Proposal. The project proposal shall be 2 pages in length and include:

* A brief introduction, a high-level description of the system/problem you will work on.
* A summary of three key journal papers relevant to your work.
* A problem formulation.
* A statement of objectives, proposed methodology, and the evaluation measure for the performance of the proposed methodology.
* A conceptual/high-level description includes assumptions, what aspects will be considered in your model/approach, and a study logic.

CUNY SPS

DATA698: Master’s Research Project

Professor: Dr Paul Bailo

Student: Michael O’Donnell

9/19/20

**Project: The Effects of COVID19 on Americans’ Behavior shown by Podcast Data**

***Introduction***

The Coronavirus disease 2019 (COVID-19) was declared a global pandemic by the World Health Organization on March 11th, 2020 ([source1](https://www.who.int/news-room/detail/08-04-2020-who-timeline---covid-19)). As a response, the United States declared a national emergency on March 13th, 2020 to slow the spread of COVID-19. The national emergency implications were school closures, nonessential businesses closures, cancellation or large public gatherings such as sporting and entertainment events ([source2](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30743-1/fulltext#seccestitle10)), travel restrictions, quarantines for travelers, and stay-at-home orders implemented by governors and mayors ([source3](https://jamanetwork.com/journals/jama/article-abstract/2764283)).

Due to the global pandemic and US national emergency, the behavior and attitude of US public changed. Surveys from May 5-12, 2020 showed US citizens avoided groups of 10 or more persons and agreed with rules that prohibited dining inside ([source4](https://www.cdc.gov/mmwr/volumes/69/wr/mm6924e1.htm?s_cid=mm6924e1_w#T1_down)). Another study showed behavior change through a drastic decrease in US population movement during March, April and May, 2020 ([source5](https://www.cdc.gov/mmwr/volumes/69/wr/mm6935a2.htm?s_cid=mm6935a2_w)). All of this change led to the US public embracing a “new normal” ([source6](https://www.mdpi.com/1660-4601/17/12/4484/htm))

From research articles, we know that the “new normal” in the US includes changes in exercise ([source7](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7358585/)), increases in working from home ([source8](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3568830)), and more Netflix subscriptions ([source9](https://www.researchgate.net/publication/343445075_NETFLIX_FROM_APOLLO_13_TO_THE_CORONAVIRUS_PANDEMIC)). But how can we find greater detail about the changes in American behavior?

From previous research, we’ve learned that podcasts are built upon interest by a population ([source10](https://krex.k-state.edu/dspace/handle/2097/761)) and are sustained by a listener community ([source11](https://www.tandfonline.com/doi/full/10.1080/19376529.2014.891211?scroll=top&needAccess=true&)). With this evidence, changes in podcast data can since the onset of COVID-19 in the US can uncover changes in Americans’ behavior. This project will use changes in podcasts produced as well as podcast responses to extrapolate changes in American behavior.

Coronavirus disease 2019 (COVID-19) first appeared as a cluster of pneumonia cases in Wuhan, China on December 31, 20191 and was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020.2 As of May 6, 2020, the European Centers for Disease Control reports that worldwide there have been 3,623,803 confirmed cases of COVID-19, resulting in 256,880 deaths.3

The United States has both the highest number of cases (1,204,475) and deaths (71,078) due to the disease.3 As a result, the U.S. government has been widely criticized for inaction in the early stages of the pandemic.2 Although the first confirmed case of COVID-19 was reported to the Centers for Disease Control on January 21, 2020 and documented transmission commenced immediately,4 a national state of emergency was not declared until nearly two months later on March 13. At that time, the only mandatory action at the national level was international travel restrictions.5

As COVID19 spread quickly in the United States

1. During the COVID19 breakout, the US was locked down
2. During lockdown, people’s behavior changed
3. We can see people’s behavior changed from:
   1. CDC survey: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6924e1.htm?s_cid=mm6924e1_w#T1_down>
   2. Netflix data
   3. Whatever else
4. To get a fuller picture about how behavior changed, we can tell that podcasts reflect interest
   1. Article!
5. Thus, the change in Podcast production and reception can show how behavior changed

Developing countries deal with large obstacles in accessing up-to-date information about foreign financial aid, development, and humanitarian flows. This information is vital to countries in order to plan and manage resources effectively. Similarly, citizens in developing countries and in donor countries lack the information they need to hold their governments accountable for the use of resources. According to the Natural Bureau of Economic Research, “based on some measures of corruption – the more the government is, the more foreign aid it actually receives.” This project will look at publicly available financial foreign aid transactions and attempt to identify corrupt financial transactions using Benford’s law.

***Relevant Research/Journal Papers***

* A summary of three key journal papers relevant to your work.

1. WHO Timeline – COVID-19. *World Health Organization*

<https://www.who.int/news-room/detail/08-04-2020-who-timeline---covid-19>

1. The COVID-19 pandemic in the USA: what might we expect?

<https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30743-1/fulltext#seccestitle10>

1. Governmental Public Health Powers During the COVID-19 Pandemic, Stay-at-home Orders, Business Closures, and Travel Restrictions

<https://jamanetwork.com/journals/jama/article-abstract/2764283>

1. Public Attitudes, Behaviors, and Beliefs Related to COVID-19, Stay-at-Home Orders, Nonessential Business Closures, and Public Health Guidance — United States, New York City, and Los Angeles, May 5–12, 2020

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6924e1.htm?s_cid=mm6924e1_w#T1_down>

1. Timing of State and Territorial COVID-19 Stay-at-Home Orders and Changes in Population Movement — United States, March 1–May 31, 2020

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6935a2.htm?s_cid=mm6935a2_w>

1. Environments, Behaviors, and Inequalities: Reflecting on the Impacts of the Influenza and Coronavirus Pandemics in the United States

<https://www.mdpi.com/1660-4601/17/12/4484/htm>

1. Resistance Training in Face of the Coronavirus Outbreak: Time to Think Outside the Box

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7358585/>

1. Corona Virus (COVID-19) Pandemic and Work from Home: Challenges of Cybercrimes and Cybersecurity

<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3568830>

1. NETFLIX: FROM APOLLO 13 TO THE CORONAVIRUS PANDEMIC

<https://www.researchgate.net/publication/343445075_NETFLIX_FROM_APOLLO_13_TO_THE_CORONAVIRUS_PANDEMIC>

1. Podcast use motivations and patterns among college students

<https://krex.k-state.edu/dspace/handle/2097/761>

1. Why Pod? Further Explorations of the Motivations for Independent Podcasting

<https://www.tandfonline.com/doi/full/10.1080/19376529.2014.891211?scroll=top&needAccess=true&>

CDC article showing public attitudes, behavior, and beliefs related to COVID19 stay-at-home orders, etc.

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6924e1.htm?s_cid=mm6924e1_w#T1_down>

CDC article showing US adults struggling with mental health and substance abuse during COVID19 pandemic

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6932a1.htm?s_cid=mm6932a1_w>

CDC article showing people moved less across county borders with stay-at-home orders, showing people acted differently

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6935a2.htm?s_cid=mm6935a2_w>

Changed behavior in the US due to COVID19, creating a “new normal”

<https://www.mdpi.com/1660-4601/17/12/4484/htm>

Changes in exercise due to COVID19, less gym-time, more at home training

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7358585/>

Increase in Netflix subscribers during COVID19

<https://www.researchgate.net/profile/Murillo_Dias/publication/343445075_NETFLIX_FROM_APOLLO_13_TO_THE_CORONAVIRUS_PANDEMIC/links/5f2aa0b7299bf13404a2a28e/NETFLIX-FROM-APOLLO-13-TO-THE-CORONAVIRUS-PANDEMIC.pdf>

Winners of the Coronavirus (financially): Netflix, amazon, zoom, etc.

<https://onlinelibrary.wiley.com/doi/full/10.1111/tesg.12433>

Podcasts are maintained by a community, need feedback from listeners

<https://www.tandfonline.com/doi/full/10.1080/19376529.2014.891211?scroll=top&needAccess=true>

Podcast listeners central focus is to discuss the show with other listeners

<https://www.tandfonline.com/doi/full/10.1080/19376521003719391?src=recsys>

Kansas state links podcast-listeners motives to the same as Television

<https://krex.k-state.edu/dspace/handle/2097/761>

Podcasts are effective for learning, shown in college setting

<https://www.sciencedirect.com/science/article/abs/pii/S0360131510000746>

Podcasts show effectiveness for learning

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4384874/>

Older episodes of podcasts can still gain traction and relevancy

<https://dl.acm.org/doi/abs/10.1145/1644893.1644919>

Podcasts are replacing radio, other forms of media

<https://ro.uow.edu.au/cgi/viewcontent.cgi?article=3463&context=lhapapers>

Poverty reduction in developing countries has always been a great concern for the international community. As Okada and Samreth explain in their paper, *The Effect of Foreign Aid on Corruption: A Quantile Regression Approach,* foreign aid in both multilateral and bilateral forms from international institutions and donor countries is considered to be an important element contributing to poverty alleviation in developing countries. However, foreign aid may also have impact on the quality of governance, particularly corruption, in the recipient countries. The authors point out that foreign provides public officials with more room for rent-seeking behavior leading to an aggravation in the recipient countries. Okada and Samreth using a quantile regression approach conclude that multilateral aid has a reduction impact on corruption while bilateral aid has no reduction impact.[[1]](#footnote-1)

Asongu and Jellal also investigated corruption in foreign aid by studying the channels of delivery for foreign aid. The authors focused on the assessing the channels of foreign to corruption in 53 Africa countries for the period of 1996-2010 and discuss two major findings. The two major findings are that foreign aid channeled through government’s consumption expenditure increases corruptions and development assistance channeled via private investment and tax effort decreases corruption. They conclude that foreign aid that is targeted towards reducing corruption should be channeled via private investment and tax effort, not through government expenditure.[[2]](#footnote-2)

Benford’s law has been promoted as providing auditors a tool that is simple and effective for the detection of fraud. Benford’s law is based on the observation that certain digits appear more frequency than others in data sets. As Durtschi, Hillison, an Pacini explain in their paper, *The Effecive Use of Benford’s Law to Assist in Detecting Fraud in Accounting Data*, digital analysis based on Benford’s law can be use used and show where auditors exercise caution. The paper also provides an example demonstrating where Benford’s law proved successful in identifying fraud in a population of accounting data.[[3]](#footnote-3)

***Problem Statement***

* A problem formulation.

*Research Question*

The main focus of this research is to apply Benford’s law to foreign financial aid transactions and answer the following questions:

* What is the distribution of foreign financial aid transactions that have a high likelihood of corruption?
* What type of organizations, multilateral or bilateral, have more foreign financial aid transactions flagged as possibly fraudulent?
* What is the distribution of type, private or government expenditure, of transactions that are flagged as fraudulent?

***Methodology***

* A statement of objectives, proposed methodology, and the evaluation measure for the performance of the proposed methodology.

For this research, financial foreign aid data will be collected from the International Aid Transparency Initiative (IATI) which is an organization that provides a data standard and location for donor organizations to publish data on their activities. Transparency International’s Corruption Perception Index (CPI) will also be collected to rank corruption of recipient countries. After the data has been collected, Benford’s law will be applied to the transaction values to view the distribution of digits in the transactions. After this has been performed, using the CPI and output of Benford’s law a likelihood of fraud value will be applied to transactions. Once these data transformations are performed, the above questions will be investigated, graphics will be produced, and the author will draw conclusions on types organizations that have higher amounts of transactions that are more likely to be fraudulent and tied to corruption.

***Assumptions***

* A conceptual/high-level description includes assumptions, what aspects will be considered in your model/approach, and a study logic.

The main assumptions for this research focus on the data available to perform the analysis. The author assumes that the data in the web portal are the organization’s unaltered data set. Also, the assumption is that Benford’s law can be applied to this type of financial transactions.

***Datasets***

Datasets for this project

1. Okada, Keisuke and Samreth, Sovannroeun (2011): *The effect of foreign aid on corruption: A quantile regression approach.* [↑](#footnote-ref-1)
2. Asongu, Simplice A and Jellal, Mohamed (2013): *On the channels of foreign aid to corruption.* Published in: Economics Bulletin , Vol. 33, No. 3 (29. August 2013): pp. 2191-2201. [↑](#footnote-ref-2)
3. Durtschi, Cindy, Hillison, William, and Pacini, Carl (2004): *The Effective Use of Benfrod’s Law to Assist in Detecting Fraud in Accounting Data Published in Journal of Forensic Accounting.* Vol. V pp. 17-34. [↑](#footnote-ref-3)