

KEENELAND VENUE ANALYSIS AND INVESTMENT RECOMMENDATIONS

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KEENELAND HORSE RACECOURSE IS VITALLY IMPORTANT TO LEXINGTON, KY'S ECONOMY

- Fall 2019 meet attendance 262,630 people (Keeneland, 2019)
- Spring 2019 meets attendance 242,547 people (Keeneland, 2019)
- Breeders cup is upcoming in November 2020.
 - Last event in 2015 attracted 95,102 attendees in two days. (Breeders' Cup, 2015)
- Economic impact previously studied at University of Kentucky. Impact from racing estimated at 200M USD annually (Bollinger, 2015)
- Building business around horse racing attendees could prove valuable plan.

MULTISTEP PROCESS NEEDED TO DETERMINE IDEAL LOCATION PAIRS

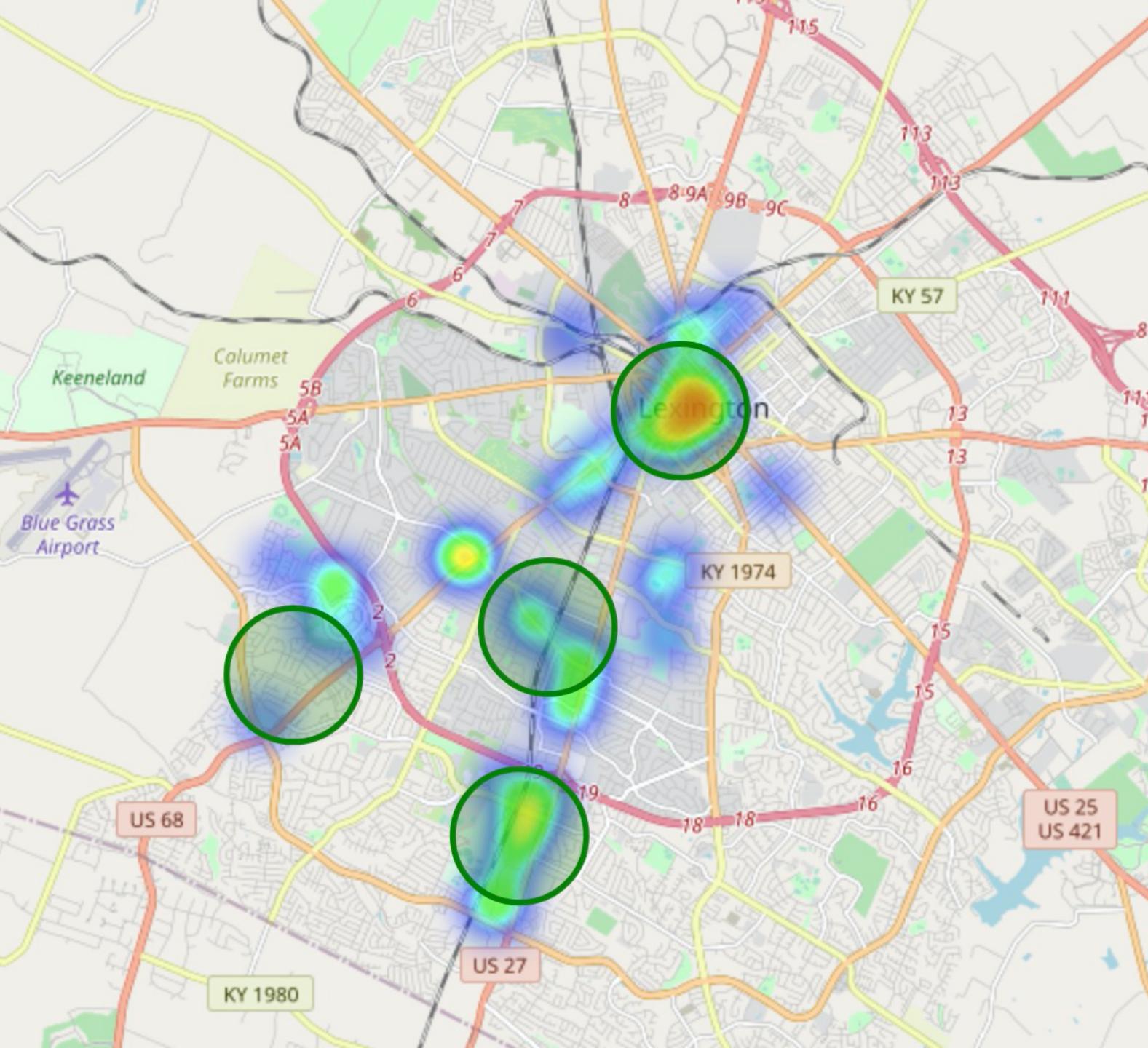
- Goal is to determine location category pairs for development
- Steps required:
 1. Determine impact of Keeneland visitors by location and category
 2. Find top categories to be used as basis for analysis
 3. Base chosen category and location pairs on proximity to Keeneland visits and saturation of top categories
 4. Determine additional metrics for consideration using nearby venues
 5. Evaluate chosen location pairs based on metrics and choose final pairs

DATA SOURCES USED FOR FINAL LOCATION AND CATEGORY DETERMINATION

- Foursquare API (Foursquare, 2020) used to determine next venues that users visit after checking in to a prior venue. Needed to evaluate impact of Keeneland's visitors on the local economy. Also used to determine nearby venues. Used to determine number nearby and minimum distance to category.
- Shapefile for the state of Kentucky (US Census Bureau, 2019) used to determine location of each studied point by tract.
- Shapefile for zoning of Lexington (LFUCG, 2020) obtained to filter possible locations to only business
- Google Maps Geocoding API (Google, 2020) used to convert lat/long to addresses

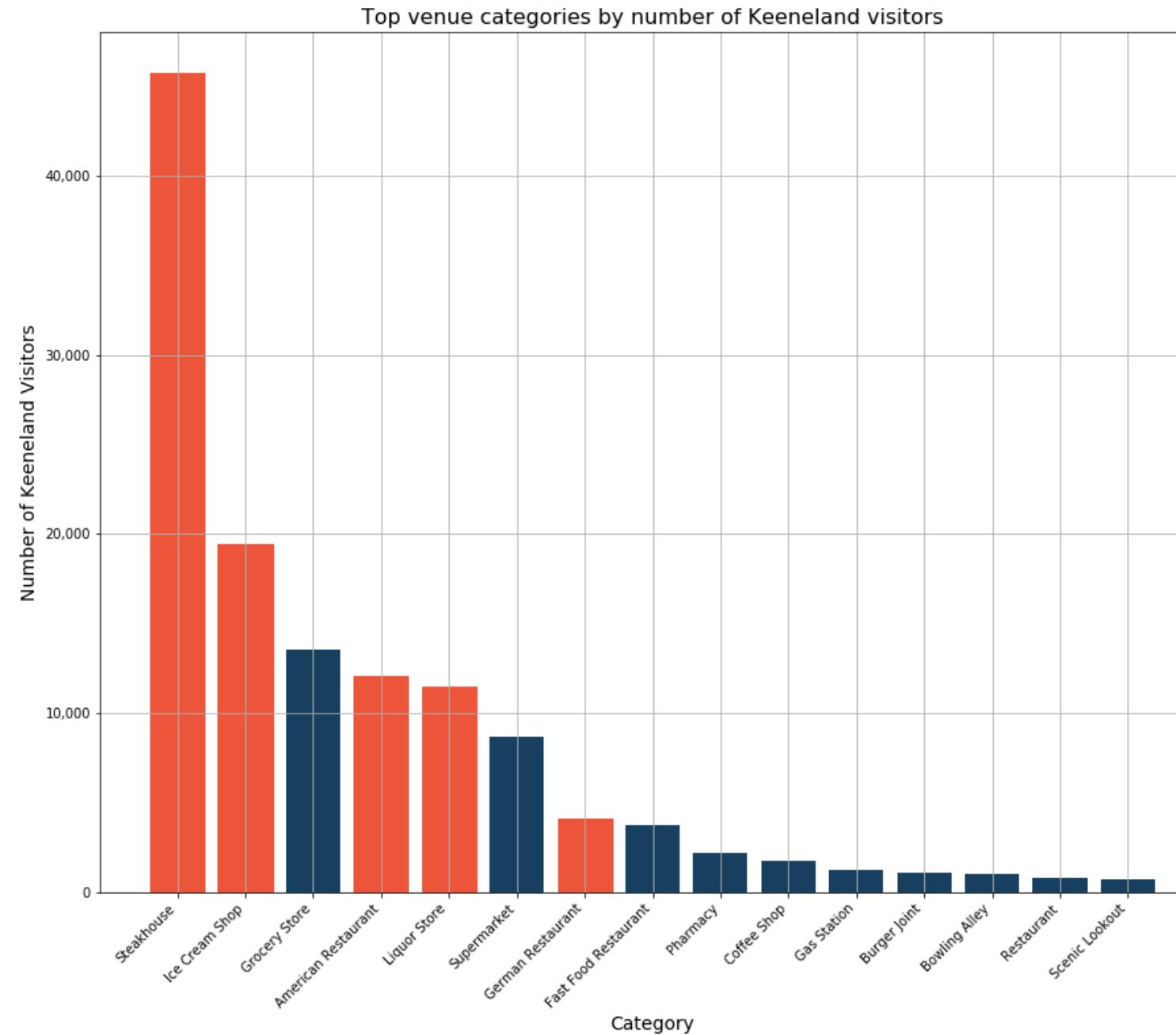
KEENELAND IMPACT AND AFFECTED LOCATIONS DETERMINED USING NEXT VENUES

- Next venues call in API needed to determine web of impacts from horse racing
 - Linearly related weight assigned to each next venue based on prior venue weight and order
 - Six layers of analysis for next venues conducted
 - Venues filtered by county and urban tract and grouped by venue to determine locations.
 - K Means clustering used to determine centers of visits with k=4
 - Elbow method used to determine ideal number of clusters



VENUES GROUPED TO FIND TOP CATEGORIES AND VISITS IN AREA

- Locations generated within 1.5 km radius of cluster centers
- Filtered based on whether zoned for business
- Venue distances to locations determined
- Use 1 km radius from point to determine visits in area
- Venues grouped by category to determine top categories
- Top categories with visited venues not nearby to locations determined.
Chosen shown in red.

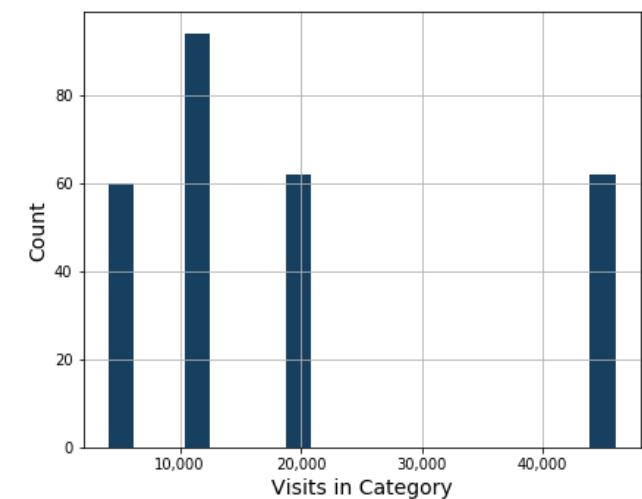
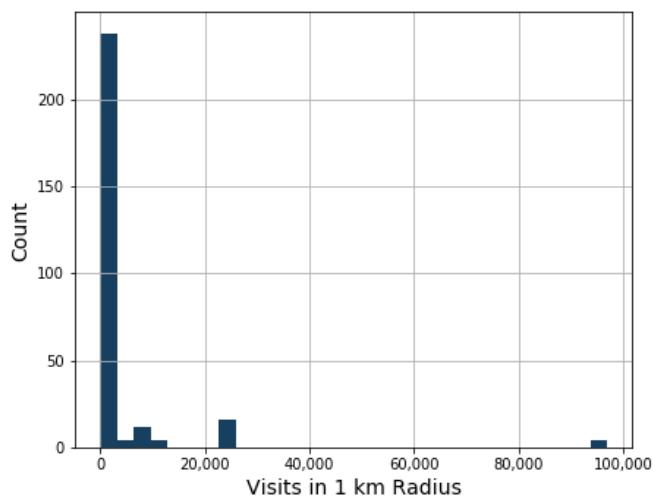
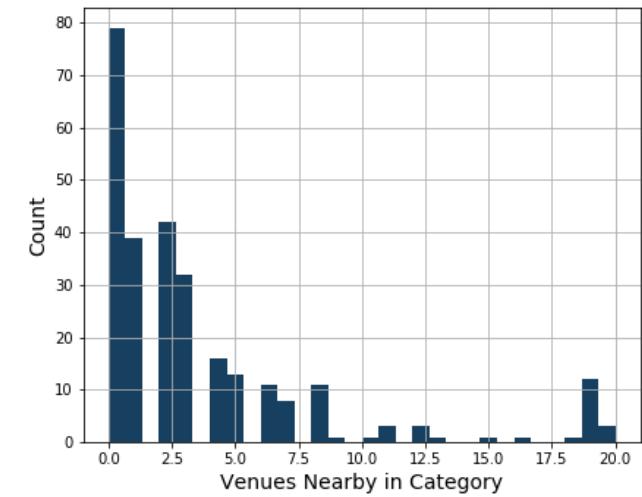
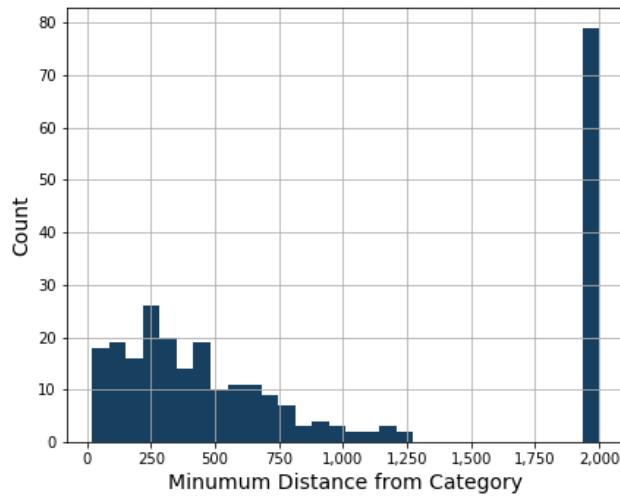


FOUR METRICS DERIVED TO DETERMINE FINAL LOCATIONS AND VENUES

- Foursquare API used to generate nearby venues of chosen top category for each point. If venue not near point, distance set at 2 km and number nearby 0.
- Nearby venues grouped to determine two metrics:
 1. Number of venues in each category roughly within 1 km
 2. Minimum distance to venue in category
- Using visits two additional metrics derived:
 1. Number of visits within 1 km radius of studied location
 2. Number of visits in each category

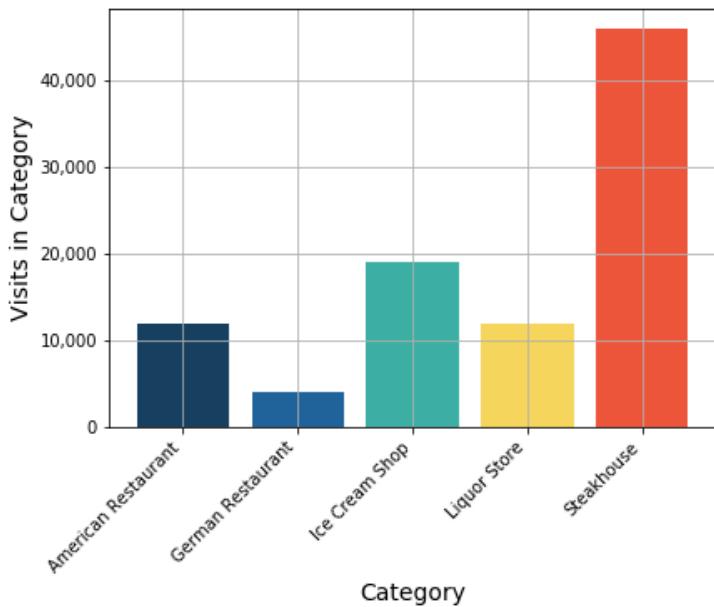
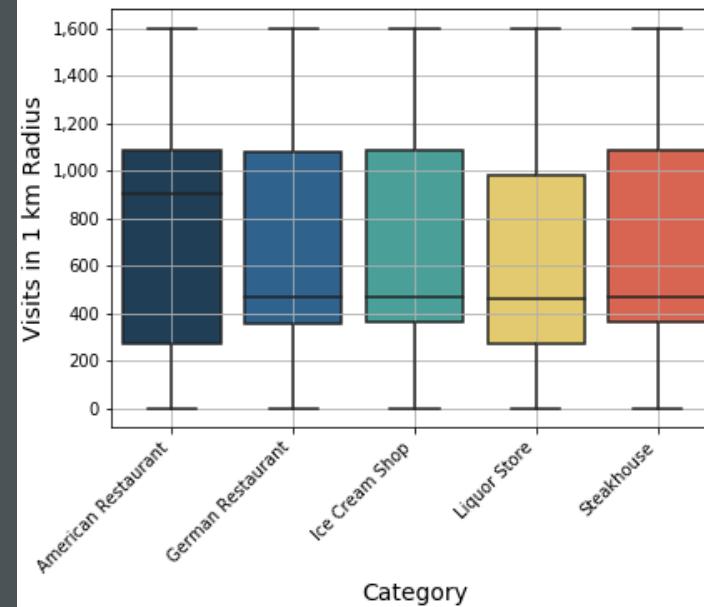
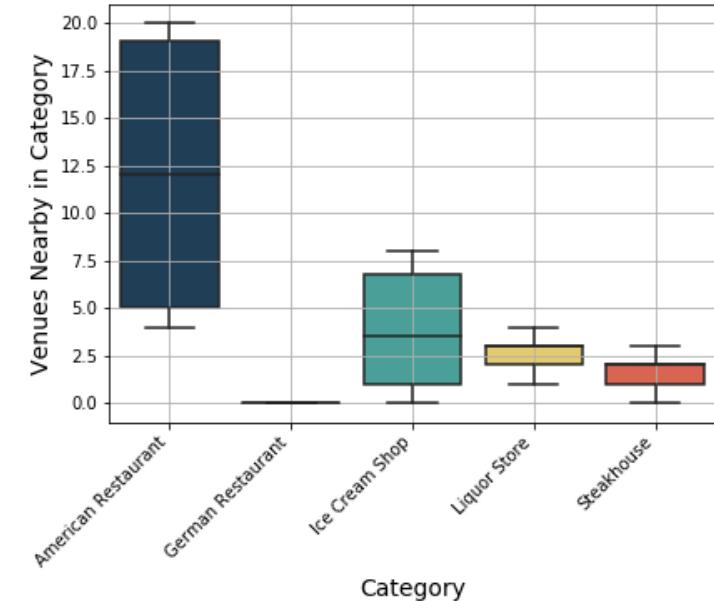
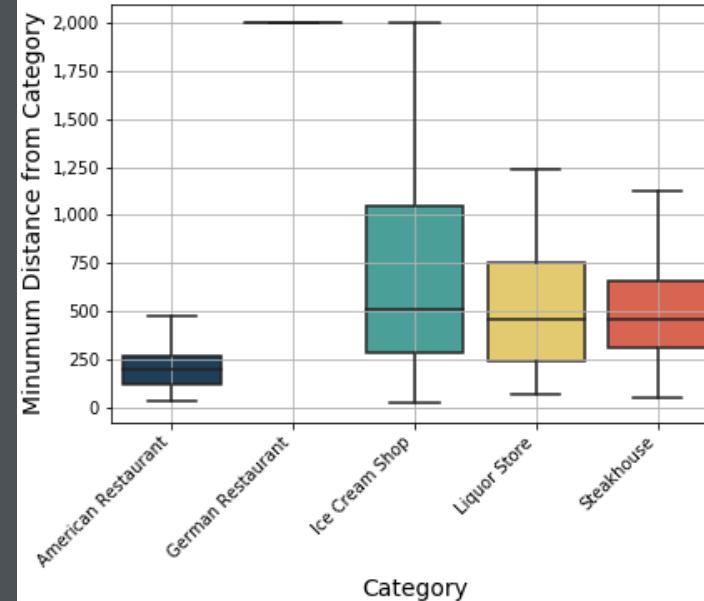
MOST VENUES
HAVE FEW
NEARBY VISITS,
LOW MINIMUM
DISTANCE, AND
LOW NUMBER OF
NEARBY VENUES

Distribution of evaluated metrics for all considered points



AMERICAN RESTAURANTS ARE RELATIVELY WIDESPREAD, AND STEAKHOUSES HAVE HIGH VISITS AND LOW NEARBY VENUES

Distribution of evaluated metrics for all considered categories



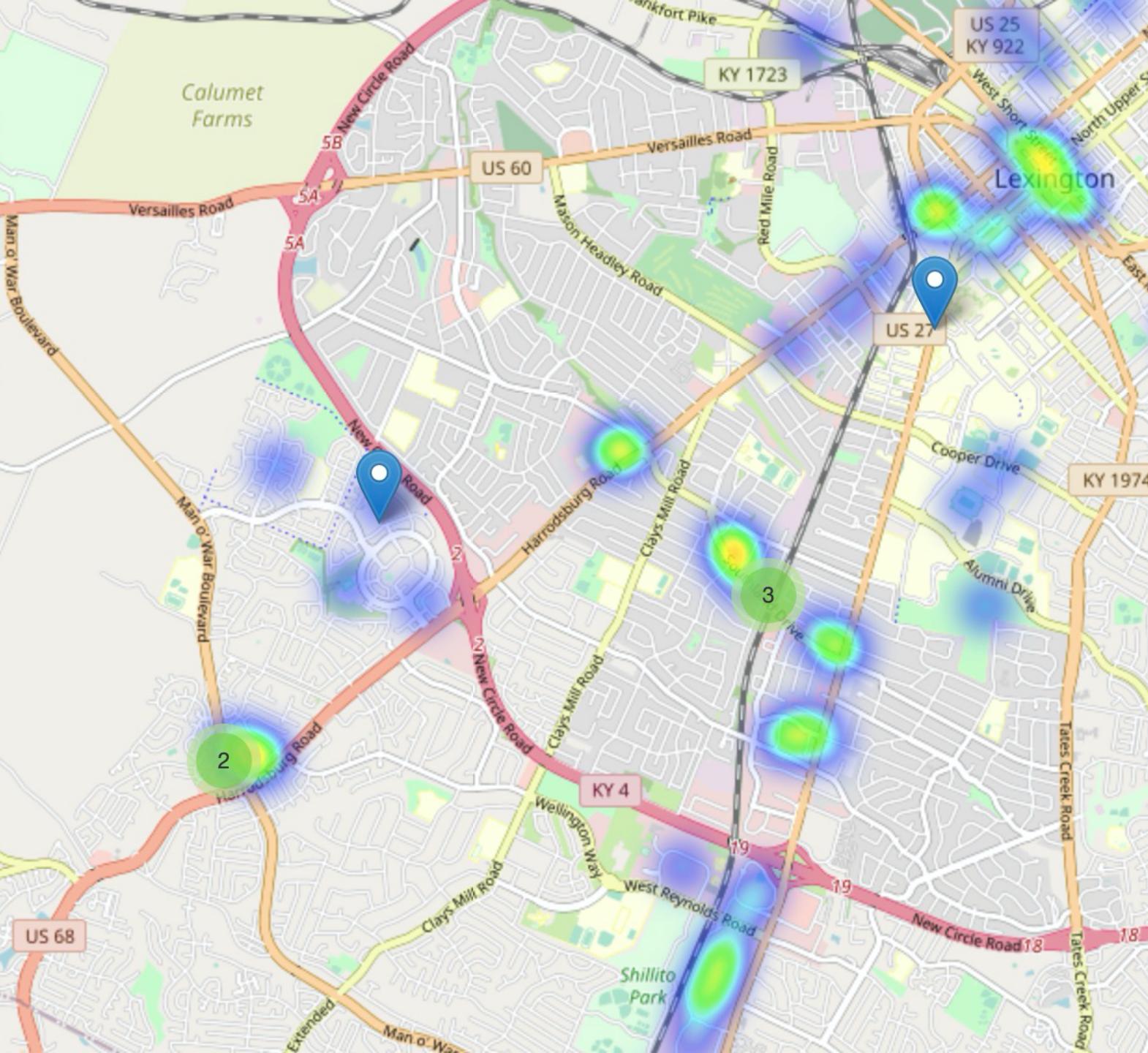
CHOSEN LOCATION CATEGORY PAIRS BASED ON EXCLUDING INHERENTLY INFERIOR POINTS

- A function was created that test for inherently inferior points
 - Point must be worse in one metric and equivalent or worse in all metrics than at least one other point
 - High minimum distance, low number of nearby venues, high number of nearby visits, and high number of category visits chosen
- Locations converted to addresses using Google Maps Geocoding API
- Seven recommended location category pairs chosen

Category	Minimum Distance	Number Venues Nearby	Visits in 1 km Radius	Visits in Category	Address
Ice Cream Shop	2,000	-	8,600	19,000	230 Plaza Dr
Ice Cream Shop	2,000	-	8,600	19,000	278 Southland Dr
Liquor Store	2,000	-	97,000	12,000	3801 Harrodsburg Rd
Liquor Store	2,000	-	97,000	12,000	3765 Palomar Centre Dr
Steakhouse	1,123	1	6,800	46,000	455 Southland Dr
Steakhouse	839	1	24,000	46,000	3191 Beaumont Centre Cir
Steakhouse	2,000	-	320	46,000	110 Virginia Avenue

THREE CATEGORIES REPRESENTED WITH
SEVEN DISTINCT LOCATIONS

CHOSEN PAIRS CLUSTERED IN SOUTHLAND, HARRODSBURG ROAD, AND DOWNTOWN AREAS



FINAL LOCATION AND CATEGORY CHOICE WILL DEPEND ON FOCUS

- If targeting Keeneland is priority, consider the following:
 - Liquor store locations have greatest number of visits within 1 km
 - Steakhouse locations have greatest number of category visits
- If targeting more general audience, consider the following:
 - All venues except steakhouses on Southland Drive have no nearby venues

ADDITIONAL FACTORS MAY BE NECESSARY FOR FINAL DECISION

- Within context of problem statement, seven possible venues were created that all have weaknesses and strengths.
- Additional considerations:
 - Demographics and preferences of neighborhood
 - Number of all visits in area
 - Availability of each location and what businesses are already existing

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