# Weather and Citi Bike

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## Important Insights

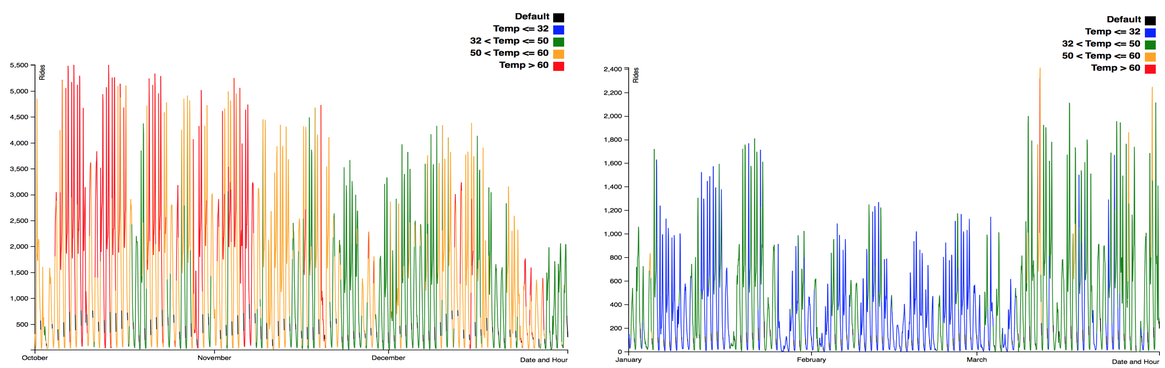
- The number of rides plummets significantly when the *snow depth* reaches *3 inches and above.*
- No rides were taken from *2 AM - 11 AM* on $28^{th}$ *March, 2015.*
- September $7^{th}$, a Monday, had users behaving as on weekends possibly because of it being the Labor day.
- The best period for maintenance during the winter is *0 AM - 5 AM* and *2 AM - 4 AM* during other seasons.
- The number of rides taken by females during the peak hours (evening) of colder months drops consistently during weekdays when compared to males.
- Females and the *age group* below *21 and* above *50* could be good targets for marketing.

## Motivation

The motivation for this work is to get a better understanding about the impact of weather on the usage of the Citi Bike service. The objective is achieved by defining certain usage metrics and plotting them over the year and by seasons (spring, summer, fall and winter) in order to visualize the impact of the weather conditions on the usage by joining the two data sets.


(a) Fall (b) Spring

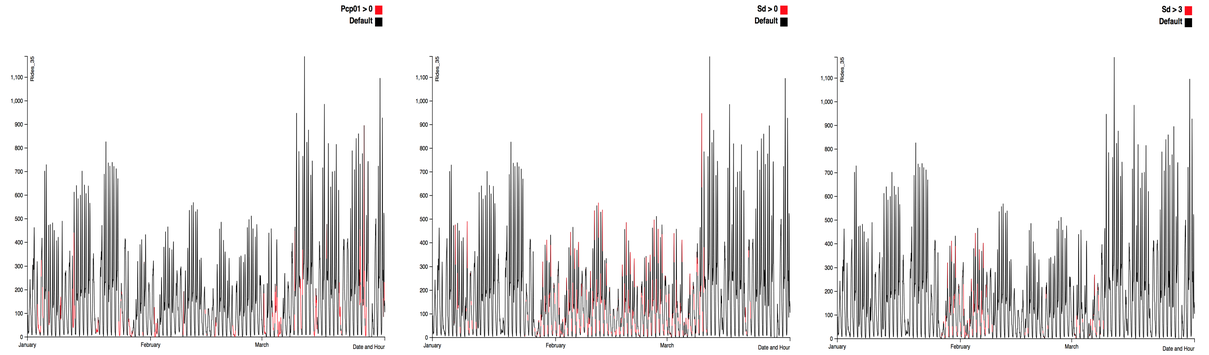
Figure 1: Variation in the total number of rides with temperature - Females




(a) Fall (b) Spring

Figure 2: Variation in the total number of rides with temperature - Males

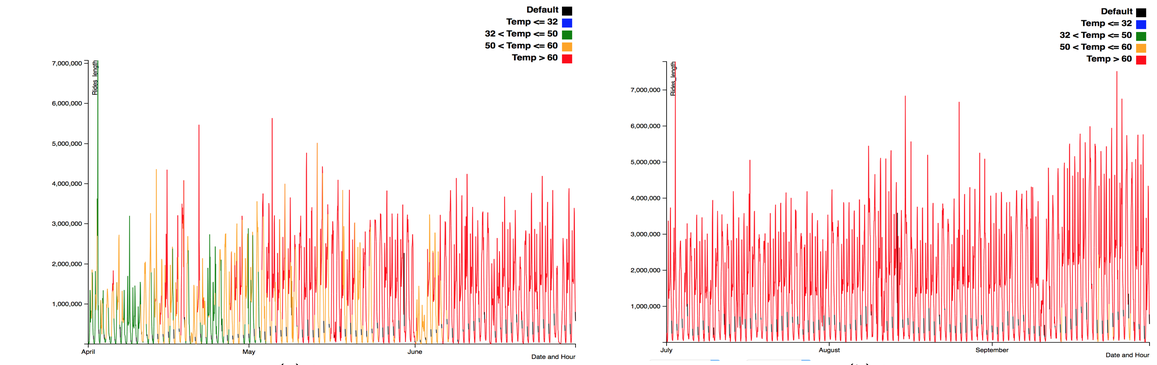
The trend is consistent across both the seasons for males and females even though the number of rides taken by females are comparatively lesser.




(a) Precipitation (b) Snow depth $> 0$ (c) Snow depth $> 3$

Figure 3: Impact of precipitation and snow depth on the number of rides in winter for users in the age group 20-35

The impact of a logical sequence of weather conditions on the number of rides can be observed above. Also, additional factors such as cleaning roads and stations have to be considered to reestablish the number of rides to the normal level.




(a) Spring (b) Summer

Figure 4: Total duration of rides in summer and spring

These pictures presented what could be a special event for having uncommon peaks of usage length. However, researches were not able to match the happenings with any probable cause.

## References

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Freire, Juliana. "DS-GA 1004 BigData." DS-GA 1004 BigData. New York University, New York, NY. 2016. Lecture.

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