

What's Up With Thursdays? A Professional Analysis  
Vanderbilt Data Analytics Bootcamp: Group 2, Project 1

Nashville traffic has ebbed and flowed throughout the years, especially since the pandemic, sometimes making it difficult for us to plan our day. The question was recently asked, “What’s up with Thursdays?” because many of us have become aware that Thursdays are the new Fridays. It is now the busiest traffic day of the week for Nashville. Or is it? For our first project, we chose to address head on the most critical, timely issue VU-VIRT-DATA-PT-2023-U-LOLC-MWTH has to face: Is Nashville traffic getting worse than the other days of the week? Our two corollary questions are: Which day of the week and which traffic segment does have the highest traffic volume? Another question that emerged to help us explain our local traffic experience is: How has population and traffic accidents affected our traffic experience?

We selected the US Traffic Volume Data from the US Department of Transportation Federal Highway Administration who provide fixed station data broken down by month and year: (<https://www.fhwa.dot.gov/policyinformation/tables/tmasdata/>). We selected the 5 years of data from 2018 – 2022 (the latest year of reported data). The first 24 files we received were fixed width files, and the final 36 were pipe delimited, and all needed to be decoded for understanding. Following the documentation from [https://www.fhwa.dot.gov/policyinformation/tmguides/2001\\_TMG\\_Chapter\\_6.pdf](https://www.fhwa.dot.gov/policyinformation/tmguides/2001_TMG_Chapter_6.pdf), we were able to parse out the meaning of each record, and with Ahmad’s help, we were able to download and combine 60 disparate files into one dataset. Each file contains 35 distinct fields or columns: record\_type, state\_code, f\_system, station\_id, travel\_dir, travel\_lane, year\_record, month\_record, day\_record, day\_of\_week, hour\_00, hour\_01, hour\_02, hour\_03, hour\_04, hour\_05, hour\_06, hour\_07, hour\_08, hour\_09, hour\_10, hour\_11, hour\_12, hour\_13, hour\_14, hour\_15, hour\_16, hour\_17, hour\_18, hour\_19, hour\_20, hour\_21, hour\_22, hour\_23, restrictions.

Our original findings were remarkable, even incredible. We found a massive spike in traffic all throughout 2020, especially in April of that year, right after Covid closed down the town. In fact, 4/20/20 was the busiest traffic day the TDOT has ever reported for middle Tennessee. Further investigation concluded this was due to corrupted data, and we discovered the Tennessee Department of Transportation had to drop months of data from their reported traffic volumes. We then compared our dataset with an ad hoc dataset we received from Chris Lynch and Ashley Hunter, GIS Technicians from TDOT.

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As a result, we were able to develop a less remarkable and more credible story for what is actually happening with Nashville traffic on Thursdays, which day of the week is the busiest, and which segment of our traffic is the busiest.

1. Is Nashville traffic getting worse on Thursdays than the other days of the week?  
As of 2022, the latest dataset we can access for free, we see nothing special about traffic trends on Thursdays. Traffic trends are always living organisms, especially coming out of a pandemic, and the busiest traffic day is typically the day you need to get where you are going faster than you are able to due to traffic. According to actual counts, Wednesday is currently seeing an uptick in relative traffic volumes, making it the second busiest day. Thursdays are not the slowest, but there is a noticeable drop in volume from Wednesday to Thursday.
2. Which day of the week does have the highest traffic volume? Friday continues to be the leader in Nashville traffic volumes. Trends ebb and flow, but Fridays are forever. Fridays remained the volume leader throughout most of this project with a short dip during the pandemic when traffic volumes were most unpredictable.
3. Which traffic segment has the highest traffic volume? The highest traffic volume for Middle Tennessee is the Evening commute. 24 of the 35 columns in the FHWA data are dedicated to traffic counts for each hour of the day, and we summarized that data into 3 drive time segments and 1 daily total. Our segments are Morning (6:00 – 10:00), Afternoon (11:00 – 3:00), and Evening (3:00 – 7:00). Whether we used data from 3, 6, or 9 counting stations, Morning traffic is always the lightest, and Evening traffic is always the heaviest, especially Friday nights.
4. How has population and traffic accidents affected our traffic experience? Several factors play into our commuting experience, but the two largest factors include population growth and traffic accidents. In this case, we define traffic accidents as any collision or emergency where police, fire, or EMT services are needed. We found two datasets for the population of Nashville. The first dataset focuses on just the city limits of Nashville, and we found that population is decreasing inside the city. The second dataset shows that Nashville as an entire metropolitan area is increasing in population, including cities such as Franklin and Murfreesboro. We used the second dataset, as many citizens that live in the outer metro-areas do in fact commute to Nashville for work. In our data, we can

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see that the population of the Metro-Nashville area was 1,906,794 in 2018, and unofficially it has jumped to 2,049,076 as of 2022--an increase of over 150,000 people. Additionally, we were able to pull data from Nashville's government data website to investigate traffic accidents. Despite the growth in population, the number of car accidents were trending down through all 5 years. In 2018, Nashville police recorded 34,058 accidents. There was a small decrease in 2019, and likely due to the Covid pandemic, we saw a sharp decrease in 2020 as only 21,025 accidents were recorded. Even with traffic picking up post-Covid, we are seeing less reported accidents with 18,777 in 2021 and 17,719 in 2022. While accidents have no effect on traffic counts, they do make our traffic experience worse. With the data we have, there seems to be little to no correlation in traffic vs population, or traffic vs car accidents.

In conclusion, Nashville's Thursday traffic volume is not remarkable; however, we do see what looks like a Wednesday traffic bubble, and we covet the opportunity to learn more about this situation: Is this a temporary anomaly or a growing trend? If so, why? With unlimited resources (time, money, and expertise), we could easily untie that knot to better understand Nashville traffic.