Establishing a Bicycle-based Bakery in Portland

**Introduction**

Portland is home to many bicycle lovers. Riding a bicycle is part of daily life for many Portland citizens. The city itself is home to many routes, bicycle lanes, and bicycle shops. By 2030, the city hopes to have over a quarter of all trips made by bike. In relation to this, bicycle crime is also a big problem in Portland. Nearly 3,000 bicycle thefts are reported each year to the police, and this doesn’t include the larger number of unreported thefts.

It’s also home to many health-conscious individuals who can be selective about what they eat. Gluten-free, lactose-free, sugar-free, organic, farm-to-table, locally sourced, in season: these are all terms or conditions of healthy eating that are not uncommon to find in the City of Roses. Menus at restaurants and other food and drink venues often cater to the healthy eating lifestyles of Portland’s inhabitants.

In this project, a fictional entrepreneur named Anne wishes to establish a Gluten-free, lactose-free, organic bakery which includes a workforce dedicated to delivering the yummy goods by bicycle around the neighborhoods. Concerned with the crime, and intent on keeping her two-wheeled workers on well-maintained bikes, she wishes to find a neighborhood to set up shop where crime levels are low, and where at least one bicycle shop is nearby when maintenance or supplies is required. Additionally, she wants to view other bakeries or similarly based venues in the area to see what the local competition is like, in order to help her decide where to establish her new business.

**Data**

Crime statistics were acquired from the Police Bureau of Portland Oregon, accessed from the *portlandoregon.gov/police* website. The data is in CSV form using 2018 crime statistics. Neighborhood GeoJSON data is supplied by PortlandMaps ArcGIS Open Data website.

PortlandMaps also provided the bicycle shop data points which give latitude and longitude as well as bike shop names for each shop currently in Portland

**Methodology**

Several tools were used to access and interpret the data. Data science modules such as Pandas and NumPy were imported to manipulate the data in and out of dataframes and other structured data types. Neighborhoods in the police data were connected to the GeoJSON neighborhood data in order to create a coherent picture of where crime is seen in each neighborhood.

Geolocation tools such as those found in GeoPy and map tools such as Folium helped to visualize the data and its local significance. Folium was used to generate choropleth maps to visualize the depth of crime in each Portland neighborhood using the crime CSV and GeoJSON file.

Folium was also used to superimpose markers on top of the choropleth map. These markers demonstrated where each bicycle shop of interest was in relation to the neighborhoods. These bike shop locations were used as data anchors in conjunction with Foursquare’s API in order to make calls to the API. These calls, made possible with imported JSON modules, provided venue information in the surrounding neighborhoods based on a radius surrounding the bike shop’s given latitude and longitude.

**Results**

The crime map showed that the eastern part of Portland was much heavier in crime compared to the rest of the city. Specific neighborhoods definitely stood out. Hazelwood stood at the top of the neighborhood list as the most crime-heavy city. Several neighborhoods close by also showed a greater level of crime based on the heatmap and dataframe quantities. Downtown Portland was also very crime heavy. The surrounding neighborhoods also seemed to have a greater depth of crime, although not nearly as saturated as Downtown itself. North Portland’s biggest crime-heavy neighborhood was clearly St. Johns, which covers a large area in relation to other neighborhoods. Western Portland was surprisingly low in crime, as was the innermost portion of Northeast Portland.

As for bicycle shops, West Portland had very few. In fact, only a couple seemed to exist on the southern end of the entire stretch of West Portland. A large amount were clustered in and around Downtown, and also follow a stretch of I-5 northwards.

**Discussion**

The reveal that eastern Portland is heavier in crime isn’t that surprising. Gresham, which lies just east of Portland proper, is well known to be a city heavy in criminal activity, so it seems logical that the further eastwards you go, the more intense crime eventually becomes. Part of this perhaps can be attributed or at least correlated to gentrification, which has been a much-addressed issue lately for Portland. If studies do not currently exist in this area, I would certainly recommend one which seeks to find the relationship between gentrification and crime in neighborhoods.

I did not expect Downtown to be as criminally intense as it was. In terms of the bicycle shops in the area, it wasn’t surprising since Downtown is one of the most bike-friendly downtowns in the United States. There are plenty of bike lanes laid out, and bikers are everywhere to be found in that area. Another interesting study is to find out how much of the crime in Downtown is related to bicycle theft. I imagine many bikers go to work in Downtown, leave their bikes locked up, and use the bikes to go back home. Additionally, many bicyclists will switch between bus and bike, sometimes even attaching their bikes to the bus to travel.

I did expect more bicycle shops in western Portland. The lack of shops and reduced crime makes me suspect population is simply lower on that side of the city. Additionally or alternatively, those neighborhoods may also be higher income neighborhoods, with higher property values. These individuals would be less urban and more suburban, and bicycles would likely not be used as a main aspect of transportation. Indeed, looking closely at the map, especially at the layout of infrastructure and streets, indicates this may be the case, but it can be another potential study for the future.

**Conclusion**

In the universe of our fictional character Anne, she eventually settled on Mount Tabor as the neighborhood of choice to start her business. The reasons being low crime, close access to a bike shop, and very few competitors in the area. In reality, however, we would also have to look at many other factors, including how does an area compare in terms of residential and industrial saturation. Perhaps Mount Tabor is low crime because it is mostly comprised of corporate and/or industrial businesses. Or perhaps there are simply less accommodations for bicyclists in that area. Given the fact the most bicycle shops are closer to Downtown Portland, a business in this area might prove to be more successful.

Additionally, the Buckman neighborhood was rife with bicycle shops and low crime. The decision to not set up shop in this neighborhood was due mainly to the large number of coffee shops. These shops could factor in as potential competitors given that they often offer more than just coffee but other food choices with Portlanders in mind. However, again it is important to consider that this may be simply because demand is high in this particular neighborhood, and a bakery in such a neighborhood has a better chance than not otherwise. Nevertheless, it was a good opportunity to explore some of the characteristics of Portland that make it special.