In [1]:

```
import seaborn as sns
import matplotlib.pyplot as plt
```

In [7]:

```
df = sns.load_dataset("car_crashes")
df
```

Out[7]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
0	18.8	7.332	5.640	18.048	15.040	784.55	145.08	AL
1	18.1	7.421	4.525	16.290	17.014	1053.48	133.93	AK
2	18.6	6.510	5.208	15.624	17.856	899.47	110.35	AZ
3	22.4	4.032	5.824	21.056	21.280	827.34	142.39	AR
4	12.0	4.200	3.360	10.920	10.680	878.41	165.63	CA
5	13.6	5.032	3.808	10.744	12.920	835.50	139.91	CO
6	10.8	4.968	3.888	9.396	8.856	1068.73	167.02	CT
7	16.2	6.156	4.860	14.094	16.038	1137.87	151.48	DE
8	5.9	2.006	1.593	5.900	5.900	1273.89	136.05	DC
9	17.9	3.759	5.191	16.468	16.826	1160.13	144.18	FL
10	15.6	2.964	3.900	14.820	14.508	913.15	142.80	GA
11	17.5	9.450	7.175	14.350	15.225	861.18	120.92	HI
12	15.3	5.508	4.437	13.005	14.994	641.96	82.75	ID
13	12.8	4.608	4.352	12.032	12.288	803.11	139.15	IL
14	14.5	3.625	4.205	13.775	13.775	710.46	108.92	IN
15	15.7	2.669	3.925	15.229	13.659	649.06	114.47	IA
16	17.8	4.806	4.272	13.706	15.130	780.45	133.80	KS
17	21.4	4.066	4.922	16.692	16.264	872.51	137.13	KY
18	20.5	7.175	6.765	14.965	20.090	1281.55	194.78	LA
19	15.1	5.738	4.530	13.137	12.684	661.88	96.57	ME
20	12.5	4.250	4.000	8.875	12.375	1048.78	192.70	MD
21	8.2	1.886	2.870	7.134	6.560	1011.14	135.63	MA
22	14.1	3.384	3.948	13.395	10.857	1110.61	152.26	MI
23	9.6	2.208	2.784	8.448	8.448	777.18	133.35	MN
24	17.6	2.640	5.456	1.760	17.600	896.07	155.77	MS
25	16.1	6.923	5.474	14.812	13.524	790.32	144.45	MO
26	21.4	8.346	9.416	17.976	18.190	816.21	85.15	MT
27	14.9	1.937	5.215	13.857	13.410	732.28	114.82	NE
28	14.7	5.439	4.704	13.965	14.553	1029.87	138.71	NV
29	11.6	4.060	3.480	10.092	9.628	746.54	120.21	NH
30	11.2	1.792	3.136	9.632	8.736	1301.52	159.85	NJ
31	18.4	3.496	4.968	12.328	18.032	869.85	120.75	NM
32	12.3	3.936	3.567	10.824	9.840	1234.31	150.01	NY

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	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
33	16.8	6.552	5.208	15.792	13.608	708.24	127.82	NC
34	23.9	5.497	10.038	23.661	20.554	688.75	109.72	ND
35	14.1	3.948	4.794	13.959	11.562	697.73	133.52	OH
36	19.9	6.368	5.771	18.308	18.706	881.51	178.86	OK
37	12.8	4.224	3.328	8.576	11.520	804.71	104.61	OR
38	18.2	9.100	5.642	17.472	16.016	905.99	153.86	PA
39	11.1	3.774	4.218	10.212	8.769	1148.99	148.58	RI
40	23.9	9.082	9.799	22.944	19.359	858.97	116.29	SC
41	19.4	6.014	6.402	19.012	16.684	669.31	96.87	SD
42	19.5	4.095	5.655	15.990	15.795	767.91	155.57	TN
43	19.4	7.760	7.372	17.654	16.878	1004.75	156.83	TX
44	11.3	4.859	1.808	9.944	10.848	809.38	109.48	UT
45	13.6	4.080	4.080	13.056	12.920	716.20	109.61	VT
46	12.7	2.413	3.429	11.049	11.176	768.95	153.72	VA
47	10.6	4.452	3.498	8.692	9.116	890.03	111.62	WA
48	23.8	8.092	6.664	23.086	20.706	992.61	152.56	WV
49	13.8	4.968	4.554	5.382	11.592	670.31	106.62	WI
50	17.4	7.308	5.568	14.094	15.660	791.14	122.04	WY

In [8]:

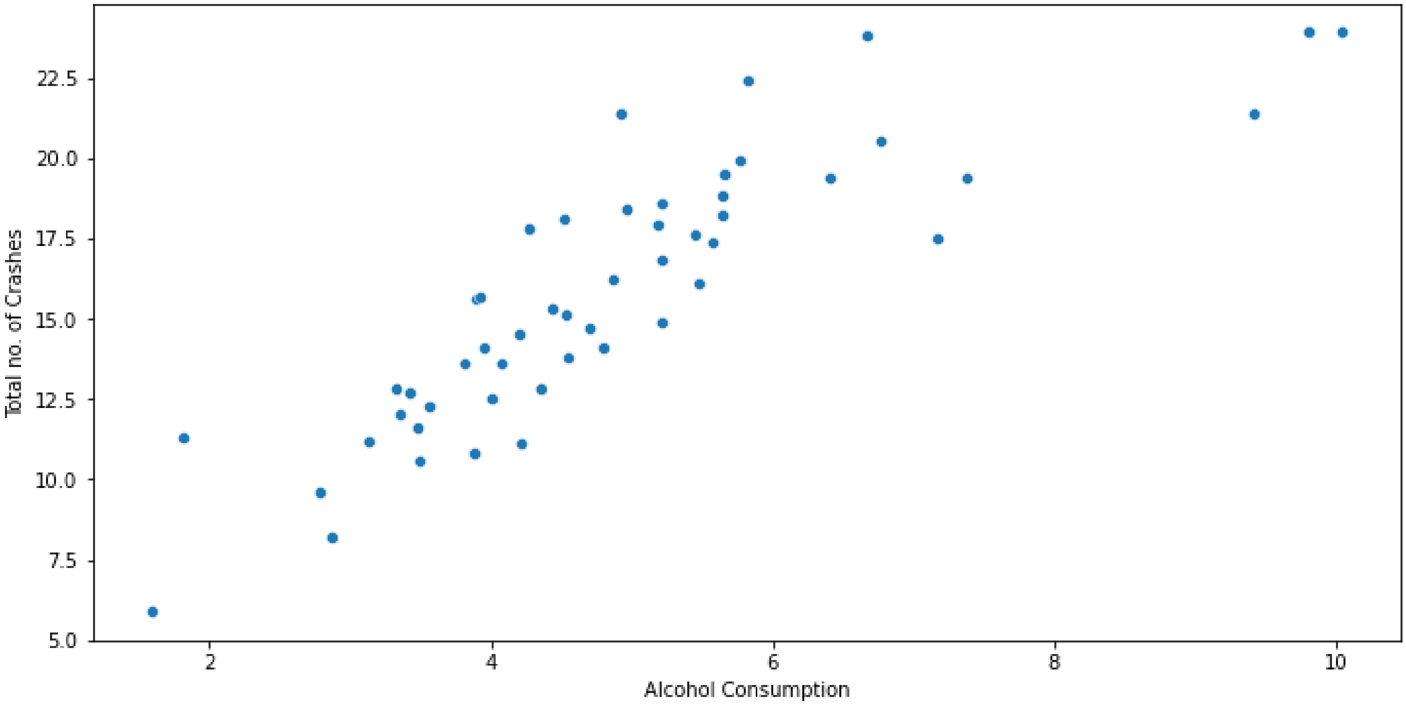
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51 entries, 0 to 50
Data columns (total 8 columns):
 #   Column          Non-Null Count  Dtype  
---  ------          --------------  -----  
 0   total           51 non-null     float64
 1   speeding        51 non-null     float64
 2   alcohol         51 non-null     float64
 3   not_distracted  51 non-null     float64
 4   no_previous     51 non-null     float64
 5   ins_premium     51 non-null     float64
 6   ins_losses      51 non-null     float64
 7   abbrev          51 non-null     object 
dtypes: float64(7), object(1)
memory usage: 3.3+ KB
```

Scatterplot

In [50]:

```
#ScatterPlot (Alcohol Consumption vs. Total no. of Crashes)
plt.figure(figsize=(12,6))
sns.scatterplot(x='alcohol', y='total', data=car_crashes)
plt.xlabel('Alcohol Consumption')
plt.ylabel('Total no. of Crashes')
plt.show()
```

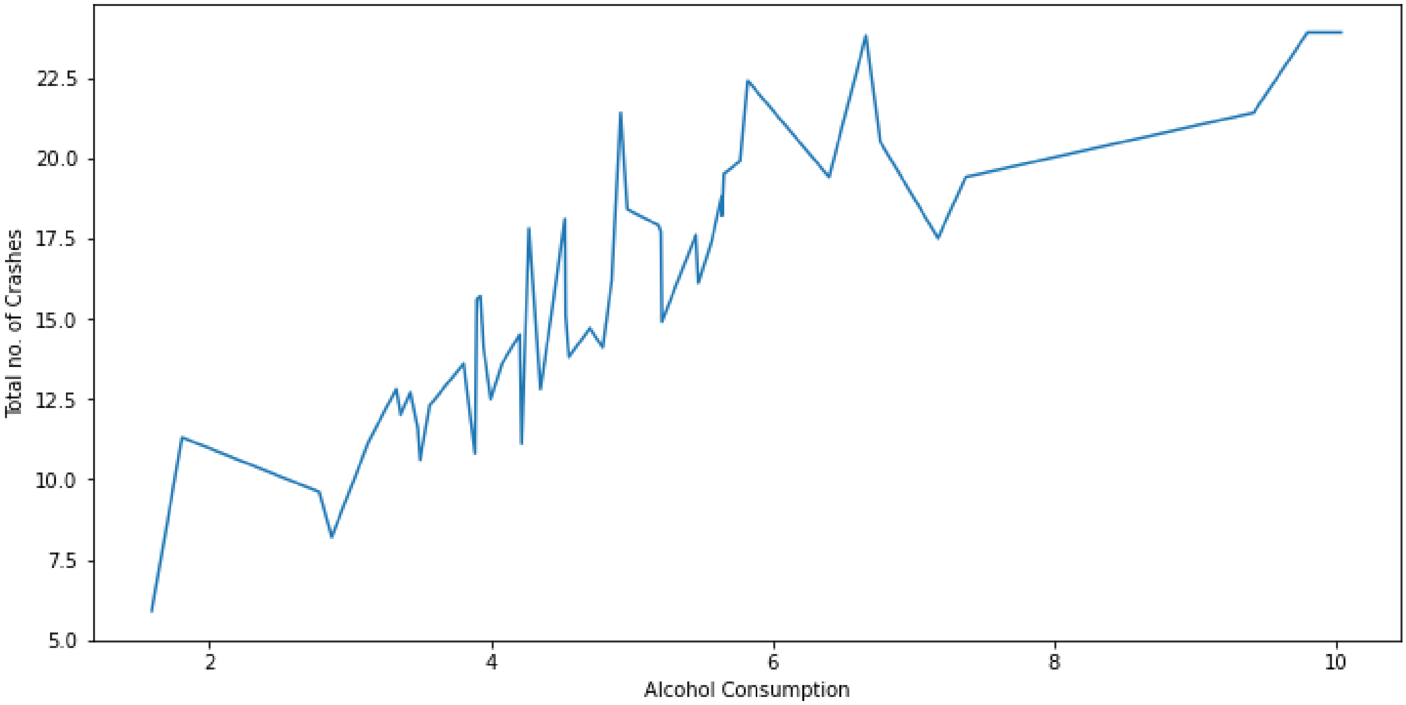


Inference: The scatter plot shows the relationship between alcohol consumption and the total number of crashes. It suggests that higher alcohol consumption is leading to more crashes (Positive correlation)

Lineplot

In [49]:

```
# Line plot of (Alcohol Consumption vs. Total no. of Crashes)
plt.figure(figsize=(12,6))
sns.lineplot(x='alcohol', y='total', data=car_crashes,ci=None)
plt.xlabel('Alcohol Consumption')
plt.ylabel('Total no. of Crashes')
plt.show()
```



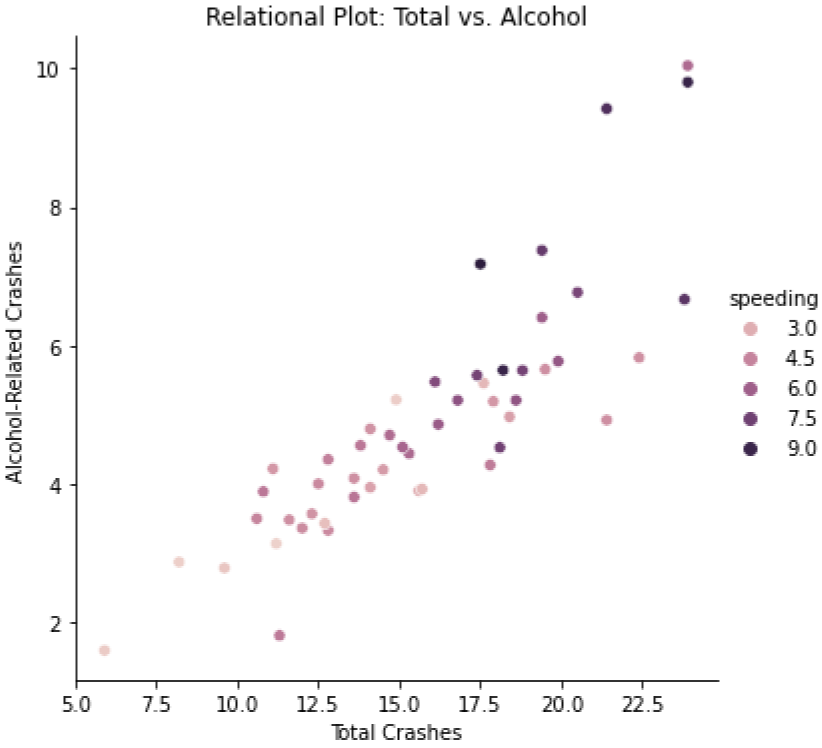
Inference: The line plot shows the relationship between alcohol consumption and the total number of crashes. It suggests that higher alcohol consumption is leading to more crashes (Positive correlation)

Relationalplot

In [48]:

```
#Relplot for alcohol related crashes
plt.figure(figsize=(12,6))
sns.relplot(x="total", y="alcohol", data=car_crashes, hue="speeding")
plt.title("Relational Plot: Total vs. Alcohol")
plt.xlabel("Total Crashes")
plt.ylabel("Alcohol-Related Crashes")
plt.show()
```

```
<Figure size 864x432 with 0 Axes>
```

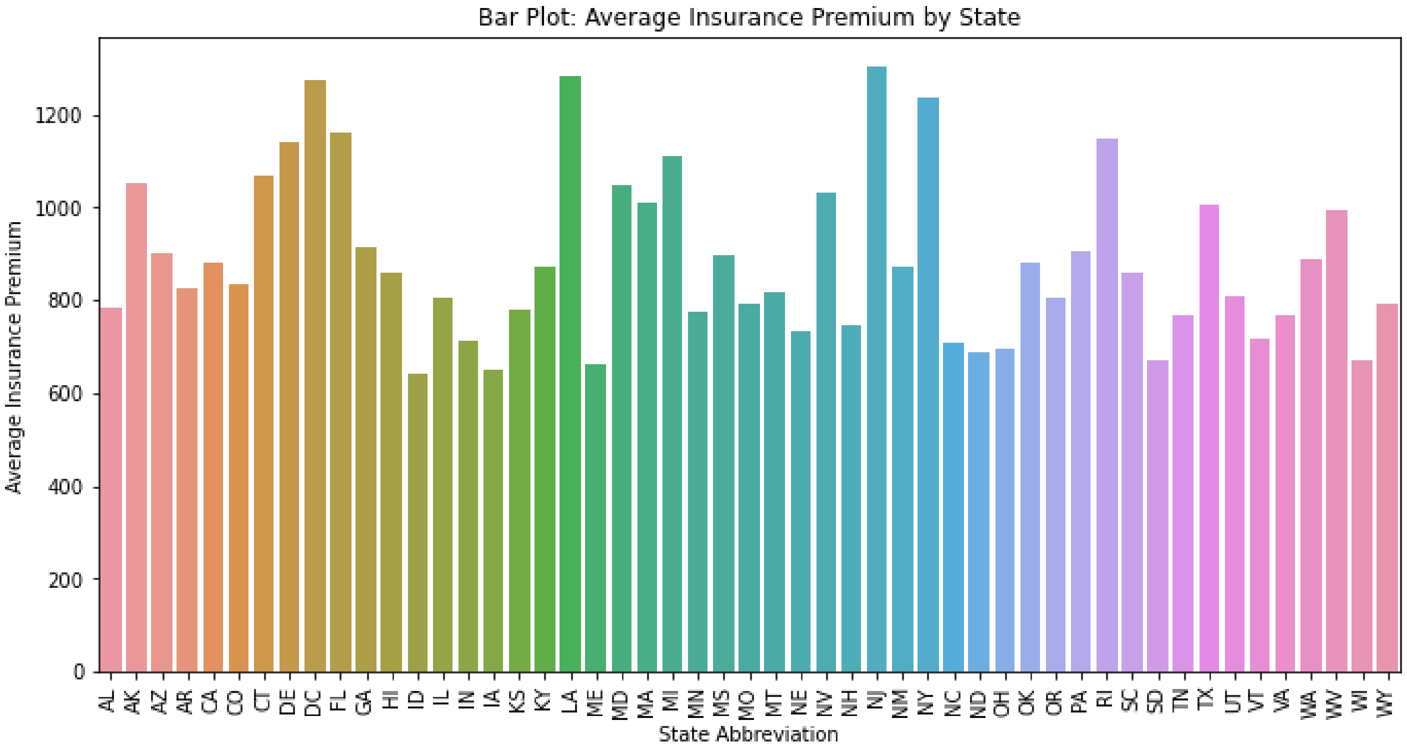


Inference:The scatter plot visually displays the relationship between the total number of crashes and alcohol-related crashes for various cities. The color differentiation based on "speeding" allows us to see how speeding behavior might affect the relationship between total crashes and alcohol-related crashes.

Barplot

In [47]:

```
# Bar Plot - Average ins_premium by state
plt.figure(figsize=(12,6))
sns.barplot(x="abbrev", y="ins_premium", data=car_crashes,ci=None)
plt.title("Bar Plot: Average Insurance Premium by State")
plt.xlabel("State Abbreviation")
plt.ylabel("Average Insurance Premium")
plt.xticks(rotation=90)
plt.show()
```

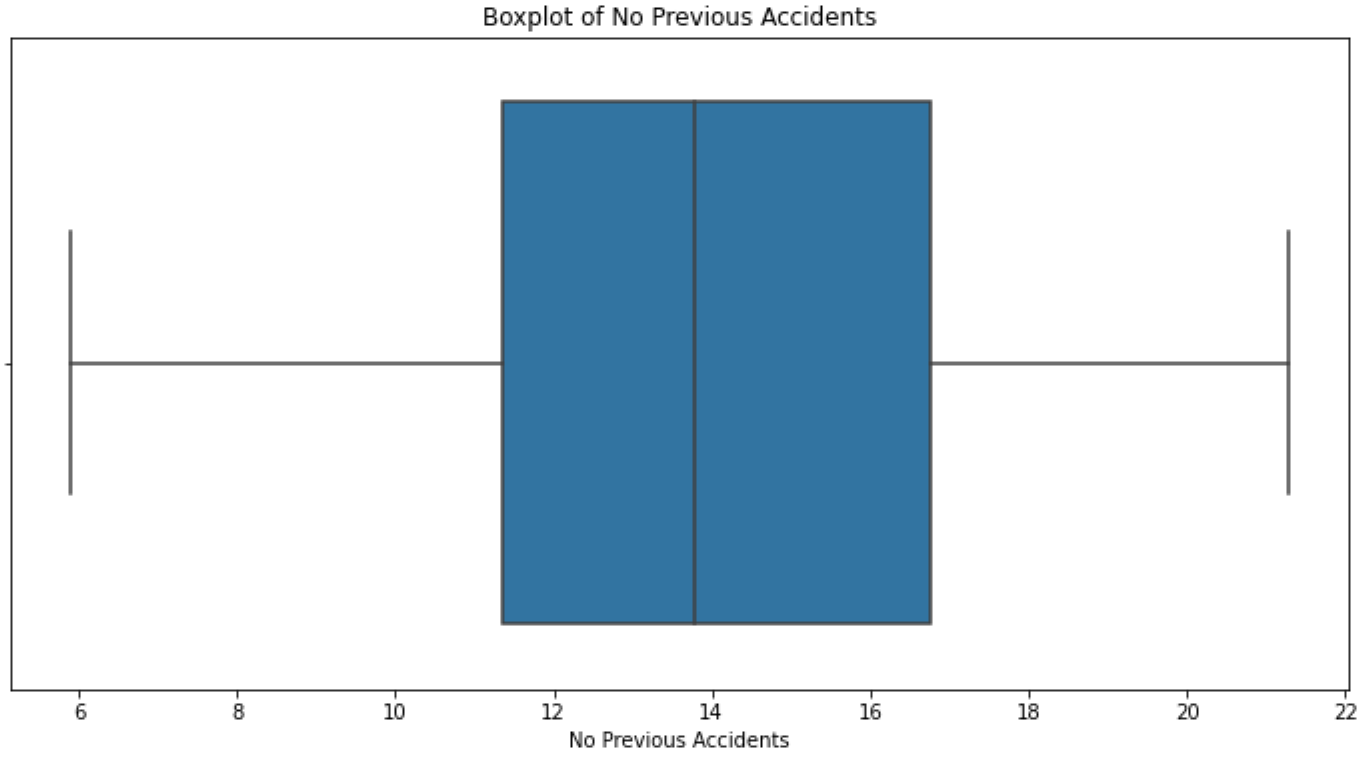


Inference: States with different abbreviations have varying average insurance premiums.

Boxplot

In [74]:

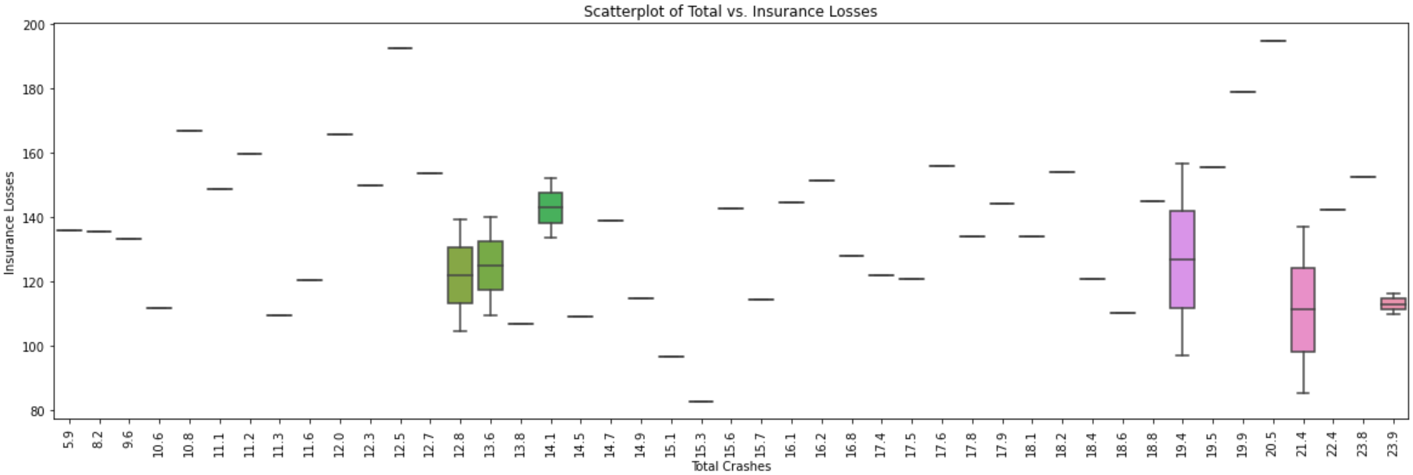
```
# 7. Boxplot of No Previous Accidents
plt.figure(figsize=(12,6))
sns.boxplot(x="no_previous", data=car_crashes)
plt.title("Boxplot of No Previous Accidents")
plt.xlabel("No Previous Accidents")
plt.show()
```



Inference: Boxplot displays the distribution of cities with or without previous accidents.

In [67]:

```
#BoxPlot of Total vs. Insurance Losses
plt.figure(figsize=(20,6))
sns.boxplot(x="total", y="ins_losses", data=car_crashes)
plt.title("Scatterplot of Total vs. Insurance Losses")
plt.xlabel("Total Crashes")
plt.ylabel("Insurance Losses")
plt.xticks(rotation=90)
plt.show()
```

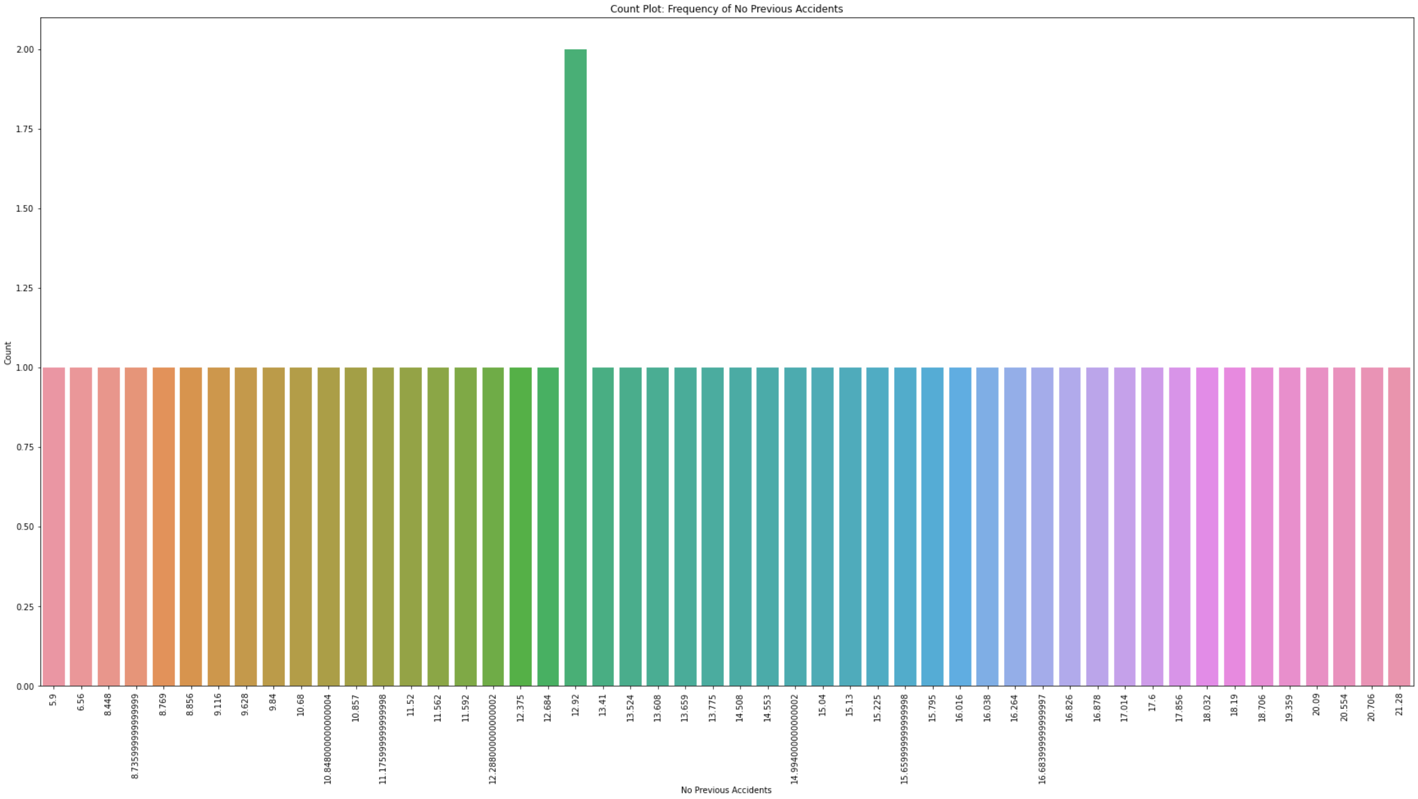


Inference: This scatterplot shows the relationship between the total number of crashes and insurance losses.

Countplot

In [66]:

```
#countplot for frequency of No Previous Accidents
plt.figure(figsize=(30, 15))
sns.countplot(x="no_previous", data=car_crashes)
plt.title("Count Plot: Frequency of No Previous Accidents")
plt.xlabel("No Previous Accidents")
plt.ylabel("Count")
plt.xticks(rotation=90)
plt.show()
```



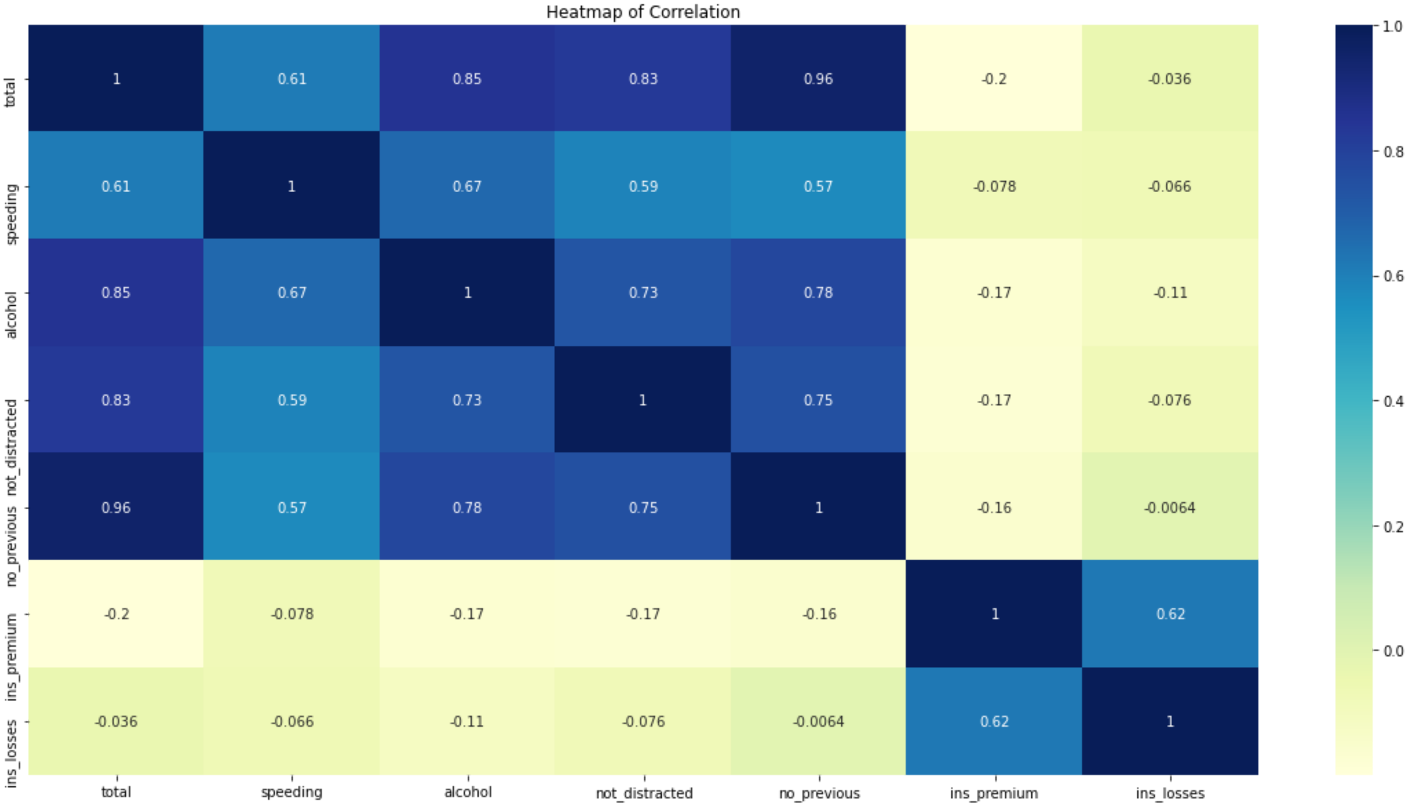
In [ ]:

```
Inference: It infers whether previous accident had occured or not occured
```

Heatmap

In [72]:

```
# Heatmap of Correlation
plt.figure(figsize=(20, 10))
correlation_matrix = car_crashes.corr()
sns.heatmap(correlation_matrix, annot=True, cmap="YlGnBu")
plt.title("Heatmap of Correlation")
plt.show()
```



Inference: Heatmap shows the correlation between numerical variables in the dataset.

Violinplot

In [89]:

```
# Violinplot of Total Crashes
plt.figure(figsize=(10, 7))
sns.violinplot(x="total", data=car_crashes)
plt.title("Violinplot of Total Crashes")
plt.xlabel("Total Crashes")
plt.show()
```

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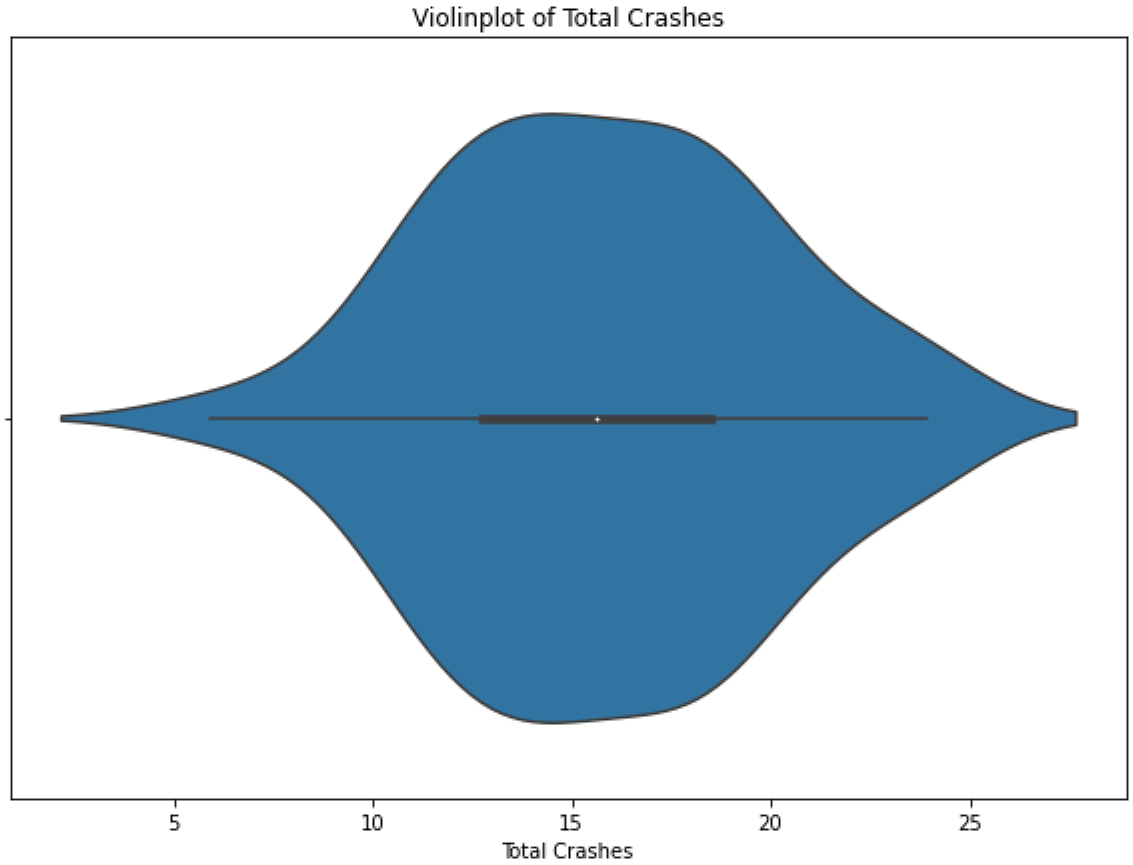
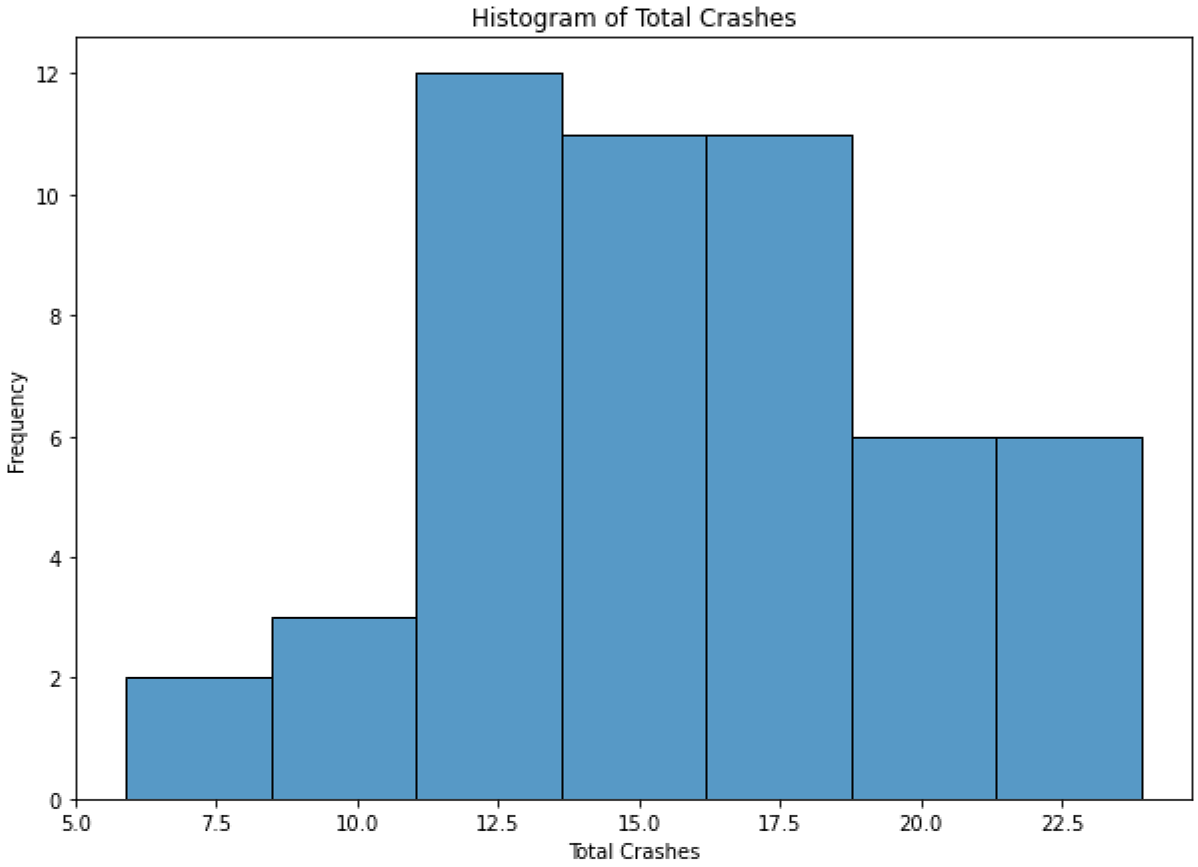


Inference: Violinplot shows the distribution of total crashes with a density estimate.

Histogram

```
In [91]:
#Historgram for findimg total no. of crashes
plt.figure(figsize=(10, 7))
sns.histplot(car_crashes["total"])
plt.title("Histogram of Total Crashes")
plt.xlabel("Total Crashes")
plt.ylabel("Frequency")
plt.show()
```



Inference: The majority of cities have a lower total number of car crashes.

Distribution plot

In [92]:

```
plt.figure(figsize=(10, 6))
sns.distplot(car_crashes["total"], bins=10, kde=True)
plt.title("Distribution Plot: Total Crashes")
plt.xlabel("Total Crashes")
plt.ylabel("Density")
plt.show()
```

```
C:\Users\Jaaswand\anaconda3\lib\site-packages\seaborn\distributions.py:2557: FutureWarnin
g: `distplot` is a deprecated function and will be removed in a future version. Please ada
pt your code to use either `displot` (a figure-level function with similar flexibility) or
`histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

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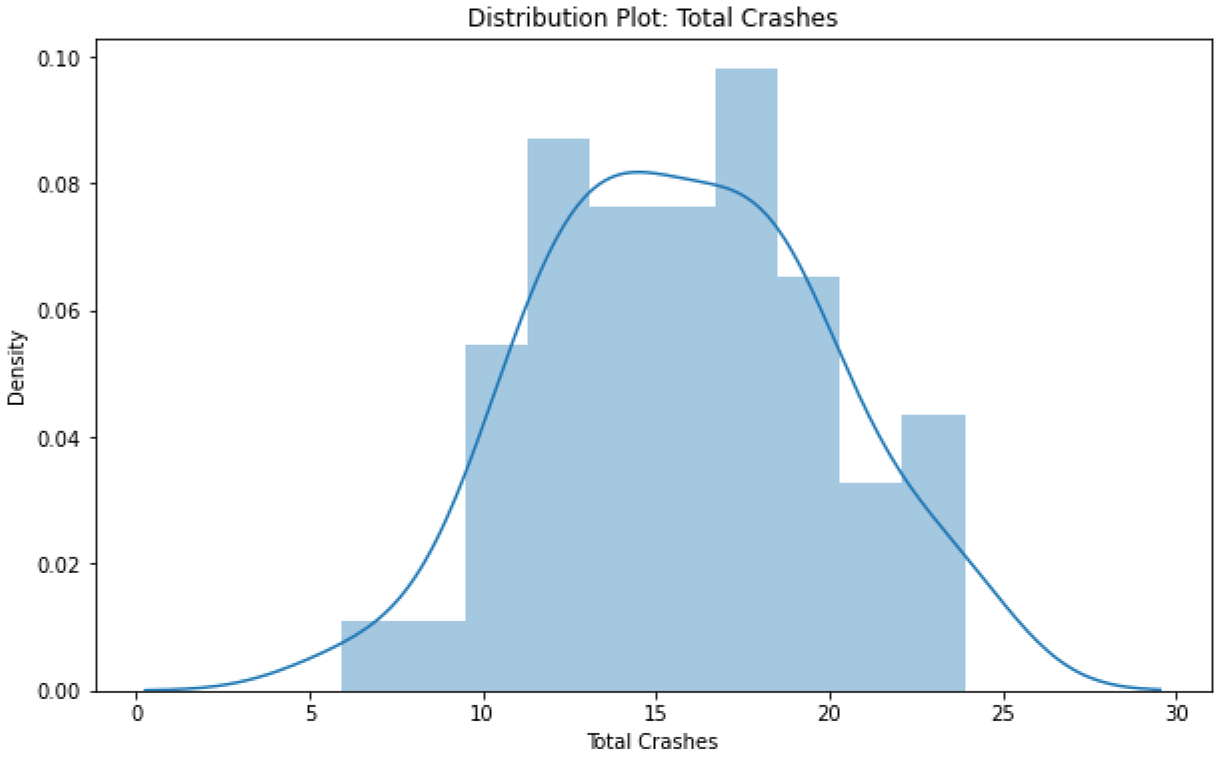


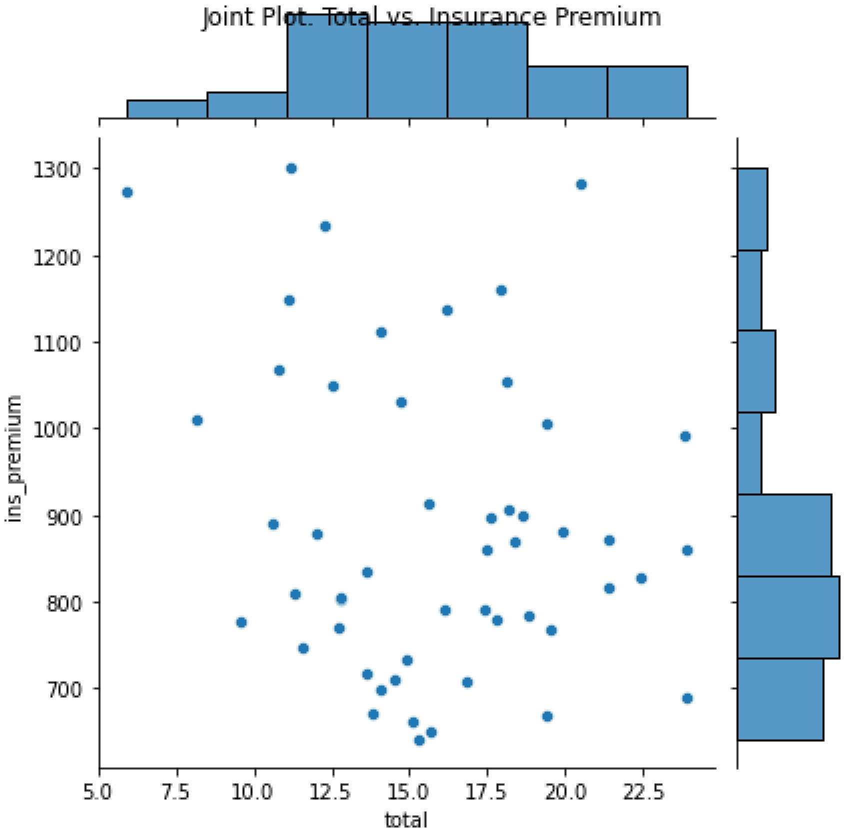
Inference: The distribution plot visualizes the distribution of the "total" variable, showing the density of values across the range of total crashes.

Jointplot

In [96]:

```
# jointplot for 'total' vs 'ins_premium'
plt.figure(figsize=(20, 6))
sns.jointplot(x="total", y="ins_premium", data=car_crashes, kind="scatter")
plt.suptitle("Joint Plot: Total vs. Insurance Premium")
plt.show()
```

```
<Figure size 1440x432 with 0 Axes>
```



Inference:The joint plot visualizes the relationship between the "total" variable (total crashes) and the "ins_premium" variable (insurance premiums) using a scatter plot.