Retail Location Analysis – Multiple Regression Model
Due March 25, 2019

Business Problem: From the Buxton store sales and location data, build a sales forecasting model to predict the future performance of the five potential new locations. From the forecasts, as well as any other factors or data you decide to include, recommend which sites to pursue.

Deliverable: Submit a written report on the site forecasting/recommendation model you develop. The report will:

- Provide a descriptive analysis of dependent and independent variables included in the predictive site forecasting/recommendation model, as well as explicitly state the regression model derived and used to make the location recommendations.
- Discuss of any data cleaning performed – what was done and why.
- Describe and justify any "calculated" or transformed variables used in the predictive model.
- Justify the dependent variable employed in model.
- Justify analytically (e.g., correlations) and theoretically why the independent variables were chosen. For example, you might "profile" the high performing stores with a judiciously selected set of independent variables and use the profiling as part of the justification for the model approach chosen.
- Include an "executive level" discussion of your model, including a description of the variables in the model, their effect in the model, their relative importance, and your site recommendations derived from the model
- Include technical sections discussing the model and model diagnostics such as standard errors of parameter estimates, significance tests, alternative models considered (along with the associated adjusted R^2 values and partial F-tests results leading to the model selected), analysis of residuals, checks on model assumptions, analysis/description of outliers, and evaluation of model fit.

Grading Criteria	Analysis Components	Points	Score
Exploratory analysis	Thorough exploratory analysis and justifications for independent variables included in the regression model. Explain any data cleaning and variable transformations.	20	

Model construction	Explain and evaluate model presented. Describe process of variable selection. Evaluate overall fit. Assess collinearity between variables. Describe other models considered and why they were not chosen. Validate model with hold-out sample (or justify why not).	30	
Assessment of independent variables	Evaluate significance of coefficient estimates, evaluate standardized coefficients estimates	10	
Model recommendations	Apply model to provide variable predictions, assess face validity of predictions, and interpret predictions within business context.	10	
Executive summary and discussion section	Clear, complete overview of analysis, discussion of solution and underlying theory for model, clear recommendations, discussion of limitations to model.	10	
Technical writing	Proper formatting, clear exposition, grammar, punctuation.	10	
Overall	Demonstrated understanding, and extra insight.	10	