**Impact of COVID-19 Restrictions on Hawaii Tourism: Working Notes**

Audience:

* Hawaii State Government
  + Quick decisions had to be made as COVID started to spread. How did those decisions impact Hawaii tourism $ coming into Hawaii and taxes going to the State?
  + Now that we are 18+ months in, can we learn anything from the data that might impact decision on how/when to completely re-open the islands
  + Governor Ige stated on xx/xx/xx that all travel restrictions and the Hawaii Safe Travels Program would cease as soon as the state reached a 70% vaccination rate
    - On xx/xx/xx, this decision was reversed in light of impact from the Delta Variant
    - At this point, there is no measure by which we can know when Hawaii will fully re-open and drop travel restrictions
  + In looking at the data in hindsight, can we determine which measures helped the most in terms of reducing COVID transmission and the cost of those measures. Were there any measures that ‘went too far’ in the sense that the cost endured was not justified by the risk.
* Residents of Hawaii
  + Hawaii has always been a place where people join together for the common good. This is one of the reasons that Hawaii has been able to achieve such a high vaccination rate (over 70%) at this time. But, also, pressure to achieve this rate so that Hawaii’s economy can get back to normal.
  + Hawaii residents desperately want their economy to get back to normal. In the wake of high unemployment rates and dramatic decline in income to the state, a lot of residents are left wondering if Hawaii went too far w/it’s restrictions that impacted Tourism.
  + Many residents of Hawaii are also investors in Hawaii’s Tourism or have a financial interest in Tourism… especially the elderly who rely on income from short-term rental properties to pay for assisted living, nursing home care, and medical bills.
  + Many residents of Hawaii also have regular need to travel to and from the mainland… for business and family. It’s important to realize that travel restrictions also impacted this segment significantly… even though leaving the islands was not a problem, they would have to abide by the same entry requirements as tourists… and maybe even for better reason since returning residents might cause even more risk upon return than a tourist… more integrated into the community upon return.
* Travelers to Hawaii
  + There’s no doubt that many people love to travel to Hawaii and had to alter their plans around COVID. Generally-speaking, though, this is a minor inconvenience in the scope of things.
  + The travelers to Hawaii that were impacted the most are former residents w/family on the islands. No other state has made it virtually impossible to visit and for so long. For those of us w/aging parents in Hawaii, we were constantly reading the proclamations to figure out when/if we could ever come to visit our family.

Objectives:

* This study aims to shed light on both the positive and negative impacts resulting from the COVID restrictions that were put in place that effect Travelers and Hawaii Tourism.
* This study can **NOT** conclusively answer the question… did Hawaii go too Far?... because it’s impossible to put a price on human life. But, it can hopefully show us which measures were more effective than other measures (had a better cost/benefit balance).
* One question we may want to also consider is… in light of the cost to Hawaii’s Economy, would it have made better financial sense to increase hospital capacity and staffing in lieu of stricter travel restrictions… given that the tourism $ lost was so incredibly high.
* Depending on EDA, we might want to explore further as to whether or not too much focus was put on traveler restriction monitoring/compliance vs community restriction monitoring/compliance. One could argue that Hawaii’s history creates an underlying ‘fear of the traveler’ in some respect… a knee jerk response to tragedies in Hawaii’s past that were due to outsiders. In reality, was the biggest threat of COVID to Hawaii actually the community culture/traditions of Hawaii (multi-gen housing, large family gatherings, ride-sharing, social norms)… things that are more difficult to change from within… creating a tendency to want to control what’s coming from the outside instead.
  + Multi-gen housing is a big one… need to look up stats again, but I believe Hawaii is #1 across the US in percentage of multi-gen homes. This highlights just one cultural difference between Hawaii and the rest of the US. Even though, ethnically, this comes mostly from Pacific Islanders and Filipinos, I can tell you that, culturally, immersed in a community that puts a high value on taking care of extended family, all ethnicities will tend towards that norm. Growing up, my family built an addition on to our home so that my grandfather could come live with us. It was considered honorable and expected. On the mainland US, multi-gen is often looked down upon… the adult child is often thought of as ‘less than’ for being tied to the parent. Whereas, in Hawaii, the adult child who is in a multi-gen household is looked upon with higher respect and honor for being the responsible child who takes care of their parent(s). This bleeds throughout the culture of Hawaii.
  + Also, traditionally, in Hawaii, large social gatherings hold a higher significance. It’s expected to ‘show face’ for a multitude of events… and, to not, can be considered shameful. If you didn’t show up at your uncle’s funeral or your cousin’s wedding, you would be judged badly for that. If you travel far to be there, you are held in higher esteem. In a way, there is a constant pressure to prove your dedication to your family and friends in a public way by ‘showing face’. If you don’t ‘show face’, you can be assured that it’s talked about in a negative way. It’s also expected that you host large gatherings for certain occasions and be inclusive on invitations… not just in families, but also for work gatherings.
  + Talk-Story Culture

Presentation… Things to mention in no particular order:

* The reality of Quarantine in Hawaii… taken very seriously… one use key cards ensuring that visitors cannot leave their hotel room for the duration of quarantine. $5000 and up to 1 yr in jail for violation of quarantine and other COVID restrictions. Active monitoring w/host financial/legal responsibility.
* The importance of Tourism to Hawaii’s Economy… Tourism is THE business of Hawaii. This study is not about Public Policy or Politics. It is about **how the business of Tourism was managed by Hawaii during COVID19**.

Data:

The primary sources of data to be used for this study are as follows:

* Hawaii COVID Rules Table
  + The most labor intensive part of this project is to review all COVID-related State Proclamations and manually extract out those parts that impact Tourism in order to create a data table with timeline as to when each rule went into effect and, if lifted, when it was lifted.
  + This is the table that will be used to ‘overlay’ the timing of various restrictions w/visitor data and covid data to determine how much impact we can see from the restrictions over time.
* Visitor Data
  + Extracted from the Hawaii Tourism Data Warehouse
  + Disclaimers in Dowload:
    - Data is updated monthly by the Research & Economic Analysis Division, State of Hawaii Department of Business, Economic Development and Tourism (DBEDT)
    - Source of Data: Hawaii Tourism Authority
    - Seasonally adjusted series are from DBEDT
    - Hotel performance data prior to March 2017 are from Hospitality Advisors, LLC.
* COVID Data
  + Categorizes daily reported COVID cases into one of 3 categories:
    - Community
    - Travel-Related (Resident)
      * Limited to travel into and out of the State… not Inter-Island… as I had initially assumed
      * I have now added data documentation (including data definitions) to the Data Folder
    - Travel-Related (Non-Resident)
      * Preliminary EDA shows that Hawaii increased restrictions on Tourism even when Travel-Related(Non-Resident) cases were already extremely low at 1% and not rising.
        + Actually, Non-Residents and Residents need to be clumped together for this
        + One thing that did not occur to me before is that the restrictions for entry to Hawaii are also for returning residents… who are probably a much bigger threat to spreading COVID than other travelers into Hawaii
      * Limited to travel into and out of the State… not Inter-Island

Potential secondary sources of data… to augment or discuss next steps:

* Hawaii COVID Cluster Reports
* Hawaii COVID by Ehnicity and Proportion of Population Statistics

Technologies Used:

* EDA in R
* Graphs… Python or R?
  + Python Gantt Charts for presentation timeline using plotly.express
    - <https://plotly.com/python/gantt/#:~:text=Plotly%20Express%20is%20the%20easy-to-use%2C%20high-level%20interface%20to,it%20can%20be%20configured%20like%20any%20time-series%20chart>.
    - This looks a lot more simple than what I’ve started in R… definitely want to do some work in parallel in Python
    - This definitely allows for multiple segments assigned to one category which is needed to simplify the visual
  + Gantt charts in in R using plotly
    - <https://plotly.com/r/gantt/>
    - This also looks good, but I’m not seeing an example of multiple bars (segments) assigned to one category and this is what we need to simplify the visual for this
  + Need to figure out how I will overlay timelines… will be gantt over line or bar
* Check to see if it’s important to show use of both R and Python for this project… I like R better for EDA, but look for opportunities where Python is a better choice

Skills to Showcase:

* Ability to weed through multiple potential data sources to find the best fit for project
* Smart decision making in what data to focus on and present
  + For example, understanding that seasonally adjusted data is most appropriate for clear/unbiased interpretability of the graphs
* Extracting non-tabular data into table format (manually)
  + Basically, creating a data resource that didn’t exist before in order to be able to use it in data analysis
  + Clearly explaining the construction of this data… parameters for inclusion/exclusion, etc.
  + Database design skills
* Data Cleanup
  + Extra steps to ensure data is actually duplicate before removing columns, for example – shows proper care for data integrity
  + Changing labels for counties to islands makes reading graphs easier for audience
* Data Imputation
  + Missing Expenditure data will need to be imputed very carefully/thoughtfully so that it will not be interpreted as biased
* Statistical Analysis
  + Between Number of Passengers entering Hawaii and COVID Cases Related to Travel into the State
  + ? Monetary Impact… tax revenue, etc.
  + ? Unemployment Impact
* Ability to present data that relates to politics in a non-partisan way

Analysis: