

Traffic and Air Quality: Executive Report

Group 1

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Table of Contents

1	Executive Summary	3
1.1	Business Problem	3
1.2	Objectives	3
2	Methodology	3
2.1	Data Collection and Description	3
2.2	Data Analysis	3
2.3	Model Architecture	3
3	Results	4
3.1	Conclusions	4
3.2	Limitations	4
3.3	Future Directions	4
4	References	4
5	Appendix	4

1 Executive Summary

(Write your executive summary here regarding the Traffic and Air Quality analysis.)

1.1 Business Problem

(Write your business problem here regarding the Traffic and Air Quality analysis.)

1.2 Objectives

(Write your objectives here regarding the Traffic and Air Quality analysis.) - find the relationship between traffic and NO2 levels

2 Methodology

(Write your methodology here regarding the Traffic and Air Quality analysis.)

2.1 Data Collection and Description

(Write your data collection and cleaning here regarding the Traffic and Air Quality analysis.)
(Web-scraping, etc.) data dictionary (link to github data_description.md)

2.2 Data Analysis

The following analysis explores the relationship between traffic volume and NO2 levels.

correlation plot (link to github results/eda_correlation_matrices.png) seasonal pattern plot (link to github results/eda_seasonal_pattern.png)

2.3 Model Architecture

- Feature Engineering
- k-fold Cross-Validation (expanding window)

cross-validation plot (link to github results/cv_vs_test_with_traffic.png)

- Model Performance and Evaluation Metrics (RMSE)
- Model Selection (RMSE)

plots: - feature importance

3 Results

(Write your results here regarding the Traffic and Air Quality analysis.) - Shareholder value impact
- Relationship between traffic and NO₂ levels - Business impact and recommendations

Answer these questions: - Is there a positive or negative association between traffic and air quality?
- Is increased traffic volume associated with higher concentrations of air pollutants in Toronto? -
Does traffic explain a meaningful proportion of variation in air quality after controlling for time effects? - Is there evidence of nonlinear effects between traffic volume and air pollution levels? -
Does the relationship between traffic and air quality change over time?

3.1 Conclusions

- Relationship between traffic and NO₂ levels
- answer the questions in proposal

3.2 Limitations

(Write your limitations here regarding the Traffic and Air Quality analysis.) - Data limitations
(hourly, daily data, location, time)

3.3 Future Directions

- Future Directions
-

4 References

5 Appendix