitated under HUD's Rental Assistance Demonstration (RAD) Program.
- RAD Phase 2 - Projects in the 2nd phase that are being rehabilitated under HUD's Rental Assistance Demonstration (RAD) Program.
- Small Sites - Projects acquired and rehabilitate with financial assistance from MOHCD's Small Sites Program.
- Adaptive Reuse - Existing buildings not historically used for housing that have been rehabilitated for residential use.
- New Construction - Construction of new affordable housing.
- Rehabilitation - Rehabilitation of existing affordable housing.
- Preliminary Phase - Project is in very preliminary planning by MOHCD or OCII such as prior to issuance a Request for Proposals for the site or developer selection.
- Predevelopment Feasibility - Development phase after developer selection through a Request for Proposal/Qualifications and prior to securing the project's land use entitlement approvals.
- Design with Entitlements Approved - Development phase after project has secured its land use entitlement approvals and prior to start of construction or rehabilitation.
- Site Work Permit Issued - Development phase after building permit for site work has been issued by the Department of Building Inspection.
- First Construction Document Issued - Development phase after the Department of Building Inspection has issued the building permit addenda that allows development of the project and excludes permits or addenda for demolition, grading, shoring, pile driving or site preparation work.
- Complete - Project's construction or rehabilitation is complete and the Department of Building Inspection has issued a Temporary Certificate of Occupancy (TCO) and/or Certificate of Final Completion (CFC).
- Family Units - Housing units whose occupancy is not restricted by age, disability or other special needs.
- Senior Units - Housing units whose occupancy is restricted by age; typically one household member must be 62-years-old or older.

- Supportive Housing Units - Housing units occupied by homeless or formerly homeless households; could be for homeless families, homeless singles, homeless seniors, or homeless transition-age youth.
- TAY Units - Housing units occupied by homeless or formerly homeless Transition-Age Youth age 18-24.
- Units for the Disabled - Housing units occupied by disabled households such as the developmentally disabled.

Appendix B – SQL Analysis Queries & Outputs

Query 1:

```sql
SELECT project_status, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
group by project_status
```

Output 1:

Affordable Project Status Overview

project_status	total_count
(5) First Construction Document Issued	97
(3) Design with Entitlements Approved	73
(6) Complete	57
(4) Site Work Permit Issued	53
(2) Predevelopment Feasibility	39
(1) Preliminary Phase	38
(7) On-Hold / Planning Approval Expired	3
(8) Cancelled	3

Query 2:

```sql
SELECT zip_code, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
group by zip_code
order by Total_Count DESC
limit 10
```

Output 2:

	zip_code	total_count
1	94103	70
2	94110	46
3	94102	46
4	94107	43
5	94124	36
6	94105	21
7	94109	16
8	94112	8
9	94133	7
10	94118	7

Query 3:

```sql
SELECT zip_code, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
group by zip_code
having count(*) >10
order by Total_Count DESC
```

Output 3:

	zip_code	total_count
1	94103	70
2	94102	46
3	94110	46
4	94107	43
5	94124	36
6	94105	21
7	94109	16

Query 4:

```sql
SELECT count (distinct city_analysis_neighborhood)
FROM elisa4321.sf_affordable_housing_pipeline
```

Output 4:

count
31

Query 5:

```sql
SELECT city_analysis_neighborhood, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
group by city_analysis_neighborhood
order by Total_Count DESC
limit 10
```

	city_analysis_neighborhood	total_count
1	Mission	59
2	South of Market	58
3	Bayview Hunters Point	39
4	Tenderloin	32
5	Financial District/South Beach	26
6	Hayes Valley	20
7	Potrero Hill	20
8	Mission Bay	14
9	Bernal Heights	10
10	Western Addition	8

Query 6:

```
SELECT program_area, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
group by program_area
order by Total_Count DESC
```

Output 6:

	program_area	total_count
1	Inclusionary Housing Program	187
2	Multifamily Rental Program	84
3	Small Sites Program	34
4	Bond Financed Multifamily Housing	14
5	Limited Equity Program	14
6	HOPE SF	11
7	Rental Assistance Demonstration Program (RAD)	8
8	OCII Inclusionary Rental Program	7
9	Bond Financed Inclusionary Housing	2
10	Big Sites Program	2

Query 7:

```
SELECT project_type, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
group by project_type
order by Total_Count DESC
```

Output 7:

	project_type	total_count
1	New Construction	286
2	Rehabilitation	77

Query 8:

```
SELECT housing_tenure, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
group by housing_tenure
order by Total_Count DESC
```

Output 8:

	housing_tenure	total_count
1	Rental	236
2	Ownership	71
3	Unknown	54
4	Ownership, Rental	2

Query 9:

```
SELECT extract(year from estimated_construction_completion) as completion_year, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
where estimated_construction_completion is not null
group by completion_year
order by Total_Count desc
```

Output 9:

	completion_year	total_count
1	2019	70
2	2020	63
3	2021	79
4	2022	60
5	2023	31
6	2024	17
7	2025	9
8	2026	1
9	2027	1
10	2029	1
11	2030	2

Query 10:

```
SELECT project_lead_sponsor, count(*) Total_Count
FROM elisa4321.sf_affordable_housing_pipeline
where project_lead_sponsor is not null
group by project_lead_sponsor
having count(*)> 10
order by total_count DESC
```

Output 10:

	project_lead_sponsor	total_count
1	Mission Economic Development Agency	24
2	Developer not yet selected	22
3	Reuben, Junius & Rose, LLP	17
4	Mercy Housing California	16
5	Tenderloin Neighborhood Development Corporation	16
6	Chinatown Community Development Center	13
7	BRIDGE Housing Corporation	12

Query 11:

```
SELECT  project_name, affordable_units
FROM elisa4321.sf_affordable_housing_pipeline
order by affordable_units DESC
limit 10
```

Output 11:

	project_name	affordable_units
1	Clementina Towers	274
2	1068 Mission	256
3	Laguna Honda Hospital Continuum of Care	249
4	Westbrook Apartments	221
5	Hunters Point East / West	211
6	Eastern Park Apartments	201
7	921 Howard St	201
8	Ping Yuen North	199
9	600 7th St (formerly 801 Brannan)	199
10	Transbay Block 4 (Podium)	192

Query 12:

```
SELECT affordable as Affordable_Rate, count(nullif(0,affordable)) as Total_Number
FROM elisa4321.sf_affordable_housing_pipeline
group by affordable
having affordable >=50
order by affordable DESC
limit 10
```

Output 12:

	affordable_rate	total_number
1	100	67
2	99	63
3	98	11
4	97	5
5	94	1
6	50	1

Query 13:

```
SELECT  SUM(sro_units) as no_sro, sum(studio_units) as no_studio,sum(units_1bd) as no_1bd,
sum(units_2bd) as no_2bd,sum(units_3bd) as no_3bd, sum(units_4bd) as no_4bd, sum(units_5bd) as no_5bd,
sum(affordable_units) as no_total_afford_units
FROM elisa4321.sf_affordable_housing_pipeline
```

Output 13:

✓ 1 rows | 64B returned in 472ms   Copy

	no_sro	no_studio	no_1bd	no_2bd	no_3bd	no_4bd	no_5bd	no_total_afford_units
1	1175	2539	3459	3100	1379	240	27	15509

Query 14:

```
SELECT  SUM(family_units) as no_family, sum(senior_units) as no_senior,sum(homeless_units) as homeless,
sum(tay_units) as no_tay, sum(disabled_units) as no_dis
FROM elisa4321.sf_affordable_housing_pipeline
```

Output 14:

	no_family	no_senior	homeless	no_tay	no_dis
1	12952	2323	1876	71	73