

# **The comparison of young kids education resources in San Jose,CA and Fremont,CA**

## **1. Introduction of San Jose and Fremont**

San Jose was founded on November 29, 1777, it is the largest city in Northern California (both by population and area), with an estimated 2018 population of 1,030,119.

San Jose Public Library is the largest public library system between San Francisco and Los Angeles. Its central library, Dr. Martin Luther King Jr. Library, is also the main library of the San Jose State University. As the result of a bond measure passed in November 2000, a number of new branches opened.

Fremont is a city in Alameda County, California, United States. It is a young city incorporated on January 23, 1956. Located in the southeast San Francisco Bay Area and straddling both the East Bay and South Bay regions, Fremont has a rapidly-growing population of around 230,000. It is one of the largest cities by land area and the fourth most populous city in the San Francisco Bay Area, behind San Jose, San Francisco, and Oakland. The city has an extensive and rapidly expanding base of both tech industry and workers.

Fremont and San Jose are two popular cities in the Bay Area, northern California. These two cities are the first choices of young couples when considering to settle down. My objective is to compare the resources in two cities for young kids (less than 5 years). Daycare facility data and library data will be used as indicators to compare two cities.

## **2. Data**

Data of library and daycare is requested from foursquare API (Table 2.1, 2.2, 2.3, 2.4), which contains the venue id, name, categories, address, latitude, longitude, and zip code of facilities. Latitude and longitude are used to locate on Folium map. Rows with null values are dropped. Two maps of two cities are generated to display the libraries and daycares in the city. Blue circles represent libraries and red circles represent daycares.

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		id	name	categories	referralId	hasPerk	location.address	location.crossStreet	location.lat	location.lng	location.labeled
0	4a6a3154f964a520cbcc1fe3	Dr. Martin Luther King, Jr. Library	[[{"id": "4bf58dd8d48988d12f941735", "name": "C..."}]]	v-1577470900	False	150 E San Fernando St	at S. 4th St.	37.335467	-121.885000	[[{"label": "display", "lat": 37.33546746, "lng": -121.885000}]]	
1	4b5f98a2f964a520a8c329e3	Joyce Ellington Branch Library	[[{"id": "4bf58dd8d48988d12f941735", "name": "L..."}]]	v-1577470900	False	491 E Empire St	NaN	37.349781	-121.887064	[[{"label": "display", "lat": 37.3497807, "lng": -121.887064}]]	
2	59cd8e9b6eda021ecf132466	MLKJ Library TeenHQ	[[{"id": "4bf58dd8d48988d12f941735", "name": "L..."}]]	v-1577470900	False	Dr Martin Luther King Jr Library	San Fernando St	37.335808	-121.885095	[[{"label": "display", "lat": 37.335808, "lng": -121.885095}]]	
3	4a43dd51f964a520e5a61fe3	Rose Garden Branch Library	[[{"id": "4bf58dd8d48988d12f941735", "name": "L..."}]]	v-1577470900	False	1580 Naglee Ave	at Dana Ave	37.331965	-121.926273	[[{"label": "display", "lat": 37.33196525, "lng": -121.926273}]]	
4	4beca5f20dda59366e21dc3	Bascom Branch Library & Community Center	[[{"id": "4bf58dd8d48988d12f941735", "name": "L..."}]]	v-1577470900	False	1000 S Bascom Ave	btwn Fruitdale Ave. & Leon Dr.	37.307161	-121.931298	[[{"label": "display", "lat": 37.30716125, "lng": -121.931298}]]	

Table 2.1 San Jose library data

		id	name	categories	referralId	hasPerk	location.address	location.lat	location.lng	location.labeledLatLngs	location.d
0	4af5f69ef964a52083ff21e3	Fremont Main Library	'4bf58dd8d48988d12f941735', 'name': 'L...	[[{'id': '4bf58dd8d48988d12f941735', 'name': 'L...'}]]	v-1577470906	False	2400 Stevenson Blvd	37.550895	-121.971139	[[{'label': 'display', 'lat': 37.55089490542579, 'lng': -121.971139}]]	
1	4fed6ec6e4b0283e9a18f854	Fremont Main Library	'4bf58dd8d48988d12f941735', 'name': 'L...	[[{'id': '4bf58dd8d48988d12f941735', 'name': 'L...'}]]	v-1577470906	False	NaN	37.550525	-121.984792	[[{'label': 'display', 'lat': 37.55052529217357, 'lng': -121.984792}]]	
2	4c006e6fad15a59363f18d73	Fremont Library	'4bf58dd8d48988d12f941735', 'name': 'L...	[[{'id': '4bf58dd8d48988d12f941735', 'name': 'L...'}]]	v-1577470906	False	NaN	37.549833	-121.983565	[[{'label': 'display', 'lat': 37.54983258663893, 'lng': -121.983565}]]	
3	5944163d4382ab30b28e7640	Jfk Library	'4bf58dd8d48988d12f941735', 'name': 'L...	[[{'id': '4bf58dd8d48988d12f941735', 'name': 'L...'}]]	v-1577470906	False	NaN	37.529193	-121.986432	[[{'label': 'display', 'lat': 37.52919290360988, 'lng': -121.986432}]]	
4	4b5f8f7df964a520b4c129e3	Irvington Library	'4bf58dd8d48988d12f941735', 'name': 'L...	[[{'id': '4bf58dd8d48988d12f941735', 'name': 'L...'}]]	v-1577470906	False	41825 Greenpark Dr	37.522423	-121.964885	[[{'label': 'display', 'lat': 37.52242299999999, 'lng': -121.964885}]]	

Table 2.2 Fremont library data

		id	name	categories	referralId	hasPerk	location.lat	location.lng	location.labeledLatLngs	location.distance	location.post
0	4c7ed40afb13a1cd93e29ea4	Daycare	[[{"id": "4f4532974b9074f6e4fb0104", "name": "D..."}]]	v-1577472972	False	37.369899	-121.850804	[[{"label": "display", "lat": 37.369899, "lng": -121.850804}]]		5144	
1	4f9ab968e4b0ad38548ed20d	Niki's Daycare	[[{"id": "4f4532974b9074f6e4fb0104", "name": "D..."}]]	v-1577472972	False	37.300900	-121.896708	[[{"label": "display", "lat": 37.30090013937539, "lng": -121.896708}]]		3965	
2	4fa4600fe4b0ac15cef2bbf2	Willow Glen Daycare	[[{"id": "4f4532974b9074f6e4fb0104", "name": "D..."}]]	v-1577472972	False	37.309364	-121.913414	[[{"label": "display", "lat": 37.30936431884765, "lng": -121.913414}]]		3605	
3	551057c5498e5529e6cb848d	ywca day care	[[{"id": "4f4533814b9074f6e4fb0107", "name": "N..."}]]	v-1577472972	False	37.330736	-121.884786	[[{"label": "display", "lat": 37.33073589118909, "lng": -121.884786}]]		794	
4	5595a7bf498ed14c4a6a363f	Diane's Daycare	[[{"id": "4f4532974b9074f6e4fb0104", "name": "D..."}]]	v-1577472972	False	37.331000	-121.945370	[[{"label": "display", "lat": 37.331, "lng": -121.945370}]]		4883	

Table 2.3 San Jose daycare data

	id	name	categories	referralid	hasPerk	location.lat	location.lng	location.labeledLatLngs	location.distance	location.cc
0	4e0a1be97d8b2a01806cfaea	Lulus Daycare	{'id': '4f4532974b9074f6e4fb0104', 'name': 'D...	1577472982	v-False	37.538464	-121.991295	[{'label': 'display', 'lat': 37.538464, 'lng': ...	1117	US
1	5049609fe4b0fbe28f19ed07	Little Angels Daycare	{'id': '4f4532974b9074f6e4fb0104', 'name': 'D...	1577472982	v-False	37.560503	-121.990445	[{'label': 'display', 'lat': 37.56050268415861...	1371	US
2	520df2d68bbd3cd4283313e3	Ereno Daycare and Preschool	{'id': '4f4532974b9074f6e4fb0104', 'name': 'D...	1577472982	v-False	37.560686	-121.990386	[{'label': 'display', 'lat': 37.560686, 'lng': ...	1391	US
3	4bf3f3906a31d13a3026952e	Little Bunnies Daycare	{'id': '4f4532974b9074f6e4fb0104', 'name': 'D...	1577472982	v-False	37.534162	-121.986557	[{'label': 'display', 'lat': 37.534162, 'lng': ...	1580	US
4	50089bd2e4b0d0fe1365b25a	Little People Daycare	{'id': '4f4532974b9074f6e4fb0104', 'name': 'D...	1577472982	v-False	37.533865	-121.979550	[{'label': 'display', 'lat': 37.53386500000000...	1790	US

Table 2.4 Fremont daycare data

## 3. Methodology

### 3.1 Libraries data pre-processing

Libraries located 5,000 meters from center of San Jose(37.3361905, -121.8905833) was requested from foursquare API and saved as dataframe (df1) in notebook, 12 libraries located outside San Jose was deleted by:

```
df1 = df1[df2['location.city']=='Fremont'].reset_index(drop=True)
```

Libraries without zip code was dropped by:

```
df1.dropna(subset=['location.postalCode'],axis=0,inplace = True)
```

Libraries located 5,000 meters from center of Fremont (37.5482697 -121.9885719) was requested from foursquare API and saved as dataframe (df2) in notebook, 1 library located in Newark was deleted by:

```
df2 = df2[df2['location.city'] == 'Fremont'].reset_index(drop=True)
```

Libraries without zip code was dropped by:

```
df2.dropna(subset=['location.postalCode'],axis=0,inplace = True)
```

### 3.2 Daycare data pre-processing

Daycare facilities located 5,000 meters from center of San Jose(37.3361905, -121.8905833) was requested from foursquare API and saved as dataframe (df3) in notebook.

Daycare facilities located 5,000 meters from center of Fremont (37.5482697 -121.9885719) was requested from foursquare API and saved as dataframe (df4) in notebook.

### 3.3 Map creating

*Folium* which powerful Python library that helping you creating several types of Leaflet maps was used to create map in notebook. Blue circles represent libraries and red circles represent daycares on map.

### 3.4 San Jose library data analysis

Library location data was grouped by zip code:

```
SJLzip = df1['location.postalCode'].value_counts().to_frame()
SJLzip.columns=['Count']
```

A bar plot was drawn to show library distribution:

```
SJLzip.plot(kind='bar',figsize=(10,6), color='darkgreen')
```

Each bar was marked with percentage:

```
ax=SJLzip.plot(kind='bar', figsize=(16,7), width=0.8)
ax.legend(prop={'size':14})
ax.set_ylabel('Number of libraries',size = 14)
ax.set_xlabel('Zip code',size=14)
ax.set_title('Percentage of libraries in San Jose', size=16)
totals = []
for i in ax.patches:
    totals.append(i.get_height())
total = sum(totals)
for i in ax.patches:
    # get_x pulls left or right; get_height pushes up or down
    ax.text(i.get_x()+0.03, i.get_height()+0.01, \
            str(round((i.get_height()/total)*100, 2))+ '%', fontsize=10,
```

```

        color='black')
ax.spines['right'].set_visible(False)
ax.spines['left'].set_visible(False)
ax.spines['top'].set_visible(False)
plt.show)**_

```

## 4. Result

### 4.1 Libraries

Thirty five public libraries distribute in 5 zip code areas in city of San Jose. Area with zip code 95112 has 13 libraries (Table 4.1), 42% of all libraries in San Jose (fig. 4.1). Seven public libraries in Fremont.

Zip code	Count
95112	13
95126	5
95113	3
95133	2
95128	2

Table 4.1 Libraries count in San Jose

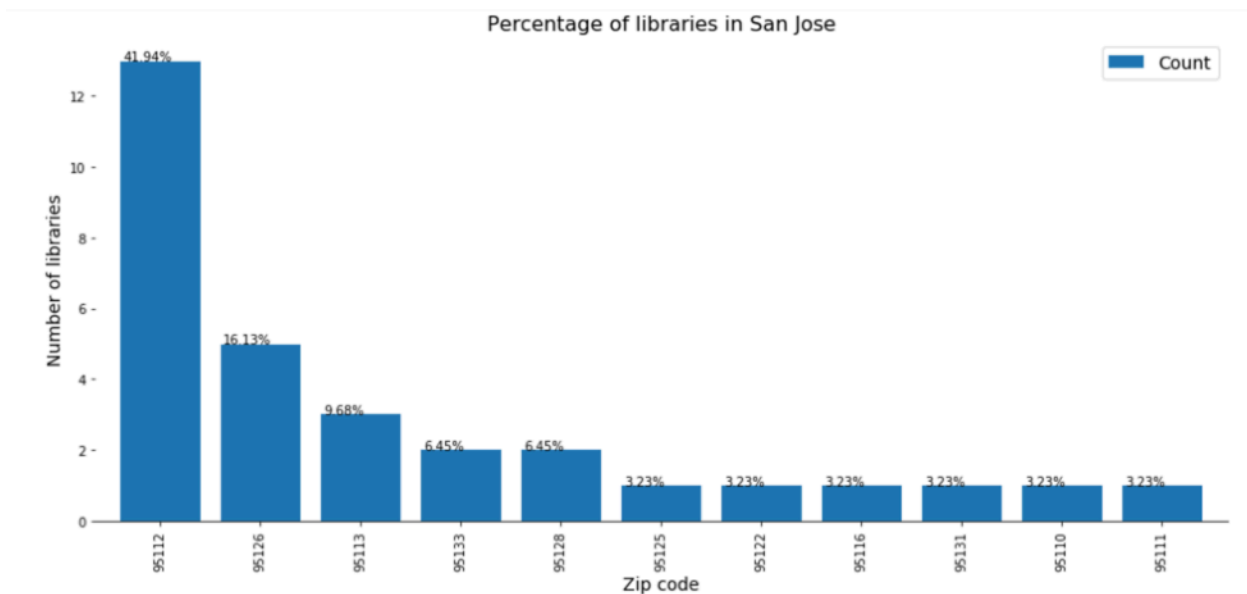


Fig 4.1 Percentage of libraries in San Jose

## 4.2 Daycare

Ten daycare facilities were found in San Jose (Table 4.2) and eleven daycare facilities were found in Fremont (Table 4.3).

Zip code	Count
95125	2
95128	2
95133	1
95112	1
95122	1
95116	1

Table 4.2 Daycare count in San Jose

Zip code	Count
94536	3
94538	2
94587	1
94560	1
94555	1

Table 4.3 Daycare count in Fremont

## 5. Conclusion

At the heart of San Jose, library provides a place where everyone can learn, create, study, and explore. Library branches provide educational events for kids less than 5 years old, such as Homework club, Family Storytime, and early learning program. San Jose public library (SJPL) has a long history since 1872, with 35 libraries totally. 42% of libraries are located in downtown area (zip code 95112) (Fig. 4.1).

As a young city (incorporated in 1956), Fremont has only 7 public libraries (Table 5.1) distributed in 2 zip code areas.

zip code	Count
94538	5
94536	2

Table 5.1 Libraries count in Fremont

There are less daycare facilities than libraries in San Jose, less libraries than daycare in Fremont. The main reason is daycare is for kids less than five years old, while libraries are designed for toddler and kids, as a result, there is less demand in daycare than library.

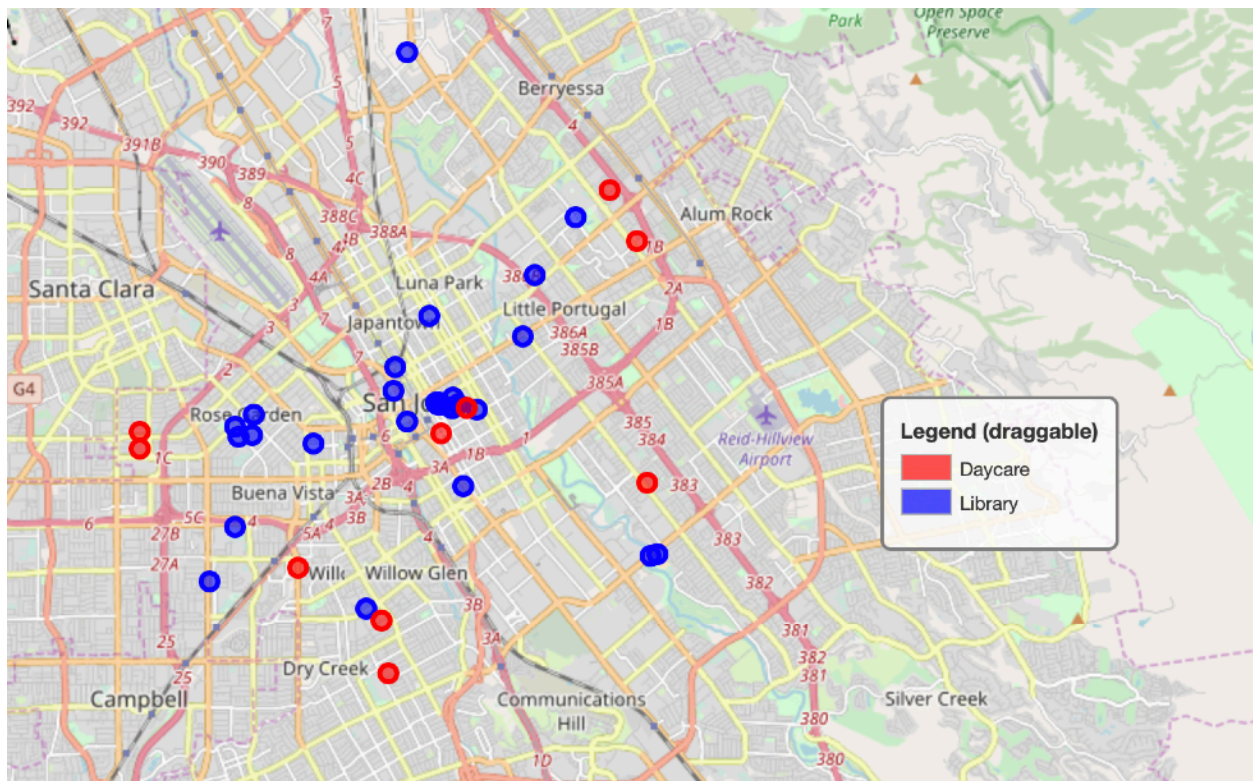


Fig. 5.1 Daycare and library distribution in San Jose



