Econometrics 475   Spring 2024
Economic Forecasting
<div align="center">Term Project Assignment</div>

Your task for the term project assignment is to develop forecasting models of County level Beer, Wine, and Liquor Sales in the State of Texas. You will be assigned to a 4-student team and each team will be responsible for forecasts for an assigned Texas County. The main data for the project is available on the class website in an Excel workbook "Texas County Liquor Sales.xlsx" with monthly data covering the period January 2007– February 2024. The data covers sales of "liquor by the drink" at establishments like bars and restaurants (not liquor or grocery stores) and includes beer, wine, liquor, and total sales. Your analysis (and forecasts) should focus on total sales. You will need to collect and incorporate other data/variables into your analysis.

These data are from the Texas Comptroller's Office, and you may find some useful information on their website:
https://comptroller.texas.gov/

Your final project submission should be compiled in a formal report format and should include the following elements:
1. County Socio-Economic Profile: Provide a brief socio-economic profile for your team's assigned county. Some of the items you could discuss include:
    a. How have the County's age and ethnic demographics evolved over the last 10-15 years?
    b. Is the County's population concentrated in any particular urban center, or somewhat disperse?
    c. What industries are key economic drivers for the County?
    d. Are there any disproportionately large employers in the County (for example, Texas A&M is by far the largest employer in Brazos County)?
2. Overview of the Total Sales variable
    a. Trend elements
    b. Seasonal elements
    c. Cyclical elements
3. Univariate Forecasting Models
    a. Present your preferred ETS and ARIMA forecasting models for the Sales Tax variable based on a six-month "hold-out" sample where you forecast into the last six months of the data (that is, define your "training" set as ending in August 2023).
        i. Present a basic model description for your preferred ETS and ARIMA models along with residual diagnostics.
        ii. Present a six-month ahead forecast for September 2023 – February 2024. How do your forecasts compare to the actual values for the Total Sales variable?
        iii. Present a series of 6 one-step-ahead forecasts September 2023 – February 2024. How do your forecasts compare to the actual values for the Sales Tax variable?
        iv. Based on your analysis in i-iii, what is your preferred forecasting model, ETS or ARIMA?
    b. Using the full dataset and the model you developed in 2.a., present a 12 month ahead path forecast for March 2024 – February 2025 (that is, forecasts for each of the months).
4. Multivariate Forecasting Model
    a. Present a multivariate forecasting model based on a VAR model of the Sales Tax variable plus 2 or more series of your choice. I have provided sales data for a set of 8 additional counties in "Texas County Liquor Sales Alt.xlsx" that you *may* find useful.
    b. Your presentation should include a description of why you chose certain variables for your multivariate model.
    c. Based on your final multivariate model, present a 12 month ahead path forecast of the Total Sales variable. How does it compare to your Univariate model forecasts?

Organize your results into a formal report for submission in Canvas due by midnight **Tuesday, April 30th**. Team presentations will be conducted in class during our scheduled Final Exam period on **Thursday, May 2nd 3-5 pm.**

Team Assignments

Team	County	Student	email
1	Comal	Amin, Hamza	hamzaamin@email.tamu.edu
1		Bartolo, Andy	abartolo@email.tamu.edu
1		Civunigunta, Monish	monish2c@email.tamu.edu
1		Duong, Will	duowill@email.tamu.edu
2	Bastrop	Ford, Jc	jasoncford2025@email.tamu.edu
2		Rasmussen, Derek J.	djrasmussentx@email.tamu.edu
2		Schulman, Regan	rschulman@email.tamu.edu
2		Serwatka, Myka L.	myka0708@email.tamu.edu
3	Parker	Robinson, Kaiser C.	kaisertamu2024@email.tamu.edu
3		Saunders, Mark	marksaunders1@email.tamu.edu
3		Schaefer, Matt	mattabnormal@email.tamu.edu
3		Schlatterbeck, Cody	cody.schlatterbeck69@email.tamu.edu
4	Ellis	Jackson, Carlee	carleejackson@email.tamu.edu
4		Khuu, Benjamin	k0703146@email.tamu.edu
4		Kolar, Smriti	smriti.kolar@email.tamu.edu
4		Valdez, Aidan	aidanv19@email.tamu.edu
5	Rockwall	Kemp, Margaret E.	margaretkemp@email.tamu.edu
5		Alpar, Gabe	gabealpar@email.tamu.edu
5		Neat, Lucy	lucyneat@email.tamu.edu
5		Tijerina, Ilan	ilantijerina@email.tamu.edu
6	Hunt	Grogan, Jacob E.	jacobgrogan@email.tamu.edu
6		Aguirre, Martin	breakthrough2021.-@email.tamu.edu
6		Muery, Cooper	camuery12@email.tamu.edu
6		Tabrizi, Colin	ctabrizi13@email.tamu.edu
7	Kaufman	Graeber, Hunter Tweedle	hunterkees1@email.tamu.edu
7		Jacops, Remy	rej0192837465@email.tamu.edu
7		Hernandez-Balsamo, Jose	hernandezbjose@email.tamu.edu
7		Powell, Carter	carterasa9@email.tamu.edu
8	Johnson	Halilagic, Melisa	melisa_h@email.tamu.edu
8		He, Yibin	yibinhe@email.tamu.edu
8		Liu, Ruth	rliu33776@email.tamu.edu
8		Oetting, Zach	zoetting@email.tamu.edu