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Master of Financial Management and Control

Data Analytics

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<Date>

# Preface

< optional: personal notes>

<mandatory: information about how much each group member contributed to the report>

# Abstract

<describe in short: topic, research question, research methodology used, main findings, main recommendations>

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# Introduction

<topic and justification for the choice of the topic (why is this research interesting); research question(s); in short choice of methodology (come back on this in chapter 2)>

<do not use the future tense, at the time of someone reading this article, the research has taken place in the past>

# 1 Literature review <another title is allowed>

<describe the main findings from at least two articles about this paper’s topic; use correct reference style>

# 2 Methodology

<describe how the research questions are answered using data analytics>

<Example below>

The central question formulated for this research asks what the effect is for the corona crisis on air quality in the Netherlands. To answer this central question a couple of sub questions have been formulated. This paper answers two of the empirical sub questions. This chapter describes the methodology used to answer these sub questions.

## 2.1 Air quality metric

Different metrics can be used to measure air quality (AAAAA, yyyy). XXXXX (yyyy) describes that one of the main indicators for air quality is the level of PM2.5 pollutants, fine particles with a diameter of less than 2.5 microns, in the open air. For this research this metric is used to measure air quality.

## 2.2 Corona and air quality

Because of the “intelligent lock down”[[1]](#footnote-1) an improvement of the air quality was expected. Several studies show that the CO2 level has improved significantly since the outbreak of the corona pandemic (Jansen, 2020; De Vries, 2020). Although a positive effect on air pollution is expected, the effect on the number of fine particles in the air has not been investigated yet. This research uses the hourly measured levels of PM2.5 in an urban and in a rural area in the Netherlands.

## 2.3 Operationalization

To answer the questions about the influence of the corona crisis on the air quality in the open air this research compares the air pollution level in April in 2020 with the level in April in the years 2014 to 2019. Using a comparison in the same month, mitigates the influence of seasonal influences on the air pollution level. Levels are compared using graphs, summary statistics and by testing three hypotheses:
H1: the average daily PM2.5 pollution in April 2020 is lower than the average in April in the years 2015 to 2019;

H2: the distribution of the PM25 air pollution level over the hours of the day in 2020 differs from the distribution in the years 2015 to 2019;

H3: the average air pollution level in an urban area is more influenced by the corona crisis than the air pollution level in a rural area.

Amsterdam, the capital city of the Netherlands has been chosen to represent the urban areas in the Netherlands and Wekerom, a village in the center of the Netherlands, as a representative for rural areas.

## 2.4 Data

<describe the data source and the data collected from this source as well as the checks and data cleaning performed; present a table with the first rows of the (cleaned) dataset used; present some graphs just to present the data (not to answer the research questions, keep these for chapter 3)>.

# 3 Results and discussion

<the answers to the subquestions>

## 3.1 Graphical analysis

<graphs which help to answer the research questions, add comment(s) to them related to the research questions>

## 3.2 Descriptive analysis

<tables with summary statistics to answer the research questions, add comment(s) to them related to the research questions>

## 3.3 Inferential analysis

<results from hypotheses testing in relation to the research questions>

## 3.4 Conclusions

## 3.5 Recommendations

<recommendations based on the findings and/or recommendations for further research>

# References

<see <https://apastyle.apa.org/style-grammar-guidelines/references/examples>>

<important: every source mentioned in the paper should be in the reference list and also the other way around, every source in the reference list should be mentioned in the report>

# Appendix A <title>

<contents of the appendix>

1. Prime Minister Rutte used this term for the partial lock down in the Netherlands in March 2020 [↑](#footnote-ref-1)