

Georgia and Florida Reopening Among COVID-19 Concerns

Introduction/Business Problem

There are cities like Jacksonville reopening beaches while Georgia is planning to reopen several businesses starting April 24th. Is this a good time to consider reopening with the risk to public health from COVID-19 or will there be too much economic damage if not? In order to answer the questions, I will take a look at county health population information and business information (leveraging Foursquare API) in Jacksonville, Florida and compare to Savannah, Georgia since they are large cities located in the neighboring states. I will also look at additional information for death rates and hospital capacities that the governors of Georgia and Florida should take into consideration before opening their states among COVID-19

Data

I. Neighborhood Locations

I will be using <http://www.city-data.com> to get neighborhoods and geographical locations.

II. Foursquare Location API

I will explore business information such as number and type of businesses to see the type of impact closing the cities will have. I also want to see if there are nearby clinics, hospitals, and/or pharmacies to learn about capacity for handling rise in cases for decision in reopening.

III. County Health Rankings

I will be using county health rankings to get details about the population using information such as:

- Quality of Life
- Health Behaviors
- Clinical Care
- Social & Economic Factors

IV. Death Rates by Age

I will be using <https://www.worldometers.info/coronavirus/coronavirus-age-sex-demographics/> to get death rates by age.

V. Hospital Capacities

I will be using <https://coronavirus.jhu.edu/us-map> to get deaths, confirmed cases, and hospital capacity by county.

Methodology

I. Get neighborhood locations

Get geographical locations by creating a function(ref: jupyter notebook) to web scrape <http://www.city-data.com> for neighborhoods in Jacksonville and Georgia. For example, city-data.com lists Avalon as a neighborhood for Savannah and I entered Avalon, Savannah to get latitude and longitude from geolocator.

II. Access Foursquare API

After obtaining coordinates from geolocator, I used functions to get frequency and most common venues in Savannah and Jacksonville by neighborhood. I used this information to get the top 10 venues and explore the type of businesses being impacted.

III. Additional Data References

I pulled health county rankings from <https://www.countyhealthrankings.org> to get information such as demographics and behavioral factors(i.e. obesity, smoking rates) to give some background information about the population especially the high-risk population for COVID-19. I wanted to identify the high-risk population by age group from <https://www.worldometers.info> and review hospital capacity from <https://coronavirus.jhu.edu/us-map> to put in perspective the risks each city is taking if there is another outbreak.

Results

Table 1. Savannah Venues

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
Avalon	Mobile Phone Shop	Pizza Place	Chinese Restaurant	Sandwich Place	Mexican Restaurant	Restaurant	Big Box Store	Breakfast Spot	Fast Food Restaurant	Hardware Store
Avondale	Park	Sporting Goods Shop	General Travel	Convenience Store	Historic Site	Seafood Restaurant	Skating Rink	Fast Food Restaurant	Food	Liquor Store
Baldwin Park	Gas Station	Park	Intersection	Playground	American Restaurant	Southern / Soul Food Restaurant	Salon / Barbershop	Sporting Goods Shop	Liquor Store	Lounge
Bartow	Pet Store	Park	Discount Store	Food	Business Service	Seafood Restaurant	Chinese Restaurant	Grocery Store	Mobile Phone Shop	American Restaurant
Bayview	Garden	Kids Store	Drive-in Theater	Women's Store	Donut Shop	Food & Drink Shop	Food	Flower Shop	Fish Market	Fast Food Restaurant
Beach Institute	Plaza	Bed & Breakfast	Park	Southern / Soul Food Restaurant	Hotel	Italian Restaurant	Dive Bar	Bakery	Tea Room	BBQ Joint
Berkshire Woods	Park	Home Service	Photography Studio	Coffee Shop	Donut Shop	Food	Flower Shop	Fish Market	Fast Food Restaurant	Farmers Market
Bingville	Convenience Store	Park	Discount Store	Wings Joint	Grocery Store	General Entertainment	Fast Food Restaurant	Mexican Restaurant	Electronics Store	Bar
Blueberry Hill	Farm	Women's Store	Wings Joint	Food Truck	Food & Drink Shop	Food	Flower Shop	Fish Market	Fast Food Restaurant	Farmers Market
Brookview	Chinese Restaurant	Intersection	Construction & Landscaping	Food	Furniture / Home Store	Golf Course	Food & Drink Shop	Thrift / Vintage Store	Southern / Soul Food Restaurant	Electronics Store
East Savannah	Pizza Place	Discount Store	Grocery Store	Ice Cream Shop	Supermarket	Sandwich Place	BBQ Joint	Construction & Landscaping	Department Store	Drive-in Theater
Southover	Brewery	Discount Store	Vegetarian / Vegan Restaurant	Bakery	Women's Store	Electronics Store	Food & Drink Shop	Food	Flower Shop	Fish Market

In East Savannah, pizza places (18%) and discount stores (18%) account for 36% of venues. In Southover, Savannah bakeries (25%), breweries (25%), and discount stores (25%) account for 75% of venues. For full table results refer to jupyter notebook.

Table 2. Jacksonville Venues

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
Arlington	Video Store	Restaurant	ATM	Italian Restaurant	Mexican Restaurant	Shopping Mall	Seafood Restaurant	Sandwich Place	Fried Chicken Joint	Bookstore
Avondale	Park	Pizza Place	Convenience Store	Gaming Cafe	Plaza	Deli / Bodega	New American Restaurant	Coffee Shop	Chinese Restaurant	Smoke Shop
Belfort Station	Hotel	Sandwich Place	Automotive Shop	Cocktail Bar	Chinese Restaurant	Food Truck	Gas Station	Japanese Restaurant	Italian Restaurant	Mexican Restaurant
Brooklyn	Café	Park	Deli / Bodega	Gym / Fitness Center	Gym	Smoothie Shop	Sandwich Place	Concert Hall	Plaza	Playground
Church District	Grocery Store	Pizza Place	Japanese Restaurant	Intersection	Spa	Shopping Mall	Pharmacy	Liquor Store	Shipping Store	Sandwich Place
Downtown	Bakery	History Museum	Truck Stop	Gas Station	Bar	Italian Restaurant	Greek Restaurant	Rest Area	American Restaurant	Dive Bar
East Jacksonville	Fast Food Restaurant	Video Store	Light Rail Station	Train Station	Sandwich Place	Bakery	Zoo	Event Service	Flea Market	Farmers Market
Empire Point	Chiropractor	Lawyer	American Restaurant	Rental Car Location	Gas Station	Baseball Field	Donut Shop	Flea Market	Fast Food Restaurant	Farmers Market
Mandarin	Event Service	Pet Store	Business Service	Farmers Market	Park	Food Truck	Flea Market	Fast Food Restaurant	Exhibit	Zoo
North Jacksonville	Fast Food Restaurant	Video Store	Light Rail Station	Train Station	Sandwich Place	Bakery	Zoo	Event Service	Flea Market	Farmers Market

In North Jacksonville and East Jacksonville, fast food restaurants account for about 38% of venues. For full table results refer to jupyter notebook.

Table 3. County Health Rankings

	Duval (DU), FL	Chatham (CA), GA
Demographics		
Population	950,181	289,195
% below 18 years of age	22.60%	21.20%
% 65 and older	14.00%	15.40%
Health Behaviors		
Adult smoking	20%	17%
Adult obesity	31%	32%
Food environment index	6.6	6.9
Physical inactivity	26%	26%
Access to exercise opportunities	92%	90%

Ref: https://www.countyhealthrankings.org/app/georgia/2020/compare/snapshot?counties=12_031%2013_051

Table 4. Death by Age New York

AGE	Number of Deaths	Share of deaths	With underlying conditions	Without underlying conditions	Unknown if with underlying cond.	Share of deaths of unknown + w/o cond.
0 - 17 years old	9	0.06%	6	3	0	0.02%
18 - 44 years old	601	3.90%	476	17	108	0.80%
45 - 64 years old	3,413	22.40%	2,851	72	490	3.70%
65 - 74 years old	3,788	24.90%	2,801	5	982	6.50%
75+ years old	7,419	48.70%	5,236	2	2,181	14.30%
TOTAL	15,230	100%	11,370 (75%)	99 (0.7%)	1,551 (24.7%)	25.30%

Ref: <https://www.worldometers.info/coronavirus/coronavirus-age-sex-demographics/>

Table 5. Capacity and Fatality Rates

Description	Duval	Chatham	Queens
Number of Beds	3,456	1,569	3,210
Cases per 100,000	128	119	2,521
Confirmed Cases	1,215	344	57,459
Deaths	32	14	4,595
Fatality Rate	2.60%	4%	8%

Ref: <https://bao.arcgis.com/covid-19/jhu/county/13051.html> Figures 1-3

Discussion

Based on venues in Savannah (Table 1) and Jacksonville (Table 2) there are many businesses/venues that will be significantly impacted by economic shutdown. In North Jacksonville and East Jacksonville, fast food restaurants account for about 38% of venues. In East Savannah, pizza places (18%) and discount stores (18%) account for 36% of venues while in Southover, Savannah bakeries (25%), breweries (25%), and discount stores (25%) account for 75% of venues. With so many businesses impacted will reopening be risky? If we take a look at county health rankings (Table 3), only 14-15% of the population is 65 and over indicating a small high-risk population (Table 4) with about 75% of deaths occurring in people 65+. Additionally, access to exercise opportunities are about 90% indicating the ability for most of the population to engage in immune and health boosting activities which is important to improve the obesity rate at 31%. However, we do need to factor in smoking at 20% which increases the risk for complications for Coronavirus. Is there medical capacity for handling increase in cases? According to Johns Hopkins University, capacity and fatality rates (Table 5), Duval and Chatham counties fall well below the averages of Queens, New York. Although New York was initial site, at this point Jacksonville and Savannah have relatively low numbers of infections with a significant number of beds available.

Conclusion

The governors of Jacksonville and Savannah should consider the pros and cons of opening up too soon. As Table 5 indicates, the rate of infections and fatalities are relatively low especially for Duval county of Jacksonville. Chatham county has a higher rate but still half of Queens, New York which is the epicenter of the virus. With a population of about 300K, Chatham may fare better than other counties because of the relatively small population and vulnerable population at approximately 15% (65+). Governors have considered opening places at 25% capacity, but many businesses cannot be profitable at such low capacity. Another suggestion is perhaps sustaining stay-at-home orders for vulnerable populations. Businesses like gyms may significantly lower the risks by permitting those under 65 at full capacity with significant cleaning measures. For schools, the most vulnerable populations continue to work online while the least can go back to the classroom. Allow the least vulnerable populations get back to work and subsidize the ones that need to stay at home.

APPENDIX

Figure 1

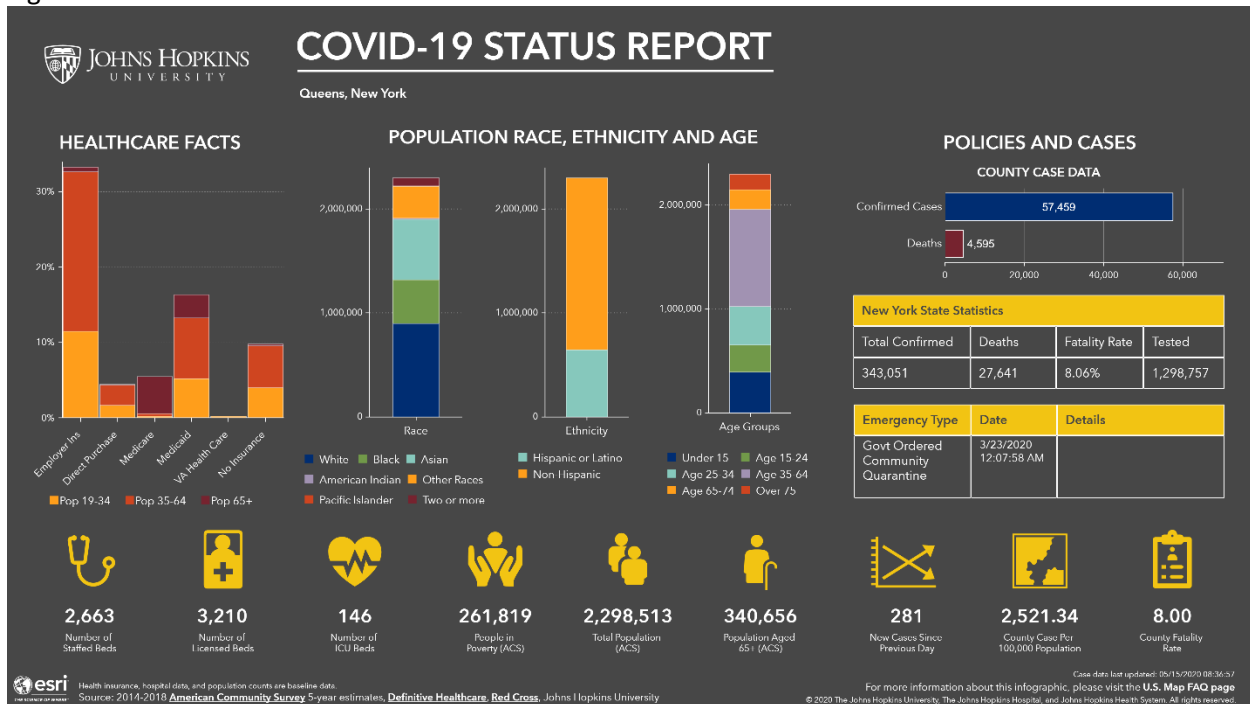


Figure 2

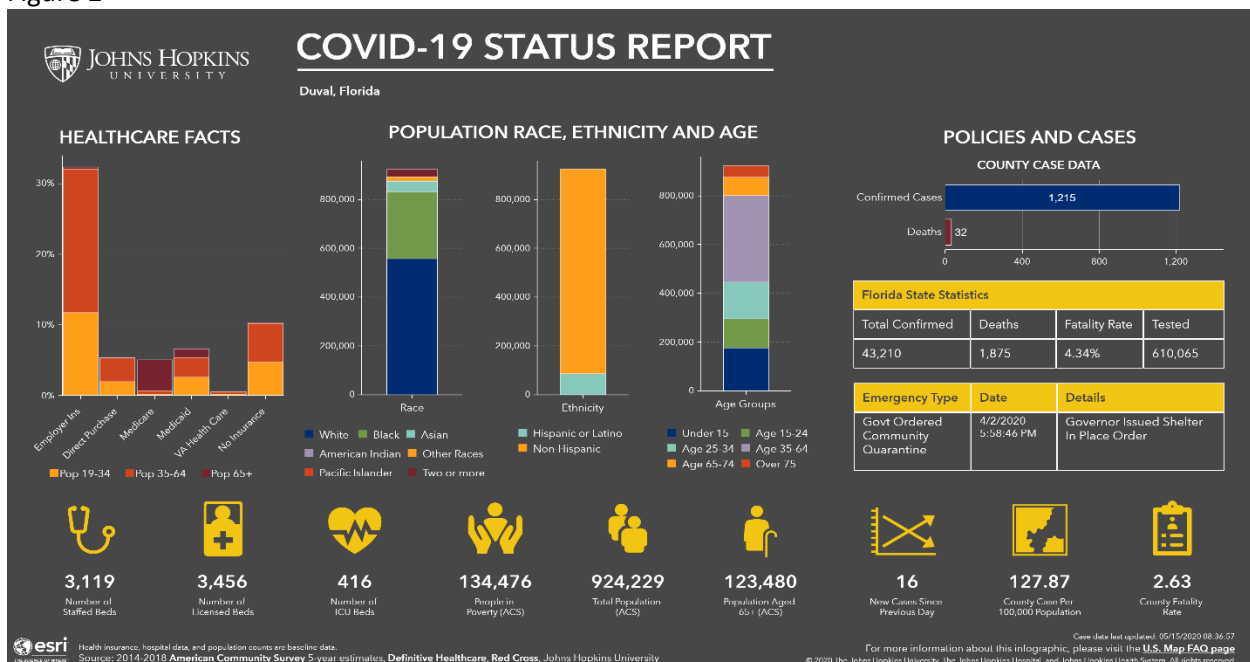
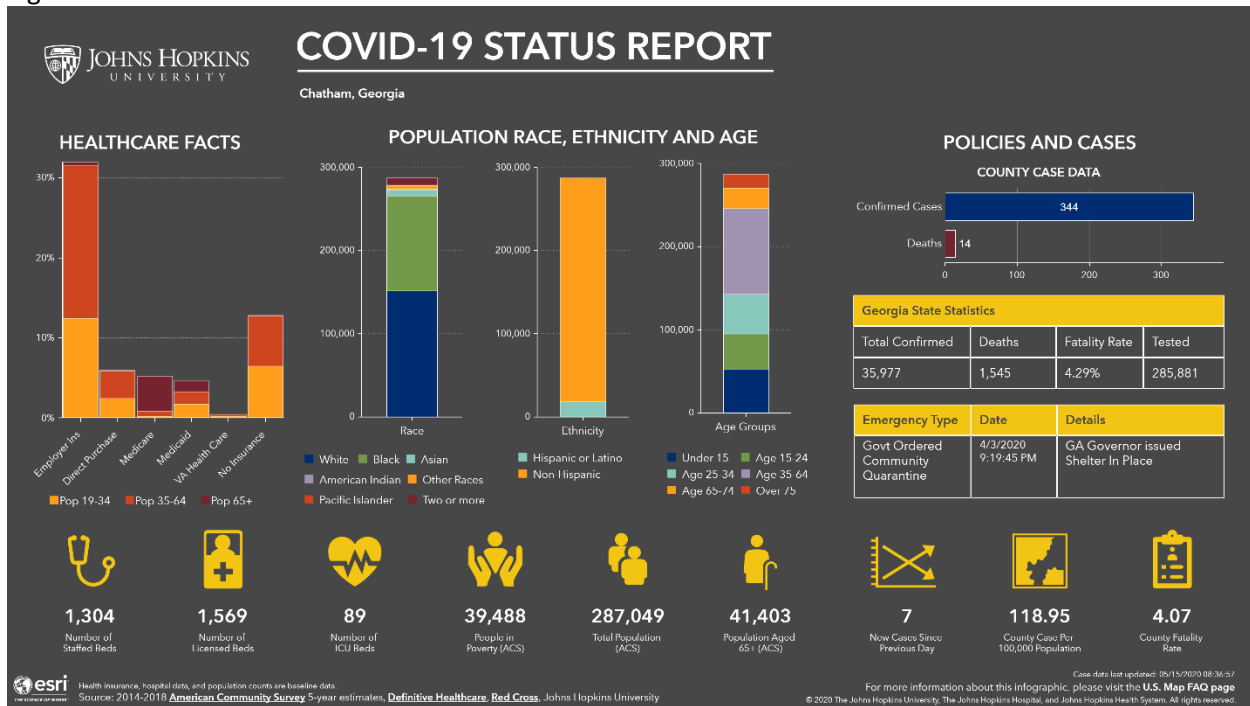


Figure 3



Jupyter Notebook:

https://nbviewer.jupyter.org/github/mannykav/Coursera_Capstone/blob/master/Capstone%20Final%20Project%20IBM%20Data%20Science.ipynb