

PROJECT: ANALYZING ELECTRIC VEHICLE CHARGING HABITS



As electronic vehicles (EVs) become more popular, there is an increasing need for access to charging stations, also known as ports. To that end, many modern apartment buildings have begun retrofitting their parking garages to include shared charging stations. A charging station is shared if it is accessible by anyone in the building.



But with increasing demand comes competition for these ports — nothing is more frustrating than coming home to find no charging stations available! In this project, you will use a dataset to help apartment building managers better understand their tenants' EV charging habits.

The data has been loaded into a PostgreSQL database with a table named `charging_sessions` with the following columns:

charging_sessions

Column	Definition	Data type
<code>garage_id</code>	Identifier for the garage/building	VARCHAR
<code>user_id</code>	Identifier for the individual user	VARCHAR
<code>user_type</code>	Indicating whether the station is <code>Shared</code> or <code>Private</code>	VARCHAR
<code>start_plugin</code>	The date and time the session started	DATETIME
<code>start_plugin_hour</code>	The hour (in military time) that the session started	NUMERIC
<code>end_plugout</code>	The date and time the session ended	DATETIME
<code>end_plugout_hour</code>	The hour (in military time) that the session ended	NUMERIC
<code>duration_hours</code>	The length of the session, in hours	NUMERIC
<code>el_kwh</code>	Amount of electricity used (in Kilowatt hours)	NUMERIC
<code>month_plugin</code>	The month that the session started	VARCHAR
<code>weekdays_plugin</code>	The day of the week that the session started	VARCHAR

Let's get started!

Sources

- Data: CC BY 4.0 [🔗](#), via Kaggle [🔗](#),
- Image: Julian Herzog, CC BY 4.0 [🔗](#), via Wikimedia Commons



Projects Data DataFrame as unique_users_per_garage

```
-- Finding the number of unique individuals that use each garage
```

```
SELECT garage_id, COUNT(DISTINCT user_id) AS num_unique_users
```

```
FROM charging_sessions
```

```
WHERE user_type='Shared'
```

```
GROUP BY garage_id
```

```
ORDER BY num_unique_users DESC
```

...	↑↓	g...	...	↑↓	num_uni...	...	↑↓	
0		BI2				18		
1		AsO2				17		
2		UT9				16		
3		AdO3				3		
4		MS1				2		
5		SR2				2		
6		AdA1				1		
7		Ris				1		

Rows: 8

[↗ Expand](#)



Projects Data DataFrame as most_popular_shared_start_times

```
-- Finding the most popular change starting hours  
(most_popular_shared_start_times)
```

```
SELECT weekdays_plugin,  
       start_plugin_hour,  
       COUNT(*) AS num_charging_sessions  
FROM charging_sessions  
WHERE user_type = 'Shared'  
GROUP BY weekdays_plugin,  
        start_plugin_hour  
ORDER BY num_charging_sessions DESC  
LIMIT 10;
```

...	☰↑	weekda...	...	↑↓	start_pl...	...	↑↓	num_charging...	...	↑↓	
0		Sunday				17			30		
1		Friday				15			28		
2		Thursday				19			26		
3		Thursday				16			26		
4		Wednesday				19			25		
5		Sunday				18			25		
6		Sunday				15			25		
7		Monday				15			24		
8		Friday				16			24		
9		Tuesday				16			23		

Rows: 10

Expand



Projects Data DataFrame as long_duration_shared_users

```
-- Finding users that charge more than 10 hours in shared charging stations  
(long_duration_shared_users)  
SELECT user_id, AVG(duration_hours) AS avg_charging_duration  
FROM charging_sessions  
WHERE user_type = 'Shared'  
GROUP BY user_id  
HAVING AVG(duration_hours)>10  
ORDER BY avg_charging_duration DESC
```

...	↑↓	u.	...	↑↓	avg_charging...	...	↑↓	
0		Share-9			16.845833335			
1		Share-17			12.8945555511			
2		Share-25			12.2144747466			
3		Share-18			12.0888071898			
4		Share-8			11.5504308392			
5		AdO3-1			10.3693869729			

Rows: 6

Expand