

Road Traffic Accidents

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Road Traffic Accident Severity P

Settings - Appearance

colab.research.google.com/drive/1N5JoTYxuDmLY9f8J_UOn0cXrI8rYITRB#scrollTo=OG-kleBYyMGh

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[3]

Time ['17:02:00' '1:06:00' '14:15:00']
Day_of_week ['Monday' 'Sunday' 'Friday']
Age_band_of_driver ['18-30' '31-50' 'Under 18']
Sex_of_driver ['Male' 'Female' 'Unknown']
Educational_level ['Above high school' 'Junior high school' nan]
Vehicle_driver_relation ['Employee' 'Unknown' 'Owner']
Driving_experience ['1-2yr' 'Above 10yr' '5-10yr']
Type_of_vehicle ['Automobile' 'Public (> 45 seats)' 'Lorry (41?100Q)']
Owner_of_vehicle ['Owner' 'Governmental' nan]
Service_year_of_vehicle ['Above 10yr' '5-10yrs' nan]
Defect_of_vehicle ['No defect' nan '7']
Area_accident_occurred ['Residential areas' 'Office areas' 'Recreational areas']
Lanes_or_Medians [nan 'Undivided Two way' 'other']
Road_allignment ['Tangent road with flat terrain' nan
'Tangent road with mild grade and flat terrain']
Types_of_Junction ['No junction' 'Y Shape' 'Crossing']
Road_surface_type ['Asphalt roads' 'Earth roads' nan]
Road_surface_conditions ['Dry' 'Wet or damp' 'Snow']
Light_conditions ['Daylight' 'Darkness - lights lit' 'Darkness - no lighting']
Weather_conditions ['Normal' 'Raining' 'Raining and Windy']
Type_of_collision ['Collision with roadside-parked vehicles'
'Vehicle with vehicle collision' 'Collision with roadside objects']
Number_of_vehicles_involved [2 1 3]
Number_of_casualties [2 1 3]
Vehicle_movement ['Going straight' 'U-Turn' 'Moving Backward']
Casualty_class ['na' 'Driver or rider' 'Pedestrian']
Sex_of_casualty ['na' 'Male' 'Female']
Age_band_of_casualty ['na' '31-50' '18-30']
Casualty_severity ['na' '3' '2']
Work_of_casualty [nan 'Driver' 'Other']
Fitness_of_casualty [nan 'Normal' 'Deaf']
Pedestrian_movement ['Not a Pedestrian' 'Crossing from driver's nearside'
'Crossing from nearside - masked by parked or stationNot a Pedestrianry vehicle']
Cause_of_accident ['Moving Backward' 'Overtaking' 'Changing lane to the left']
Accident_severity ['Slight Injury' 'Serious Injury' 'Fatal injury']

[4]

df['Time']= pd.to_datetime(df['Time'])

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[4] df['Time']= pd.to_datetime(df['Time'])

[5] df.duplicated()

0 False
1 False
2 False
3 False
4 False
...
12311 False
12312 False
12313 False
12314 False
12315 False
Length: 12316, dtype: bool

[6] df.groupby('Accident_severity').size()

Accident_severity
Fatal injury 158
Serious Injury 1743
Slight Injury 10415
dtype: int64

[7] df.isnull().sum()

Time 0
Day_of_week 0
Age_band_of_driver 0
Sex_of_driver 0
Educational_level 741
Vehicle_driver_relation 579
...

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0s [7]

Educational_level 741
Vehicle_driver_relation 579
Driving_experience 829
Type_of_vehicle 950
Owner_of_vehicle 482
Service_year_of_vehicle 3928
Defect_of_vehicle 4427
Area_accident_occured 239
Lanes_or_Medians 385
Road_allignment 142
Types_of_Junction 887
Road_surface_type 172
Road_surface_conditions 0
Light_conditions 0
Weather_conditions 0
Type_of_collision 155
Number_of_vehicles_involved 0
Number_of_casualties 0
Vehicle_movement 308
Casualty_class 0
Sex_of_casualty 0
Age_band_of_casualty 0
Casualty_severity 0
Work_of_casualty 3198
Fitness_of_casualty 2635
Pedestrian_movement 0
Cause_of_accident 0
Accident_severity 0
dtype: int64

1s [8]

plt.figure(figsize=(10, 5))
plt.subplot(1, 2, 1)
df['Age_band_of_driver'].value_counts().sort_index().plot(kind='bar', color='skyblue')
plt.title('Age Band of Driver')
plt.xlabel('Age Band')
plt.ylabel('Count')

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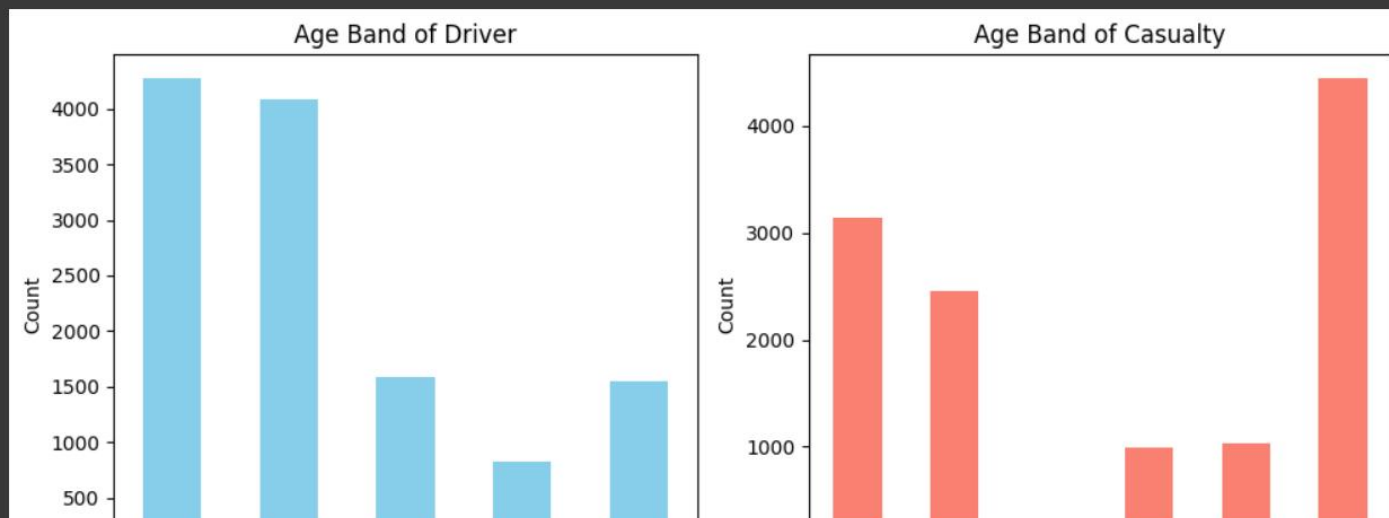
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```
[8] plt.subplot(1, 2, 1)
df['Age_band_of_driver'].value_counts().sort_index().plot(kind='bar', color='skyblue')
plt.title('Age Band of Driver')
plt.xlabel('Age Band')
plt.ylabel('Count')

# 绘制'Age_band_of_casualty'的条形图
plt.subplot(1, 2, 2)
df['Age_band_of_casualty'].value_counts().sort_index().plot(kind='bar', color='salmon')
plt.title('Age Band of Casualty')
plt.xlabel('Age Band')
plt.ylabel('Count')

plt.tight_layout()
plt.show()
```



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✓ 1s [8]

18- 31- Over Under Unkno 18- 31- Over Under
Age Band Age Band

✓ 1s [9]

df.hist(layout=(1,6), figsize=(30,5))
plt.show()

Time

Number_of_vehicles_involved

Number_of_casualties

✓ 0s [10]

df['Number_of_casualties'].value_counts()

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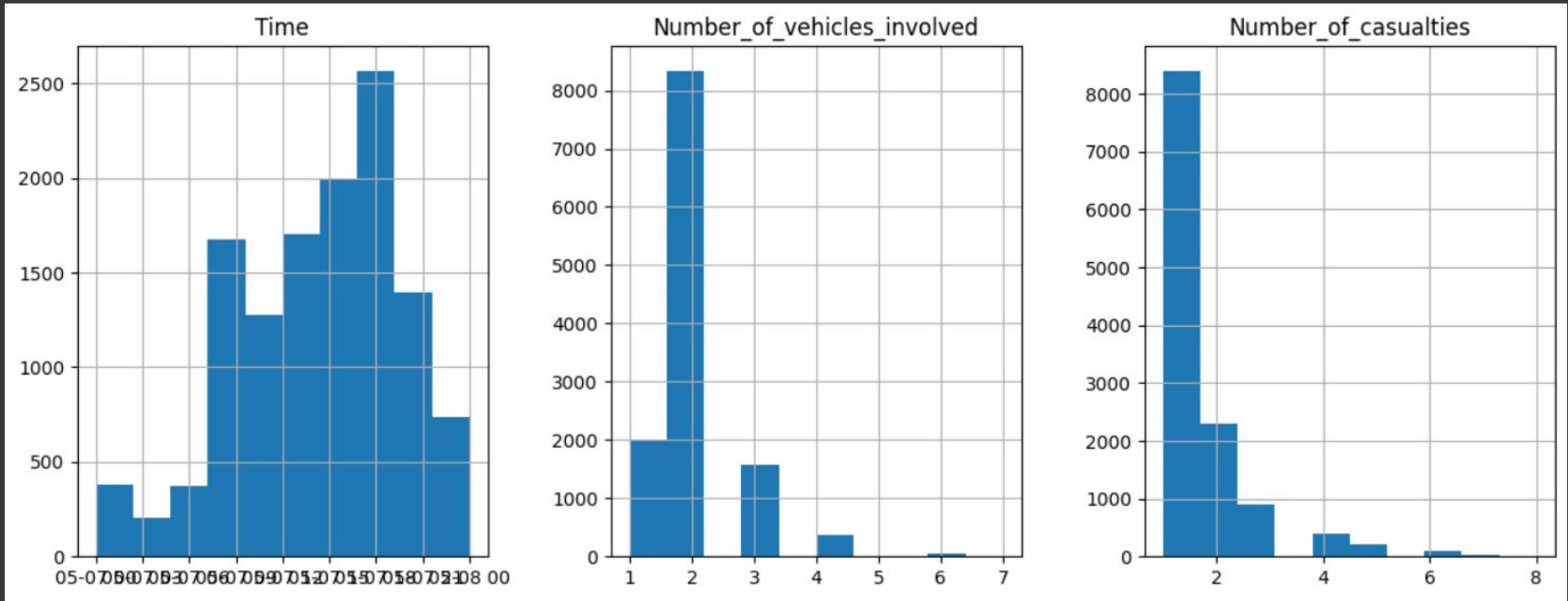
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18- 31- Over Under Unkno 18- 31- Over Under
Age Band Age Band



df['Number_of_casualties'].value_counts()

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1s [9]

0s

```
df['Number_of_casualties'].value_counts()
```

Number_of_casualties

1	8397
2	2290
3	909
4	394
5	207
6	89
7	22
8	8

Name: count, dtype: int64

1s [11]

```
plt.figure(figsize=(10,7))
sns.boxplot(data=df, y='Number_of_vehicles_involved', x='Number_of_casualties')
plt.show()
```

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✓ 1s [11] plt.figure(figsize=(10,7))
sns.boxplot(data=df, y='Number_of_vehicles_involved', x='Number_of_casualties')
plt.show()

The box plot displays the distribution of the number of vehicles involved in road traffic accidents, categorized by the number of casualties. The x-axis represents the number of casualties (1 to 8), and the y-axis represents the number of vehicles involved (1 to 7). The plot shows that as the number of casualties increases, the number of vehicles involved also tends to increase, with a notable jump at 7 casualties.

Number of casualties	Number of vehicles involved (approximate values)
1	1, 3, 4, 6, 7
2	1, 3, 4, 6
3	2, 3, 4
4	2, 3, 4
5	2, 3, 4
6	2, 3, 4
7	2, 4
8	2

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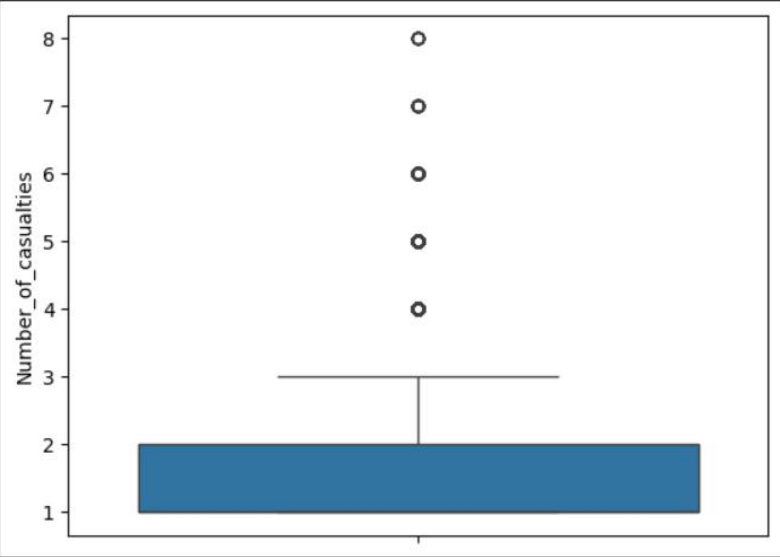
✓ [11]

1 2 3 4 5 6 7 8

Number_of_casualties

✓ 0s

```
sns.boxplot(data=df, y='Number_of_casualties')  
plt.show()
```



Statistic	Value
Minimum	0.5
First Quartile (Q1)	1.0
Median	1.5
Third Quartile (Q3)	2.0
Maximum	3.0
Outliers	4, 5, 6, 7, 8

✓ [13]

```
sns.boxplot(data=df, y='Number_of_vehicles_involved')  
plt.show()
```

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0s

Index	Number_of_vehicles_involved
0	2
1	2
2	2
3	2
4	2
12311	2
12312	2
12313	1
12314	2
12315	2

0s

[14] df['Number_of_vehicles_involved']

0	2
1	2
2	2
3	2
4	2
..	
12311	2
12312	2
12313	1
12314	2
12315	2

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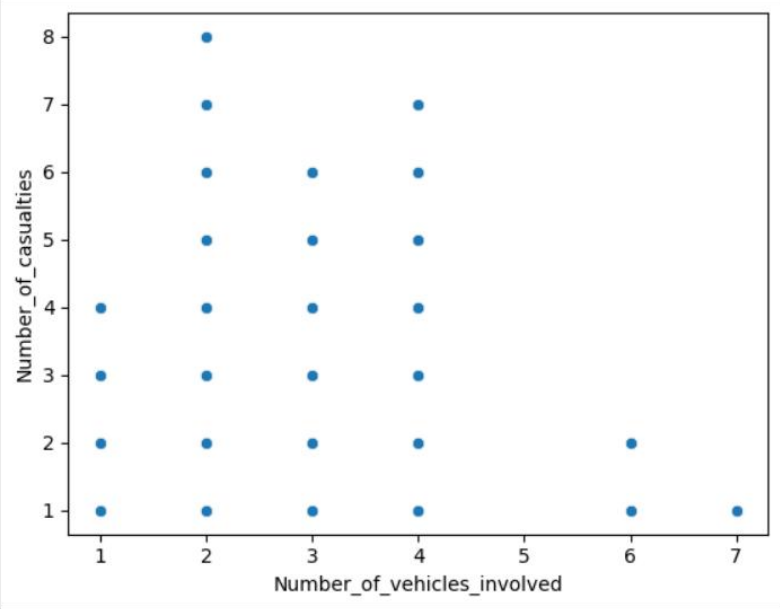
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0s [14]

12311 2
12312 2
12313 1
12314 2
12315 2
Name: Number_of_vehicles_involved, Length: 12316, dtype: int64

1s

sns.scatterplot(x=df['Number_of_vehicles_involved'], y=df['Number_of_casualties'])
plt.show()



Number_of_vehicles_involved	Number_of_casualties
1	1
1	2
1	3
1	4
2	1
2	2
2	3
2	4
2	5
2	6
2	7
2	8
3	1
3	2
3	3
3	4
3	5
3	6
4	1
4	2
4	3
4	4
4	5
4	6
4	7
6	1
6	2
7	1

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[14]: sns.scatterplot(x=df['Number_of_vehicles_involved'], y=df['Number_of_casualties'])

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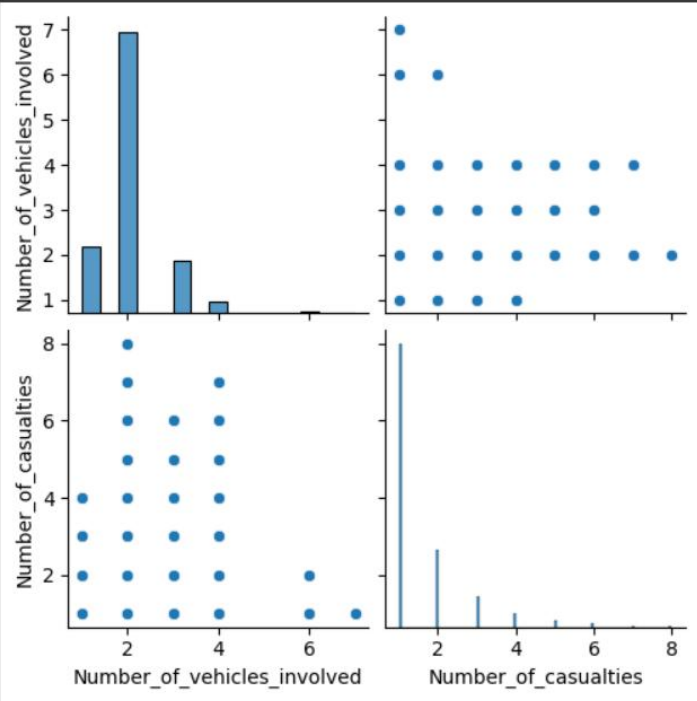
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3s

sns.pairplot(df[['Number_of_vehicles_involved','Number_of_casualties']])
plt.show()



The pairplot displays four subplots arranged in a 2x2 grid. The top-left plot is a histogram of 'Number_of_vehicles_involved' with a peak at 2. The bottom-left plot is a histogram of 'Number_of_casualties' with a peak at 1. The top-right plot is a scatter plot of 'Number_of_casualties' vs 'Number_of_vehicles_involved' showing a positive correlation. The bottom-right plot is a scatter plot of 'Number_of_vehicles_involved' vs 'Number_of_casualties' showing a negative correlation.

0s

[17] correlation_matrix = df[['Number_of_vehicles_involved','Number_of_casualties']].corr()
sns.heatmap(correlation_matrix, annot=True)
plt.show()

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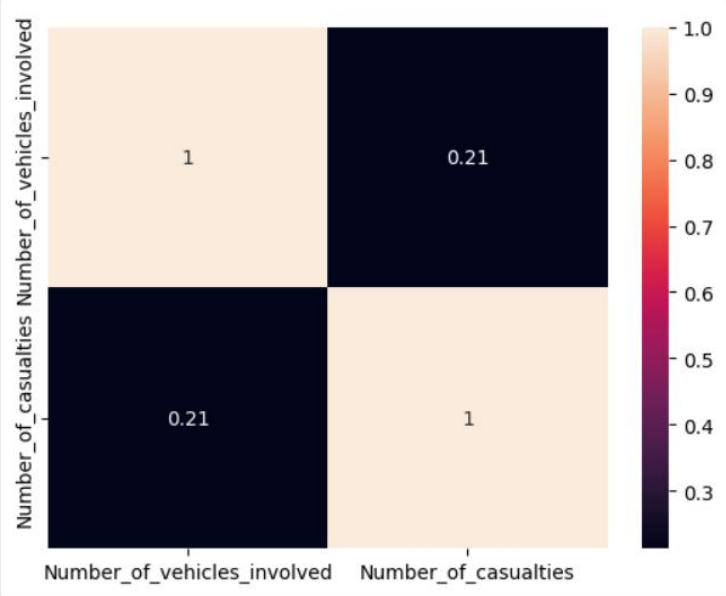
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0s



	Number_of_vehicles_involved	Number_of_casualties
Number_of_vehicles_involved	1	0.21
Number_of_casualties	0.21	1

0s

```
[18] plt.figure(figsize=(10,7))
plt.pie(x=df['Accident_severity'].value_counts().values,
labels=df['Accident_severity'].value_counts().index,
autopct='%2.2f%%')
plt.show()
```

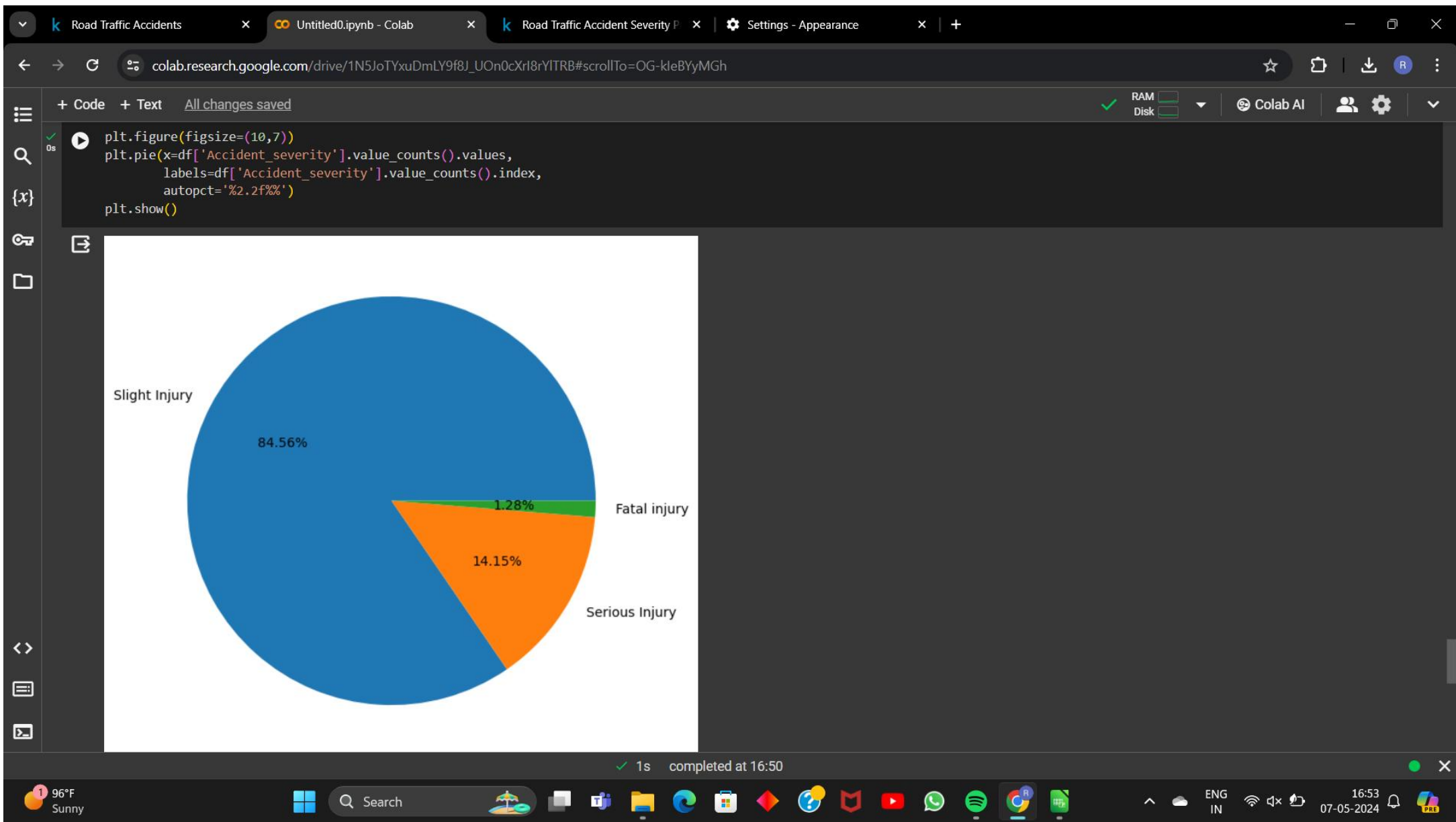
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