Pakistan Suicide Bombing Attacks:

This project involves an in-depth analysis of data related to suicide bombing attacks in Pakistan. By applying EDA techniques, you will explore patterns, frequencies, locations, and the impact of these attacks over time. The goal is to uncover trends that could inform security policies and preventive measures. This analysis will not only highlight socio-political and demographic factors associated with these incidents but also aim to provide insights that could contribute to peacekeeping and counter-terrorism strategies.

In [19]:
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
import warnings
from wordcloud import WordCloud

warnings.filterwarnings('ignore')
```

In [2]:
```
# Read the datasets into pandas DataFrame objects
bomb_attack = pd.read_csv('Suicide_bombing_attacks.csv')
```

In [3]:
```
# Exploring The data with pandas metho
bomb_attack.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 988 entries, 0 to 987
Data columns (total 25 columns):
 #   Column                   Non-Null Count  Dtype  
---  ------                   --------------  -----  
 0   Date                     988 non-null    object 
 1   Islamic Date             678 non-null    object 
 2   Blast Day Type           967 non-null    object 
 3   Holiday Type             144 non-null    object 
 4   Time                     566 non-null    object 
 5   City                     988 non-null    object 
 6   Latitude                 983 non-null    float64
 7   Longitude                983 non-null    object 
 8   Province                 988 non-null    object 
 9   Location                 982 non-null    object 
 10  Location Category        988 non-null    object 
 11  Location Sensitivity     988 non-null    object 
 12  Open/Closed Space        918 non-null    object 
 13  Influencing Event/Event  378 non-null    object 
 14  Target Type              988 non-null    object 
 15  Targeted Sect if any     194 non-null    object 
 16  Killed Min               696 non-null    float64
 17  Killed Max               988 non-null    float64
 18  Injured Min              726 non-null    float64
 19  Injured Max              924 non-null    object 
 20  No. of Suicide Blasts    824 non-null    float64
 21  Explosive Weight (max)   341 non-null    object 
 22  Hospital Names           591 non-null    object 
 23  Temperature(C)           978 non-null    float64
 24  Temperature(F)           974 non-null    float64
dtypes: float64(7), object(18)
memory usage: 193.1+ KB
```

In [4]:
```
bomb_attack.isnull().sum()
```

Out[4]:
```
Date                        0
Islamic Date              310
Blast Day Type             21
Holiday Type              844
```

```
Time                          422
City                            0
Latitude                        5
Longitude                       5
Province                        0
Location                        6
Location Category               0
Location Sensitivity            0
Open/Closed Space              70
Influencing Event/Event       610
Target Type                     0
Targeted Sect if any          794
Killed Min                    292
Killed Max                      0
Injured Min                   262
Injured Max                    64
No. of Suicide Blasts         164
Explosive Weight (max)        647
Hospital Names                397
Temperature(C)                 10
Temperature(F)                 14
dtype: int64
```

In [5]:
```
bomb_attack.describe()
```

Out[5]:

	Latitude	Killed Min	Killed Max	Injured Min	No. of Suicide Blasts	Temperature(C)	Temperature(F)
count	983.000000	696.00000	988.000000	726.000000	824.000000	978.000000	974.000000
mean	32.618279	14.79023	15.253138	31.498623	1.116505	21.093650	69.939612
std	2.475619	17.61733	19.957268	38.656426	0.395625	8.375656	15.081500
min	24.879503	0.00000	0.000000	0.000000	1.000000	-2.370000	27.734000
25%	31.823800	3.00000	3.000000	7.000000	1.000000	14.650000	58.282250
50%	33.583300	8.00000	8.000000	20.000000	1.000000	21.295000	70.331000
75%	34.004300	20.25000	18.000000	40.000000	1.000000	28.145000	82.499000
max	35.383300	125.00000	148.000000	320.000000	4.000000	44.000000	111.000000

In [6]:
```
bomb_attack.columns
```

Out[6]:
```
Index(['Date', 'Islamic Date', 'Blast Day Type', 'Holiday Type', 'Time',
       'City', 'Latitude', 'Longitude', 'Province', 'Location',
       'Location Category', 'Location Sensitivity', 'Open/Closed Space',
       'Influencing Event/Event', 'Target Type', 'Targeted Sect if any',
       'Killed Min', 'Killed Max', 'Injured Min', 'Injured Max',
       'No. of Suicide Blasts', 'Explosive Weight (max)', 'Hospital Names',
       'Temperature(C)', 'Temperature(F)'],
      dtype='object')
```

In [7]:
```
bomb_attack[bomb_attack['Location'].isnull()]
```

Out[7]:

	Date	Islamic Date	Blast Day Type	Holiday Type	Time	City	Latitude	Longitude	Province	Location	...	Targ Se
416	Friday-February 7-2014	NaN	Working Day	NaN	NaN	Khanewal	30.2999	71.9308	Punjab	NaN	...	
429	Wednesday-September 24-2014	NaN	Working Day	NaN	NaN	Peshawar	34.0043	71.5448	KPK	NaN	...	

432	Thursday-October 23-2014	NaN	Working Day	NaN	NaN	Quetta	30.2095	67.0182	Baluchistan	NaN	...
912	Friday-February 7-2014	NaN	Working Day	NaN	NaN	Khanewal	30.2999	71.9308	Punjab	NaN	...
925	Wednesday-September 24-2014	NaN	Working Day	NaN	NaN	Peshawar	34.0043	71.5448	KPK	NaN	...
928	Thursday-October 23-2014	NaN	Working Day	NaN	NaN	Quetta	30.2095	67.0182	Baluchistan	NaN	...

6 rows × 25 columns

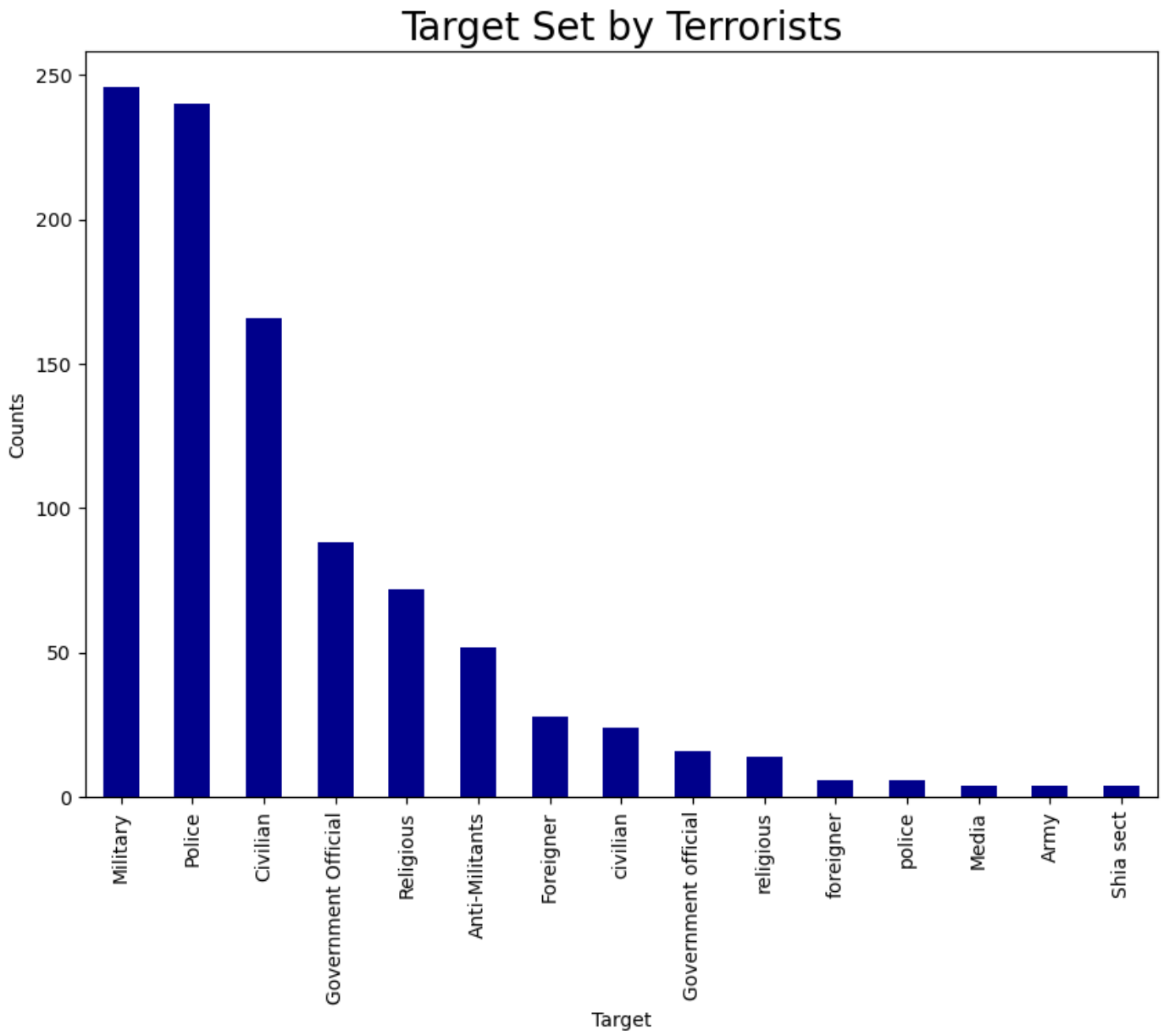
In [8]:
```
bomb_attack.isnull().any()
```

Out[8]:
```
Date                        False
Islamic Date                 True
Blast Day Type               True
Holiday Type                 True
Time                         True
City                        False
Latitude                     True
Longitude                    True
Province                    False
Location                     True
Location Category           False
Location Sensitivity        False
Open/Closed Space            True
Influencing Event/Event      True
Target Type                 False
Targeted Sect if any         True
Killed Min                   True
Killed Max                  False
Injured Min                  True
Injured Max                  True
No. of Suicide Blasts        True
Explosive Weight (max)       True
Hospital Names               True
Temperature(C)               True
Temperature(F)               True
dtype: bool
```

In [9]:
```
bomb_attack["Targeted Sect if any"].value_counts()
```

Out[9]:
```
Targeted Sect if any
Shiite          76
Sunni           76
Christian       18
shiite          18
Shiite/sunni     2
Jews             2
Ahmedi           2
Name: count, dtype: int64
```

In [10]:
```
#Check Target Type
bomb_attack['Target Type'].value_counts(dropna=False).head(15).plot.bar(figsize=(10,7),c
plt.title('Target Set by Terrorists', fontsize =20)
plt.xlabel('Target')
plt.ylabel('Counts')
plt.show()
```



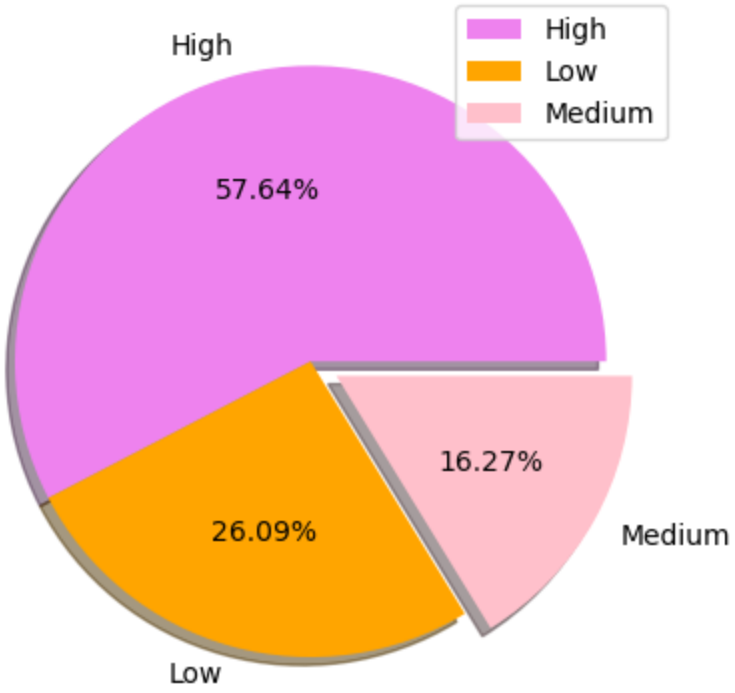
In [11]:
```
bomb_attack['Open/Closed Space'].value_counts()
```

Out[11]:
```
Open/Closed Space
Open            638
Closed          244
open             22
closed           10
Open              2
Open/Closed       2
Name: count, dtype: int64
```

In [12]:
```
bomb_attack['Open/Closed Space'].replace(('open','closed','Open/Closed','Open'),('Open',
```

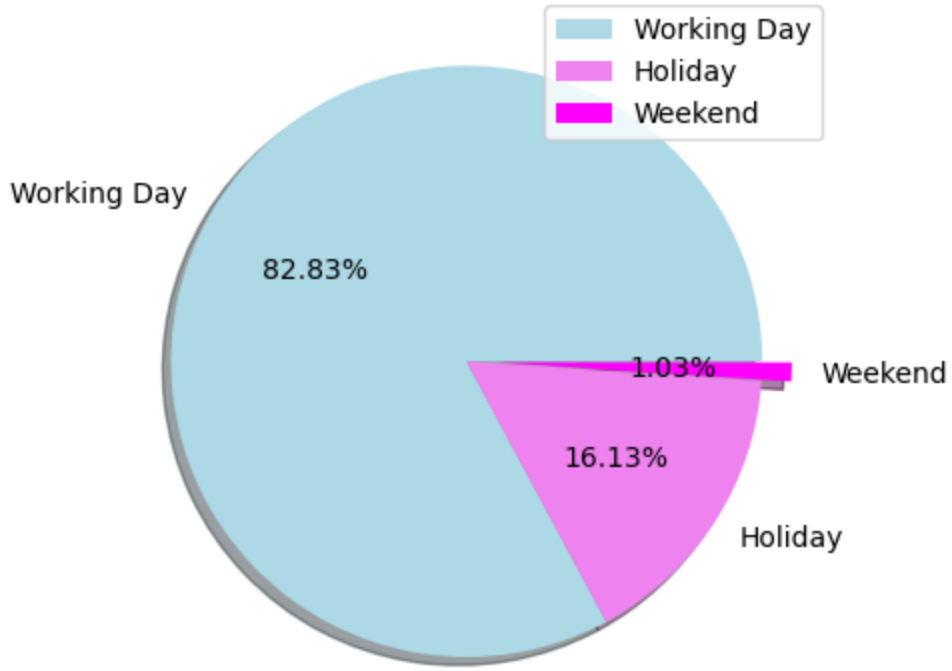
In [13]:
```
# checking the Location Sensitivity

bomb_attack['Location Sensitivity'].value_counts()

# replacing low with Low
#data['Location Sensitivity'].replace('low', 'Low', inplace = True)
```

```
# plotting a pie chart

size = [528, 239, 149]
colors = ['violet', 'orange', 'pink', 'lightgreen']
labels = ['High', 'Low', 'Medium']
explode = [0, 0, 0.1]

plt.pie(size, colors = colors, labels = labels, explode = explode, shadow = True, autopc
plt.legend()
plt.show()
```

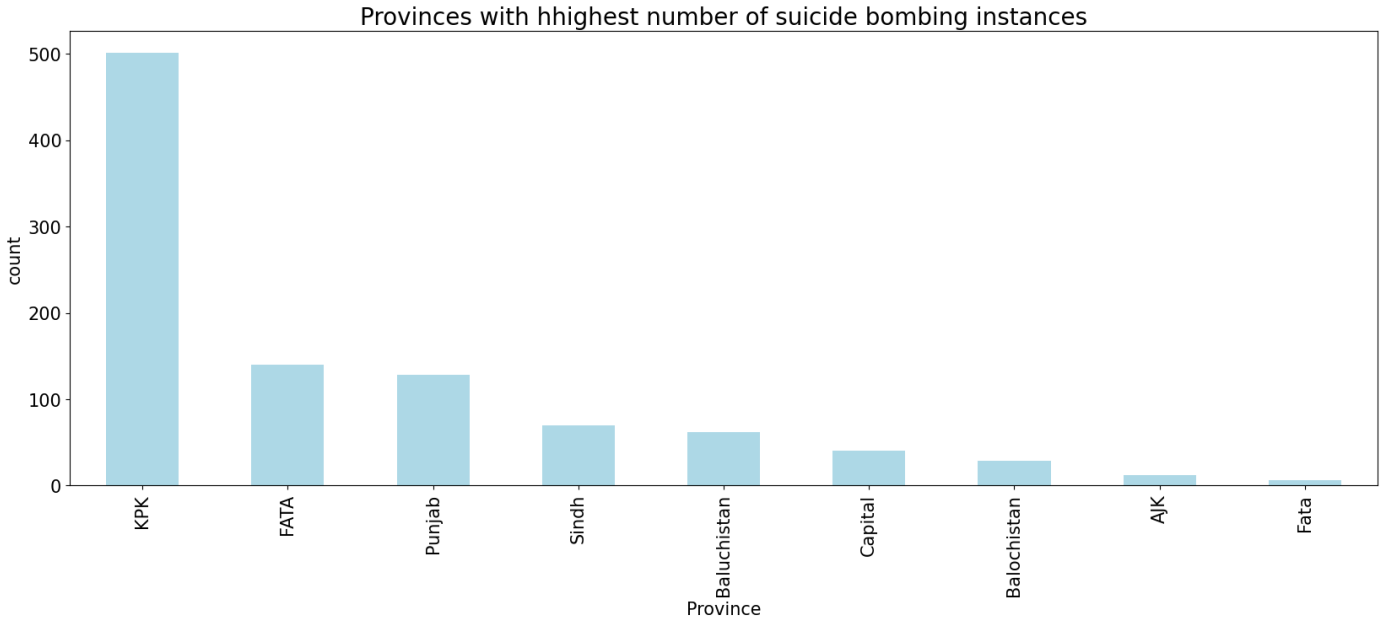


In [14]:

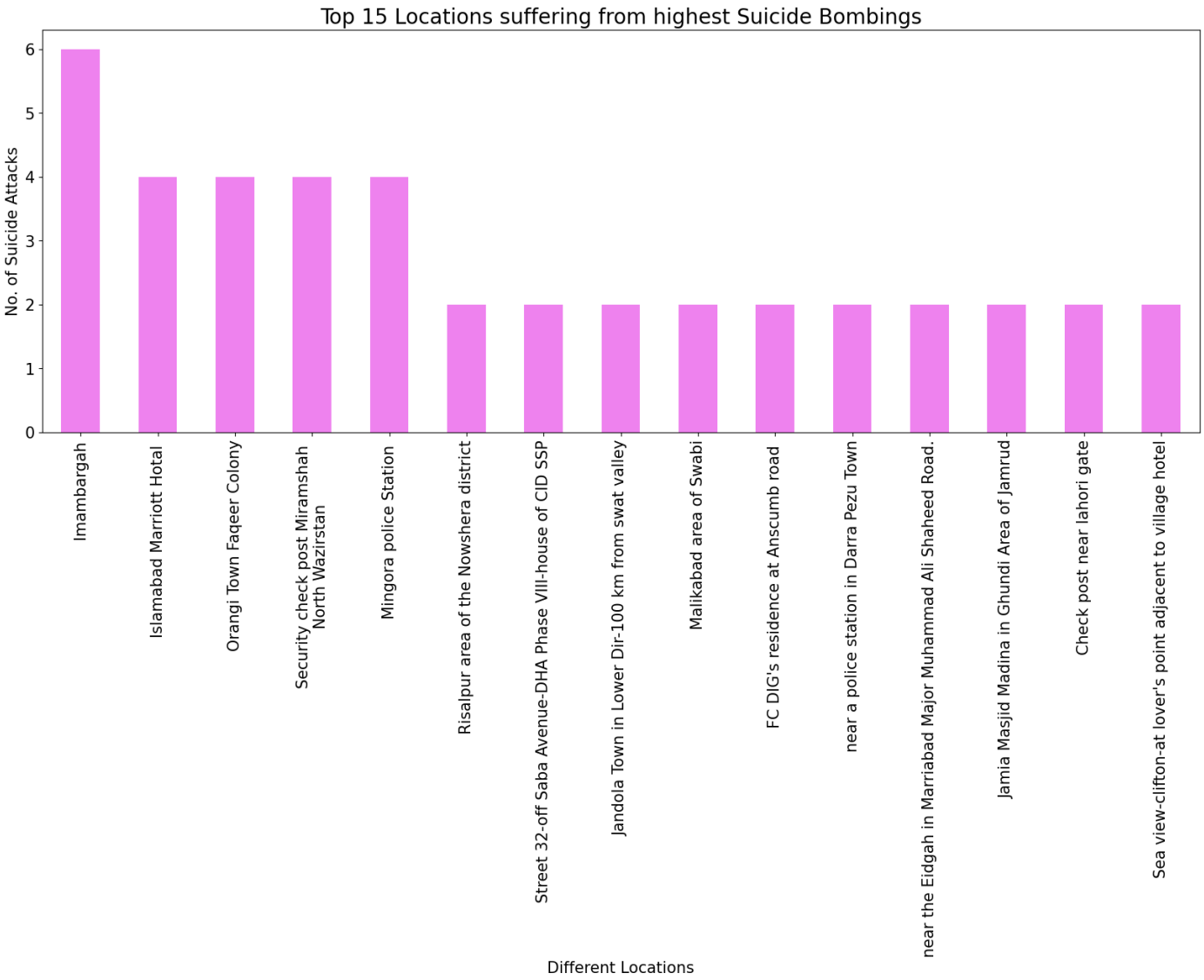
```
# checking the various blast day types

bomb_attack['Blast Day Type'].value_counts()

# making a pie chart of probability of bombings on type of holidays

size = [801, 156, 10]
labels = ['Working Day', 'Holiday', 'Weekend']
colors = ['lightblue', 'violet', 'magenta']
explode = [0, 0, 0.1]

plt.pie(size, colors = colors, labels = labels, shadow = True, explode = explode, autopc
plt.legend()
plt.show()
```



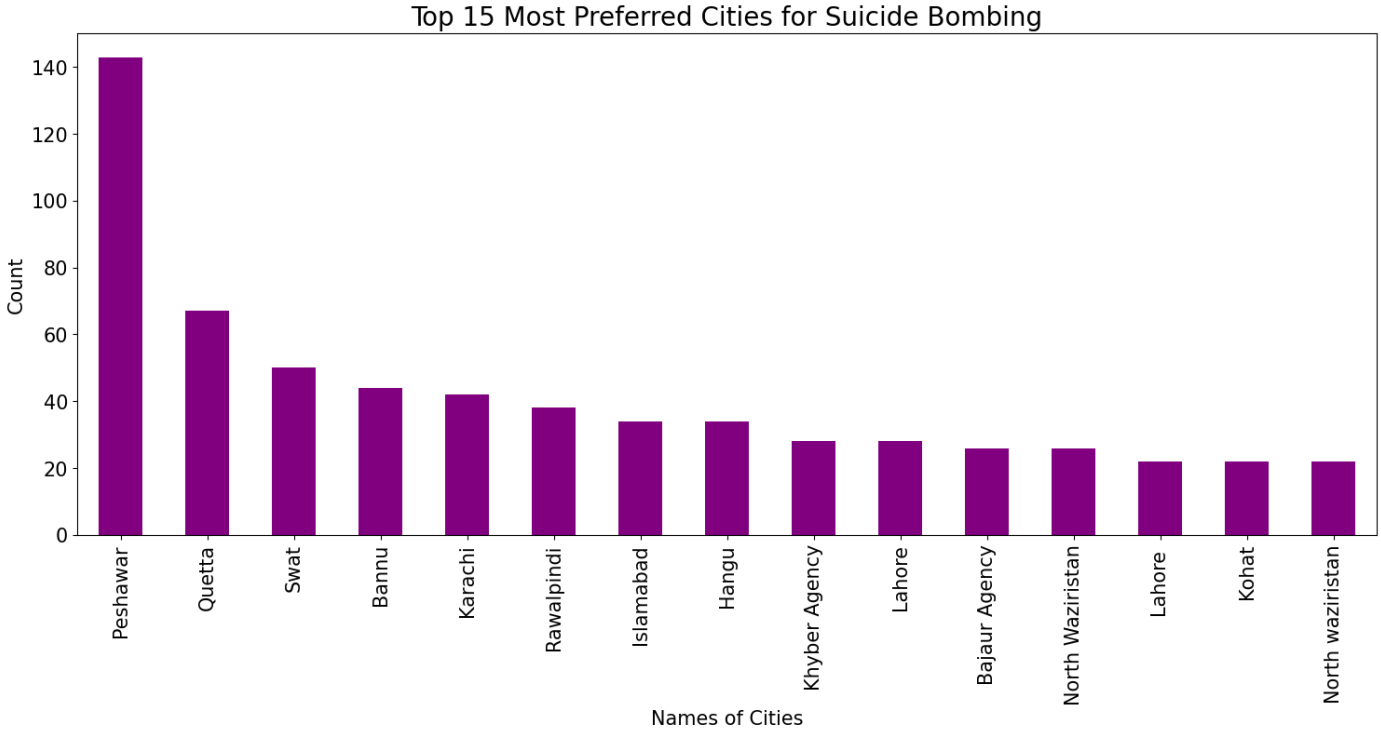
In [15]:
```
# checking the Provinces where suicide bombing happened

bomb_attack['Province'].value_counts().plot.bar(figsize = (20, 7), color = 'lightblue',f
plt.title('Provinces with hhighest number of suicide bombing instances', fontsize=20)
plt.xlabel('Province', fontsize=15)
plt.ylabel('count', fontsize=15)
plt.show()
```



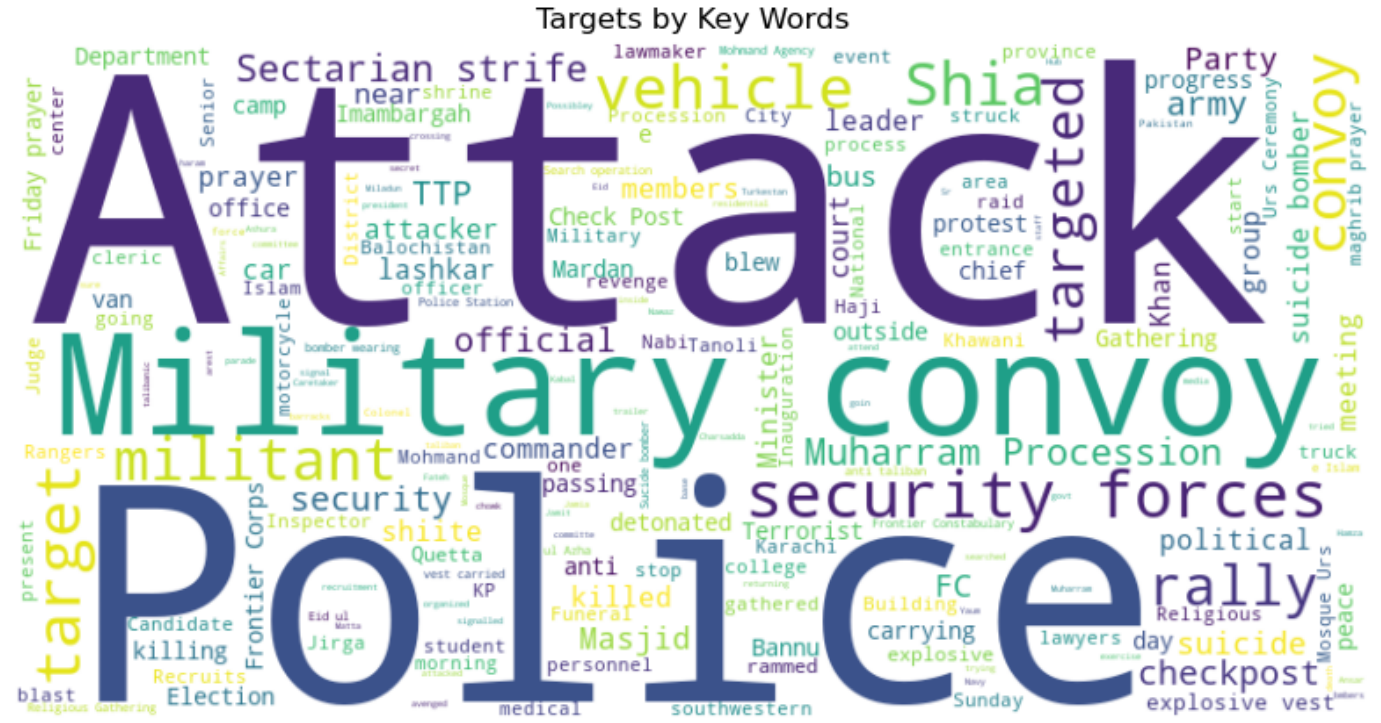
In [16]:
```
# locations where suicide bombings took place most often

bomb_attack['Location'].value_counts().head(15).plot.bar(figsize = (20, 7), color = 'vio
plt.title('Top 15 Locations suffering from highest Suicide Bombings', fontsize = 20)
plt.xlabel('Different Locations',fontsize = 15)
plt.ylabel('No. of Suicide Attacks',fontsize = 15)
plt.show()
```



In [17]:
```
# Top 20 Most Preferred Cities for Suicide Bombing

bomb_attack['City'].value_counts().head(15).plot.bar(figsize = (18, 7), color = 'purple'
plt.title('Top 15 Most Preferred Cities for Suicide Bombing', fontsize = 20)
plt.xlabel('Names of Cities', fontsize = 15)
plt.ylabel('Count', fontsize = 15)
plt.show()
```



In [18]:
```
wordcloud_data = ' '.join(bomb_attack['Influencing Event/Event'].dropna())
wordcloud = WordCloud(width=800, height=400, background_color='white').generate(wordclou

plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.title('Targets by Key Words')
plt.axis('off')
plt.show()
```



Conclusion

- **`Date insights.`**
  The sudden increase in suicide bombing attacks in 2007 can be attributed to several factors, including

the escalation of militant activities following the Lal Masjid Operation in Islamabad, the revival of Tehrik-i-Taliban Pakistan (TTP), the spread of insurgency in the tribal areas bordering Afghanistan, and the spillover effects of the War on Terror.

- **`Locations.`**
  The Federally Administered Tribal Areas (FATA) and Khyber Pakhtunkhwa (KPK) regions experienced a high number of attacks primarily due to their proximity to the Afghanistan border. Heat between two countries was caused by territorial conflict.

- **`Targets.`** Internal sectarian tensions, militant backlash against military operations, and the emergence of extremist groups exploiting political and social grievances. Additionally, factors such as geopolitical dynamics, state sponsorship of terrorism, and ideological radicalization contributed to the escalation of violence during this time frame.

- **`Casualties`** This high average can be attributed to the use of explosive devices in densely populated areas, targeting of crowded public places, and the intention of attackers to inflict maximum harm, resulting in significant casualties and injuries.

In [ ]: