**CO\textsubscript{2} Reduction in Transportation Planning using Machine Learning**

**Motivation / Background**

Transportation is the largest contributor to CO\textsubscript{2} emissions in the US, and by 2050 is expected to double.

It is possible to reduce CO\textsubscript{2} emissions by making optimal truck-route assignments based on vehicle characteristics, topology and traffic conditions.

**Key Questions / Hypothesis**

- Are certain vehicles more efficient on given road & environmental conditions?
- How should we segment delivery areas to optimize fuel consumption?
- Which vehicle characteristics have the most effect on CO\textsubscript{2} emissions?

**Relevant Literature**


**Methodology**

We adopt a modification of Cross Industry Standard Process for Data Mining (CRISP-DM), an iterative industry process model for data analytics with six flexible stages:

1) **Business objectives**
2) **Data collection and templates**
3) **Normalized data sources**
4) **Mathematical models**
5) **Validation and qualitative study**
6) **Recommendations and discussion**

**Expected Contributions**

- New ways to classify vehicles based on their fuel efficiency / carbon emissions
- Further insight on which vehicle characteristics have the most impact on fuel consumption
- Optimal CO\textsubscript{2} truck assignment per region specific to our project sponsor