

Finally we cannot talk about tourism without bringing up this topic, this is very real. **Capstone Travel** wants to keep all its employees and customers safe while traveling to anywhere. Generally speaking, State of Hawaii has done an excellent job of keeping the COVID-19 cases in control.

So let data speak for itself. The most up-to-date information is available on Hawaii government Department of Health website here, <https://health.hawaii.gov/coronavirusdisease2019/>.

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Total cases: 814 (11 newly reported)
Hawai'i County: 85
Honolulu County: 566
Kaua'i County: 29
Maui County: 122†
Pending: 0
Residents diagnosed outside of Hawai'i: 12
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At this point, we have mapped out all venues for each island, as well as the neighborhood information documented in the first part of this section. So visitors should have the good information to have make decision on which island they plan to visit. In addition, we also review the COVID-19 data available on Hawaii government Department of Health website.

This concludes the data gathering phase - we're now ready to use this data for analysis to produce the report on how to visit the island.

Section 3: Methodology

Making sure that visitors will experience this spirit of *Aloha* while staying in Hawaii, the **Capstone Travel**'s business goal is to provide useful information to its customers to make a decision on which Hawaiian island they plan to spend their time on.

In the **Section 2: Data**, the data science consultant has gathered a lot of useful information for each Hawaiian island, for instance, Foursquare's *top-picks*, restaurants, parks & beaches, crime incident data, cost of living index, average weather temperature in each month, and real estate information.

In the following section, the consultant will organize the information by each Hawaiian island. This is important to group the data analysis and results in this way, and it will greatly help to present the information for each island at a time. So for each Hawaiian island, the analysis section should include the following areas of studies:

- **Crime Incidents:** The consultant will start looking into how to apply the *density data analysis of the crime incident data in each neighborhood or zip code*. The consultant plans to add the *heatmap* overlaid the map of each island to identify the low crime areas or safer neighborhoods using *k-means clustering* technique to define the *clusters of locations with low crimes*.
- **Accommodation:** Once the above neighborhoods have been identified, an additional data gathering is required using the publicly available Airbnb housing data. Instead of grouping the information by zip code like above, the Airbnb housing data will be grouped by *zones*. After research, the consultant realized that it is very common practice in Hawaii housing market to slide the housing data in this way using this *zones* due to localized weather and traffic.
- **Foursquare Top-Picks:** Additional details will be included for each Foursquare's *top-picks* venues for each island. After all, this is most critical selling points to present the beauty of each Hawaiian island.
- **COVID-19:** The employees and customers safety is the top priority of **Capstone Travel**, the consultant will provide a high-level COVID-19 data analysis for the State of Hawaii.

Finally, after present above details of each Hawaiian island to **Capstone Travel**, the consultant should prepare an executive summary of the report by including a comparison chart of each Hawaiian island. This executive report should also include overall discussion and conclusion.

Section 4: Analysis

As mentioned in the previous section, the analysis will be done by each Hawaiian island. This is important to group the information in this way, and it will greatly help to present the information for each island at a time. So for each Hawaiian island, the analysis section should include the following areas of studies:

- Crime Incidents
- Accommodation
- Foursquare Top-Picks
- COVID-19

1. Kauai (aka. The Garden Isle)

Let begin by reviewing the data available for Kauai.

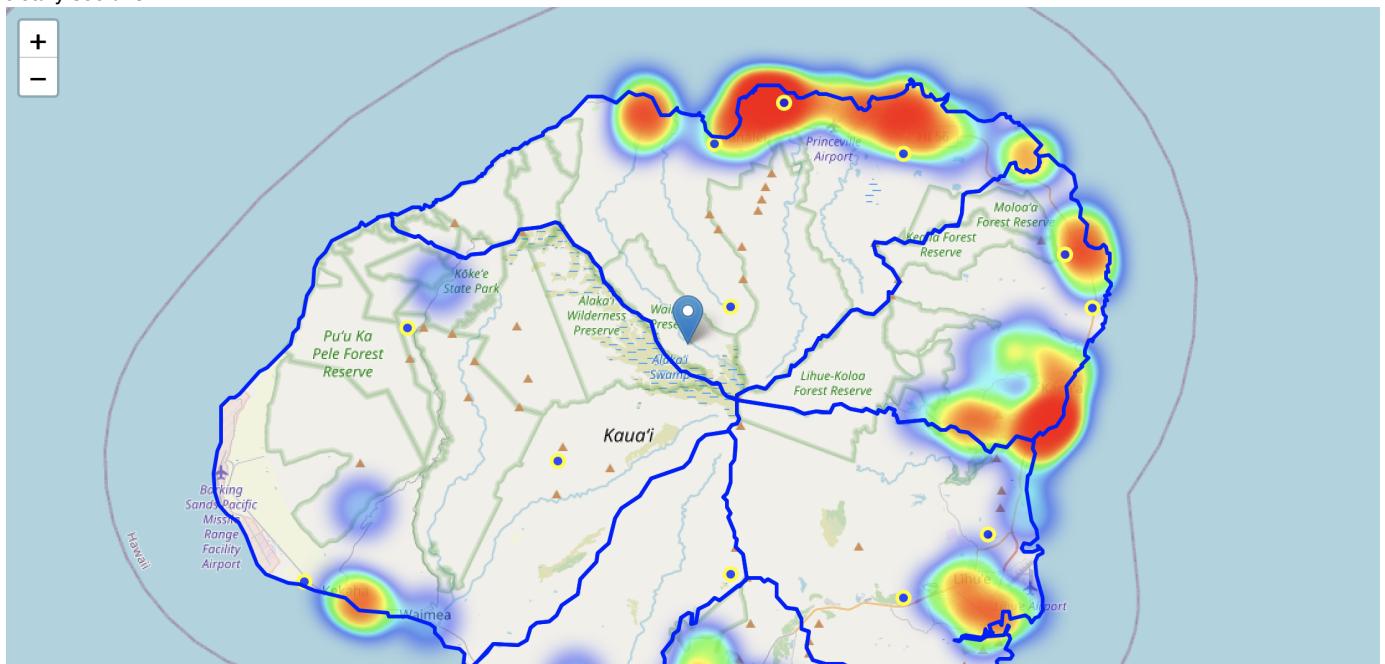
Crime Incidents on Kauai

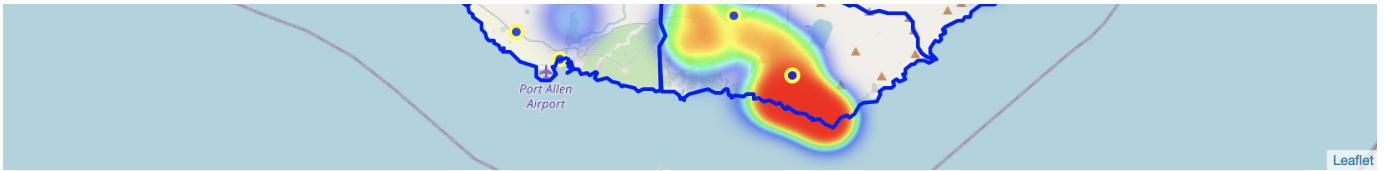
First of all we are looking to take a look at the Kauai's crime incident. However, given the 14 zip codes assigned to the island of Kauai is none crimes incidents being reported to the police. The map below does not display any crime *heatmap*.



Airbnb Housing Data

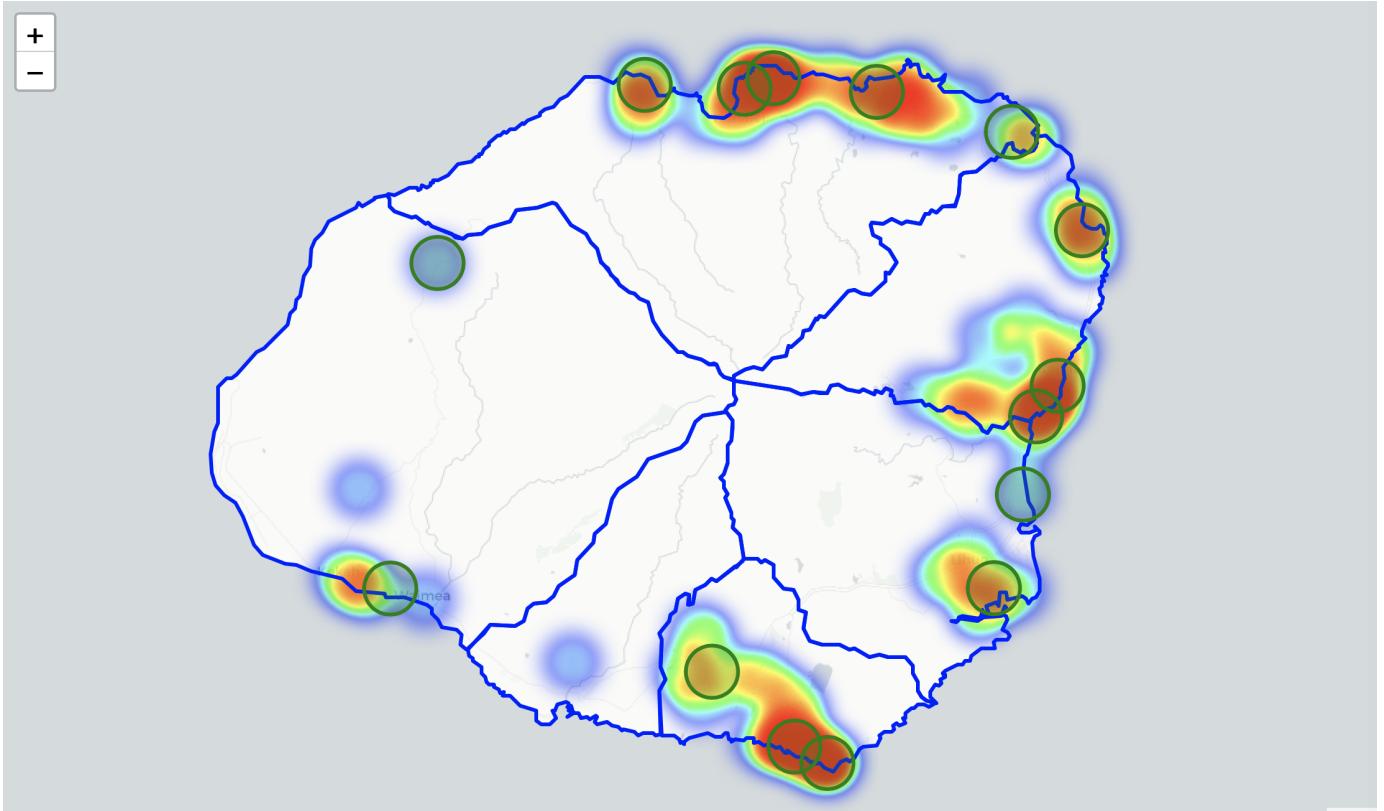
Use *heatmap* to find where are the Airbnb posting. Since Kauai is a popular destination for visitors. Using the Airbnb data the consultant can clearly see this.





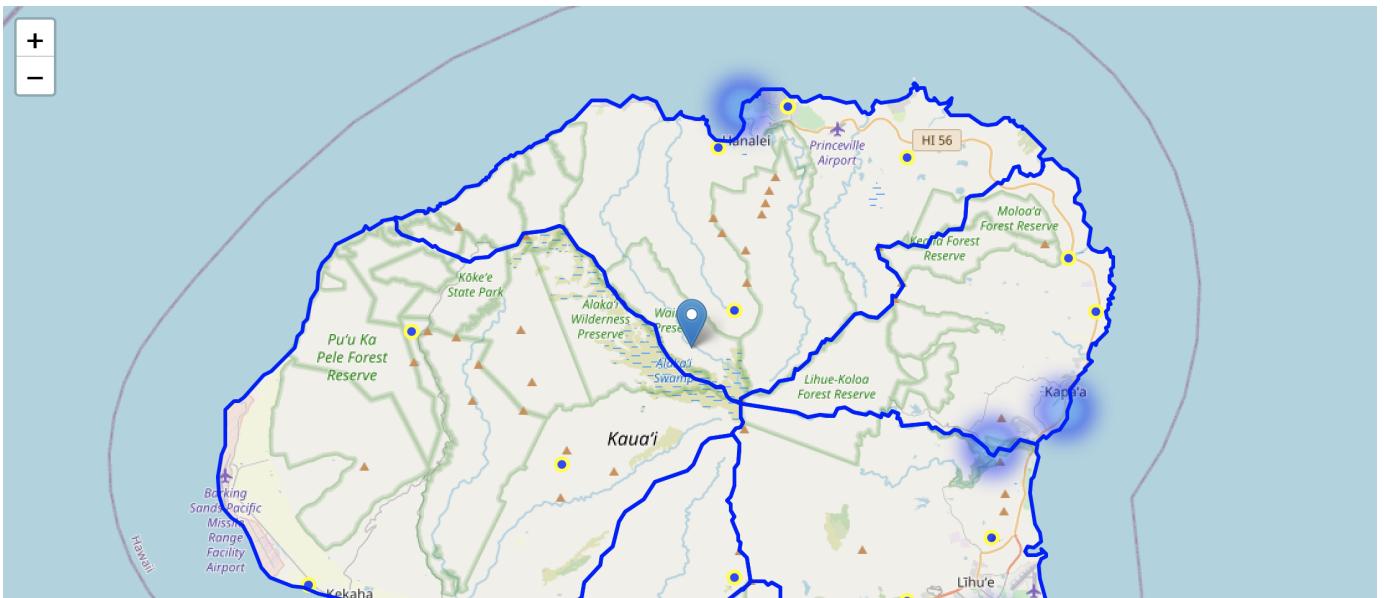
Use K-Means to Define 15 Clusters of Housing Neighborhoods

Next, use K-Means machine learning technique to define 15 clusters using Airbnb housing data. Two of the popular neighborhoods on the Kauai are **Hanalei** in the North of the island and **Poipu** in the South of the island. And these two neighborhoods tends to be more expensive compared to other neighborhoods on the island.



Top-Picks Heatmap

After retrieved the top-picks from Foursquare, let's put the venues on the map using *heatmap*. Basically, it is helpful to identify where are the visitor destinations.





Leaflet

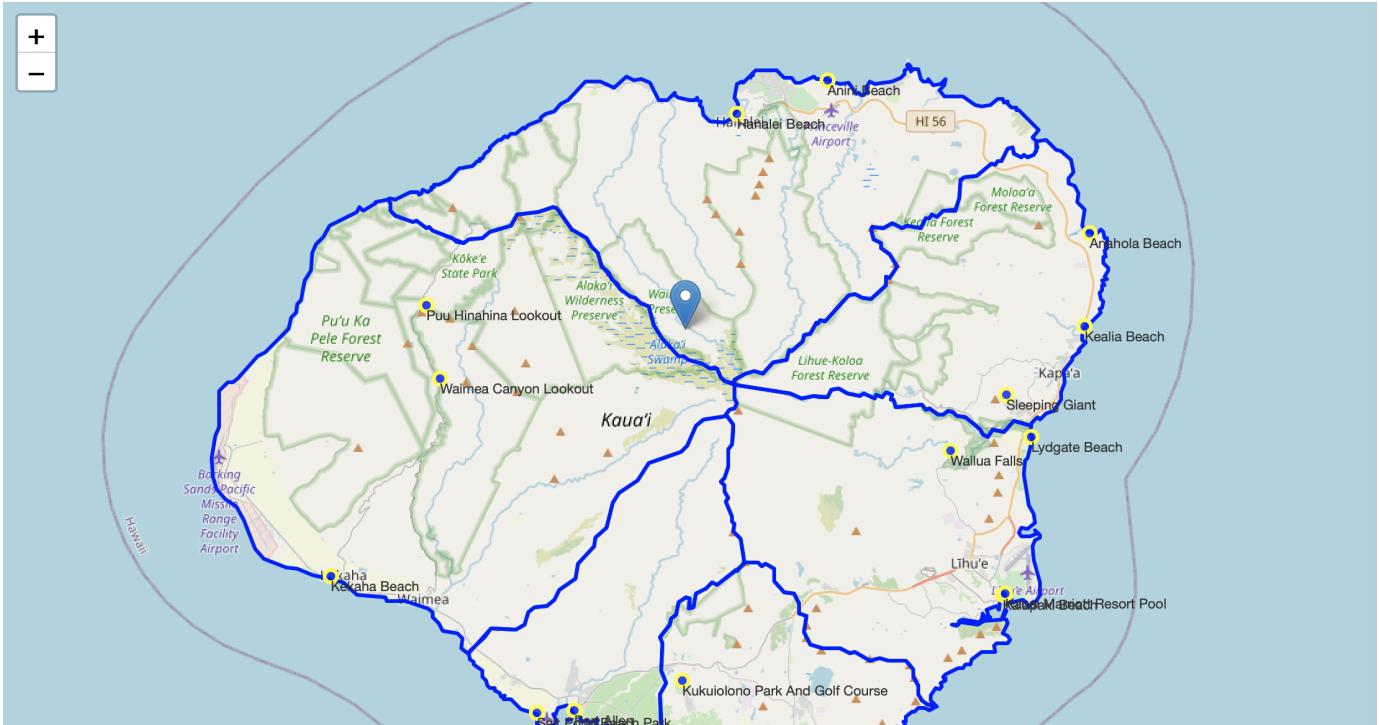
Kauai: Word Count

Using the word count technique, we can easily see the popular venues.



Kauai: Top-Picks on the Map

Here is a list of the top-picks on the map.



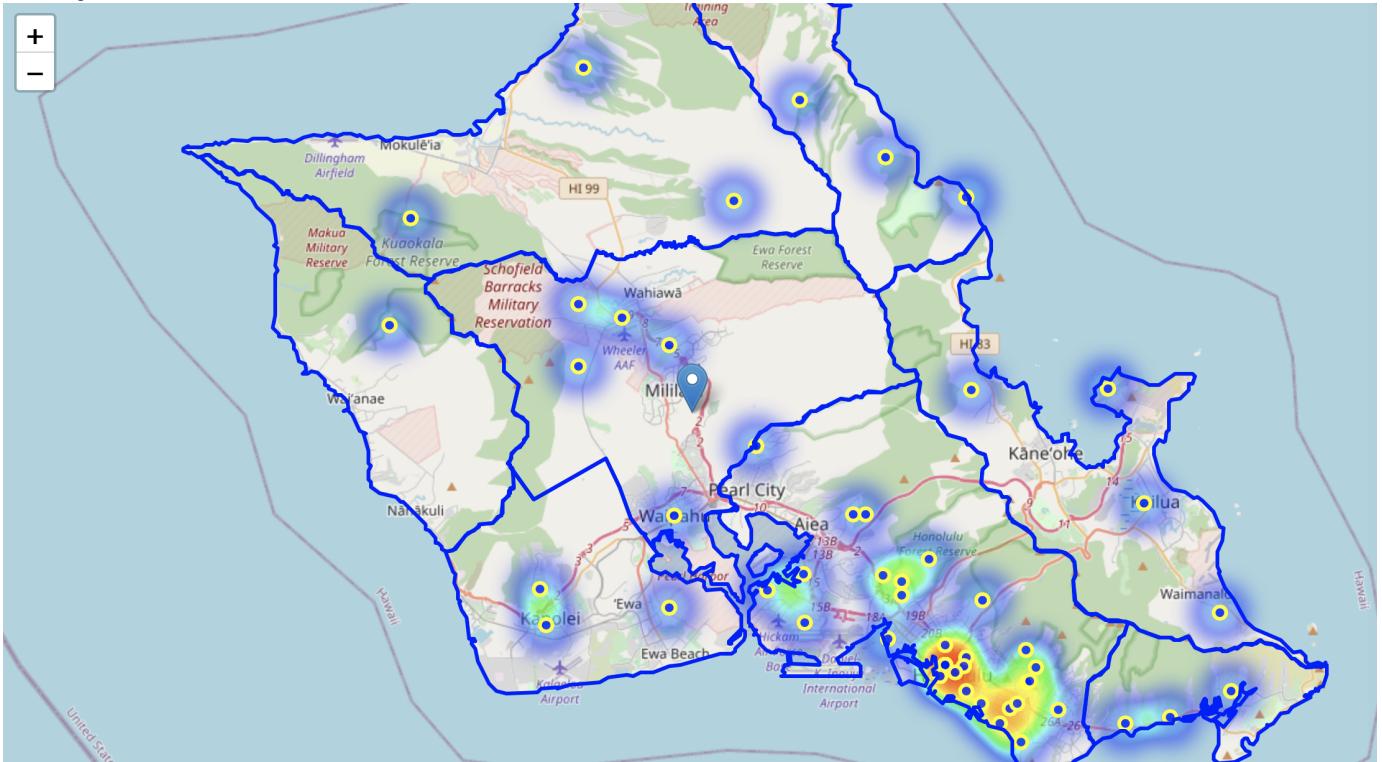


2. Oahu (aka. The Gathering Place)

Next let's review the data available for Oahu.

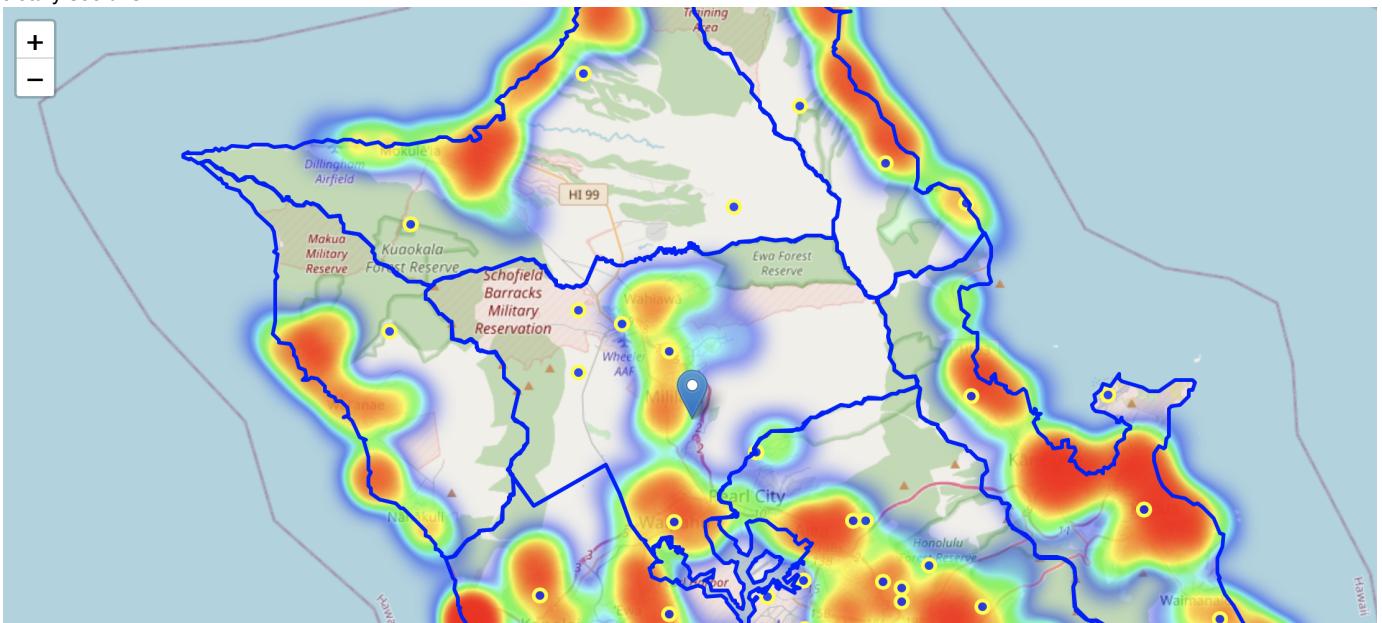
Crime Incidents on Oahu

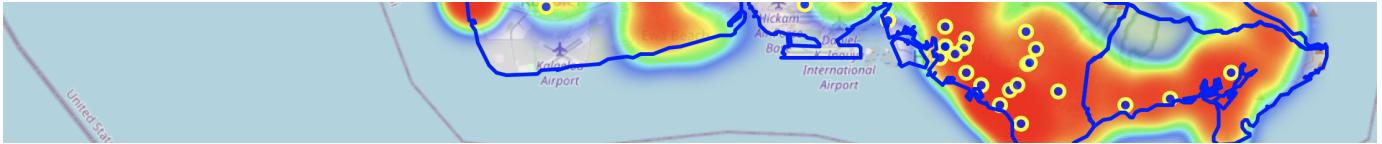
First of all we are looking to take a look at the Oahu crime incident. However, given the all zip codes assigned to the island of Oahu, crime rate is much higher on Oahu.



Oahu: Airbnb Housing Data

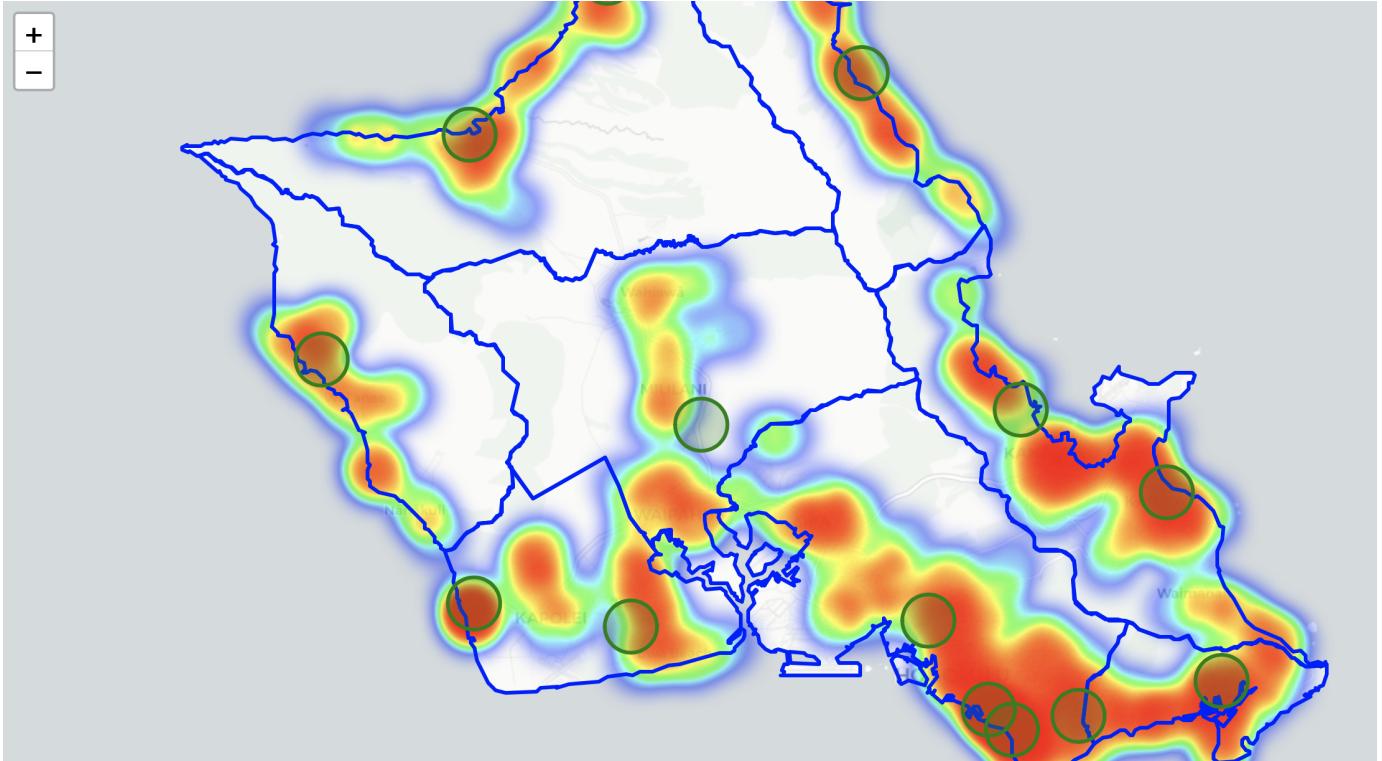
Use *heatmap* to find where are the Airbnb posting. Since Oahu is also a popular destination for visitors. Using the Airbnb data the consultant can clearly see this.





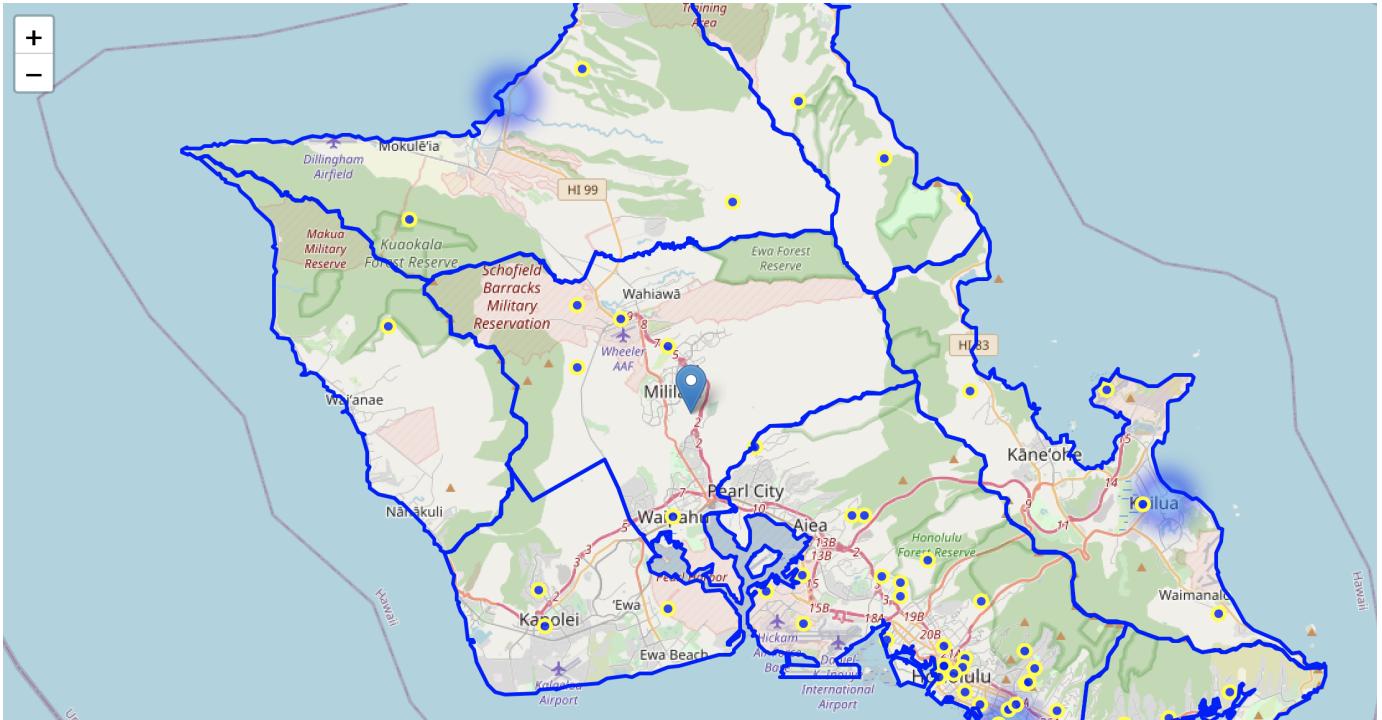
Oahu: Use K-Means to Define 15 Clusters of Housing Neighborhoods

Next, use K-Means machine learning technique to define 15 clusters using Airbnb housing data.



Oahu: Top-Picks Heatmap

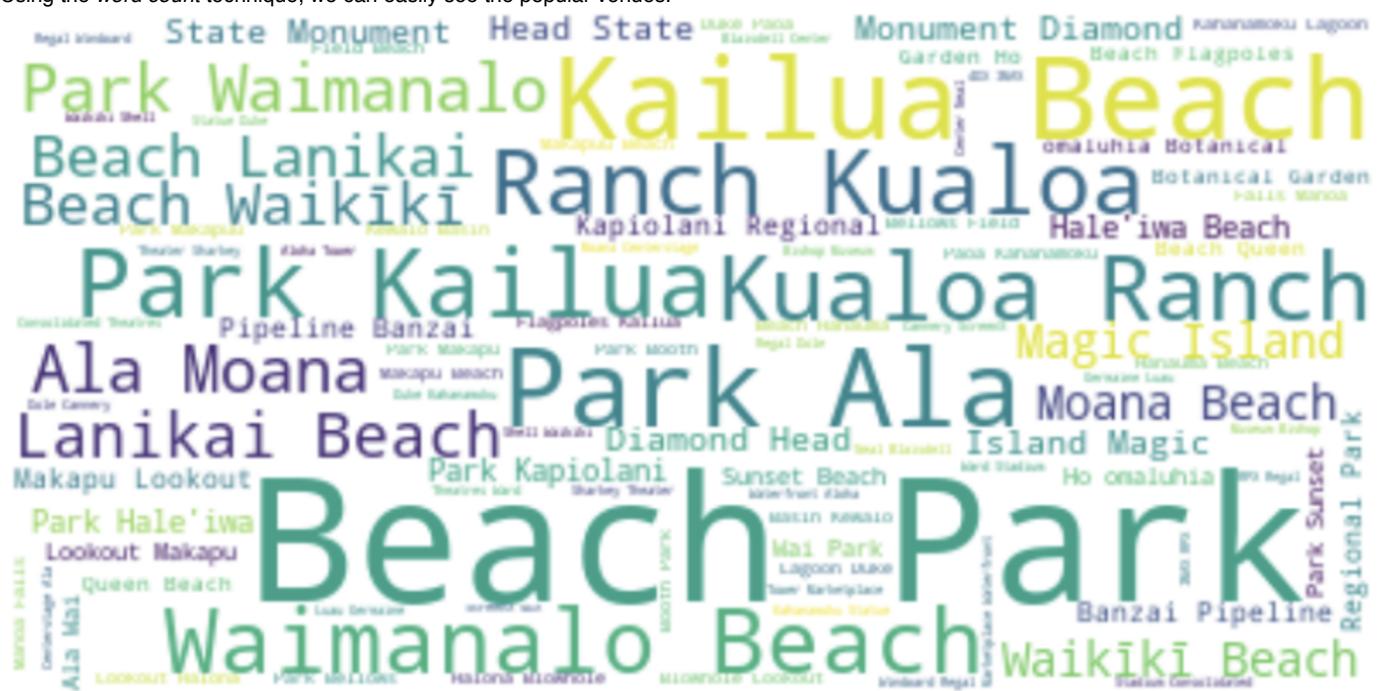
After retrieved the top-picks from Foursquare, let's put the venues on the map using *heatmap*. Basically, it is helpful to identify where are the visitor destinations.





Oahu: Word Count

Using the *word count* technique, we can easily see the popular venues.



Oahu: Top-Picks on the Map

Here is a list of the top-picks on the map.

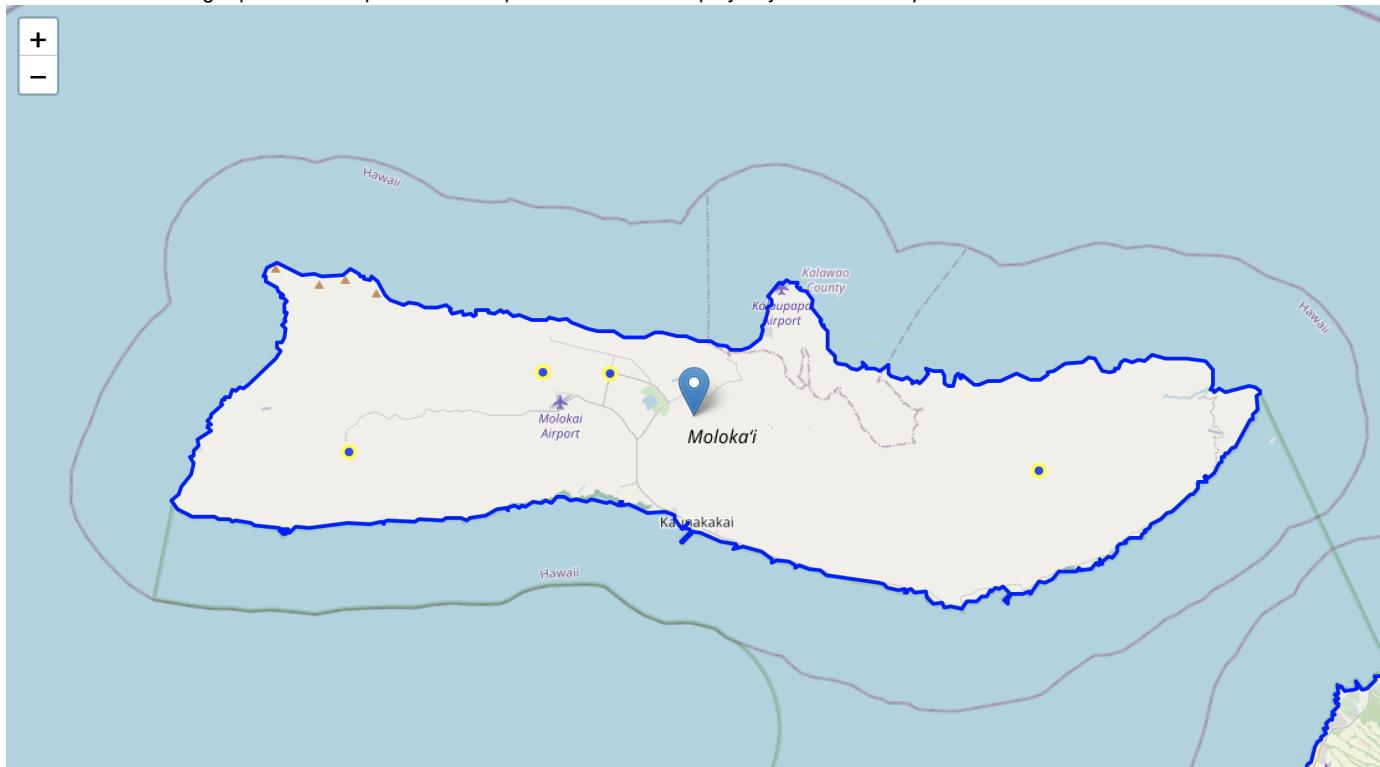


3. Molokai (aka. The Friendly Isle)

Next let's review the data available for Molokai.

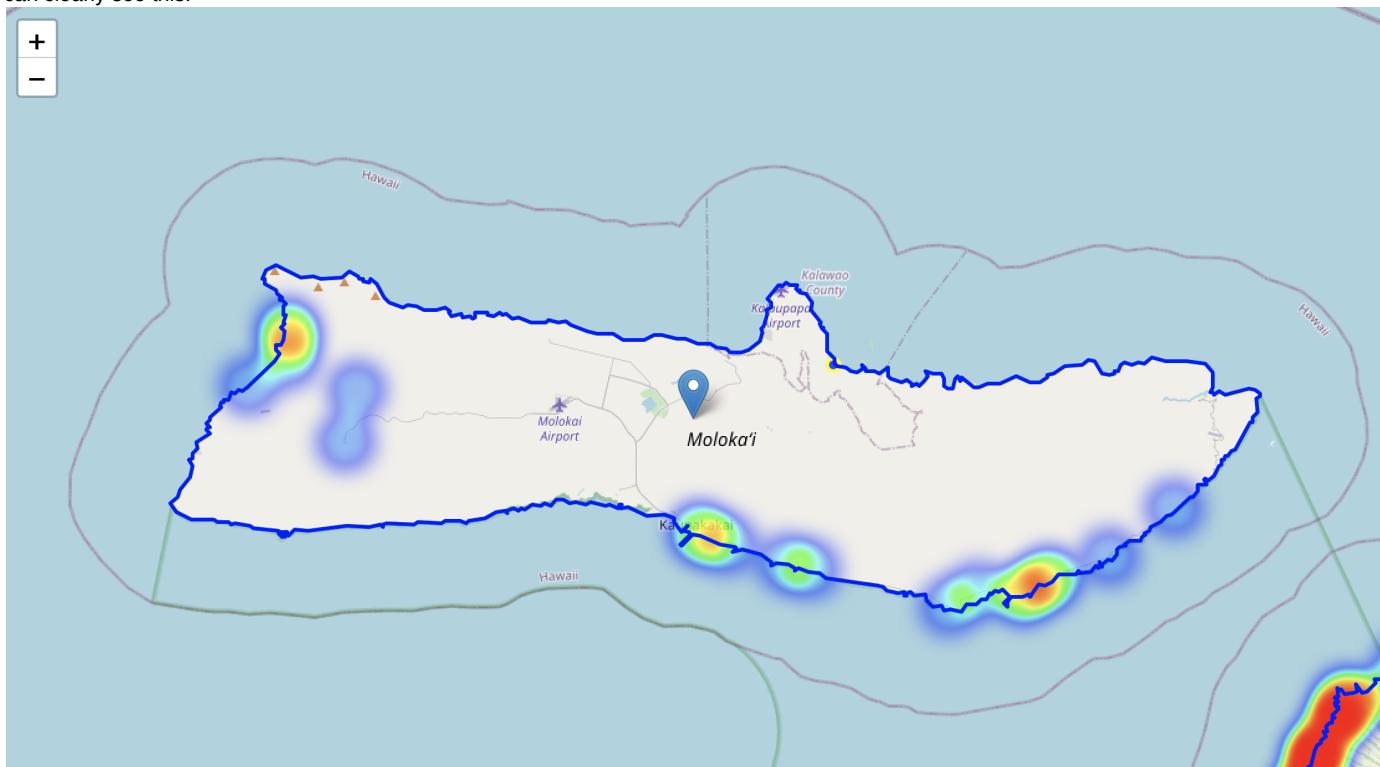
Crime Incidents on Molokai

First of all we are looking to take a look at the Molokai's crime incident. However, given all zip codes assigned to the island of Molokai is none crimes incidents being reported to the police. The map below does not display any crime *heatmap*.



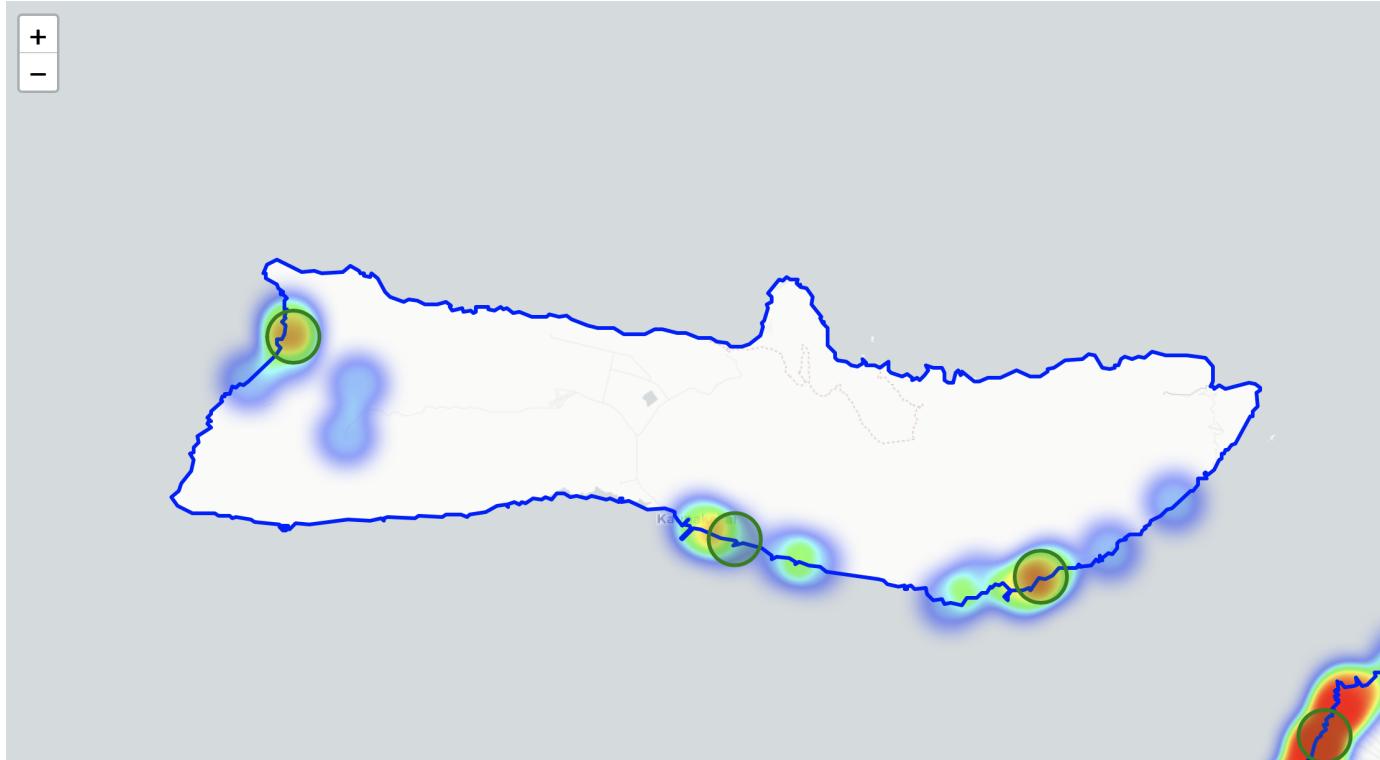
Molokai: Airbnb Housing Data

Use *heatmap* to find where are the Airbnb posting. Since Molokai is also a popular destination for visitors. Using the Airbnb data the consultant can clearly see this.



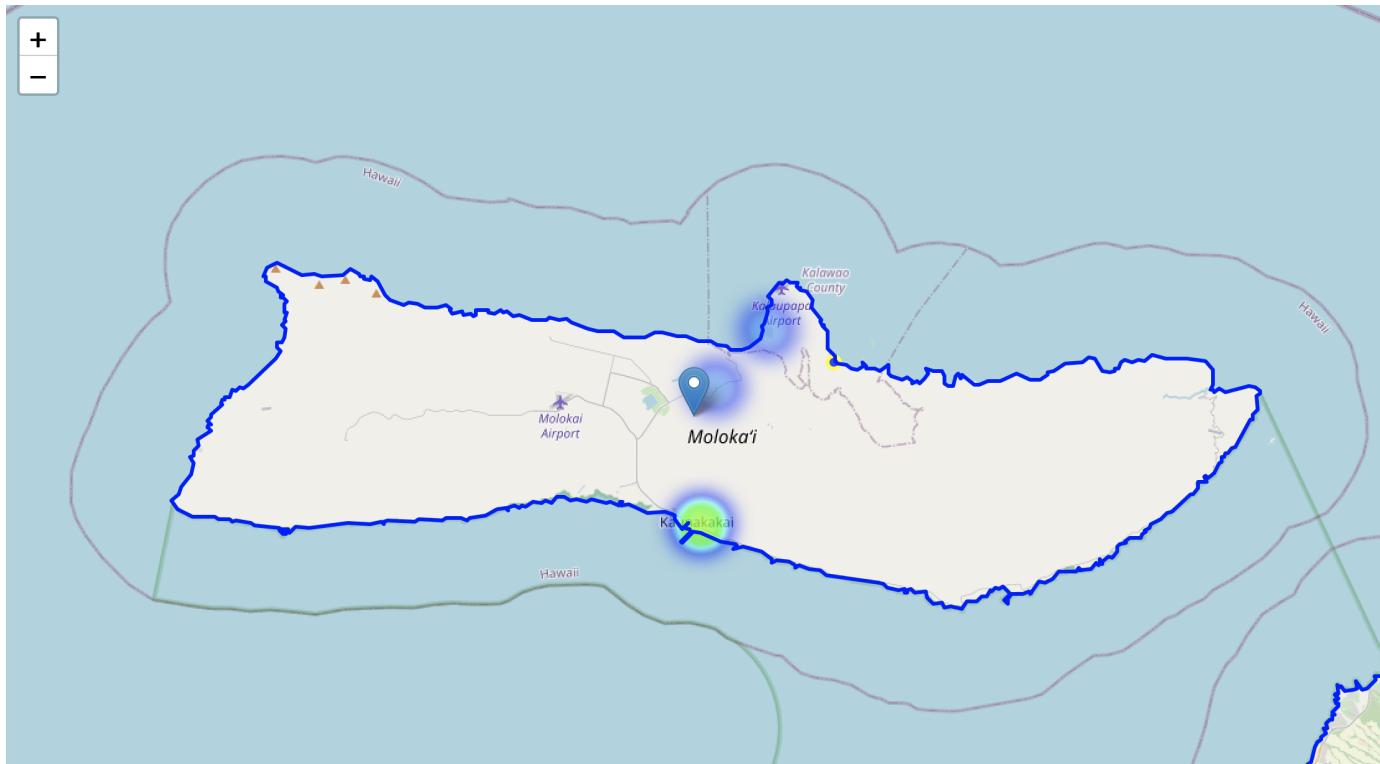
Molokai: Use K-Means to Define Clusters of Housing Neighborhoods

Next, use K-Means machine learning technique to define clusters using Airbnb housing data.



Molokai: Top-Picks Heatmap

After retrieved the top-picks from Foursquare, let's put the venues on the map using *heatmap*. Basically, it is helpful to identify where are the visitor destinations.



Molokai: Word Count

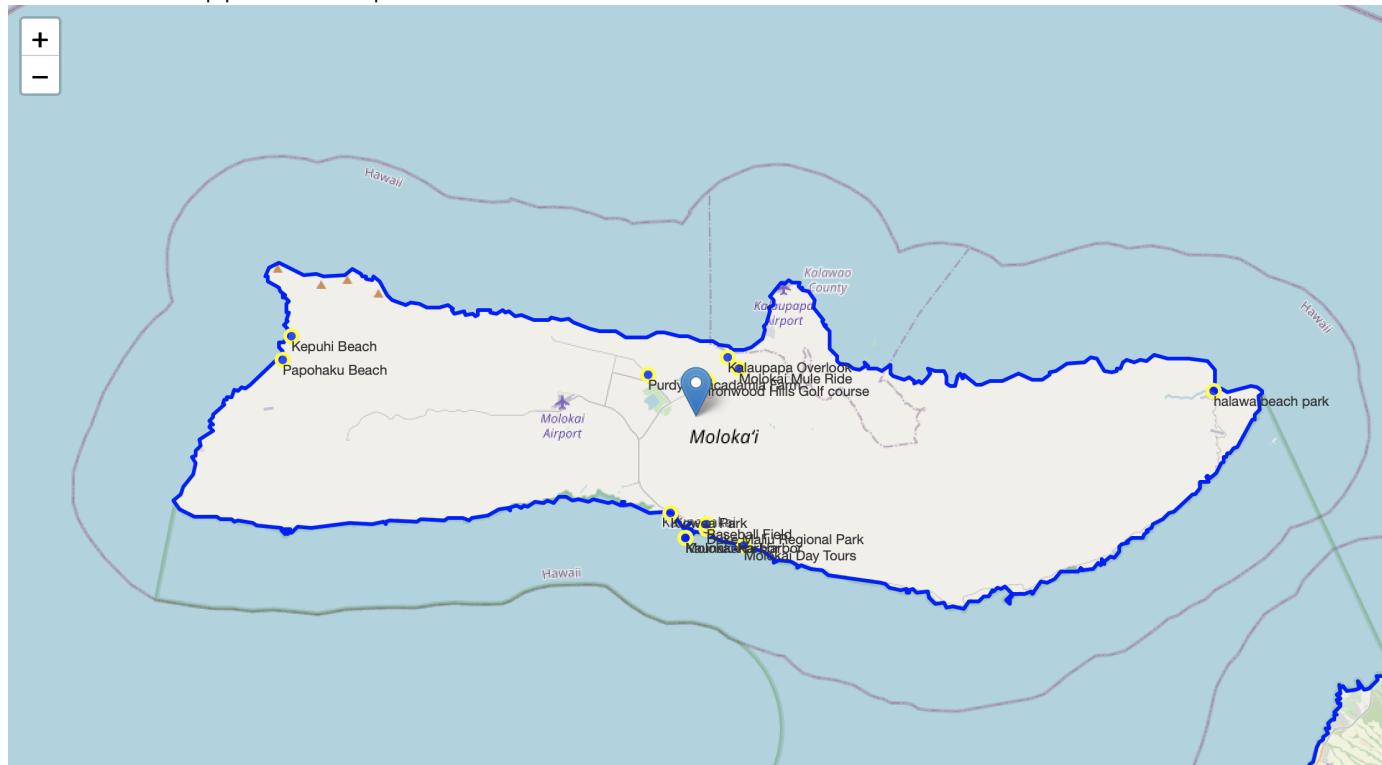
Using the *word count* technique, we can easily see the popular venues.

Harbor Kaunakakai Dav Tours

Taf Valley Molokai
 Kalaupapa Overlook Park Kiowa Park Duke
Macadamia Farm
 Duke Maliu Hills Golf Molokai Art
 Molokai Day Kepuhi Beach
 Beach Papohaku Papohaku Beach
 halawa beach Halawa Valley Overlook Kalaupapa
 Harbor Molokai Tours Molokai Art Heart
 Ride Molokai Field Baseball Falls Cultural Ironwood Hills
 Purdy Macadamia park halawa Molokai Mule
 Kaunakakai Harbor course Ironwood
 Golt course Field Baseball Falls Cultural Ironwood
 Hike Hali2003 Molokai MUSEUM

Molokai: Top-Picks on the Map

Here is a list of the top-picks on the map.



4. Lanai (aka. The Pineapple Isle)

Next let's review the data available for Molokai.

Crime Incidents on Lanai

First of all we are looking to take a look at the Lanai's crime incident. However, given all zip codes assigned to the island of Lanai is none crimes incidents being reported to the police. The map below does not display any crime heatmap.

