

**MODERN RETAIL, INC.**

REQUEST FOR PROPOSAL

RFP #: TF – F1.H2

TITLE: ARIZONA SALES MODELING

CLOSING DATE AND TIME: SEPTEMBER 29. 2017 @ 5:00 PM

Arizona Sales Modeling: TF – F1.H2

# Background and Purpose

By responding to this Request for Proposal (RFP), the Proposer agrees that s/he has read and understood all documents within this RFP package.

# Submission Details

Responders to this RFP should supply:

* A business report up to 3 pages (not including cover page or table of contents), including any supporting plots and tables.
* The commented code used to produce the results in the Appendix.

The report should address **all points described in the “Objective” section** below.

The report should be returned in the following way:

* Electronic (mailto: [sjsimmo2ncsu.edu](mailto:Aric_LaBarr@ncsu.edu); Subject Line: Arizona Sales Modeling)

# Objective

Modern Retail Incorporated (hereafter the “Store”), acting by and through its department of *Marketing and Sales Analysis* is seeking proposals for retail analytics services. Successful completion of this proposal will lead to a secondary counter proposal for further modeling. The proposal includes data from two stores – Phoenix and Tucson, AZ. The scope of services includes the following:

* Creation of a weekly forecast for sales in both Phoenix, AZ and Tucson, AZ from an Exponential Smoothing Model (ESM); The Store’s analysts know that the data is *not* seasonal and would like ESM’s for each store built separately (no aggregation of sale across stores).
* Evaluation of the data from each store to handle further time series modeling:
  + Check the stationarity of the sales from each store; the analysts recommend using the Augmented Dickey-Fuller tests up to lag 2 for the results, however, you are welcome to suggest other techniques as long as the reasons are clearly stated and supported.
  + What strategies (if any) should the marketing analysis team take to make the data stationary?
* The Store uses Mean Absolute Percentage Error (MAPE) in calculating the accuracy of its forecasts; Report this measure for the validation data set; The Store is open to other measurements in addition to the MAPE as long as they are clearly stated and supported.

# Data Provided

The following data set is provided for the proposal:

* The data set **AZ\_SALES** contains weekly sales of two cities (Phoenix and Tucson) from September 18, 2012 to September 4, 2017.
  + The data is collected from our sales team and should be relatively clean. However, a validation data set has not been created for you. The Store recommends setting aside 16 weeks for a validation data set before you model or run any analysis.