

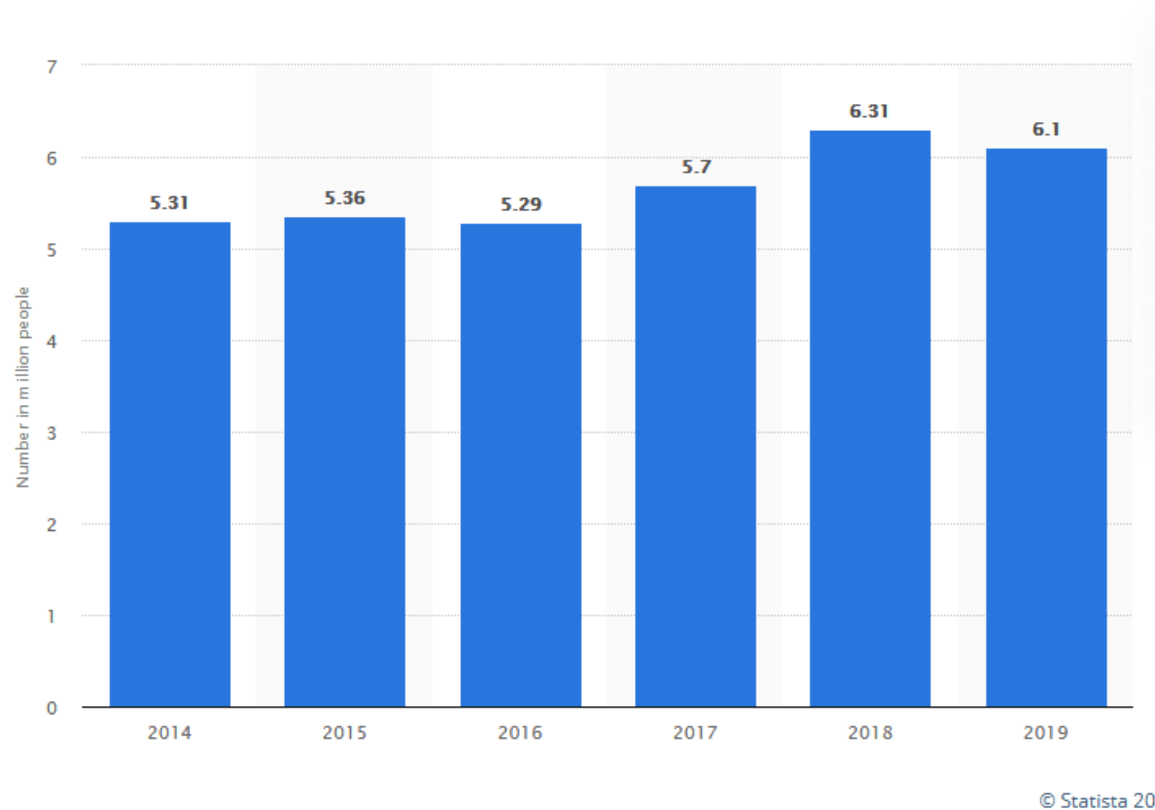
Neighborhood Segmentation to Find the Best Location for a Sustainable Meat Restaurant

Johanna Schulte-Drüggelte

Project Presentation from Coursera
Applied Data Science Capstone Project

INTRODUCTION

Number of people who largely forgo meat in Germany (pop. ~80 mio.)



“There’s been a critical failure in the past to look at which livestock systems and meats are part of the problem and which are part of the solution. The result is we are eating far less beef – 15 percent down in the last year and 50 percent since the 1980s.”

Patrick Holden, Director, Sustainable Food Trust

What Sources of Meat are Sustainable?

- Venison and Game from sustainably acting hunters.
- Not only impact on climate change due to endangerment of reforestation after drought and other natural disasters, but:
 - The population of many game populations need to be regulated because of decreasing habitat sizes
 - *“the use of wild game species and their habitats in a way and at a rate that does not lead to the long-term decline of biodiversity or hinder its restoration. Such use maintains the potential of biodiversity to meet the needs and aspirations of present and future generations, as well as maintaining hunting itself as an accepted social, economic and cultural activity (based on the definition of “Sustainable Use” in Article 2 of the Convention on Biological Diversity (CBD)). When hunting is conducted in such a sustainable manner, it can positively contribute to the conservation of wild populations and their habitats and also benefit society.”* (ENPI-FLEG.org)

What Sources of Meat are Sustainable?

- E.g. beef from regenerative agriculture can benefit the planet:
- *“These grasslands play a vital role in maintaining the soil carbon bank, as well as producing food we can eat, through the unique ability of ruminants to digest cellulose. Not only does this maintain a healthy soil, but the land works as a carbon sink – absorbing carbon dioxide. So, if you’re eating grass-fed beef, lamb and dairy, you can do so with a clear conscience, knowing you are part of the solution, not the problem.”*

Patrick Holden, Director, Sustainable Food Trust

BUSINESS IDEA

Let's Bring the Sustainable Meat to those who Want to Eat it

- Opening of a restaurant providing only dishes with animal foods derived from either sustainable hunting and/or regenerative agriculture
- Where can people afford this?
 - In a city, such as Berlin – the capital of Hipsters (<https://www.stuff.co.nz/travel/destinations/europe/germany/107840765/berlin-where-everyone-is-a-hipster>)

But where Exactly in Berlin is the Best Neighborhood to do this?

- Let's figure this out with this Data Science Capstone Project
- This project is dedicated to possible restaurant entrepreneurs from outside of Berlin who want to bring this kind of restaurant to the people and want to run their business as profitable as possible with the right kind of people frequenting this neighborhood to go out to eat.

APPROACH

What Can Be Done to Figure out the Best Neighborhood?

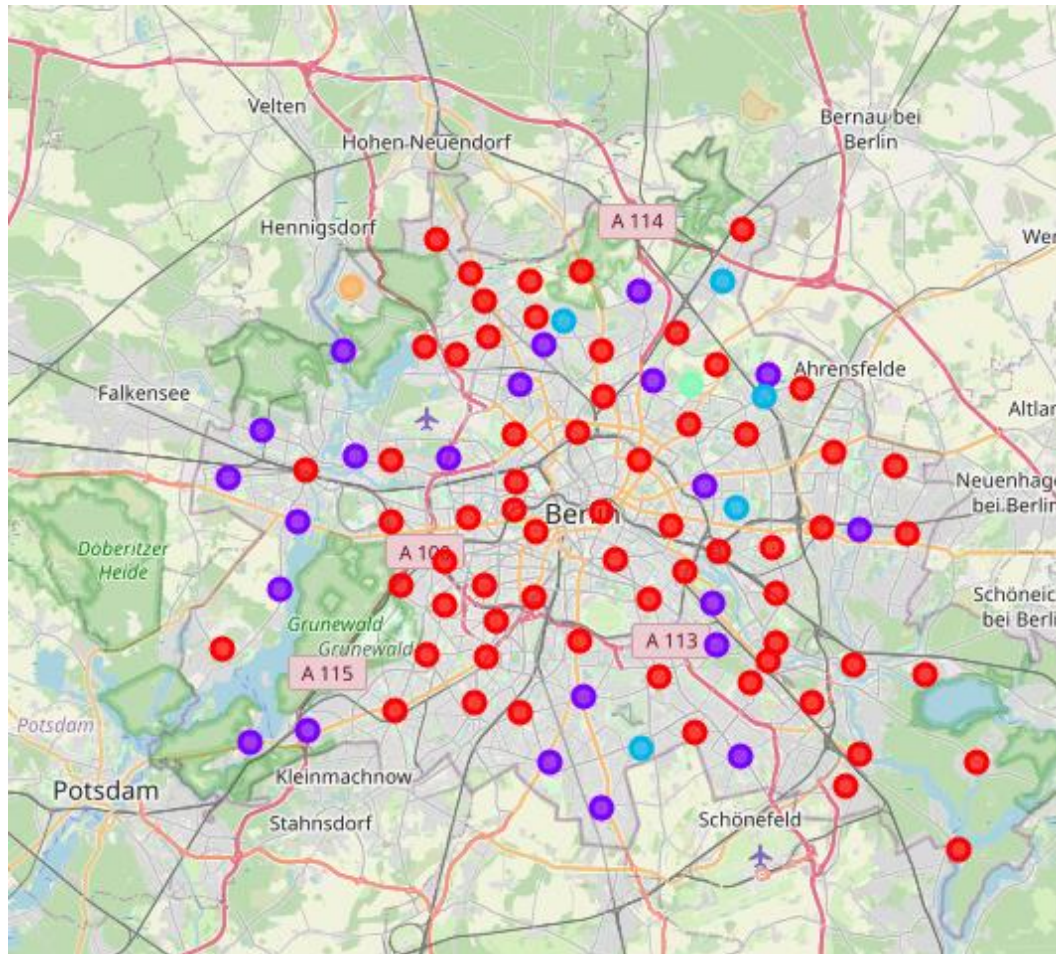
- Neighborhood segmentation
- Machine Learning algorithm: k-means clustering
- Clusters we look for: a diverse setting of different restaurants or other venues such as parks, galleries, museums etc. yet we want to make sure to stay out of the suburbs

Methodology

- Pandas for handling dataframes and web scraping
- Nominatim Geocoder to retrieve the location data of the neighborhoods
- Folium to create interactive maps
- Foursquare API to retrieve venue data
- K-means from Sklearn for the clustering – neighborhood segmentation

RESULTS

Berlin with Venue Clusters



Cluster 5

The Cluster of Choice

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
2	Hansaviertel	Café	Art Museum	Bakery	Plaza	Bus Stop	Metro Station	Farmers Market	Sporting Goods Shop	Mediterranean Restaurant	Boat or Ferry
6	Friedrichshain	Coffee Shop	Café	Pub	Bar	Vegetarian / Vegan Restaurant	Middle Eastern Restaurant	Bookstore	Bagel Shop	Ice Cream Shop	Pizza Place
8	Prenzlauer Berg	Café	Bakery	Cocktail Bar	Beer Bar	Vietnamese Restaurant	Falafel Restaurant	Park	Organic Grocery	Coffee Shop	Donut Shop
10	Blankenburg	Playground	Bus Stop	Café	Greek Restaurant	Zoo Exhibit	Falafel Restaurant	Fountain	Food Court	Food & Drink Shop	Flower Shop
16	Buch	Italian Restaurant	Art Gallery	Bakery	Asian Restaurant	Big Box Store	Drugstore	Zoo Exhibit	Flower Shop	Fast Food Restaurant	Fish Market
13	Schmargendorf	Italian Restaurant	Ice Cream Shop	Drugstore	Gym	Chinese Restaurant	Restaurant	Café	Trattoria/Osteria	Deli / Bodega	Coffee Shop
15	Westend	Café	Bar	Art Museum	Gourmet Shop	Drugstore	Liquor Store	Italian Restaurant	Plaza	Bus Stop	Ice Cream Shop
17	Lichterfelde	Bakery	Italian Restaurant	Vietnamese Restaurant	Café	Liquor Store	Chinese Restaurant	Sculpture Garden	Eastern European Restaurant	Pool	Dive Bar
19	Neukölln	Bar	Café	Coffee Shop	Middle Eastern Restaurant	Dive Bar	Cocktail Bar	Bistro	Italian Restaurant	Vegetarian / Vegan Restaurant	Nightclub
17	Johannisthal	Tram Station	Pub	Park	Taverna	Dessert Shop	Burger Joint	Sushi Restaurant	Movie Theater	Pizza Place	Food & Drink Shop
18	Niederschöneweide	Indian Restaurant	Restaurant	Greek Restaurant	Harbor / Marina	Fast Food Restaurant	Gas Station	Motel	History Museum	Convenience Store	Italian Restaurant
10	Bohnsdorf	Park	Italian Restaurant	Flower Shop	Ethiopian Restaurant	French Restaurant	Fountain	Food Court	Food & Drink Shop	Fishing Store	Fish Market
14	Grünau	Tram Station	Restaurant	Historic Site	Dessert Shop	Boat or Ferry	Flower Shop	Food & Drink Shop	Food Court	Ethiopian Restaurant	Fish Market
16	Schmöckwitz	Harbor / Marina	Accessories Store	Italian Restaurant	Gas Station	Tram Station	Ice Cream Shop	Dance Studio	Ethiopian Restaurant	Food Court	Food & Drink Shop
18	Biesdorf	Big Box Store	Liquor Store	Plaza	Bakery	Palace	Outdoor Event Space	Park	Light Rail Station	Farmers Market	Farm
15	Falkenberg	Nature Preserve	Coffee Shop	Café	Zoo Exhibit	Falafel Restaurant	French Restaurant	Fountain	Food Court	Food & Drink Shop	Flower Shop

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See the marks of examples of the kinds of places which are very welcome in the kind of neighborhood that can be chosen.

DISCUSSION

Methodology Discussion

- How relevant is the problem really? Will vegans want to eat that kind of meat?
- Quality of data sources, such as Foursquare and Wikipedia?
- Suitable algorithm for the kind of data?
 - Right number of k 's?

CONCLUSION

Conclusion

- In the notebook provided we found a number of neighborhoods suitable for the opening of a restaurant providing sustainably sources of meat for its dishes such as venison. This restaurant is supposed to attract younger alternative people that want to make more sustainable choices and to reduce their CO₂ footprint. The found cluster contains neighborhoods such as Prenzlauer Berg and Friedrichshain which are obvious choices for people who know Berlin. However, other neighborhoods rise in popularity which is shown with the neighborhoods in this cluster and might have other advantages such as lower rents and might be easier to reach. But these parameters are out of the scope of this project.