**FACE**

**Framing the problem**

Real estate tries to connect clients with the right situation, but may wait for clients to come to them. We want to build an algorithm that will place clients with the right building. For our problem, we have a brewpub that recently closed and we would like to find a tenant that will work well in its new location. Our modeling approach will consist of a mix of numerical and quantitative data that will allow for both prediction and interpretation of the results. Our company possess the technological and practical expertise to implement all the Python code and ArcGIS data gathering that will be needed for this project.

1. Problem recognition

* Identify stakeholders
* Focus on decisions
* Storytelling
* Deterministic vs. stochastic

1. Review of previous findings

* Google and the Internet are your friends
* Consult with analysts in your company, and others (noncompetitors)
* Analytics conferences
* Consultants (see vendor list)
* University professors and students

1. Modeling approach

* What type of variables are involved (explanatory and response)?
  + Categorical
  + Numerical/quantitative
* What are we using the models for? (Prediction? Interpretation? Both?)
* Which models do we possess the technological and practical expertise to implement?

**Analysis/solving the problem**

The data used in the project will consist of secondary data collected from Untapped; using their API to capture information about local beers, breweries and brewpubs along with “check-in” data that will be used for our prediction model, the most current US Census data consisting median income and disposable income by track and ZIP code, traffic count and a CSV file entitled “Texas Brewery Hours” from [www.craftbeeraustin.com](http://www.craftbeeraustin.com). “Texas Brewery Hours” included a list of all Texas breweries and brewpubs along with their addresses and status of being opened or closed. This will allow for the breweries and brewpubs to be plotted in ArcGIS. Due to the nature of this project, our models will be more stochastic than deterministic, consisting mostly regression analysis. Our data analysis will consist of descriptive and inferential statistics along with visualizations mostly in the form of location maps with census data. After collecting data, we will merge Untapped details (See Data Definitions in appendix) along with zip code demographic and 2 neighboring zip code demographics. This will allow us to create a regression model that estimates how many monthly check-ins a zip code can handle. This data will be used in evaluating the sustainability of a new brewpub opening in the now empty Humperdinks building. We would also like to find reasons for Humperdinks’ failure and compare that to successful brewpubs in the area; Dallas’ White Rock Ale House and Ft. Worth’s Funkytown Fermatorium.

1. Data collection
   * Identify a list of breweries and brewpubs ([www.craftbeeraustin.com](http://www.craftbeeraustin.com))
   * Merge Untappd details (See Data Definitions in appendix)
   * Include zip code demographic and 2 neighboring zip code demographics

* Primary vs. secondary
* Structured vs. unstructured (i.e., CSV vs. images vs. text)
* Format (JSON, XML, CSV, etc.)
* Source (API, proprietary, third party)

1. Modeling (Type of model/method)
2. Deterministic / Stochastic
   * Deterministic

Find out why Humperdinks failed, compare to successful breweries

* + Stochastic/statistical

Regression model that estimates how many monthly check-ins a zip code can handle

1. Data analysis
   * Descriptive statistics, i.e., mean, mode, median, variance, standard deviation
   * Inferential statistics, i.e., correlation, covariance, regression parameters
   * Visualization, i.e., scatter plots, heat maps, probability distribution
   * Confidence/prediction intervals, hypothesis tests, goodness of fit tests
   * Evaluation/cross validation

**Communicating and acting on results**

The data above will be collected and based on our results, we hope to find an optimal client who has an established brewery and is looking to expand operations into Dallas market. The reports will be compiled and presented with two separate audiences in mind. The first being tailored to the CEO of the brewery. This report will consist an explanation of the need for expansion, increase customers and more important, loyalty, by creating a brewpub footprint in Dallas it will contain local demographics and a general budget needed for the purchase of the building and the build out. This report will be mostly non-analytical in delivery. The second audience will be towards a CIO or the breweries’ chief marketing agent. This report will be more tactical in nature. There may also be some resistance from this team so there will be a need to address some issues to allow for buy in from this department. This report will contain the results from the model above and show the finding from all of our research. The audience to this report has backgrounds in statistics and data analytics. Both stories will address the rewards and the risk involved. If the project is accepted as viable for the company progress forward will be managed carefully to unify all stakeholders. This will be a new venture for an existing brewery and the actions needed to move this plan into action will need to be gradual and well thought out.

1. Results presentation and action
   * Based on results, we hope to find an optimal client who may have an established brewery and is looking to expand operations into Dallas market
   * Tell a story, with your audience in mind
   * The clearer the results presentation, the more likely the quantitative analysis will lead to decisions and actions
2. Results presentation and action
3. Change management dimension; non-analytically inclined staff
4. Factor in political considerations; not everyone will be happy with the results
5. The pros/benefits/rewards far outweigh the cons/costs/risks but changes and transitions need to be managed carefully to unify stakeholders/constituents

**Embedding final models and methods in** **enterprise business processes and systems**

This project will be embedded into the business processes by implementing ArcGIS simulations to examine different breweries and brewpubs in the model to assess different outcomes. We will also start predicting monthly check-ins to help clients find their next brewpub or brewery location.

1. Provide ArcGIS simulations to embed different breweries and brewpubs
2. Predicting Monthly Check-Ins to help clients find their next brewpub \ brewery location