ANALYZING CENTRAL FLORIDA THEME PARKS ECONOMIC IMPACT

1. Introduction

Background. According to a 2018 survey, 31 percent of U.S. adults said they would be very interested in going to a theme park in the next 12 months. Lucky for them, some of the biggest amusement park chains worldwide are situated in the United States. Florida-based Walt Disney Attractions, Inc was by far the most visited amusement park chain in 2018 with a total of around 157 million people attending its theme parks. Walt Disney theme parks Disneyland Anaheim and Disney's Animal Kingdom were the second and third most visited amusement parks in North America, respectively.

According to Statista, **Magic Kingdom** theme park at Walt Disney World Resort near Orlando, Florida, was visited by approximately 20.86 million people in 2018, making it the most visited amusement park in North America. **Universal Studios** had 10.71 million guests in 2018. The Universal Parks brand has spread globally, and there is now also a Universal Studios in Japan and Singapore, with plans to build parks in other international locations such as China and Russia. The success of the brand has allowed Universal Studios to become the third largest amusement park chain in the world in terms of attendance, behind Walt Disney Attractions and Merlin Entertainments.

Also, in Orlando is SeaWorld, which beside its wild animal shows boasts four rollercoasters. In nearby Lakeland, LEGOLAND is a favorite of young children who love its rides and other activities celebrating the iconic building blocks. In Tampa, about 75 miles west of Orlando, the popular African-themed Busch Gardens features animal exhibits, live entertainment and plenty of rides.

Walt Disney World, Universal Orlando Resort, SeaWorld Orlando and other attractions, hotels, entertainment, retail, etc., are all part of Orlando's tourism industry. The industry, which includes support operations such as the Orlando International Airport, Port Canaveral and others, are vital to the health of the region. A November 2019 study shared by Visit Orlando and compiled by Oxford Economics shows just how much of a role the industry plays for Central Florida. Tourism is the region's top economic engine and can result in business opportunities for all sectors of Central Florida.

Here are some highlights about Orlando's tourism industry:

- 75 million visitors
- more than $75.2 billion in annual economic impact for Central Florida.
- Each visitor spends on average $1,000 per person, per trip.
- Tourism supports 41% of the region's workforce at more than 463,000 jobs.

Last year, more than $5.8 billion in local and state tax revenue was generated through the tourism industry, which is used by governments to fund operations such as infrastructure projects, public safety, school construction and more. The study shows economic impact from the tourism industry results in more than $73 billion in "business sales impact" for 17 different sectors of the Orlando economy.

For example, tourism generates economic impact for the following industries:

- $11.9 billion in business sales impact to finance, insurance and real estate
- $7.89 billion, food and beverage
- $6.22 billion, business services

- $3.34 billion, education and health care
- $1.44 billion, construction and utilities

Indeed, the tourism industry is the lifeblood of the Orlando economy as many decisions by industry trickle over to business opportunities for other segments of the region. New hotels and attractions can lead to new construction contracts, while theme park expansions lead to land sales and acquisition, which require the assistance of law firms, accountants, surveyors, engineers and more.

Problem This analysis will focus on identifying and classifying venues around Orlando, Florida Theme Parks to determine location for novel potential business ventures that can fill gaps in current marketplace as well as overlay COVID-19 data to map potential effect on Oranges County economy. Later, will follow same methodology for Tampa and Lakeland-Winter Haven areas.

Interest Local governments as well as Regional Economic Councils would very be interested in modeling economic impact post COVID-19 since they rely on revenue generated by these businesses to finance public infrastructure which in turn depend on tourism.

2. Data acquisition

Data sources. We will be using data primarily from the following Sources:

- OpenStreetMaps (OSM) Tourist Attractions spatial data for North America feature layer from ESRI is updated every five minutes. In OSM features are places and things of interest to tourists, including places to see, stay and support tourists. Credits to Steven Moore, Product engineer at ESRI. We will use this data to extract Theme Parks geographical locations as the basis to retrieve Foursquare.
- Using Foursquare API, we will fetch venues data within a mile (1600 meters) of Orlando Theme Parks in all directions
- Florida COVID-19 Cases by Zip Code from the Florida Department of Health GIS Layer. Archived by the University of South Florida Libraries, Digital Heritage and Humanities Collections. As an optional experiment, we will try to create a Heatmap of COVID cases in Florida by Zip code

Data Cleaning:

Data downloaded or scraped from multiple sources were combined into tables in JSON and CSV format.

Data wrangling and cleaning was performed using a combination of GIS software and Pandas procedures.
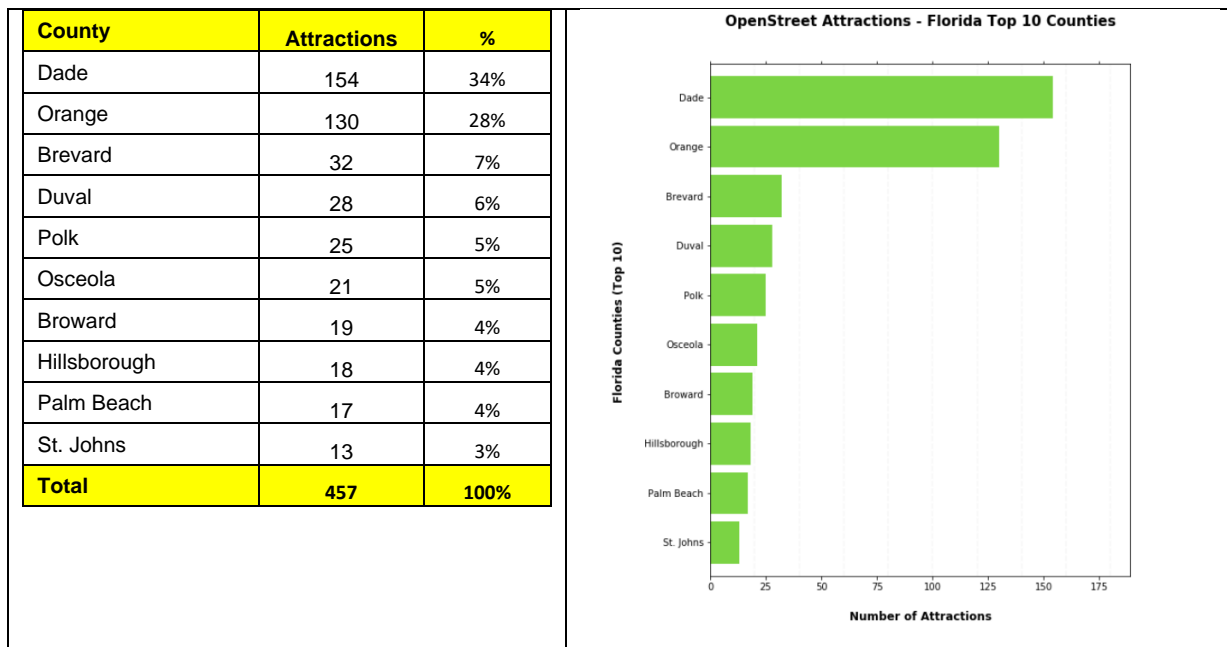
- OSM point data downloaded from ArcGIS.com, filtered to extract Florida features only, geoprocessed with ArcGIS software to add complete City and ZIP code fields, and exported to JSON file format.
- Florida COVID-19 Cases by Zip Code spatial data downloaded from the Florida Department of Health, geoprocessed with ArcGIS software to remove unnecessary fields and exported to CSV file format.

3. Exploratory Data Analysis

Florida's Open Street Tourist Attractions Map
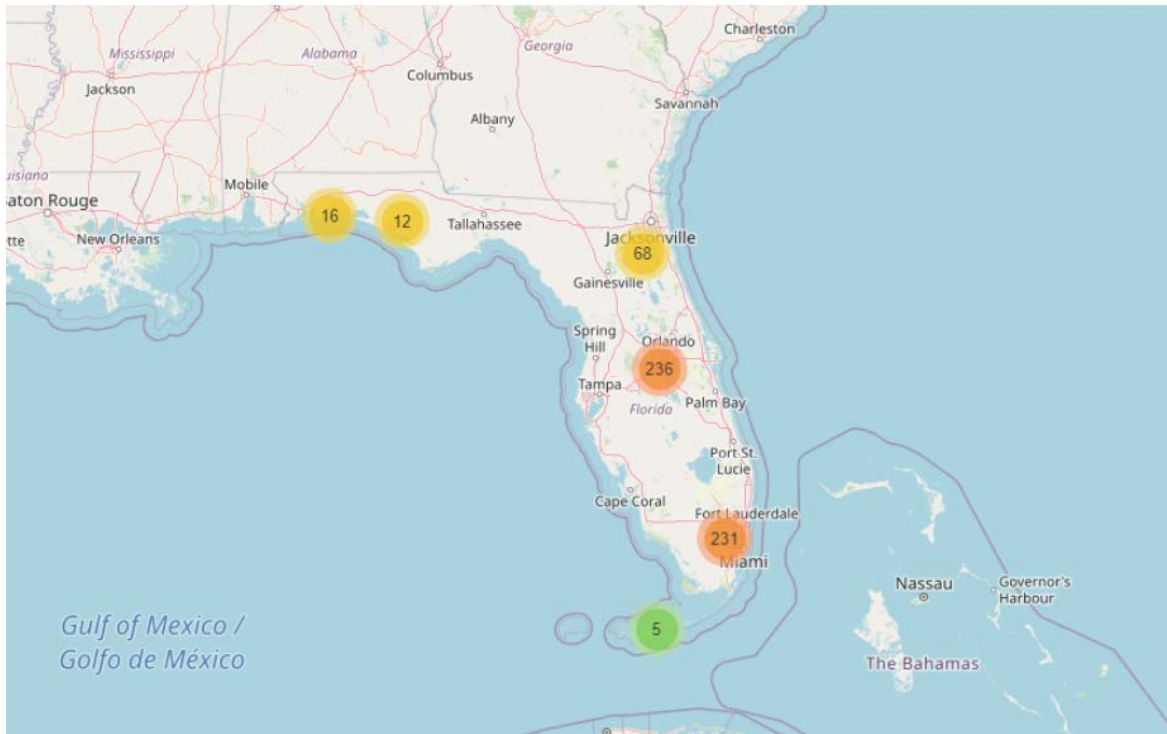
A map of OSM data shows two major concentration of attraction in South and Central Florida with Dade and Orange Counties accounting for 62% of tourist attractions.

County	Attractions	%
Dade	154	34%
Orange	130	28%
Brevard	32	7%
Duval	28	6%
Polk	25	5%
Osceola	21	5%
Broward	19	4%
Hillsborough	18	4%
Palm Beach	17	4%
St. Johns	13	3%
Total	**457**	**100%**

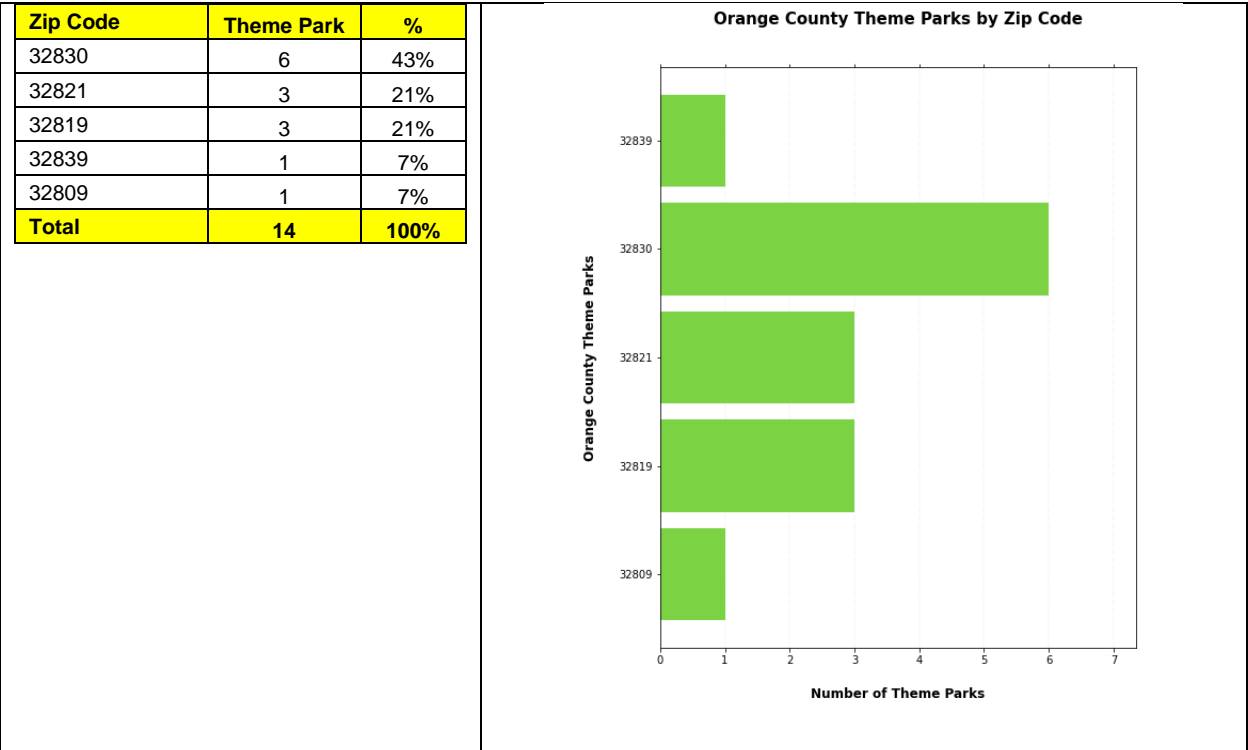## Florida Theme Parks within Orange County (Orlando Area)

Analysis will focus on major Theme Parks in the Orlando (Orange County) area with 14 identified attraction classified as theme_park by OSM data.

Orange County, Florida's Open Street Theme Parks Map
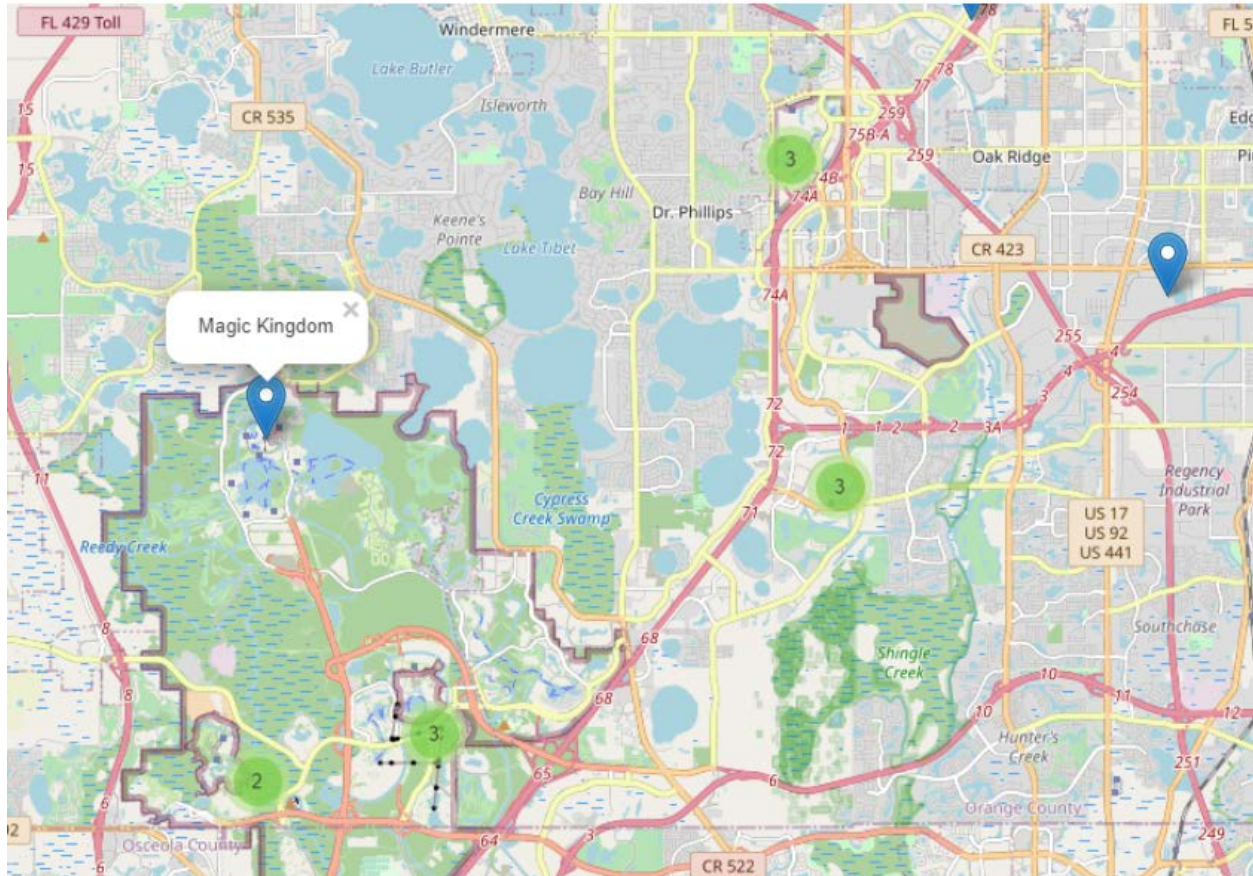
| Attraction	Type	City	ZipCode	County	Latitude	Longitude
The Crayola Experience	theme_park	Orlando	32809	Orange	28.444700	-81.391800
Universal Studios	theme_park	Orlando	32819	Orange	28.478001	-81.468697
Islands of Adventure	theme_park	Orlando	32819	Orange	28.471701	-81.471298
Universal Volcano Bay	theme_park	Orlando	32819	Orange	28.461700	-81.473000
Sea World	theme_park	Orlando	32821	Orange	28.410101	-81.461998
Discovey Cove	theme_park	Orlando	32821	Orange	28.405100	-81.462799
Aquatica Water Park	theme_park	Orlando	32821	Orange	28.415501	-81.456802
Epcot Center	theme_park	Orlando	32830	Orange	28.370100	-81.549599
Typhoon Lagoon	theme_park	Orlando	32830	Orange	28.365299	-81.528801
Magic Kingdom	theme_park	Orlando	32830	Orange	28.418699	-81.581200
Blizzard Beach	theme_park	Orlando	32830	Orange	28.352400	-81.574799
Animal Kingdom	theme_park	Orlando	32830	Orange	28.358999	-81.590698
Hollywood Studios	theme_park	Orlando	32830	Orange	28.358200	-81.558998
The Holy Land Experience	theme_park	Orlando	32839	Orange	28.495899	-81.433197

Florida Theme Parks by Zip Code (Orlando Area)

Zip Code	Theme Park	%
32830	6	43%
32821	3	21%
32819	3	21%
32839	1	7%
32809	1	7%
Total	14	100%

Orange County Theme Parks by Zip Code

ZipCode	Name	City	VenueName	VenueLatitude	VenueLongitude	VenueCategory
32809	The Crayola Experience	50	50	50	50	50
32819	Islands of Adventure	50	50	50	50	50
	Universal Studios	50	50	50	50	50
	Universal Volcano Bay	50	50	50	50	50
32821	Aquatica Water Park	50	50	50	50	50
	Discovey Cove	50	50	50	50	50
	Sea World	50	50	50	50	50
32830	Animal Kingdom	50	50	50	50	50
	Blizzard Beach	50	50	50	50	50
	Epcot Center	50	50	50	50	50
	Hollywood Studios	50	50	50	50	50
	Magic Kingdom	50	50	50	50	50
	Typhoon Lagoon	50	50	50	50	50
32839	The Holy Land Experience	50	50	50	50	50

Using Foursquare API.

The Foursquare API supports real time access to places, Snap-to-Place that assigns users to specific locations, and Geo-tag in JSON format. Using this tool, location, name and categories venues were retrieved for an area around each Theme Park in Orange County and mapped using Python Folium library and simple bar graphs to illustrate summary data results.

Foursquare Venues Retrieved around Theme Parks
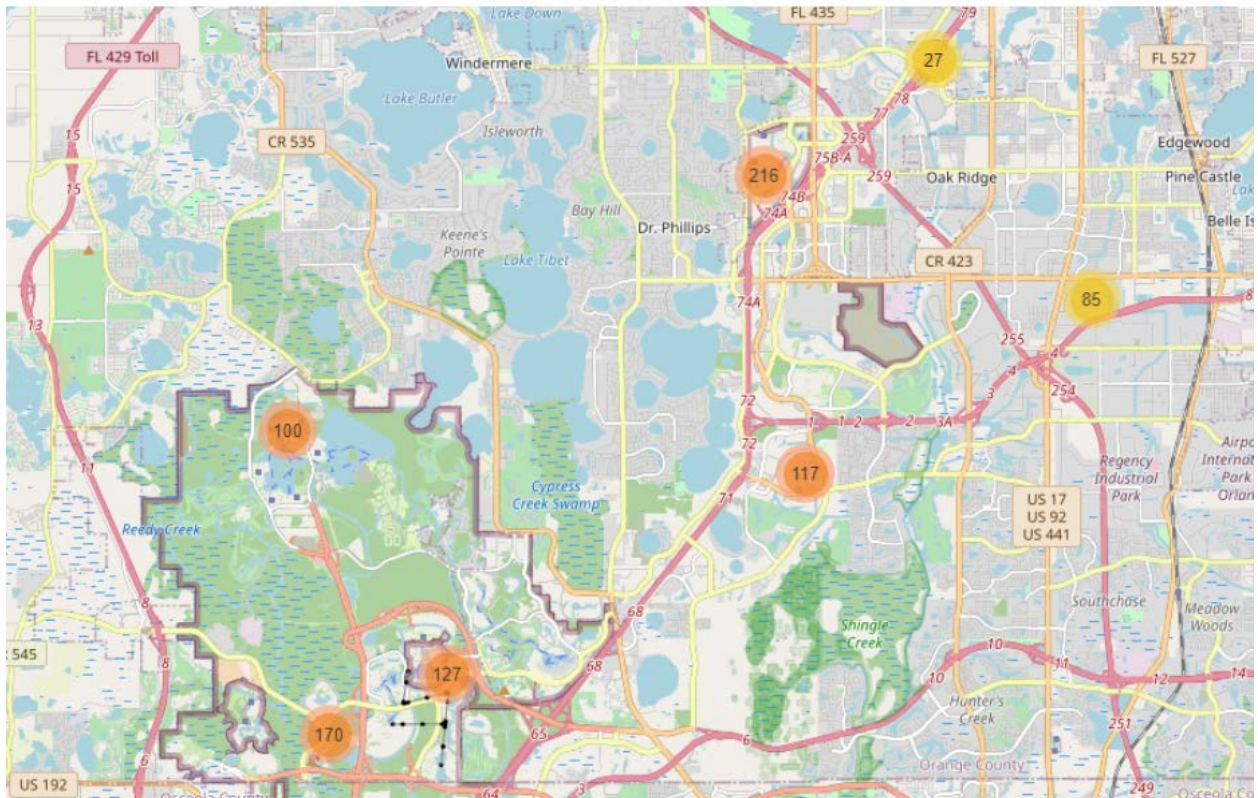
Our analysis identified 121 unique venue categories from Foursquare data.

Here are 50 of them: Cosmetics Shop, Candy Store, Arts & Crafts Store, Accessories Store, Shoe Store, Toy / Game Store, Sporting Goods Shop, Chocolate Shop, Lingerie Store, Department Store, Burger Joint, Snack Place, Electronics Store, Clothing Store, Shopping Mall, Coffee Shop, Italian Restaurant, Spa, "Men's Store", BBQ Joint, Bakery, Ice Cream Shop, Brazilian Restaurant, American Restaurant, Seafood Restaurant, Sandwich Place, Big Box Store, Furniture / Home Store, Theme Park, Theme Park Ride / Attraction, Gift Shop, Pub, English Restaurant, Tourist Information Center, Performing Arts Venue, Science Museum, Theme Restaurant, Music Venue, Lighthouse, Playground, Hotel, Fountain, Donut Shop, Souvenir Shop, Water Park, Beach, Resort, Middle Eastern Restaurant, Hotel Bar, Ethiopian Restaurant. Quite the variety, it will make our tasks of finding a niche to come up with a business idea none thought of yet.

First *Most Common Venue* is mostly composed of theme parks. As expected, gift shops and restaurants are some of the most common venues categories across the different theme parks.

Here is table with all theme parks and its most common venues around them.

Attraction	PostCode	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
Animal Kingdom	32830	African Restaurant	Cocktail Bar	Resort
Aquatica Water Park	32821	Aquarium	Stadium	American Restaurant
Blizzard Beach	32830	Hotel	Gift Shop	Resort
Discovey Cove	32821	Aquarium	Theme Park	Stadium
Epcot Center	32830	Resort	Gift Shop	Ice Cream Shop
Hollywood Studios	32830	Gift Shop	Theme Restaurant	Lounge
Islands of Adventure	32819	Theme Park	Hotel	American Restaurant
Magic Kingdom	32830	Gift Shop	Train Station	Ice Cream Shop
Sea World	32821	Aquarium	Theme Park	Hotel
The Crayola Experience	32809	Clothing Store	Cosmetics Shop	Accessories Store
The Holy Land Experience	32839	Clothing Store	Italian Restaurant	American Restaurant
Typhoon Lagoon	32830	Clothing Store	Steakhouse	Theme Park Ride / Attraction
Universal Volcano Bay	32819	Hotel	Theme Park	Brazilian Restaurant

Attraction	PostCode	5th Most Common Venue	6th Most Common	7th Most Common Venue
Animal Kingdom	32830	Café	Theme Park	Theater
Aquatica Water Park	32821	Hotel	Theme Park	Gift Shop
Blizzard Beach	32830	Theme Restaurant	Lounge	Mini Golf
Discovey Cove	32821	Hotel	Gift Shop	Pharmacy
Epcot Center	32830	Music Venue	Steakhouse	Pub
Hollywood Studios	32830	Theme Park	Jewelry Store	Mini Golf
Islands of Adventure	32819	Playground	Gift Shop	Donut Shop
Magic Kingdom	32830	American Restaurant	French Restaurant	Fountain
Sea World	32821	Stadium	Gift Shop	American Restaurant
The Crayola Experience	32809	Bakery	Department Store	Electronics Store
The Holy Land Experience	32839	Warehouse Store	Fast Food Restaurant	Sporting Goods Shop
Typhoon Lagoon	32830	American Restaurant	Art Gallery	Gift Shop
Universal Volcano Bay	32819	Gift Shop	Water Park	Ice Cream Shop

Attraction	PostCode	8th Most Common	9th Most Common	10th Most Common Venue
Animal Kingdom	32830	Indian Restaurant	Lounge	Other Great Outdoors
Aquatica Water Park	32821	Water Park	Steakhouse	Exhibit
Blizzard Beach	32830	Restaurant	Souvenir Shop	Beer Bar
Discovey Cove	32821	Pizza Place	Exhibit	Seafood Restaurant
Epcot Center	32830	German Restaurant	Cocktail Bar	Pedestrian Plaza
Hollywood Studios	32830	Restaurant	Sandwich Place	Snack Place
Islands of Adventure	32819	English Restaurant	Music Venue	Candy Store
Magic Kingdom	32830	Coffee Shop	Candy Store	Snack Place
Sea World	32821	Water Park	Exhibit	Pharmacy
The Crayola Experience	32809	Sporting Goods Shop	Burger Joint	Lingerie Store
The Holy Land Experience	32839	Sports Bar	Electronics Store	Coffee Shop
Typhoon Lagoon	32830	Hotel	Resort	Cocktail B

4. Predictive Modeling.

Clustering (K-Mean) Classification algorithm was implemented to partition Foursquare dataset into five (5) distinct non-overlapping subgroups or clusters where each point belongs only one group (Theme Park).

Visualize Resulting Foursquare Clusters
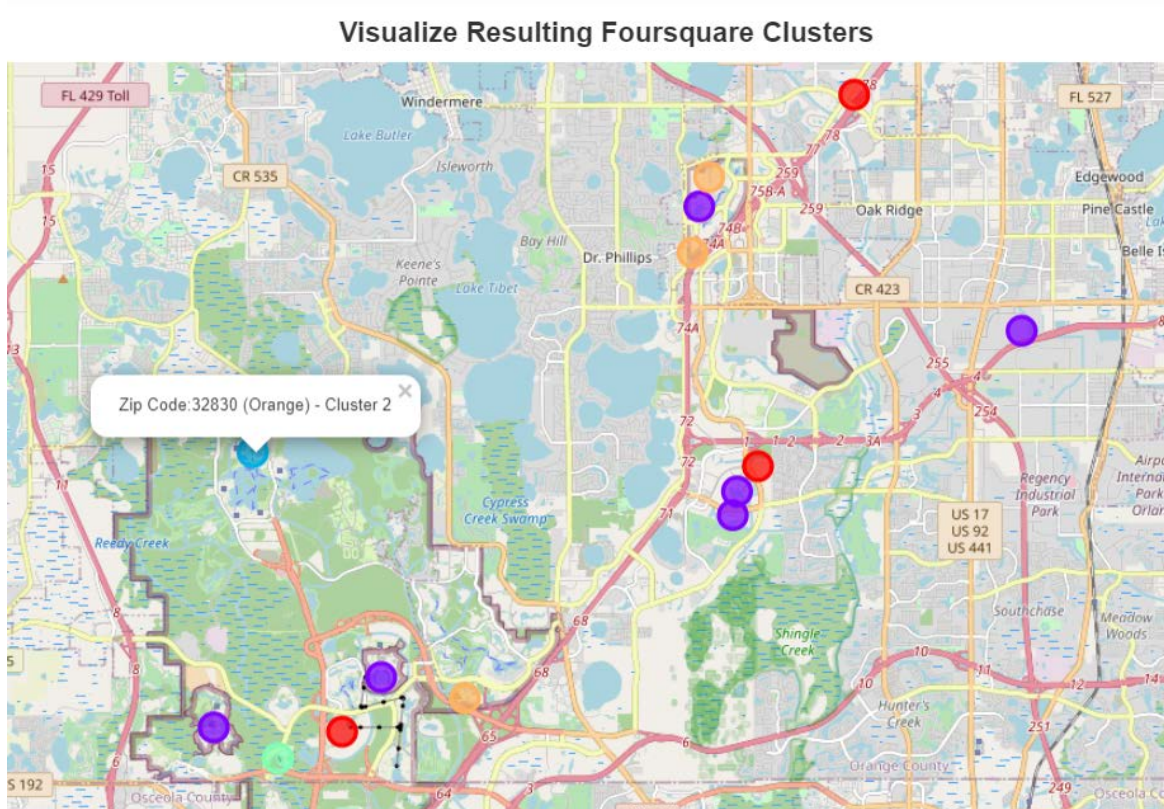
Cluster 2 – Groups most of the theme parks venues with gift shops, restaurants and clothes and shoes stores being the main categories. One common feature of clustered parks is that their main attractions – except for Epcot Center – offer more water related activities for children and are more family oriented.

Name	Latitude	Longitude	Cluster Labels	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
The Crayola Experience	28.444700	-81.391800	1	Clothing Store	Accessories Store	Shoe Store	Cosmetics Shop	Toy / Game Store	Department Store	Kids Store	Sandwich Place	Ice Cream Shop	Lingerie Store
Islands of Adventure	28.471701	-81.471298	1	Theme Park Ride / Attraction	Gift Shop	Theme Park	American Restaurant	Performing Arts Venue	Candy Store	Bar	Playground	Trail	Greek Restaurant
Sea World	28.410101	-81.461998	1	Theme Park Ride / Attraction	Aquarium	Gift Shop	Exhibit	Theme Park	American Restaurant	Stadium	Theater	Zoo	BBQ Joint
Discovey Cove	28.405100	-81.462799	1	Theme Park Ride / Attraction	Water Park	Theme Park	Exhibit	Stadium	Café	General Entertainment	Building	Diner	Market
Epcot Center	28.370100	-81.549599	1	Theme Park Ride / Attraction	Gift Shop	Food Stand	Souvenir Shop	Wine Shop	Mexican Restaurant	Cocktail Bar	Snack Place	Ice Cream Shop	Italian Restaurant
Animal Kingdom	28.358999	-81.590698	1	Theme Park Ride / Attraction	Gift Shop	African Restaurant	Cocktail Bar	Theater	Coffee Shop	Theme Park	Asian Restaurant	Lounge	Snack Place

5. **Conclusions:**   Orange county – and central Florida in general– relies and benefits from the millions of tourist the area attracts every year seeking to enjoy the thrill of the rides, the photo opportunities with characters that kids and adults watch in famous movies and TV shows, dream to be a princess, a king, a magician, etc. There is an overabundance of gift shops, restaurants and clothes and shoes stores. There may be an opportunity to start small coffee, snacks and ice cream shops which -according to the Foursquare data retrieved and analyzed - have a less prominent place among the top 10 most common venues categories.

6. **Future directions.** In order to validate these conclusions, a more detailed study will be required since some of the suggested categories are not stored independently but as part of theme parks venue category.