Lab_1

Student Project: Interactive Business Insights Using Plotly

Project Title: *Exploring Business Data Trends with Interactive Visualizations in R*

Project Objective

Students will use **Plotly** in R to explore and visualize a business-related dataset, such as **sales data, customer behavior, or stock prices**. The goal is to create **interactive visualizations** to uncover patterns and insights.

Project Requirements

Data Source:
Students can choose one of the following datasets or use their own business-related dataset:
- **Built-in dataset:** `economics` (US economic data)
- **CSV file:** Sales or financial dataset from Kaggle
- **Google Trends data:** Exported from Google Trends

Tools:
- `plotly` for visualization
- `dplyr` for data wrangling

Deliverables:
- **An R script** with interactive Plotly visualizations
- **A brief report or presentation** summarizing insights

Tasks and Guidelines

1. Data Preparation - Load a business dataset (e.g., sales, economic data). - Convert necessary variables into factors. - Perform **basic data wrangling** (filtering, grouping, summarization).

2. Visualization Tasks
Scatter Plot:
- Create an **interactive scatter plot** showing the relationship between two key metrics (e.g., **sales vs. profit**). - Use **color coding** to represent different categories.

Bar Chart:
- Create a **bar chart** comparing **total sales per region or product category**. - Use **stacked or grouped** bars.

Line Chart:
- Create an **interactive line chart** showing trends over time (e.g., **monthly revenue**).

Bubble Chart:
- Create a **bubble chart** where **bubble size represents total sales** and **color represents product categories**.

Heatmap:
- Create an **interactive heatmap** showing correlations between numerical variables.

3. Insights & Interpretation
- Summarize key **business insights** using the visualizations. - Answer questions like: - Which product category or region generates the most revenue? - Are there seasonal trends in sales or economic indicators? - How are different variables correlated?

4. (Optional) Interactive Dashboard
- If students want an extra challenge, they can integrate the plots into a **Shiny app** or **flexdashboard**.

Grading Criteria

Criteria	Points
Correct use of `plotly` for interactive visualizations	30
Clarity & accuracy of visualizations	20
Interpretation & insights from data	20
Report/Presentation quality	20
Bonus (Dashboard or additional insights)	10

Expected Outcome

By completing this project, students will develop **interactive data visualization** skills and learn how to present **business insights** using data-driven storytelling.

Would you like an **R script template** for this project?