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# MobilityATX Community Data: Impaired Driving

## Introduction

This analysis examines DWI data from the Austin Police Department by mapping the home address and stop location of all persons stopped for suspicion of DWI in 2014. The process involved use of Google and OpenStreetMap web services to geocode addresses and resulted in the creation of two main spatial datasets:

- Home addresses of DWI suspects
- Arrest locations of DWI suspects

These datasets were tied to 2015 City of Austin Council Districts to measure disparity among geography and also used to create Heat Maps.

## Analysis

The source file from the Austin Police Department contained 6173 records of DWI stops throughout the City of Austin. Each record contained a home address, home city and arrest location. The following is a summarized list for creating the two spatial datasets based on the original source file:

1. Remove duplicates, PO Box addresses, and empty address cells.
2. Fix misspellings and punctuation errors
3. Remove home addresses categorized as "transient" or "homeless"
4. Geocode addresses using Google Maps API and the OpenStreetMap Nominatim web service via QGIS.
5. For intersection addresses, use Google's Geocoding API.
6. Remove outlier addresses sometimes categorized as "APPROXIMATE"

The finished datasets resulted in 5803 points for all home addresses and 4316 points for all arrest locations. This analysis could be expedited if APD included home state and country or even GPS coordinates.
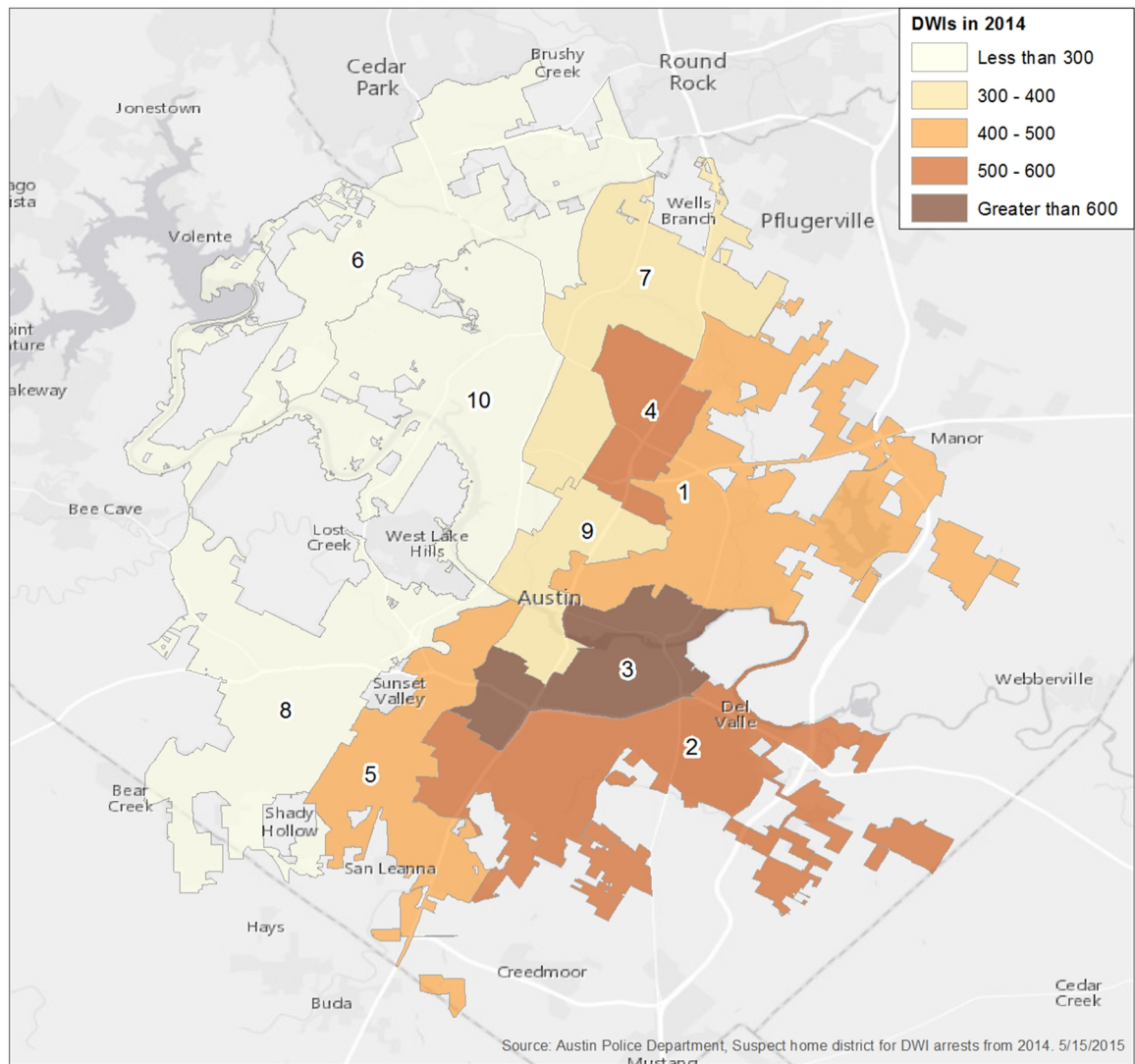
## Results

The APD data shows 6033 DWIs in Texas with 4742 of those DWIs belonging to people who live in the City of Austin. The following is a breakdown of DWI suspects by geography:
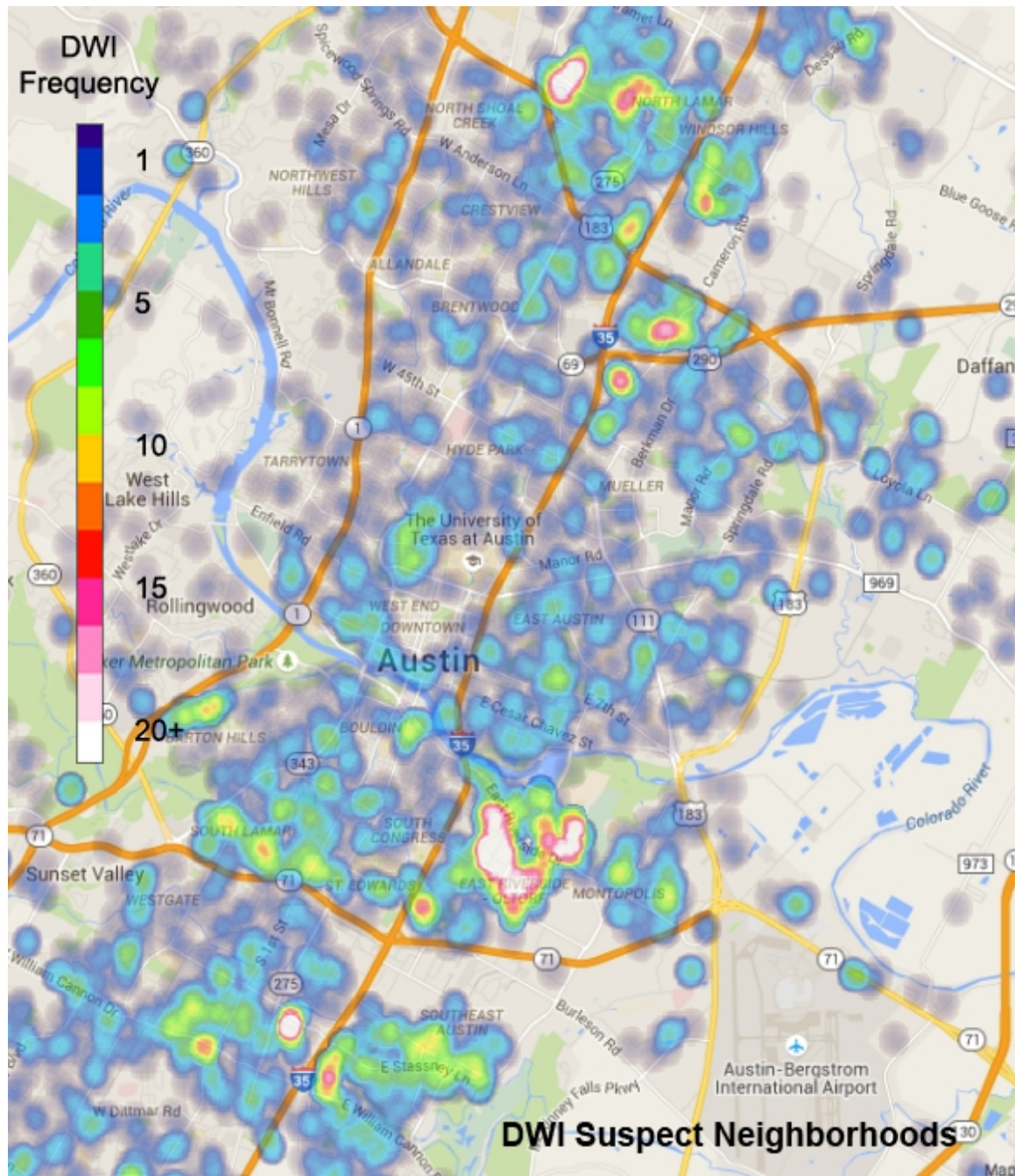
| District | # of DWI Suspects | | City | # of DWI Suspects |
|---|---|---|---|---|
| 3 | 724 | | Austin | 4742 |
| 2 | 586 | | Round Rock | 137 |
| 4 | 551 | | Pflugerville | 115 |
| 5 | 473 | | San Antonio | 72 |
| 1 | 418 | | Cedar Park | 71 |
| 7 | 372 | | Del Valle | 71 |
| 9 | 316 | | Kyle | 61 |
| 8 | 274 | | Buda | 59 |
| 10 | 252 | | San Marcos | 59 |
| 6 | 206 | | Houston | 53 |

**Image of DWI breakdown by District:**



Source: Austin Police Department, Suspect home district for DWI arrests from 2014. 5/15/2015

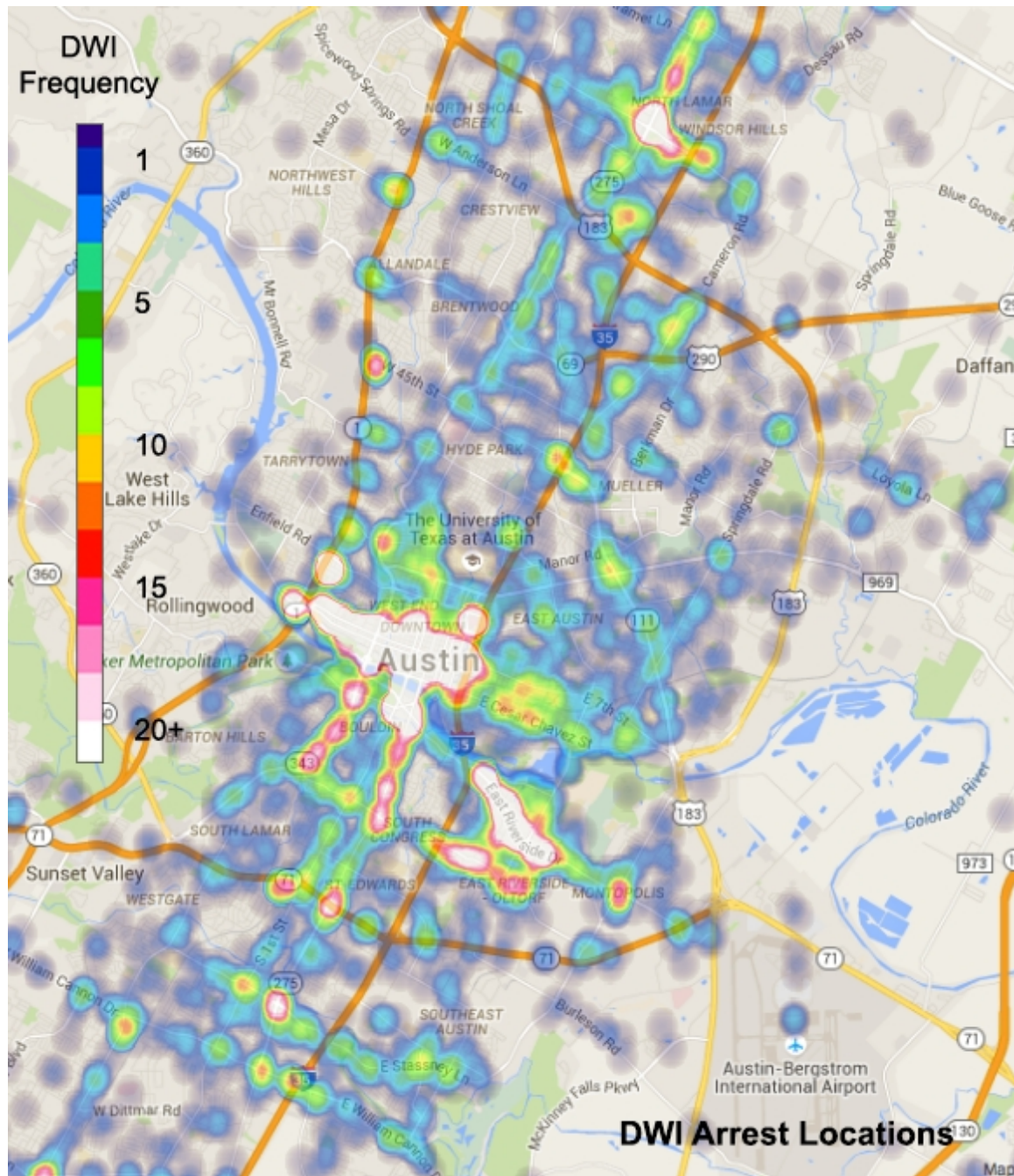**DWI suspect home locations** show various problem areas throughout the City when examined through a heat map:



DWI Suspect Neighborhoods

The following neighborhoods standout: North Austin/Rundberg, 183/290/ I35 Triangle, West Campus, East Riverside, Stassney/ I35, Southeast Austin, and the region between 71/Ben White and St Edwards University.

**DWI arrest locations** show several corridors prone to DWI stops. This could either show that police officers frequent various corridors where drunk driving has been an issue or that drunk drivers frequent these corridors.

**Neighborhoods and Age:**
Examining the heat map of suspect neighborhoods revealed high density parts of
Austin prone to DWIs which are known for housing many young people (i.e. West
Campus and Riverside). The following map was by looking at the median age of
Austin neighborhoods by census block with a dot density map of DWI suspect
addresses.