In [1]:

```python
import os

os.listdir("../data")
```

Out[1]:

```
['archive.zip',
 'other-American_B01362.csv',
 'other-Carmel_B00256.csv',
 'other-Dial7_B00887.csv',
 'other-Diplo_B01196.csv',
 'other-Federal_02216.csv',
 'other-FHV-services_jan-aug-2015.csv',
 'other-Firstclass_B01536.csv',
 'other-Highclass_B01717.csv',
 'other-Lyft_B02510.csv',
 'other-Prestige_B01338.csv',
 'other-Skyline_B00111.csv',
 'Uber Trip Analysis Machine Learning Project ( Data Analyst) (1).pdf',
 'Uber-Jan-Feb-FOIL.csv',
 'uber-raw-data-apr14.csv',
 'uber-raw-data-aug14.csv',
 'uber-raw-data-janjune-15.csv',
 'uber-raw-data-jul14.csv',
 'uber-raw-data-jun14.csv',
 'uber-raw-data-may14.csv',
 'uber-raw-data-sep14.csv']
```

In [2]:

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

plt.style.use("seaborn-v0_8")
```

In [3]:

```python
df = pd.read_csv("../data/uber-raw-data-janjune-15.csv")
df.head()
```

Out[3]:

	Dispatching_base_num	Pickup_date	Affiliated_base_num	locationID
0	B02617	2015-05-17 09:47:00	B02617	141
1	B02617	2015-05-17 09:47:00	B02617	65
2	B02617	2015-05-17 09:47:00	B02617	100
3	B02617	2015-05-17 09:47:00	B02774	80
4	B02617	2015-05-17 09:47:00	B02617	90

In [4]:

```python
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 14270479 entries, 0 to 14270478
Data columns (total 4 columns):
 #   Column                Dtype 
---  ------                ----- 
 0   Dispatching_base_num  object
 1   Pickup_date           object
 2   Affiliated_base_num   object
 3   locationID            int64 
dtypes: int64(1), object(3)
memory usage: 435.5+ MB
```

In [5]:

```python
df.isnull().sum()
```

Out[5]:

```
Dispatching_base_num         0
Pickup_date                  0
Affiliated_base_num     162195
locationID                   0
dtype: int64
```

In [6]:

```python
df["Affiliated_base_num"].fillna("Unknown", inplace=True)
df.isnull().sum()
```

```
C:\Users\HOME\AppData\Local\Temp\ipykernel_2764\2285862385.py:1: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace method.
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting values always behaves as a copy.

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value) instead, to perform the operation inplace on the original object.


  df["Affiliated_base_num"].fillna("Unknown", inplace=True)
```

Out[6]:

```
Dispatching_base_num    0
Pickup_date             0
Affiliated_base_num     0
locationID              0
dtype: int64
```

In [7]:

```python
df["Pickup_date"] = pd.to_datetime(df["Pickup_date"])
df.dtypes
```

Out[7]:

```
Dispatching_base_num            object
Pickup_date             datetime64[ns]
Affiliated_base_num             object
locationID                       int64
dtype: object
```

In [8]:

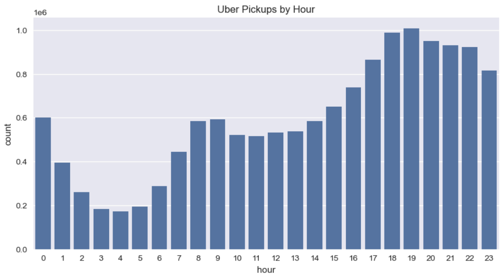
```python
df["hour"] = df["Pickup_date"].dt.hour
df["day"] = df["Pickup_date"].dt.day
df["month"] = df["Pickup_date"].dt.month
df["weekday"] = df["Pickup_date"].dt.day_name()
df.head()
```

Out[8]:

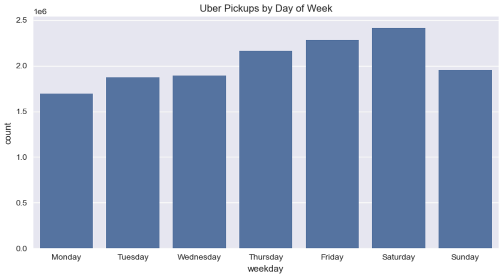
	Dispatching_base_num	Pickup_date	Affiliated_base_num	locationID	hour	day	month	weekday
0	B02617	2015-05-17 09:47:00	B02617	141	9	17	5	Sunday
1	B02617	2015-05-17 09:47:00	B02617	65	9	17	5	Sunday
2	B02617	2015-05-17 09:47:00	B02617	100	9	17	5	Sunday
3	B02617	2015-05-17 09:47:00	B02774	80	9	17	5	Sunday
4	B02617	2015-05-17 09:47:00	B02617	90	9	17	5	Sunday

In [9]:

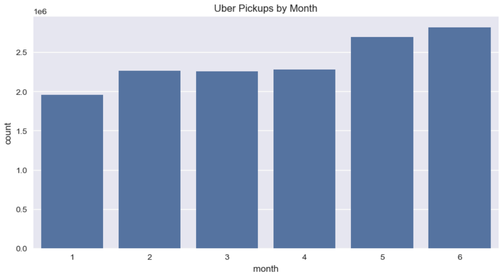
```python
plt.figure(figsize=(10,5))
sns.countplot(x="hour", data=df)
plt.title("Uber Pickups by Hour")
plt.show()
```



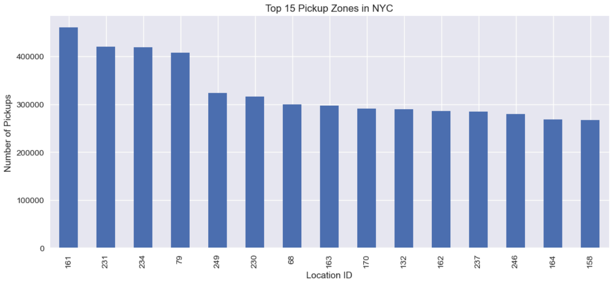
In [10]:
```
plt.figure(figsize=(10,5))
sns.countplot(x="weekday", data=df,
              order=["Monday","Tuesday","Wednesday","Thursday","Friday","Saturday","Sunday"])
plt.title("Uber Pickups by Day of Week")
plt.show()
```



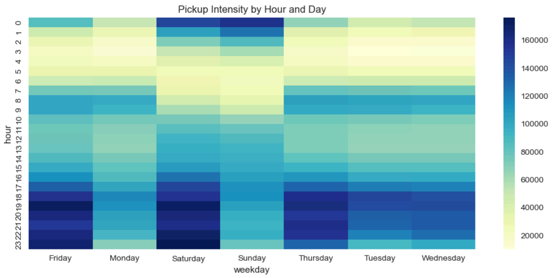
In [11]:
```
plt.figure(figsize=(10,5))
sns.countplot(x="month", data=df)
plt.title("Uber Pickups by Month")
plt.show()
```



In [12]:
```
plt.figure(figsize=(12,5))
df['locationID'].value_counts().head(15).plot(kind='bar')
plt.title("Top 15 Pickup Zones in NYC")
plt.xlabel("Location ID")
plt.ylabel("Number of Pickups")
plt.show()
```



In [13]:
```
plt.figure(figsize=(12,5))
sns.heatmap(pd.crosstab(df['hour'], df['weekday']), cmap="YlGnBu")
plt.title("Pickup Intensity by Hour and Day")
plt.show()
```



Uber Trip Analysis Project

Abstract

This project analyzes Uber pickup data to understand customer demand patterns based on hour, day, and month.
By using Python data analysis and visualization techniques, the project identifies peak demand times, busy days, and seasonal trends to help Uber optimize driver allocation and improve customer satisfaction.

🚖 Uber Trip Analysis Project

Domain: Transportation / Mobility
Tools Used: Python, Pandas, Matplotlib, Seaborn, Jupyter Notebook

📌 Project Objective

The objective of this project is to analyze Uber trip data to identify pickup trends by hour, day, and month and to visualize demand patterns.

📊 Dataset Information

The dataset contains Uber pickup records including:

- Dispatching Base Number
- Pickup Date
- Affiliated Base Number
- Location ID

🧹 Data Cleaning

- Converted pickup_date to datetime format
- Extracted hour, weekday, and month
- Checked missing values
- Removed/handled null values

📈 Analysis Performed

- Hour-wise Uber pickup analysis
- Month-wise Uber pickup analysis
- Zone/location based analysis
- Pickup intensity heatmap by hour and weekday

📌 Key Insights

- Uber demand increases significantly after 5 PM
- Peak demand occurs between **6 PM – 11 PM**
- **Friday and Saturday nights** have the highest number of pickups
- Early morning hours have very low demand

✅ Conclusion

This analysis helps Uber understand peak operating hours and allocate drivers efficiently to maximize revenue and reduce customer waiting time.