THE UNIVERSITY OF TEXAS AT AUSTIN

Department of Information, Risk,
and Operations Management

STA 372.5 **Spring 2018**

GROUP PROJECT

(1) The members of each group are given on the last page. The groups were formed randomly.

(2) You should submit a four-five page report (not counting computer output and graphics). It should be double-spaced using a 12 point font. The report should: (i) Contain a clear statement of the question you are answering; (ii) Explain what time series methods you are using to answer the question and why they are appropriate (you should try at least two, preferably three methods); and (iii) Explain why your results are useful in terms of answering the question and what your conclusions are.

(3) You should also submit a half-page executive summary. This should be a non-technical explanation of what you have done and why it is important.

(4) You should use R to analyze your data.

(5) You should only include the necessary computer output. It should be included in the body of the report (i.e. cut and pasted in, not raw output attached to the end of the report). The output should be kept to a minimum but should be enough to support your conclusions. Be sure to use an equally-spaced font for the computer output.

There are two installment due dates:

(i) Installment #1: Propose a topic to research. Due Wednesday, April 11.

(ii) Installment #2: Final project. Due Wednesday, May 2.

Please include an e-mail address on the first installment so I can send you comments by e-mail. When you submit the final project, be sure to attach a copy of my comments from the first installment.

Please send me the data as an e-mail attachment in a ".dat" file. If the file is very large (> 5MB), please contact me before sending it. I would be surprised if any data set comes close to this limit.

Evaluation

The evaluation of your project will include the following criteria:

(1) Is the topic addressed interesting and useful?

(2) Is the question to be investigated clearly stated?

(3) Is the question accurately translated into a forecasting problem? Are appropriate time series methods used?

(4) Did you try at least two time series models? Do not just try auto.arima( ).

(5) Are appropriate and adequate data collected?

(6) Is the question clearly answered? Are the analysis results correctly and clearly interpreted?

(7) Are the implications of the answer discussed or, if counterintuitive results are obtained, is a plausible explanation given?

(8) Is adequate justification given for the validity of the model assumptions? If the assumptions are not met, are the implications of the violations discussed?

The time series data you analyze should include either (i) a seasonal component; or (ii) non-constant variance that requires the use of the ARCH/GARCH methodology (ARCH/GARCH will be discussed toward the end of the semester).

Other issues to consider (but are not required) include (i) incorporating additional explanatory variables into your model; and (ii) accounting for interventions in your model. Both these topics will be discussed later in the semester.

Data sources

Government agencies (city, state and federal) are good sources of data.

Another good source of data is internships and summer jobs. Be sure to obtain the approval of your supervisor before using any company data.

Do not use data taken from a text book or a repository for text book data.

You may use data collected for a project in another class under the following conditions:

(i) The professor in the other class agrees in writing that he/she approves using the data set for both projects.

(ii) You submit the written approval with installment #1.

(iii) The project you submit for this class must be entirely self-contained. Your grade for the project in this class will not depend on your other class project. However, you should include the project from your other class when you submit your final project for this class so I can understand the relationship between the two.

If you are uncertain whether a particular use of data from another project is appropriate, it is your responsibility to check with me in advance.

A potential way to combine two class projects is to use the results of the time series analysis as an input in your other class project.

Groups

(1) De La Garza, Ma, Rudolph, Lin

(2) Edwards, Mijares, Scoggins, Tao

(3) Wang, Rank, Jackson, Xi

(4) You, Mierl, Rueda, Tan

(5) Turpin, Calhoun, Huang, Hira

(6) Lutzak, Yu, Zhao, Cruz Diaz

(7) de Lorenza-Caceres Gonzalez, Yang, Ho, Lam

(8) Li, Wurangian, Yonemaru, Athota

(9) Yip, Sabzevari, Kizer

(10) Moreign, Lybrand, Luu