Final Project

Tyler Merrill

EPPS XXXX.xxx

Introduction

THE UNIVERSITY OF TEXAS AT DALLAS
Office of Facilities & Economic Development

- F&ED's Mission: To assist UTD in becoming an 'economic convener' for the metroplex's growth by developing opportunities between the university and various public and private partners.
- Monthly: Produce reports of DFW's labor market. Composed mostly of data hosted by the Bureau of Labor Statistics (BLS).

U.S. BUREAU OF LABOR STATISTICS

Problem –> Project Purpose

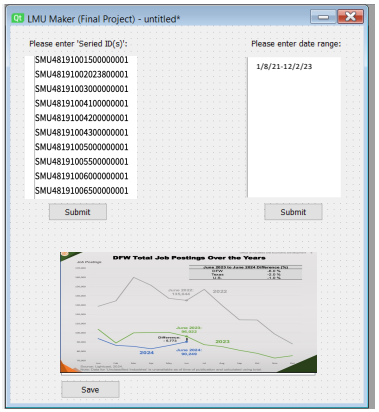
Copy the table from G2:M15 below.

Industry	May. 2023 Employment	Mar. 2024 Employment	Apr. 2024 Employment	May. 2024 Employment	Change, May. 2023 to May. 2024 (%)	Change, Apr. 2024 to May. 2024 (%)	
Mining, quarrying, and	104,200	109,000	109,000	110,200	5.76%	1.1%	Mining, quar
Construction	140,000	141,400	142,100	142,800	2.00%	0.5%	Construction
Manufacturing	305,200	309,000	309,900	311,100	1.93%	0.4%	Manufacturir
Wholesale and retail t	628,800	628,500	630,800	633,800	0.80%	0.5%	Wholesale a
Transportation and ut	261,500	263,900	263,300	265,600	1.57%	0.9%	Transportati
Information	92,800	91,000	90,700	90,500	-2.48%	-0.2%	Information
Financial activities	365,100	367,400	369,600	371,700	1.81%	0.6%	Financial act
Professional and busi	778,100	767,500	773,600	772,300	-0.75%	-0.2%	Professional
Education and health	504,000	513,700	518,200	516,200	2.42%	-0.4%	Education ar
Leisure and hospitalit	426,800	423,400	430,800	435,600	2.06%	1.1%	Leisure and
Other services	135,800	142,200	143,500	143,400	5.60%	-0.1%	Other servic
Government	476,000	488,300	490,800	493,100	3.59%	0.5%	Government
Total nonfarm	4,218,300	4,245,300	4,272,300	4,286,300	1.61%	0.3%	

- Use of outmoded pipeline in office.
- Public data-sets manipulated, and visuals designed, manually via MS Excel.
- Human-prone wrangling errors necessitates thorough checking processes.
- Other deadlines impacted.

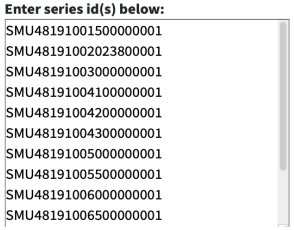
GUI Interface Template

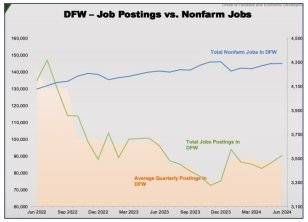
Use flow involved a user entering a set of series IDs and a date range. A line graph is given as output. An example of what the final application looks like:



Inputs and Outputs

- Data series designators (SIDs) of facets of the regional economy are entered by analyst within a text-field on left-side of app window. E.g., employment in the manufacturing sector would be entered as 'SMU48191001500000001'.
- Date range(s) are entered within another text field next to the 'Series ID' field.





- Targeted Metrics: Total employment and job posting changes in the metroplex. Filtering data to display common trends (a.k.a. level-changes over time) will be accomplished by 'Pandas'.
- Graphs of trends over time-span will be displayed in display window.
- Options to download produced images in '.png' format are accessible via button below display segment.

End Product and Solution Methodology

- Designed a standalone application in Python with a GUI interface that allowed automation of data processing and visuals production for producing LMU (Labor Market Update) graphs.
- Data was retrieved via Python instantiated code pulling from BLS API. Data was filtered with 'Pandas' and plots made with 'Matplotlib'. GUI elements were designed with 'Qt Designer'.

Resulting Benchmarks

- Implemented pythonic practices in development of robust application.
- Improved work-flow efficiency by about 25% per month.
- Introduced automation practices to analysis pipeline.
- Helps make the case for the **DFW** area more efficiently.