**Project Proposal: Analyzing and Predicting Vehicle Accidents in Arizona Using**

**Machine Learning**

**Group:** Safe Streets Squad

**Members:** Ritika, Tiffany, Walter, Kenway

**Project Overview:** Analyze traffic accidents in Metro Phoenix to identify high-risk intersections and causes. Use machine learning to predict future accidents and create visualizations comparing rates and severity. Deliverables include an interactive map, comparative analysis, and comprehensive documentation.

**Key Question:** What factors influence traffic accidents in Metro Phoenix, and how do seasonal weather patterns affect them?

**Sub-Questions:**

* Which areas are most prone to accidents?
* Which city has the highest accident volume?
* Which city has the most severe accidents?
* How does weather, especially the monsoon season, affect accidents?

**Project Timeline and Responsibilities:**

**Phase 1: Ideation and Planning**

* Project ideation
* Proposal development

**Phase 2: Data Handling**

* Data fetching/API integration
* Data cleaning
* Data analysis

**Phase 3: Development**

* Database setup
* Visualizations (Tableau map, bar charts, weather condition count)
* Machine learning model development
* Model testing

**Phase 4: Documentation and Presentation**

* Create documentation
* Develop presentation

**Deliverables:**

1. Comparative Analysis: Top 5 cities with highest accident rates and severities (visualized using Matplotlib)
2. Interactive Map: Display accident-prone areas (using Tableau)
3. Documentation: Detailed report covering data sources, analysis methods, model details, and user guide
4. Presentation: Summary of findings, methods, and future work

**Tools and Technologies:**

* Database: PostgreSQL
* Data Visualization: Matplotlib, Plotly, Tableau
* Programming Language: Python
* Machine Learning: Predictive algorithms

**Conclusion:** Provide insights into traffic safety in Metro Phoenix using machine learning and data visualization. Help city planners and policymakers identify high-risk areas and improve road safety.