

Case Study: Charlottesville Parking Ticket Spatial Analysis

DS 4002 | CS3 | JP Meyer

Purpose

Imagine the feeling of leaving dinner on the Downtown Mall in Charlottesville, getting back to your car, and seeing a pesky parking ticket flapping under your windshield wipers. It's a gut-wrenching feeling, but one felt by almost everyone who has tried to park in Charlottesville. Whether you plan to park illegally or not, wouldn't it be convenient to know the likelihood that you'll get a ticket in the spot you've parked? This case study will introduce you to time-series data analysis by providing a dataset of parking tickets that have been administered in Charlottesville and will give you the opportunity to map out and understand where the majority of parking tickets are administered.

Context

You are a college student in Charlottesville that was recently given a parking ticket for a spot that you did not even know was illegal to park in. Frustrated – and out \$50 – you would like to be sure you avoid any parking tickets for the rest of your time in Charlottesville. While you always try to park legally, it would be nice to know if the area that you are parking in is closely monitored, just in case you make another error. You'd like an interactive map of Charlottesville to help you locate calmer areas and you'd like to be able to check the exact spot you are parking in for relative ticket-risk.

Your Task

In this case study, you'll explore real data from the City of Charlottesville's Open Data Portal to uncover patterns in parking ticket issuance. You'll begin by downloading and cleaning the dataset to prepare it for analysis, focusing on time, location, and violation details. Next, you'll run scripts that visualize ticket frequency through an interactive heatmap of Charlottesville, showing where enforcement is most concentrated. You'll then build a simple predictive model that estimates the likelihood of receiving a ticket at a specific address compared to other parts of the city.

All materials for this project can be found in the GitHub repo:

<https://github.com/jpmeyer1/CS3-Parking-Tickets>