

Undergraduate Research Conference

Spring 2020

McCoy College of Business Administration

JACK WEST

Finance & Economics

How Musicians Make Money in the New Era of Streaming

Abstract:

Most people probably don't know how artists make their money off of common streaming services such as Spotify or Apple Music, because they don't exactly advertise this information. My research will cover the background and history of music streaming, Napster's role in the development of online music platforms, and how musicians get paid when their content is streamed. There is already a decent amount of information published on this topic, and a detailed video published by Spotify that summarizes how they distribute the revenues made from subscriptions. In addition, some scholarly publications cover how musicians are paid from different streaming platforms. My original contributions are interviews with Kelly Curtis, the Band manager, and Tim Bierman, the product manager, of the Rock and Roll Hall of Fame band Pearl Jam, with monthly listeners on Spotify totalling over 10.25 million. In the interviews, we discussed Pearl Jam's first hand experience with the financial side of content streaming. The poster will contain the information I have found in bullet points, along with summaries, and will be grouped by topic. The poster will also contain some visual representations.

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DANIEL GONZALEZ & DYLAN REYNOLDS

Computer Information Systems

The Effect of Presidential Tweets on Foreign and Domestic Markets

Abstract:

Background:

Donald Trump has the most social media following of any world leader, and one of the most active Twitter accounts. Because of this all of his tweets, positive or negative, are seen by the world. President Trump has used his Twitter account to communicate with Americans, announce tariffs against other countries, and voice his opinion on certain issues. The media has stated that Donald Trump's twitter account has an influence on the financial markets. So much so that J.P. Morgan created the Volfefe Index that tracks volatility in sentiment of US treasury bonds using Donald Trump's tweets.

Methods:

We are using logistic regression to attempt to predict whether or not the markets will increase or decrease. We are doing this with S&P 500 data that was collected via Yahoo finance while president Trump's tweets were extracted using the Twitter API. The tweets were analyzed for sentiment and grouped by day to then be compared against S&P returns. We then repeated the process using foreign indexes in an effort to similarly examine the effects of his tweets in non-domestic markets. Foreign index funds were selected with attention to our import/export relationship with that particular country. For example, a country that is dependent on our exports may be more affected by the speech of our president than a country that does minimal trade with the U.S.

Purpose:

This project hopes to determine if there is a relationship between the sentiment of Donald Trump's Twitter account and the behavior of the S&P 500. We also chose to investigate whether or not similar correlations existed in other large foreign market indices.

BRANDON JENKINS & GRACIELLA HERNANDEZ

Computer Information Systems

Earthquake Shock Identification and Time Distribution

Abstract:

Backgrounds:

Earthquakes are catastrophic, seismic events that can result in significant damage to the locations in which they occur. Foreshocks are shocks that occur before the earthquake's mainshock. The mainshock is when the earthquake reaches its highest magnitude. Aftershocks occur after the mainshock, which decrease in magnitude.

Methods:

Through exploratory analysis, we hope to obtain more information about these seismic events. By using the dataset called earthquakes that we obtained from the USGS Science for a Changing World website. We are using reviewed earthquake events. Reviewed status is when a seismic station records an event automatically and has been reviewed by a person. Major variables used include depth (km), latitude, longitude, magnitude, and magnitude algorithm type. We will use cluster analysis to identify groups in different variables.

Purpose:

The purpose of the research conducted is to identify elapsed time distributions between foreshocks, main shocks, and aftershocks of a given seismic event in a specific region. We will use our analysis to identify any patterns in time distributions between foreshocks, main shocks, and aftershocks in a specific event and region. We will use cluster analysis to explore patterns in the locations where earthquakes occur frequently to determine specific “hot spot” locations and to cluster other significant variables to determine if the clusters are correlated to the earthquakes’ locations.

SAMUEL GREER, TAN LE, & KENNETH SKIDMORE

Computer Information Systems

A Taxonomy of Hurricane Paths in the Gulf Coast

Abstract:

Background: We started this project to aid in ongoing research in the iMOSS (integrated modeling and optimization of service systems) lab at Texas State. Our research will be used in conjunction with an optimization model other researchers are building to define demand at food banks during times of crisis.

Methods: Our model was built using dynamic time warping to compare the times series of each of the 1871 different storm systems. Next, we constrained our data to only those storm systems that reached the Texas coast. Our data was obtained from the National Oceanic and Atmospheric Administration. We then used hierarchical clustering to group the hurricanes by similarity of their paths. The clusters tell us a lot about the characteristics of the hurricanes that reach the Texas coast.

Purpose: If a storm system begins to develop at any particular coordinates, we will be able to provide information about what our model suggests will be the likely target and time it takes to reach that target. We will provide a taxonomy of hurricanes that can inform the public and various government preparedness agencies on if and when they should start preparing.

Conclusion: Preparedness is the most important thing to have during a hurricane. This will be particularly helpful to food banks that are susceptible to the destructive wrath of a hurricane. A food bank that begins preparing at the earliest warning sign provided by our model will be able to serve more people effected.

MADISON SENNIE & BRIONNA JOHNSON

Computer Information Systems

Student Perceptions on Virginity

Abstract:

Background: We are using a dataset from the Texas State University repository that explores perceptions of virginity from students with different demographics. We intend to use the data to determine what is considered to be the new norm for virginity in a college setting and more specifically, what factors are associated with student perceptions on the importance of virginity.

Methods: From the Perceptions of Virginity data set which includes a survey given to 597 college students of Texas State University in the year 2018, age, ethnicity, sexuality, religiosity, virginity, male virginity, and female virginity are the variables that will be part of our analysis of student perceptions on the importance of virginity. We will use induction tree analysis for variable selection and regression analysis to assess our hypotheses.

Purpose: Our purpose is to determine which factor(s) are associated with student perceptions on the importance of virginity; in particular, age and religion. We hypothesized that age and religion are two

important factors that are associated with the students' perceptions of the importance of virginity. This will further help us determine if views on virginity have changed over time.

TYLER BORER & KEVIN TAYLOR

Computer Information Systems and Quantitative Methods

Analysis of President Trump's Approval Rating Based on Population Data

Abstract:

Background: In the age of social media and twenty-four-hour news coverage, political polarization has become more prevalent. There are many theories pertaining to how a person becomes affiliated with a political party; associations with gender, race, income, education, and age typically come to mind in a lot of cases. Sometimes political affiliations fluctuate during largely publicized events in the country or when governmental leaders' performance is under scrutiny.

Method: We will combine physical and social attributes to analyze the political affiliation of twelve different sample groups over twelve months during the 2018 fiscal year. We will utilize regression and clustering methodologies, controlling for the approval rating of the president. Our data was obtained by surveys funded by Cards Against Humanity Saves America and with between 800 and 1000 anonymous participants chosen per month.

Purpose: This analysis is important to assess, and predict, how the political attitude of the general population may fluctuate during a presidency. This information could be significant for a political party to determine whether a candidate should run, or rerun, for office.

SANG HOANG

Economics and Business Economics

Stock Prices and Investor Information Availability

Abstract:

Information and investment decisions are directly related according to all fundamental models of corporate finance and economics. As such, this study proposes a direct measurement of capturing investor information with the use of Google Trends - Search Volume Index (SVI). We sampled the SVI of companies in the S&P 500 and their monthly stock prices; and monthly closing stock prices extracted from the University of Pennsylvania's Wharton Research Data Services database (WRDS). We ran a time-series regression from 2008 to 2018 and find that there is a significant relationship between SVI's web searches and the price of a stock 2 to 4 months from the time the search index makes a major change. The relationship between the SVI and the stock's monthly price is negative and statistically significant at the 2 month lag. In our findings, a 3 standard deviation increase in web searches leads to a .48 dollar decrease in stock price 2 months out, controlling all attributes of the firm. The implications of this research findings confirm that Google Trends' Search Volume Index can predict stock prices.

ANATOLIE CHERNYAKHOVSKY & STACEY PEREZ

Finance

Breaking Buffett's Bet: Using Python to Construct a Diversified Portfolio

Abstract:

In Financial theory small-cap stocks typically have a higher required rate of return than large-cap stocks due to having higher levels of risk. In practice however large-cap stock indices such as the

S&P 500 outperform comparable small-cap stock indices such as the Russell 2000 very regularly. The biggest barrier to creating a well-diversified portfolio consisting of small-cap stocks is the fact that performing an analysis on each company manually is very time-consuming and having to regularly re-balance your weights makes this an almost impossible task with any level of high effectiveness. By designing software that attempts to filter out inefficient companies and tries to identify valuable assets, we may be able to create a diversified portfolio that maintains the same relative sector weights as the S&P 500 while also being exposed to relatively high levels of capital appreciation. This kind of analysis can be performed using a "Bill Benter" approach mixed with a scoreboard-style of algorithm development wherein equities with more desirable traits that are sought after are recommended to analysts at a higher level than those with less desirable traits.

CARLOS WEEBER & NATHANIEL MARRERO

Computer Information Systems

Determining Factors of Retention at Texas State University

Abstract:

Background: Retention at Texas State University is a primary issue just as it is at any university. Retention is of major relevance as universities desire to maintain students that are currently enrolled and further their education and careers. However, it might be influenced by other factors such as academics, social aspects, and mental/physical healthfulness. By better understanding, the students' struggles, to provide the university with a tool in which they can connect the at-risk student with the proper services and/or programs offered on campus.

Methods: We gathered a dataset of unidentified students from the 2013 cohort to the 2018 cohort from the Institutional Research Office at Texas State University. We will be analyzing data from students that successfully graduated from the university and students that have classified as "not retained". With these 2 major groups, we will be able to compare, contrast, and seek correlations between specific academic factors. Retention was defined as a student remaining enrolled at Texas State University and graduating within 6 years of enrollment. "Not retained" from the university can be defined as a student that is no longer enrolled in the university or failing to graduate within a 6-year school period, or transfer to a different university.

Purpose: The data gathered by the university will be used to identify the characteristics of students who are most likely to not be retained by the university. The purpose of the study is to predict a student that could potentially leave the university the following semester.