In [3]:
```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv("accident data.csv")
df.head()
```

Out[3]:

	Index	Accident_Severity	Accident Date	Latitude	Light_Conditions	District Area	Longitude	Number_of_Casualties	Nur
0	200701BS64157	Serious	05-06-2019	51.506187	Darkness - lights lit	Kensington and Chelsea	-0.209082	1	
1	200701BS65737	Serious	02-07-2019	51.495029	Daylight	Kensington and Chelsea	-0.173647	1	
2	200701BS66127	Serious	26-08-2019	51.517715	Darkness - lighting unknown	Kensington and Chelsea	-0.210215	1	
3	200701BS66128	Serious	16-08-2019	51.495478	Daylight	Kensington and Chelsea	-0.202731	1	
4	200701BS66837	Slight	03-09-2019	51.488576	Darkness - lights lit	Kensington and Chelsea	-0.192487	1	

In [4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 660679 entries, 0 to 660678
Data columns (total 14 columns):
 #   Column                   Non-Null Count   Dtype
---  ------                   --------------   -----
 0   Index                    660679 non-null  object
 1   Accident_Severity        660679 non-null  object
 2   Accident Date            660679 non-null  object
 3   Latitude                 660654 non-null  float64
 4   Light_Conditions         660679 non-null  object
 5   District Area            660679 non-null  object
 6   Longitude                660653 non-null  float64
 7   Number_of_Casualties     660679 non-null  int64
 8   Number_of_Vehicles       660679 non-null  int64
 9   Road_Surface_Conditions  659953 non-null  object
 10  Road_Type                656159 non-null  object
 11  Urban_or_Rural_Area      660664 non-null  object
 12  Weather_Conditions       646551 non-null  object
 13  Vehicle_Type             660679 non-null  object
dtypes: float64(2), int64(2), object(10)
memory usage: 70.6+ MB
```

In [5]:
```
df.isnull().sum()
```

Out[5]:
```
Index                        0
Accident_Severity            0
Accident Date                0
Latitude                    25
Light_Conditions             0
District Area                0
Longitude                   26
Number_of_Casualties         0
Number_of_Vehicles           0
Road_Surface_Conditions    726
Road_Type                 4520
Urban_or_Rural_Area         15
Weather_Conditions       14128
Vehicle_Type                 0
dtype: int64
```

In [6]:
```
df.dropna(inplace=True)
```

In [7]:
```
df.duplicated().sum()
```

Out[7]:
```
18
```

In [8]:
```
df.drop_duplicates(inplace=True)
```

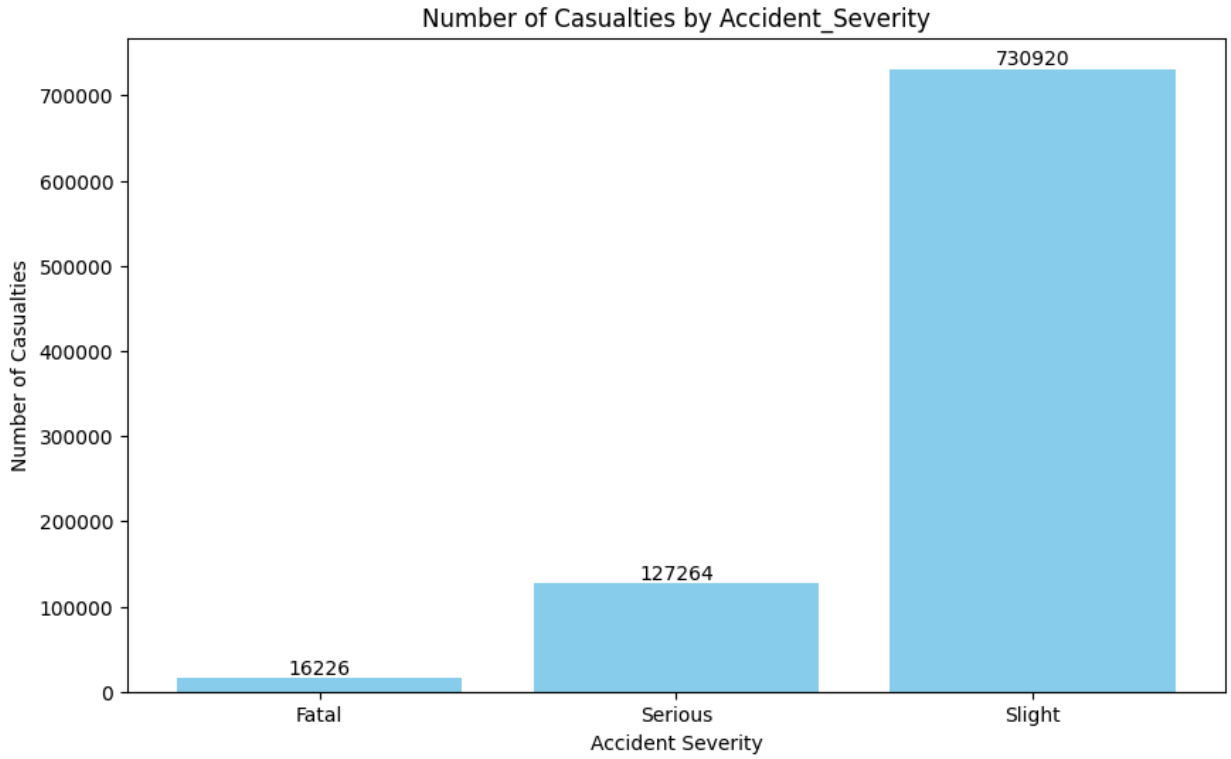
In [9]:
```
df['Accident Date'] = pd.to_datetime(df['Accident Date'],format='%d-%m-%Y')
```

In [10]:
```
df['Month'] = df['Accident Date'].dt.month_name()
```

EDA

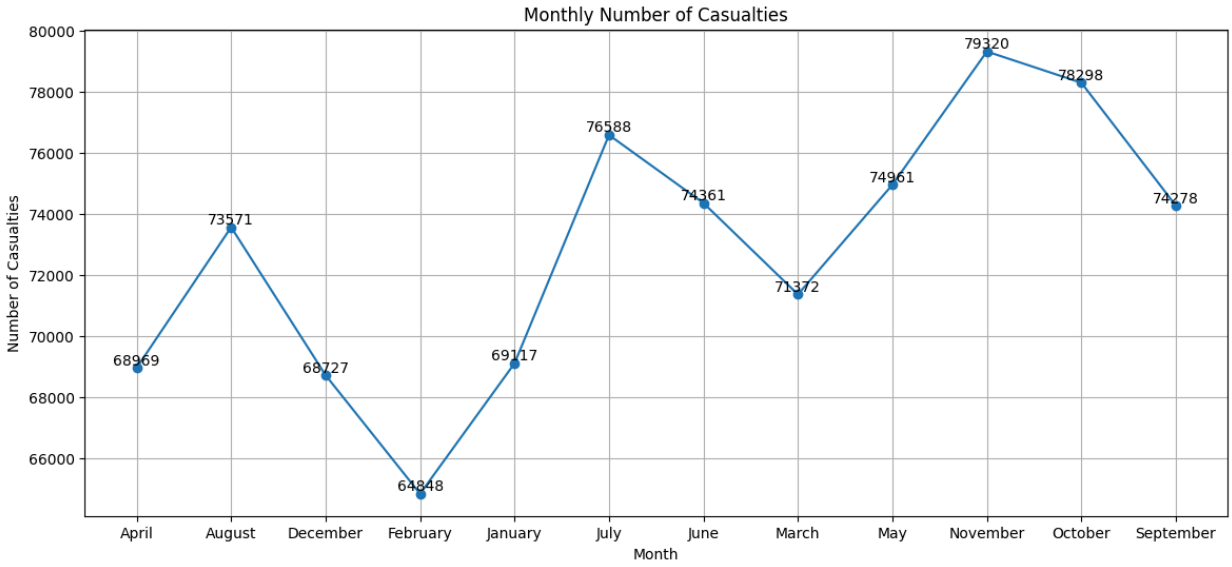
Horizontal Chart

In [11]:
```
acci_sever = df.groupby('Accident_Severity')['Number_of_Casualties'].sum().sort_values(ascending=True)

plt.figure(figsize=(10,6))
plt.bar(acci_sever.index,acci_sever.values, color='skyblue')

for i,value in enumerate(acci_sever):
    plt.text(i,value+0.5,str(value),ha='center', va='bottom')
plt.title("Number of Casualties by Accident_Severity")
plt.xlabel("Accident Severity")
plt.ylabel("Number of Casualties")
plt.show()
```



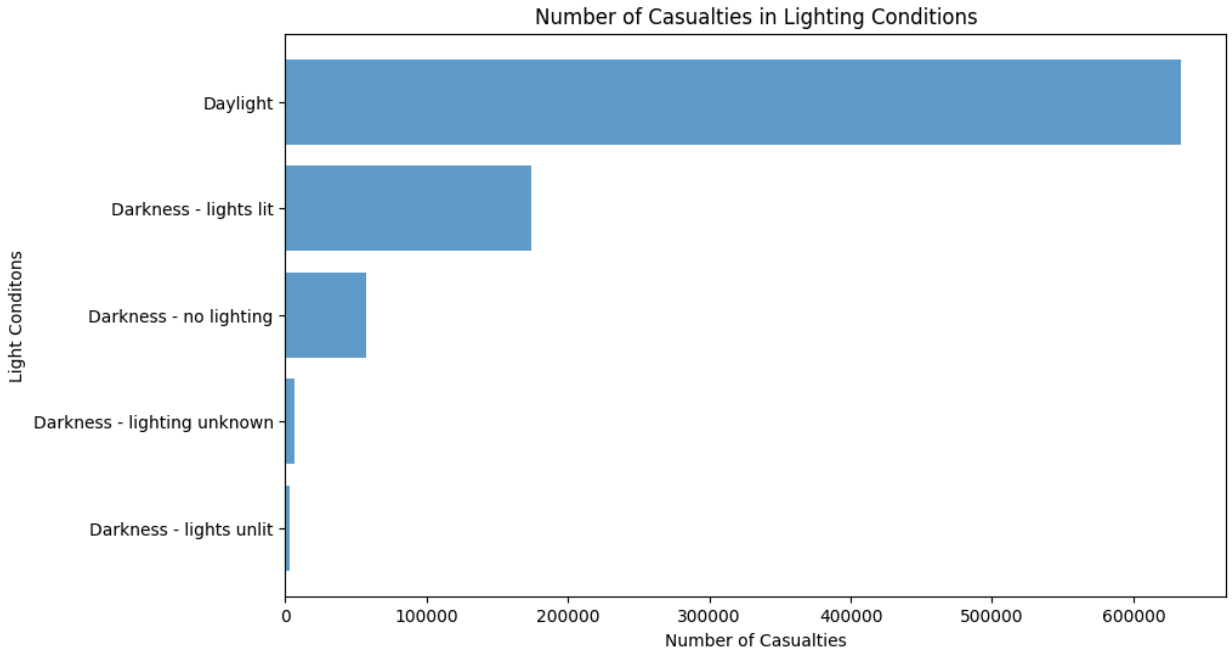
Line Chart

In [12]:
```
monthly = df.groupby('Month')['Number_of_Casualties'].sum()

plt.figure(figsize=(14,6))
plt.plot(monthly.index, monthly.values, marker='o', linestyle='solid')
for i,value in enumerate(monthly.values):
    plt.text(i,value + 5,str(value), ha='center',va='bottom')
plt.title("Monthly Number of Casualties")
plt.xlabel('Month')
plt.ylabel('Number of Casualties')
plt.grid()
plt.show()
```



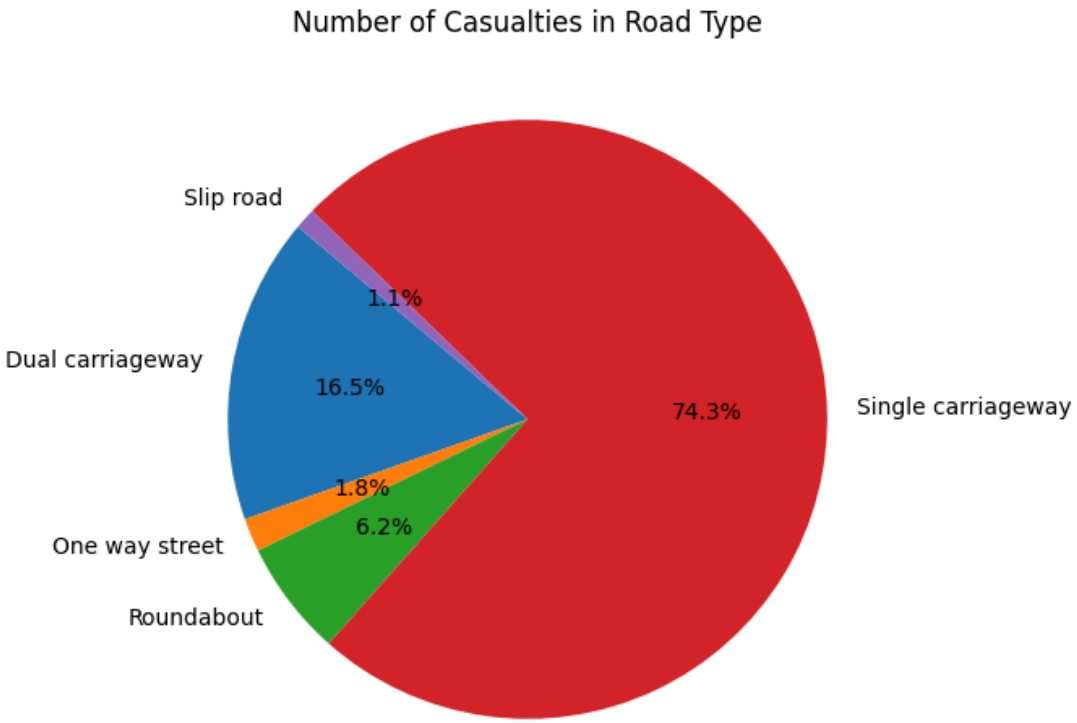
Horizontal Bar Chart

In [13]:
```
light_con = df.groupby('Light_Conditions')['Number_of_Casualties'].sum().sort_values(ascending=True)

plt.figure(figsize=(10,6))
plt.barh(light_con.index, light_con.values,alpha=0.7)
#for i, value in enumerate(light_con.values):
    #plt.text(i,value, str(value), ha='center', va='bottom')
plt.title("Number of Casualties in Lighting Conditions")
plt.xlabel("Number of Casualties")
plt.ylabel("Light Conditons")
plt.show()
```



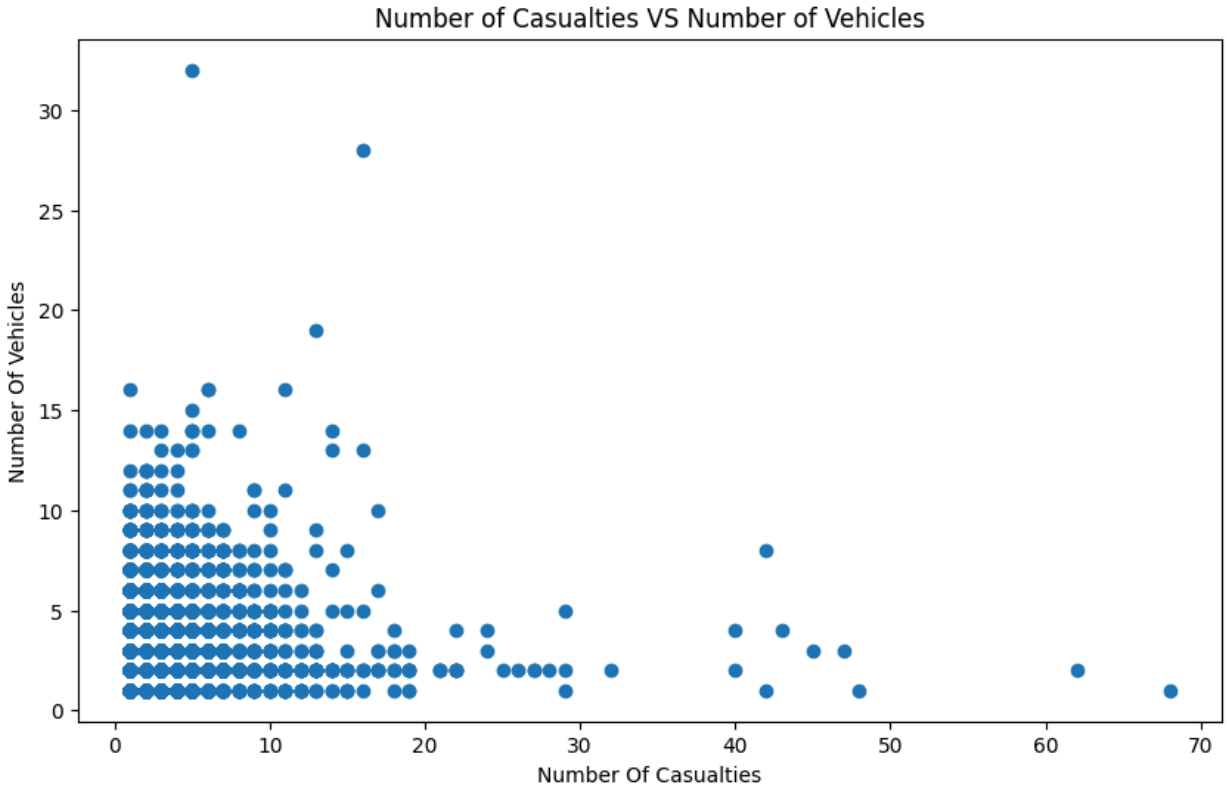
Pie Chart

In [14]:
```
road = df.groupby('Road_Type')['Number_of_Casualties'].sum()

plt.figure(figsize=(8,6))
plt.pie(road.values, labels=road.index, autopct='%1.1f%%', startangle=140)
plt.title("Number of Casualties in Road Type")
plt.show()
```



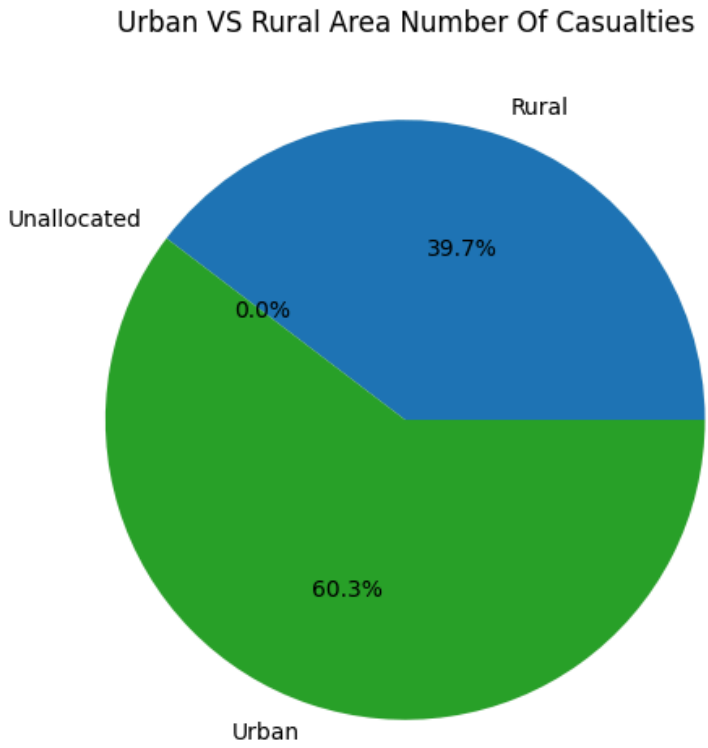
Scatter Chart

In [15]:
```
plt.figure(figsize=(10,6))
plt.scatter(df['Number_of_Casualties'],df['Number_of_Vehicles'])
plt.title("Number of Casualties VS Number of Vehicles")
plt.xlabel("Number Of Casualties")
plt.ylabel("Number Of Vehicles")
plt.show()
```



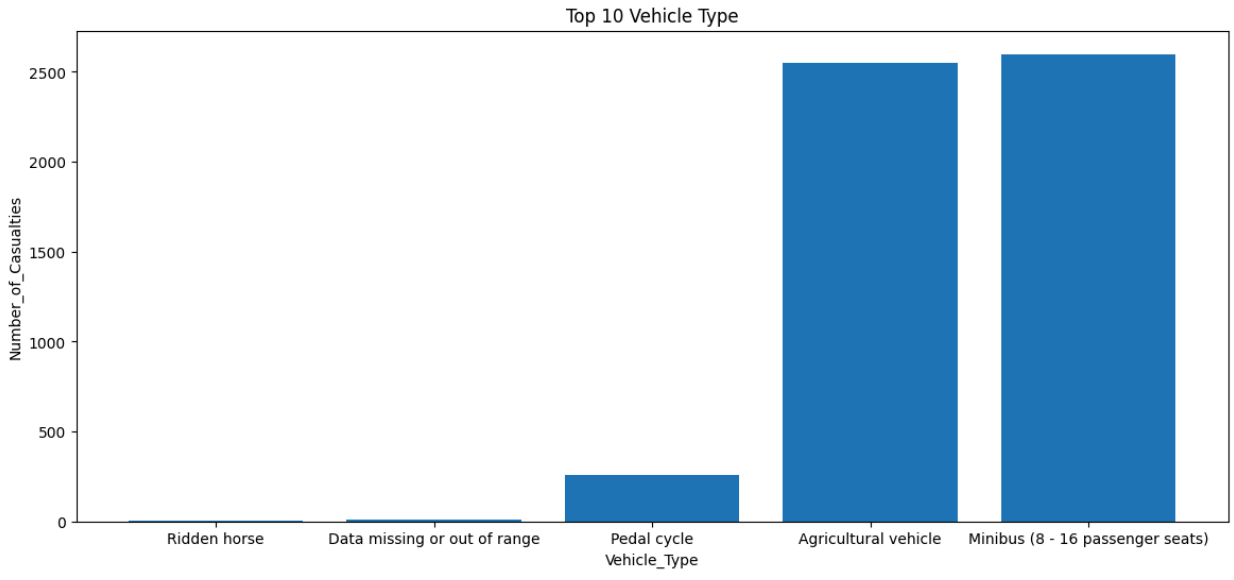
Donut Chart

In [20]:
```
area_casu = df.groupby('Urban_or_Rural_Area')['Number_of_Casualties'].sum()
plt.figure(figsize=(6,6))
plt.pie(area_casu.values, labels=area_casu.index, autopct='%1.1f%%')
plt.title('Urban VS Rural Area Number Of Casualties')
plt.show()
```



Bar Chart

In [23]:
```
top_10_casu = df.groupby('Vehicle_Type')['Number_of_Casualties'].sum().sort_values(ascending=True).head(5)

plt.figure(figsize=(14,6))
plt.bar(top_10_casu.index, top_10_casu.values)
plt.title("Top 10 Vehicle Type")
plt.xlabel('Vehicle_Type')
plt.ylabel('Number_of_Casualties')
plt.show()
```



In [ ]: