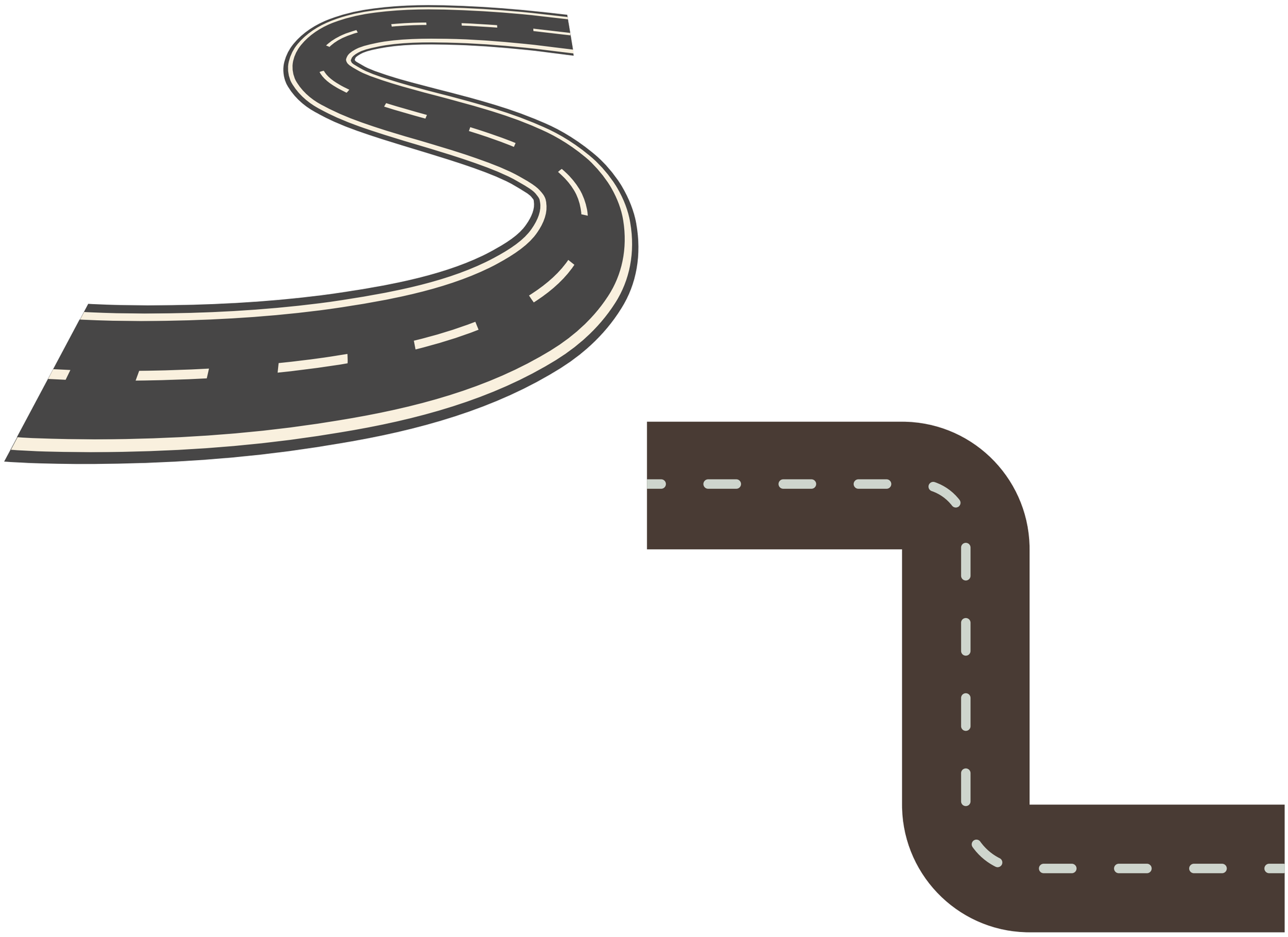
A study of Road Safety

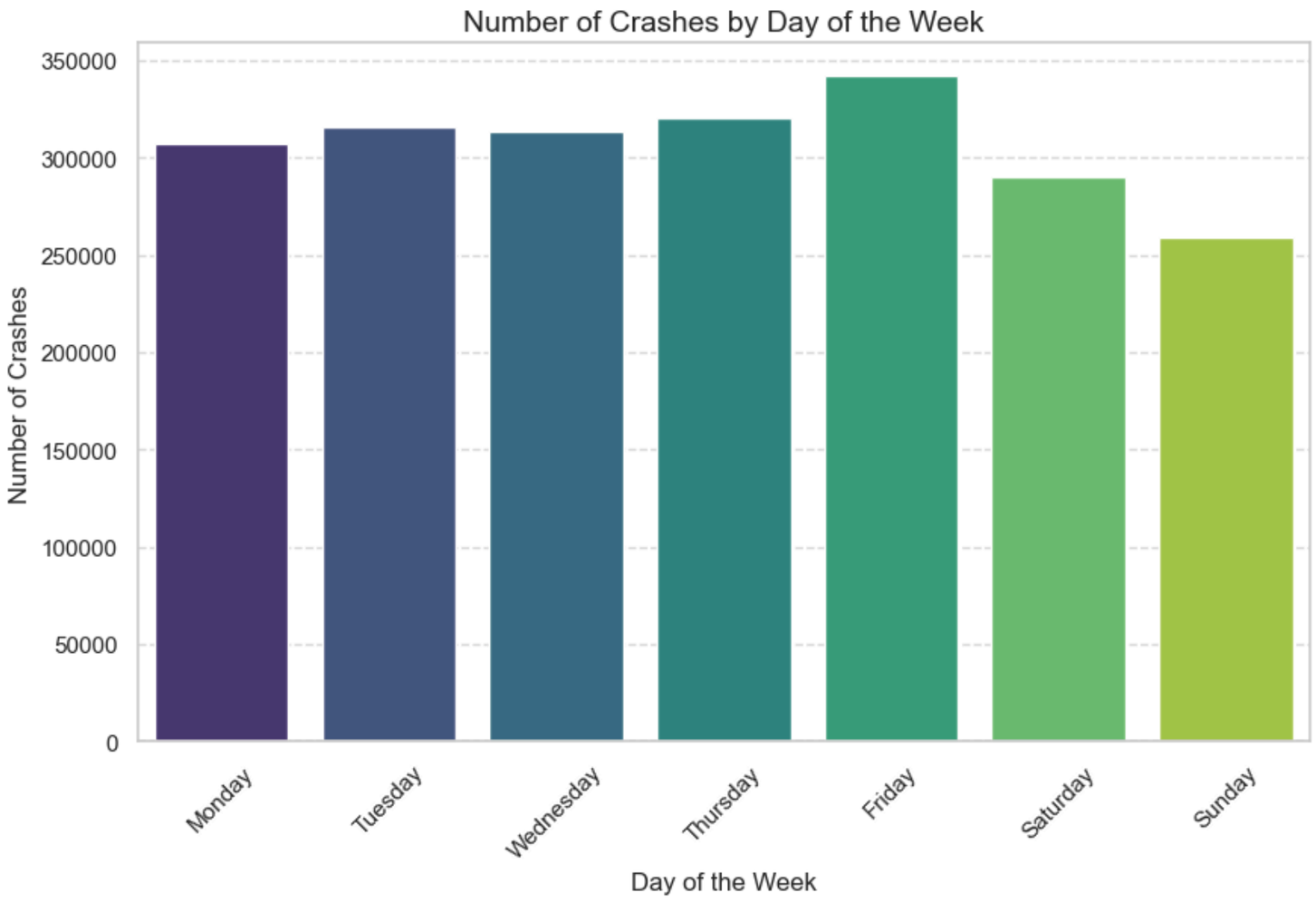
Some questions to consider:

1. **What day was of the week was where the most crashes happen?**
2. **Is there a statistically significant relationship between the time of day and the types of vehicles involved in crashes?**
3. **Do the relative proportions of crashes resulting in injuries or fatalities vary significantly across the five boroughs depending on the time of day?**



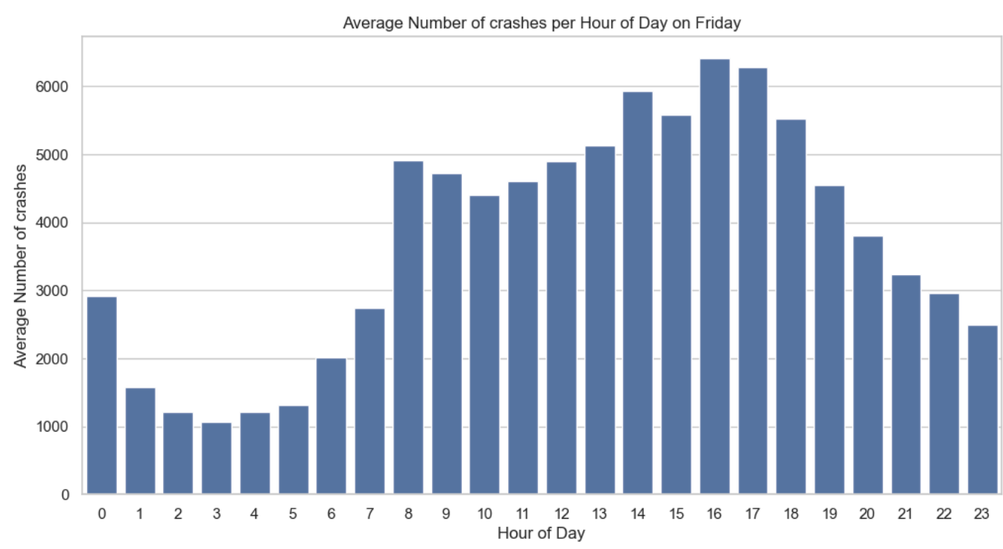
Q: Is there a statistically significant relationship between the time of day and the types of vehicles involved in crashes?

Before answer this question lets see what day the most car crashes happen:



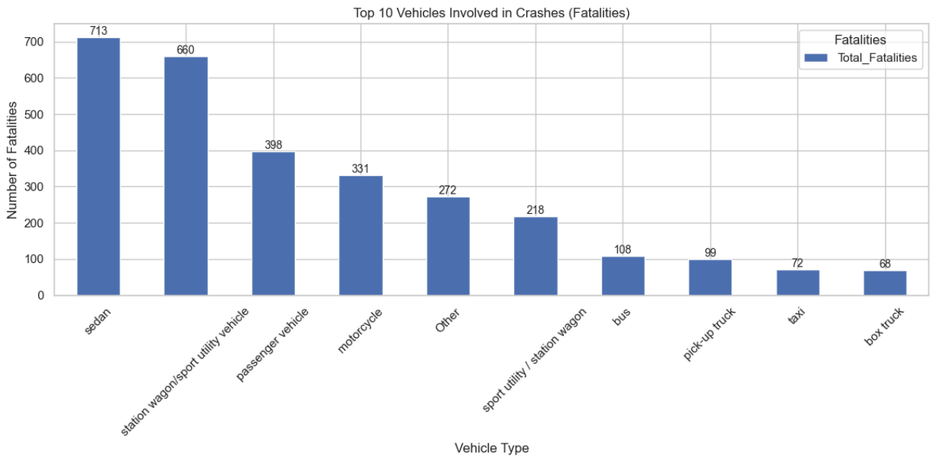
Based on the first question, we can use it to answer the following questions mentioned below. To address these questions, I will focus more in-depth on Friday, as there are more car crashes reported on that day.

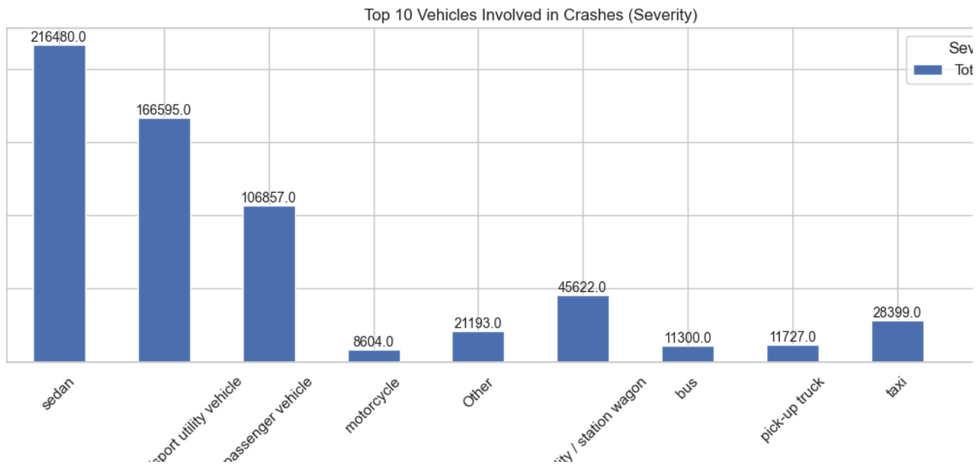
So knowing this we can now focus on Friday to answer both main questions, but first lets see how the number of crashes reflect the time of day:



By looking at the time of day we can look at the statistical and the visualization to answer this main question as shown in the python notebook on answer this potential question, we can say that:
There is a statistically significant relationship between the time of day and the types of vehicles involved in crashes, based on Statistical test (Chi-squared test)

The following two graphs show the severity of the top 10 types of vehicles that were in crashes:

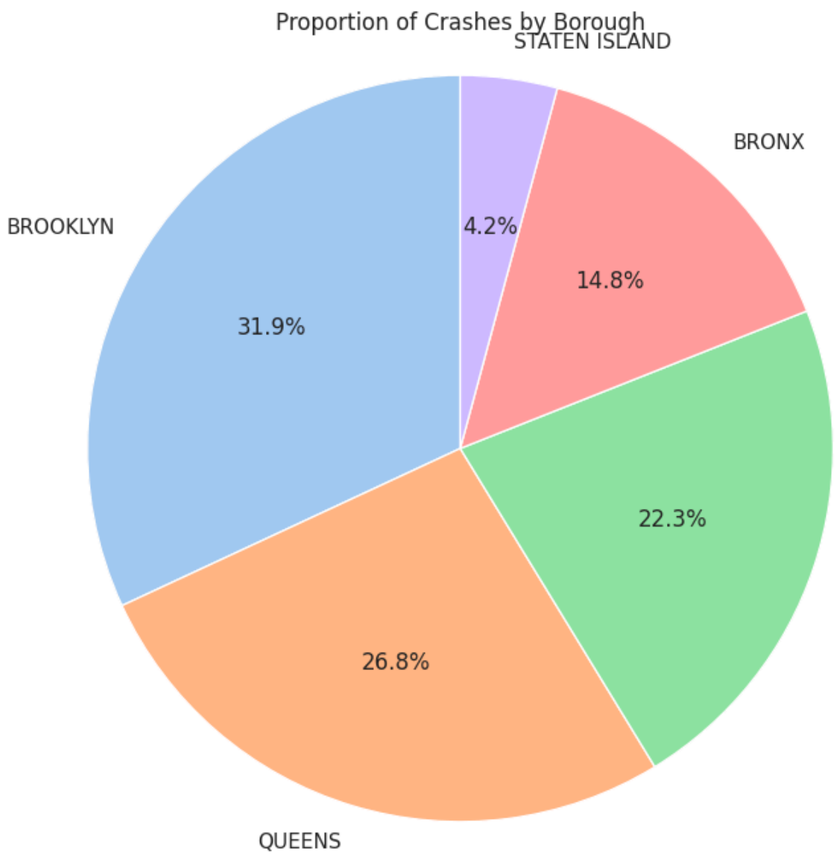




Based on these two graphs, we can observe the severity of each car crash. In both graphs, sedans have the highest severity levels for both Total_Injuries and Total_Fatalities.

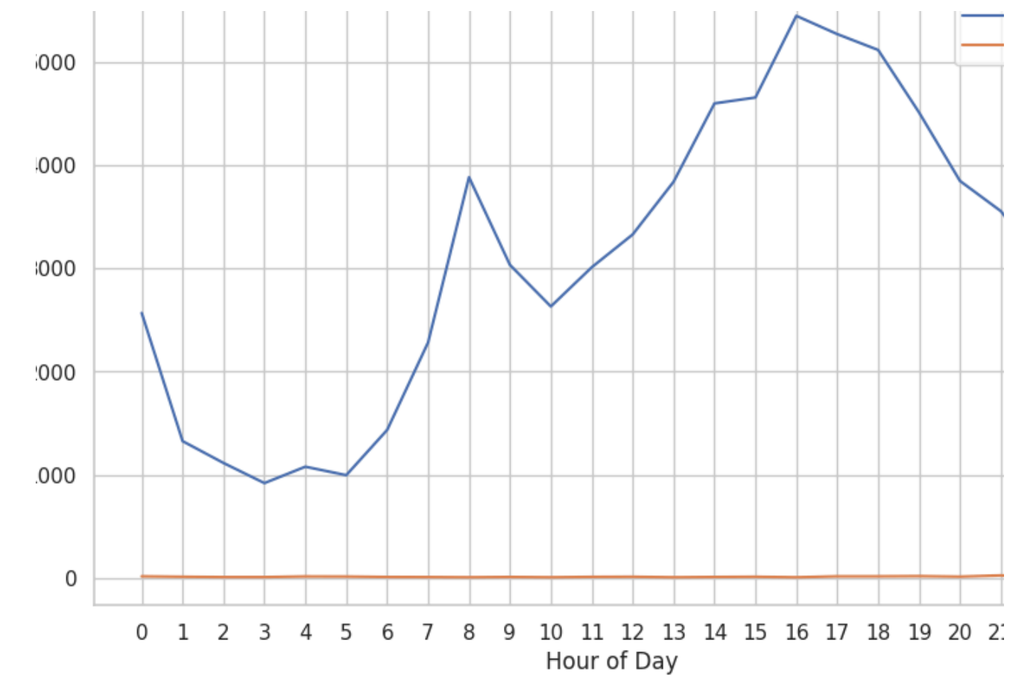
Q:Do the relative proportions of crashes resulting in injuries or fatalities vary significantly across the five boroughs depending on the time of day?

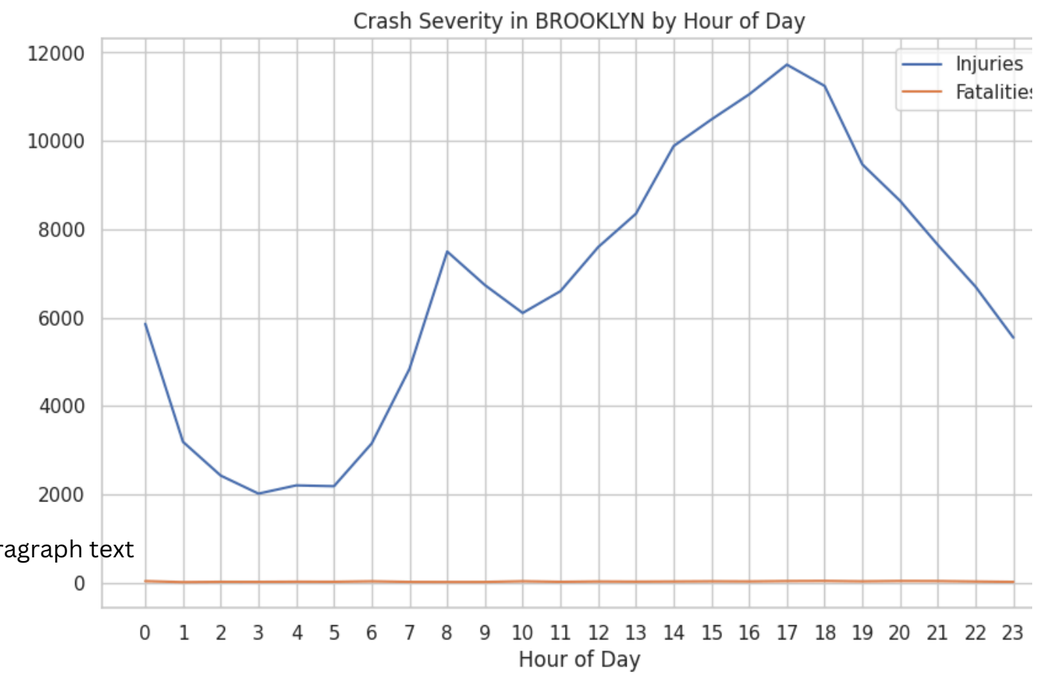
Before answer this main question we got to see where the most occurrence happen:



Based on this pie chart, we can see that Brooklyn has the highest proportion of crashes compared to the other boroughs, with a leading 5.1% difference over the second-highest percentage, which is Queens.

The following five graphs show the severit of the car crashes in the time of day base on location:





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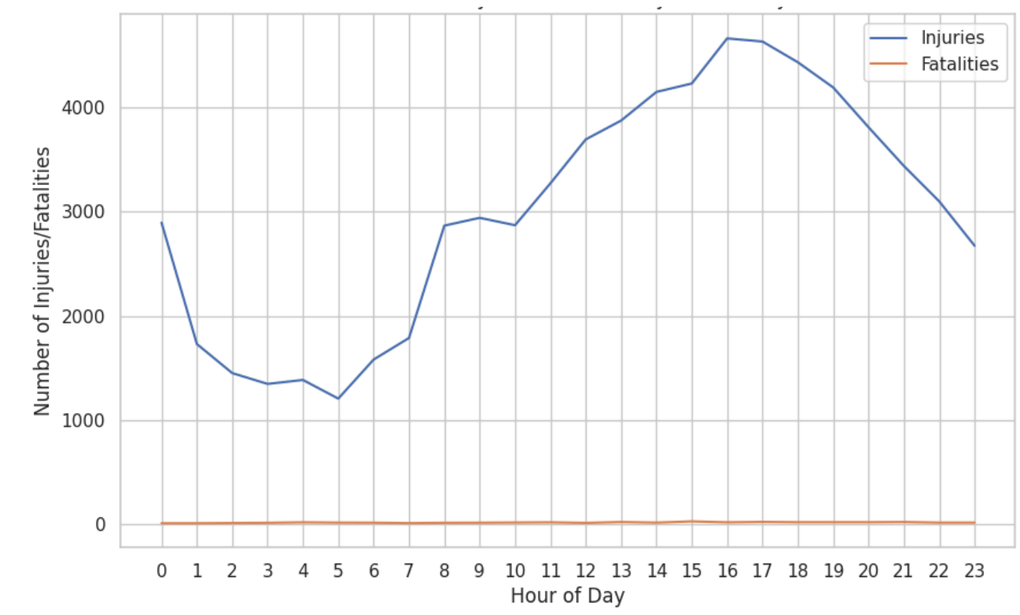

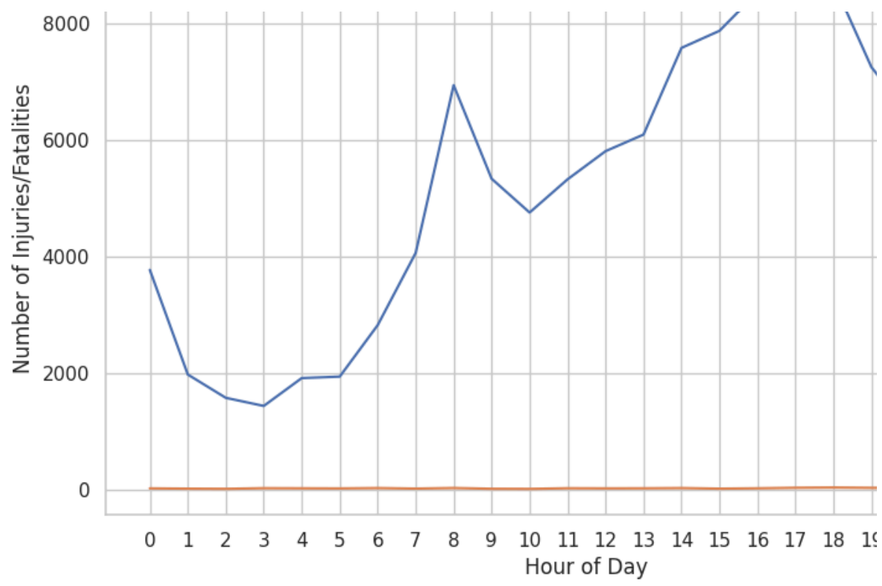

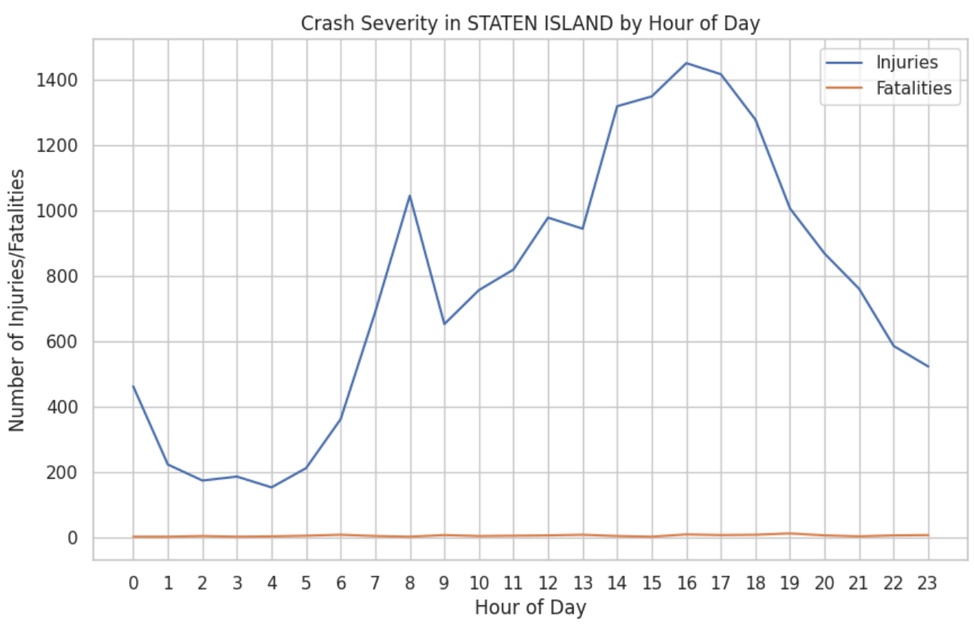

We analyzed two central questions:

1. Is there a relationship between the time of day and the types of vehicles involved in crashes?
2. Do crash proportions vary across boroughs based on time of day?

The data shows a significant link between the time of day and vehicle types involved, with most crashes occurring on Friday afternoons, likely due to fatigue. Brooklyn stands out as a hotspot, with crash severity differing across boroughs and times.

Further investigation could explore whether weather conditions influence crash frequency and timing.