In [27]:

```
import pandas as pd
import matplotlib.pyplot as plt

# Load the data
file_path = "C:/Users/NTC/Downloads/Data Tasks (1)/tasks/task_1/calls_task.csv"
data = pd.read_csv(file_path)

# Display the first few rows of the data
data.head()
```

Out[27]:

	ACTION_DATE	ACTION_ID	MEMBER_ID	ACTION_TYPE
0	2022-04-10T01:57:30Z	89821691	116778534.0	show_number
1	2022-04-10T02:08:47Z	89915585	110472624.0	show_number
2	2022-04-10T02:31:42Z	90099017	6961446.0	show_number
3	2022-04-05T16:46:39Z	43538787	107681746.0	show_number
4	2022-04-05T17:03:33Z	43670683	108485886.0	show_number

In [28]:

```
data.tail()
```

Out[28]:

	ACTION_DATE	ACTION_ID	MEMBER_ID	ACTION_TYPE
496723	2022-04-14T18:59:46Z	137134739	118280514.0	show_number
496724	2022-04-14T19:00:08Z	137137555	118280514.0	show_number
496725	2022-04-19T13:57:25Z	187460783	118579286.0	show_number
496726	2022-04-24T16:34:48Z	242643555	118821126.0	show_number
496727	2022-04-29T20:26:06Z	296794047	67680072.0	show_number

In [29]:

```
data.describe()
```

Out[29]:

	ACTION_ID	MEMBER_ID
count	4.967280e+05	4.962520e+05
mean	1.453999e+08	9.632383e+07
std	7.127076e+07	3.532784e+07
min	1.018500e+04	1.254000e+03
25%	1.124607e+08	9.989845e+07
50%	1.387663e+08	1.131582e+08
75%	1.915923e+08	1.182805e+08
max	3.081690e+08	1.190928e+08

In [30]:

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 496728 entries, 0 to 496727
Data columns (total 4 columns):
 #   Column       Non-Null Count   Dtype  
---  ------       --------------   -----  
 0   ACTION_DATE  496728 non-null  object 
 1   ACTION_ID    496728 non-null  int64  
 2   MEMBER_ID    496252 non-null  float64
 3   ACTION_TYPE  496728 non-null  object 
```

```
dtypes: float64(1), int64(1), object(2)
memory usage: 15.2+ MB
```

In [31]:

```python
data.isna().sum()
```

Out[31]:

```
ACTION_DATE      0
ACTION_ID        0
MEMBER_ID      476
ACTION_TYPE      0
dtype: int64
```

In [32]:

```python
data.isnull().mean()*100
```

Out[32]:

```
ACTION_DATE    0.000000
ACTION_ID      0.000000
MEMBER_ID      0.095827
ACTION_TYPE    0.000000
dtype: float64
```

Trend Analysis

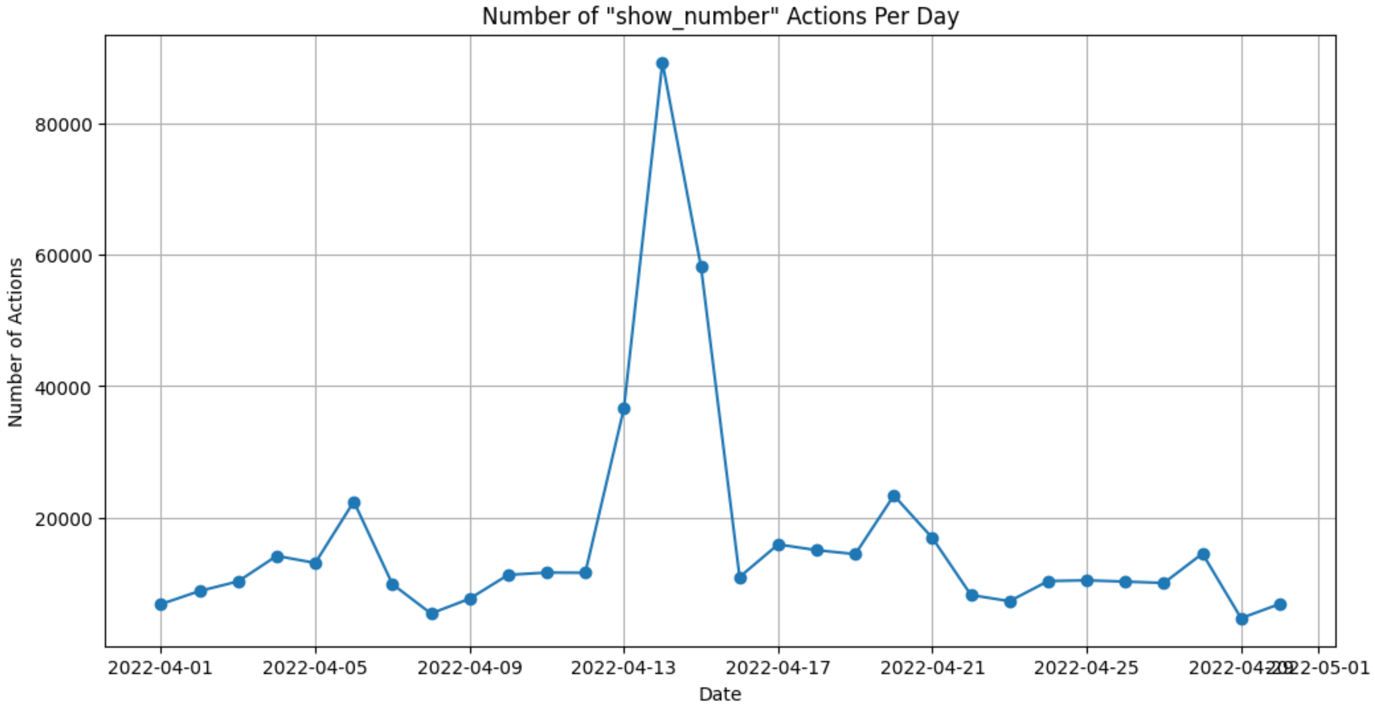
In [38]:

```python
# Convert ACTION_DATE to datetime
data['ACTION_DATE'] = pd.to_datetime(data['ACTION_DATE'])

# Set ACTION_DATE as the index
data.set_index('ACTION_DATE', inplace=True)

# Resample the data by day and count the number of actions per day
daily_actions = data.resample('D').count()['ACTION_ID']

# Plot the number of actions per day
plt.figure(figsize=(12, 6))
plt.plot(daily_actions, marker='o', linestyle='-')
plt.title('Number of "show_number" Actions Per Day')
plt.xlabel('Date')
plt.ylabel('Number of Actions')
plt.grid(True)
plt.show()
```



Hourly Patterns

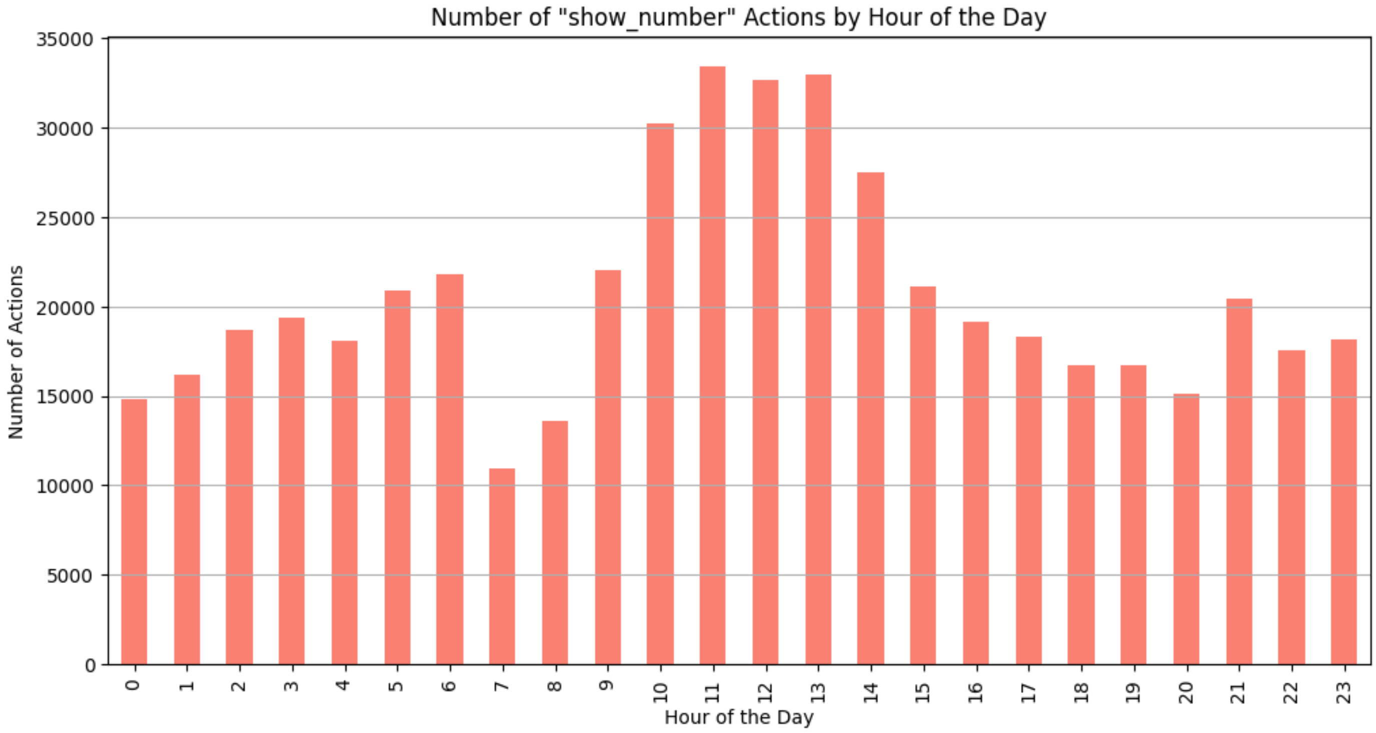
```python
# Extract the hour of the day
```

In [40]:

```python
data['hour_of_day'] = data.index.hour

# Group by hour of the day and count actions
actions_by_hour = data.groupby('hour_of_day').count()['ACTION_ID']

# Plot the actions by hour of the day
plt.figure(figsize=(12, 6))
actions_by_hour.plot(kind='bar', color='salmon')
plt.title('Number of "show_number" Actions by Hour of the Day')
plt.xlabel('Hour of the Day')
plt.ylabel('Number of Actions')
plt.grid(axis='y')
plt.show()
```



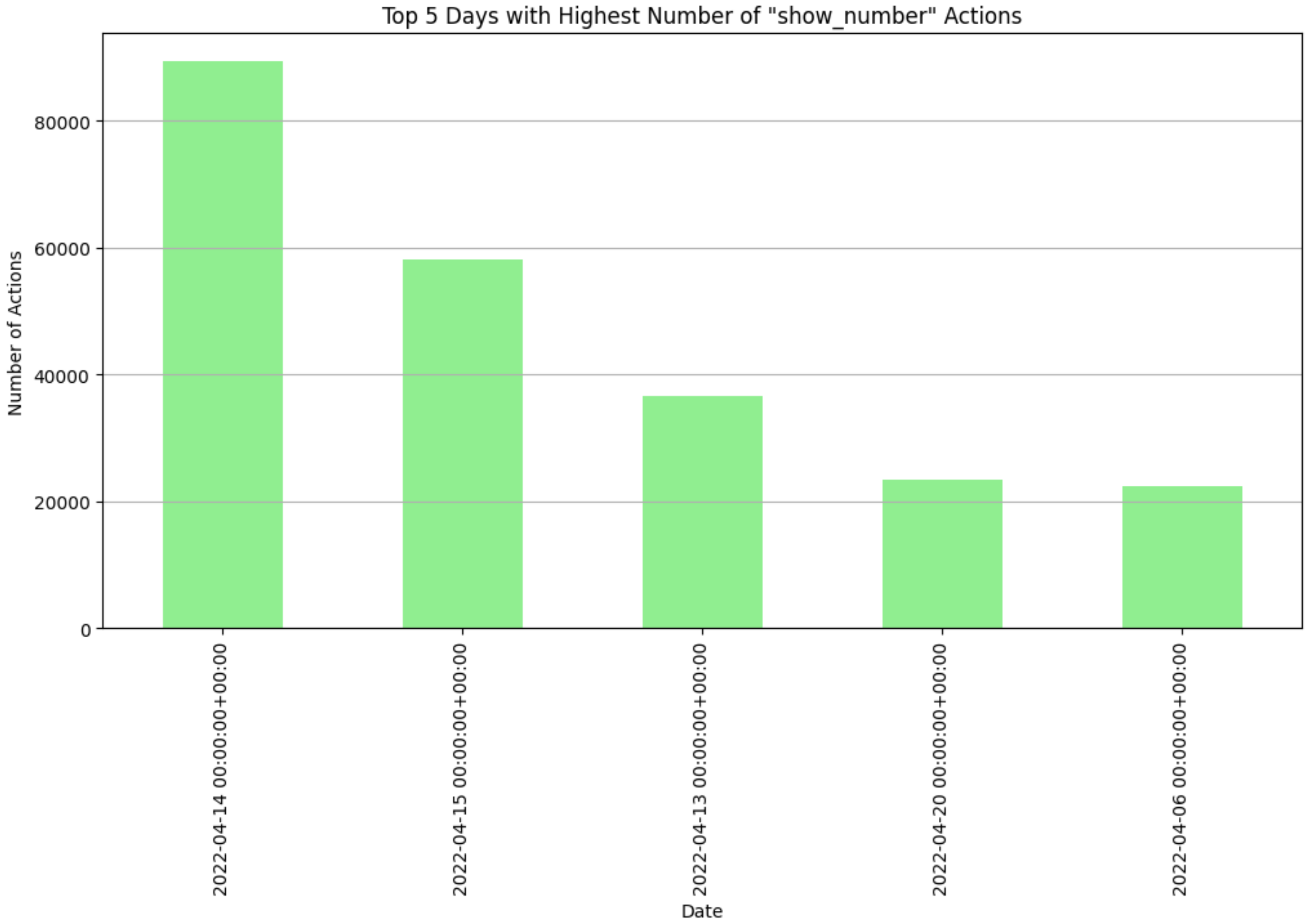
during hour of the day [10 am to 1 pm] shows the highest number of [show number] actions among other hours of the day especially at 11 am and 12 pm [afternoon period] shows the peak activity of [show number actions]

Peak Analysis

In [41]:

```python
# Find the top 5 days with the highest number of actions
top_days = daily_actions.nlargest(5)

# Plot the top days with the highest number of actions
plt.figure(figsize=(12, 6))
top_days.plot(kind='bar', color='lightgreen')
plt.title('Top 5 Days with Highest Number of "show_number" Actions')
plt.xlabel('Date')
plt.ylabel('Number of Actions')
plt.grid(axis='y')
plt.show()
```



Top 3 Days with Highest Number of "show_number" Actions is [14-04],[15-04],[13-04] which comes at toward half of month days