NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY



TDT4259 - APPLIED DATA SCIENCE

Group Assignment

A Data-Driven Approach to Lifestyle Risk Prediction Using Clinical Biomarkers: Smoking and Drinking Analysis

Authors:

Marco Prosperi - 151613 Andrea Richichi - 151790 Tizita Belachew Tamirat - 128549 Gianluigi Vazzoler - 152698

Fall, 2025

Contents

1	Inti	roduction	3	
	1.1	Background and Context	3	
	1.2	Problem Definition	3	
	1.3	Motivation	3	
	1.4	Team and Roles	3	
	1.5	Report Outline	3	
2	Project Objectives and Scope 3			
	2.1	Project Goals	3	
	2.2	Scope and Limitations	3	
	2.3	Broader Context and Relevance	3	
3	Dat	ta Strategy and Management	3	
	3.1	Data Sources and Description	3	
	3.2	Data Collection and Preprocessing	3	
	3.3		3	
	3.4		3	
	3.5	Tools and Technologies Used	3	
4	Me	thods and Modeling	3	
_	4.1		3	
	4.2	v 11	3	
	4.3		3	
	4.4	8	3	
	4.5		3	
5	Analysis and Results 3			
0	5.1	v	3	
	5.2		3	
	5.3		3	
	5.4	•	3	
	$5.4 \\ 5.5$	9 .	3	
	5.5	Business of Scientific Implications	0	
6		1 0	3	
	6.1		3	
	6.2	1 0	4	
	6.3	<u>.</u>	4	
	6.4	Limitations and Future Work	4	
7		nitoring and Maintenance	4	
	7.1	v /	4	
	7.2	Monitoring Plans and Dashboards	4	
	7.3	9 (4	
	7.4	Maintenance and Updates	4	
	7.5	Lessons Learned and Feedback	4	
8	Cor	nclusion	4	
9	Ref	erences	4	

2

10 Appendices 4

1 Introduction

- 1.1 Background and Context
- 1.2 Problem Definition
- 1.3 Motivation
- 1.4 Team and Roles
- 1.5 Report Outline
- 2 Project Objectives and Scope
- 2.1 Project Goals
- 2.2 Scope and Limitations
- 2.3 Broader Context and Relevance
- 3 Data Strategy and Management
- 3.1 Data Sources and Description
- 3.2 Data Collection and Preprocessing
- 3.3 Data Quality and Cleaning
- 3.4 Data Strategy Framework
- 3.5 Tools and Technologies Used
- 4 Methods and Modeling
- 4.1 Analytical Approach
- 4.2 Modeling Techniques and Algorithms
- 4.3 Model Training and Validation
- 4.4 Interpretability and Explainability
- 4.5 Limitations of Methods
- 5 Analysis and Results
- 5.1 Exploratory Data Analysis
- 5.2 Results Presentation
- 5.3 Interpretation of Findings
- 5.4 Benchmarking and Comparisons
- 5.5 Business or Scientific Implications
- 6 Recommendations and Deployment
- 6.1 Recommendations and Action Plans

- 6.2 Deployment Strategy
- 6.3 Implementation Roadmap
- 6.4 Limitations and Future Work
- 7 Monitoring and Maintenance
- 7.1 Key Performance Indicators (KPIs)
- 7.2 Monitoring Plans and Dashboards
- 7.3 Risk Management and Contingency Plans
- 7.4 Maintenance and Updates
- 7.5 Lessons Learned and Feedback
- 8 Conclusion
- 9 References
- 10 Appendices