

BUDA 530 – Spring 2023

Snarly Yow Group Discussion Project

Len Hancock



Preface

It is my pleasure to submit this Group Discussion Project in partial fulfillment of the requirements of West Virginia University's John Chambers College of Business and Economics course, Business Data Analytics 530. Throughout this course offering I've been challenged with new data concepts and modelling techniques which have expanded the boundaries of my knowledge and expertise.

This Project involves an exploration of our own, and our fellow Snarly Yow group members', career goals and the projects we'd undertake to aid us in our professional development. For me, it's critical to view my future work through the lens of my personal goals, desires, and experiences in addition to my professional skillset. Herein, I take time to explain the infusion of my career objectives with that indivisible personal background.

My current employment at the West Virginia University John Chambers College of Business and Economics meets a majority of my personal and professional preferences and, as such, I focus my future work projects around that position and the contributions I hope to make there. The situation of my employment will make the public presentation of my work results nearly impossible. However, hopefully the College and the broader University will share and benefit from my work. In fact, I recently learned that the Office of the Provost has shown some interest in work related to the projects that I describe below.

You'll notice that my two projects are similar, focusing on the reduction of expenses and growing revenue. This is by necessity. Working in the College's Business Office these are areas of emphasis and the results fit squarely into the College's Strategic Plan. While similar, and even some of the same, data will be gathered for use in both projects, this, in no way, diminishes the scope of either project or the reach of the resulting revelations.

I've sincerely enjoyed working with the other talented people in group Snarly Yow. Their insights and different approaches to problems have helped to expand my thinking and refine my techniques. I appreciate and support Chris, Amber, and Mikaela's goals and endeavors. I acknowledge and respect their individuality and their quests to find meaning and fulfillment in their work. I did my best to provide concise and specific insight into their goals and projects. Although, my few bullet points or sentences about their projects pale in comparison to their unique visions for not only the scope of their work but the greater picture of their lives.

I'll begin below by unpacking my own career and professional development goals and charting a course for some projects that I believe are important to the Chambers College and me personally.

Current Career Goals

I've never been the person that has been called to a specific trade or industry. I resonate more with the vintage commercials from BASF which said, "At BASF we don't make a lot of the products you buy. We make a lot of the products you buy better." I've enjoyed working behind the scenes and I am, by nature, a problem solver. Fortunately, I've always been able to find the mistakes, problems, and inefficiencies of an organization and more than that, I've been passionate about overhauling and recalibrating them. I'm drawn toward underperforming operational aspects of a business, floundering finances, struggling systems, and any opportunity to do something better. "That's the way we've always done it," grates my soul.

In my current stage of life my goals are quite different than in the beginning of my career. In life, and in everything really, my career goals have transformed over time. When younger, I longed for admiration, recognition, influence and, of course, money. Over the years I've engaged my skillset for both profit and charity. I've made a lot of money and I've lost a lot of money. I've been well off and I've struggled. So, you won't catch me saying money doesn't matter. It does. But today I have other priorities. In short,

I want to be around accomplished people solving challenging and worthy problems.

I know myself well. I know what I like and don't like, what I'm good at and what I'm not, and what I need to live a happy, fulfilling existence. I could write chapters about qualities like accountability, compassion, emotional intelligence, encouragement, ethics, helping others achieve their goals, intellectual curiosity, openness, meaning, respect, situational awareness, work/life balance, and having a worthy problem to solve. And fun. If it's not fun or I'm not able to embrace and enjoy the struggle it's not worthy of my time.

Over my career I've proven that working artfully with data, metrics, formulas, finances, efficiencies, and models *is* the skillset, or trade, that I bring to bear against the problems that come my way. I tear the problem apart and reassemble it into something better. More accurate. Faster. More efficient. Easier. It makes no difference to me if the issues are in a small business, a government entity, selling widgets, education, entertainment, sports, or any other industry. I'm there for the problem, not the product.

That's not to say that I'll jump at any opportunity. I won't suffer difficult people and lacking leadership or spend half of my waking hours in a barren wasteland where soft skills go to die. The people I work with are ultimately the single biggest factor in my level of job satisfaction and the driving force behind my career choices. Thankfully, being an accomplished problem solver, I can usually find and choose the openings that best suit my wants and needs.

Project 1: Educational Expense Efficiencies

Research Topic/Question:

Upon what data, models, or metrics can the John Chambers College of Business and Economics rely to reduce expenses by 1.25% while maintaining or improving the educational quality of the institution?

Background:

Over the last year I've been asked to perform several data analyses that are aimed to provide College leadership with pieces of information relating to the costs and revenue of certain Centers, Departments, and Majors. Obviously, being good stewards of the State and donated funds we receive is a top priority. To that end, I've created new data categorization methods as well as provided analysis novel to the College and the University. Following along the paths of this new information a question of interrelatedness arises.

Aims:

Explore reductions in expenses based on current or new data, models, and/or metrics.
Provide actionable business intelligence based on the distilled results of the analyses.

Methodology:

There are hundreds of thousands of entries into the University's standardized chart of accounts and other software systems that need to be gathered from the several distinct systems which provide financial, enrollment, and faculty data under which the University operates. Relevant software packages used by the University include Oracle, MyReports, Argos, Banner, Digital Measures, and more. This incongruent data will need cleaned and homogenized in a way so that the disparate systems' data is relevant to each other. I've found this to be the single most difficult obstacle to overcome when conducting such research at the College. Conversion to comma separated values (.csv) files would help facilitate an apples-to-apples comparison. Larger data sets might require processing through the WVU GoFirst cluster. Data storage is widely available to me through my current position.

Data collected will also be across multiple functions of the College like operations, instruction, and enrollment. Some key elements include operational expenses and payroll expenses for administrative functions, Centers and Departments' expenses, class fill rates, faculty salary, workload, and classes taught, enrollment, accrediting body standards, WVU Foundation donations, and grants.

Costs are then associated with three main operational aspects of the College: Administrative functions, Centers, and Departments. After aggregating the financial data, then class size, fill rates, and enrollment will be cleaned. Thereafter, faculty salaries, workloads, schedules, classes taught, and other factors will be organized. From there, new models will be constructed to describe the interrelatedness of these pieces of information.

In my career I've found that the exact evaluation methodology doesn't reveal itself until the information has been gathered, organized, and cleaned. As a result, I'm hesitant to guess at the necessary models but all models would be considered to determine any relationships or correlation between the two driving elements of the study, namely, costs and enrollment. I expect linear and nonlinear relationships which would involve the use of linear regressions, splines, and polynomials. And, since tuition revenue is

seasonal and time based, an autoregressive integrated moving average (ARIMA) model would likely be used to ultimately explain the data. The time-based data might also benefit from a Holt-Winters or Prophet model.

Expected outcomes:

From the analytical observations I expect the revelation of quantifiable inefficiencies in operations and offerings. The real-life data will provide results that are accurate, pertinent, and actionable. A particularly helpful result would be the establishment of a model that can formulate and predict results based on the input of different future scenarios and/or real-world events. In particular, learning the effect of differing percentages of accreditation requirements on expenses will be informative. With the same data being collected University wide, results may also include the interpolations of the interpretations across other Colleges or the University as a whole. Ultimately, maintaining a near-real-time database of information could lead to creation and limited publication of a Tableau, or similar, dashboard for use by University and College administration.

| |
|--------------------------------------|
| Project 2: Ramping Up Revenue |
|--------------------------------------|

Research Topic/Question:

What student demographic, enrollment, and student success data predict higher than average revenue for the John Chambers College of Business and Economics?

Background:

Currently, only a portion of the tuition revenue flows to the individual Colleges and the central administration provides supplementary State funds to ensure operational capacities. In the near future West Virginia University intends to enact a new budget model which may make the Colleges more accountable for their own revenue and expenses. At that time, it will be necessary for the Chambers College to seek out the most productive revenue models which must, by defined strategy, include increased recruitment, retention, and placement.

In my position at the Chambers College, I regularly evaluate student data especially as it relates to revenue. While we frequently estimate tuition revenue with general increases or decreases of X% of certain calculations from the prior year(s), no one to my knowledge has formally investigated what specific data elements would reap increased revenue. In an era of increasing competitiveness, students' tuition dollars are increasingly valuable. Student recruitment and retention is a key goal in the College's strategic plan. Providing certain criteria or a model which predicts increased revenue while maintain or increasing student success would be an important tool to use to drive revenue growth and ensure the viability of one of the University's most profitable Colleges.

Aims:

Discover paths for increased revenue based on current or new data, models, and/or metrics.
Provide actionable business intelligence based on the distilled results of the analyses.

Methodology:

Most data required is readily available but contained within incongruent University systems. Relevant software packages used by the University include Oracle, MyReports, Argos, Banner, Digital Measures, and more. This data will need cleaned and homogenized to be useful. I've found this to be the single most difficult obstacle to overcome when conducting such research at the College. The resulting incongruent information would be converted to comma separated values (.csv) files for evaluation in R Studio and processed on the GoFirst cluster if required. Data storage is widely available to me through my current position.

Key data would include students' enrollment and course loads, credits taken, various demographic information including state and country of residence, student success (defined as timely job placement in the student's field), professors, class sizes, scholarships awarded, financial aid, standardized test scores, grade point average (GPA), and of course tuition paid.

An opportunity to compare the Chambers Colleges' data against those of our peers is tempting but more complicated to pursue. The additional complexity stems from the availability, timeliness, and accuracy, or lack thereof, of the peer institutions' enrollment and revenue data. It could be more practical to complete the initial study then, later, compare others' data from government and accrediting body surveys retroactively when it is more widely available and accurate.

In my career I've found that the exact evaluation methodology doesn't reveal itself until the information has been gathered, organized, and cleaned. As a result, I'm hesitant to guess at the necessary models but all models would be considered to determine any relationships or correlation between revenue, student success and the other factors mentioned above. Any model used must include increasing student success and retention. The data would likely be modeled in R Studio and include linear and non-linear regressions. There will also be a time component to most of the data and it's likely that the final product would require an ARIMA, Holt-Winters, or Prophet model.

Expected outcomes:

Using the accumulated data, trends will appear that predict increased revenue. From the established relationships between revenue, student success, recruitment and retention, and various other data points an ideal recruiting model will emerge. This model will be used as a basis to steer recruitment strategy. This outcome will be unique to the Chambers College since not all Colleges define success similarly or have the same student demographics.

[CONTENT RELATED TO OTHERS' PROJECTS AND FEEDBACK DELETED]

Conclusion

Above, I've drafted a significant, career defining document that should influence my work for the next several years. In performing the individual exercises outlined in this assignment I have contemplated my career, surveyed my skills, planned two worthy projects, assisted others, and refined my focus. If this assignment, and even this course, existed for nothing else, these results are worth the price of admission. Author, motivational speaker, and World War II veteran Zig Ziglar said, "If you aim at nothing, you will hit it every time." In addition to hard statistical and programming skills this course has provided a target where I can squarely apply my attention.

While more work needs done to complete the larger picture of the projects, finding out very recently from Dean Hall that the Office of the Provost has expressed interest in the preliminary expense and revenue related models I've created is encouraging. I believe it fortifies the practicality and desirability of the projects which I aspire to produce. I feel confident in my ability to scale up both projects from the College to the University level if such a need arose. Such leveling up could have a large impact on the University's operations and strategy the impacts of which could be profound.

Throwing myself wholeheartedly into this assignment has already paid great dividends. On top of that, finding my place at the Chambers College has been an enlightenment of my expectations of my skills, my career, and not lastly my personal life. To say this place, more aptly, these people, have changed my life is an unmitigated underestimation.