First Year Project

Project 2 –

COVID-19 Data Analysis of the Netherlands 2020 – 2021

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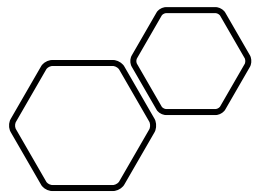
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COVID-19,
Weather, and
the Netherlands

1,056,447 Total Cases of COVID-19 in the Netherlands

6 % of the population has been infected

Hypothesis:

There is a statistical correlation between UV Index and other weather variables and COVID-19.

Spearman correlations between the UV Index and COVID-19 per region using IBM PAIRS & Jupyter Notebooks.

Published on June 19, 2020

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3 articles   ✓ Following

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Introduction

In the last article we introduced 1) IBM PAIRS that provides highly localized, geospatial and temporal data and 2) data sources that, on a regional level, give access to COVID-19 data. In this week's article we will start to explore our first analysis.

15,978   55,095   94,211   133,328   172,445   211,561   250,678

Confirmed cases of Covid-19
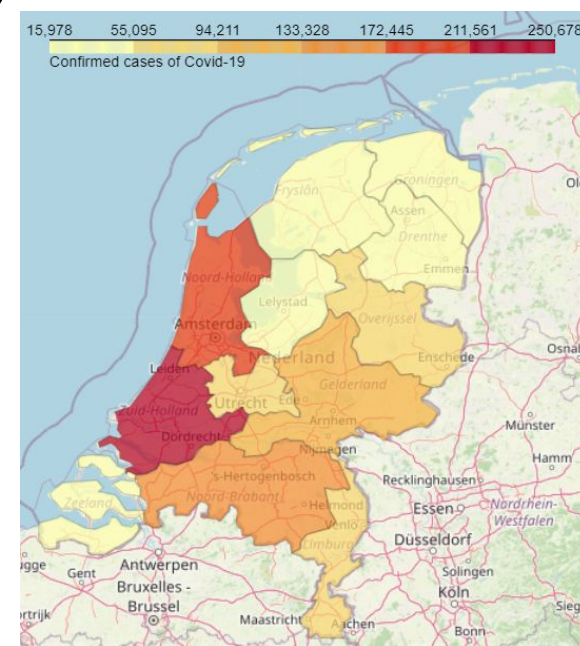
COVID-19 Data

Overview:

4152 Records

Data covers 29/2/2020 - 22/2/2021

Process:

1. Change spelling of region names

2. Check for missing values

3. Remove first two weeks

4. Verify data is only from the Netherlands

: COVID-19 case counts in The Nethe

NL collects numbers on COVID-19 disease count cases in **The Netherlands**. T
ources on a daily basis, like RIVM (National Institute for Public Health and the
rdinatiecentrum Patiënten Spreiding), NICE (Nationale Intesive Care Evaluatie
nis project standardizes, and publishes data and makes it **Findable, Accessible**
R). We aim to collect a complete time series and prepare a dataset for reprod

Weather and Additional Data

Weather Data from IBM Pairs:

7 Weather Variables

4500 Records

1. Check for missing values

2. Filtered region using two methods

3. Merged with COVID-19 data

4. Added external lockdown data

Government of the Netherlands

measures to stop spread of coronavirus in the etherlands

ws item | 12-03-2020 | 18:18

Please note: this news item was published on March 12. Read more about the current approach to tackling coronavirus in the Netherlands.
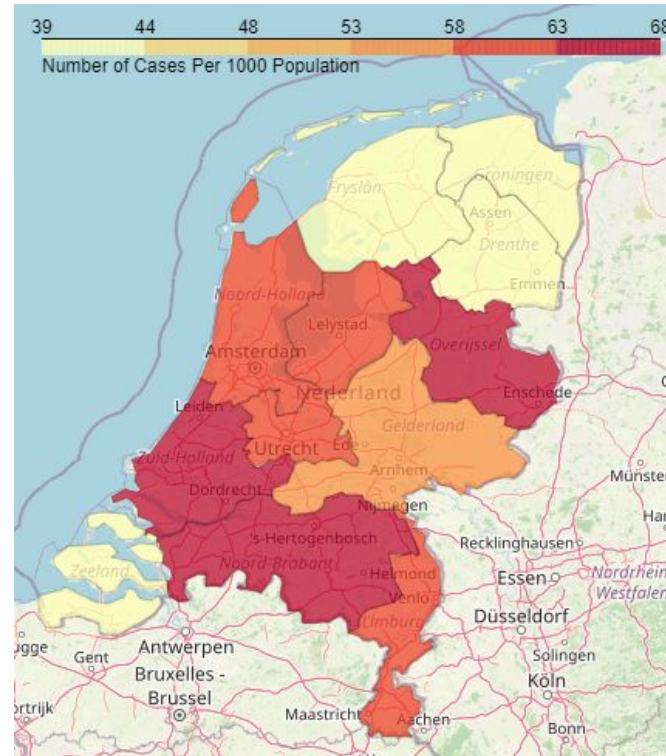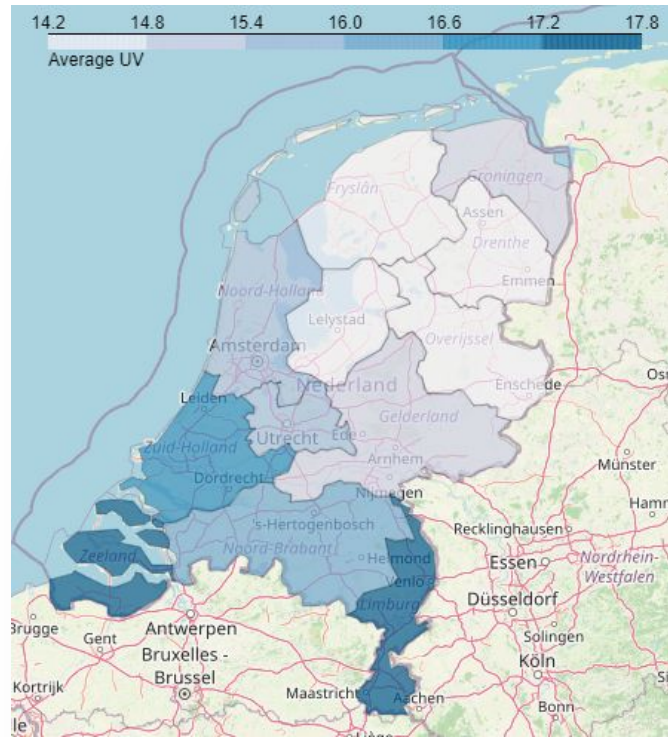
From Thursday 12 March 2020 new measures apply in the Netherlands to stop the spread coronavirus. Prime Minister Mark Rutte and Minister for Medical Care Bruno Bruins nnounced the measures at a press conference. The measures are based on the advice of th

Single Variable Analysis
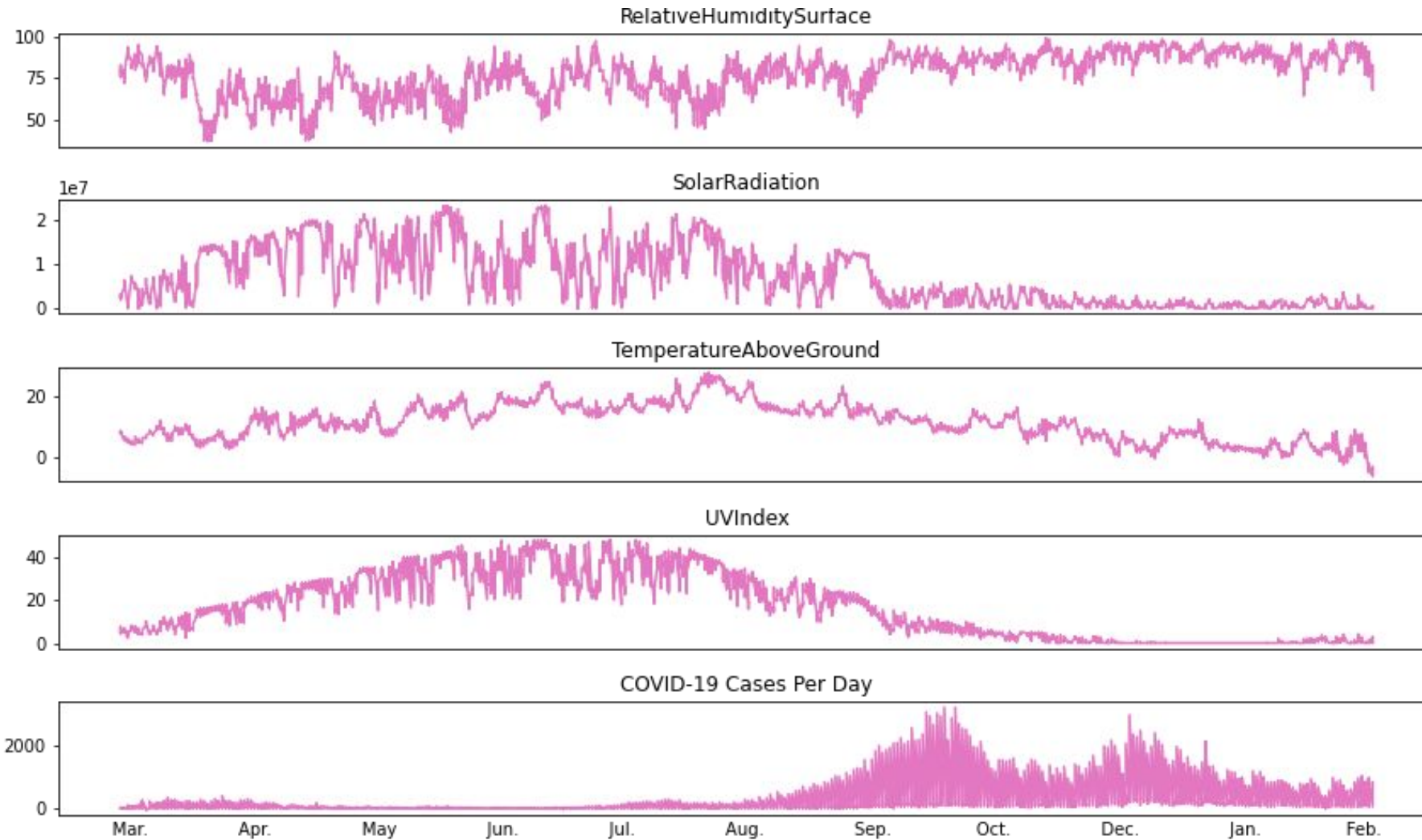
Multivariable Analysis
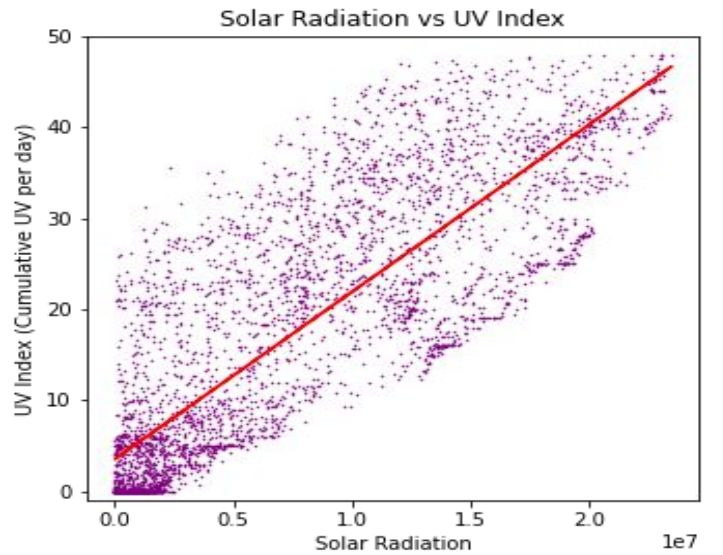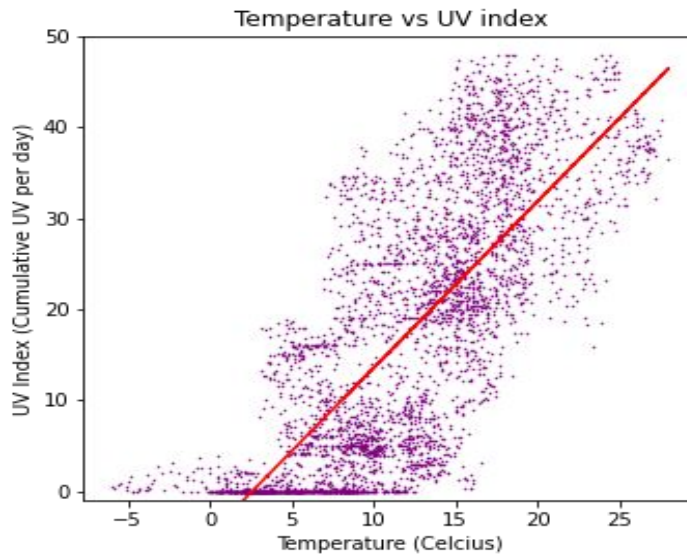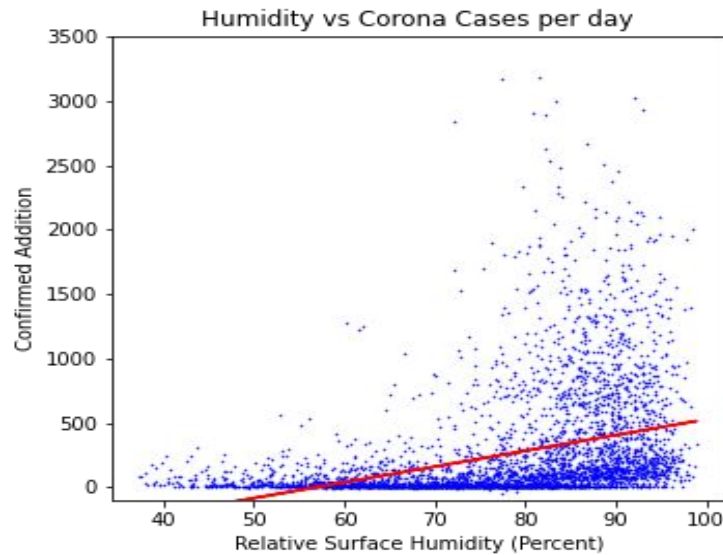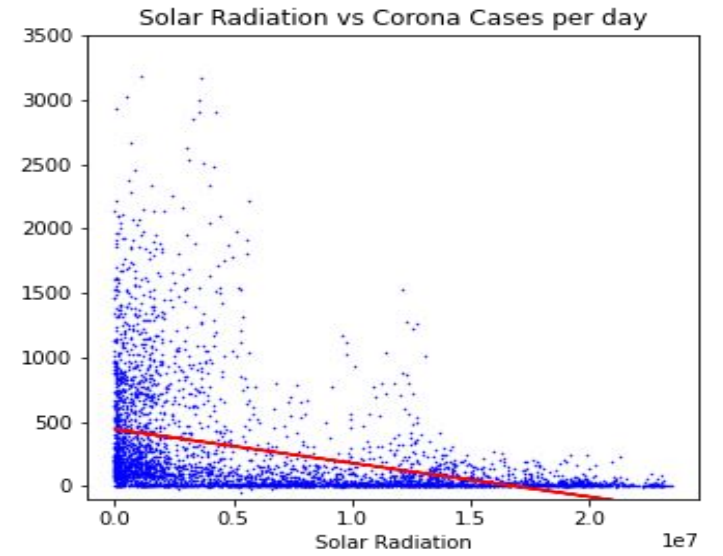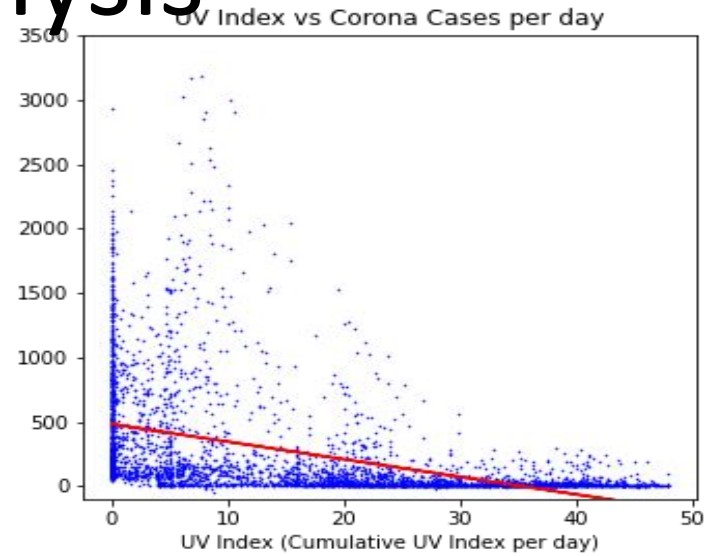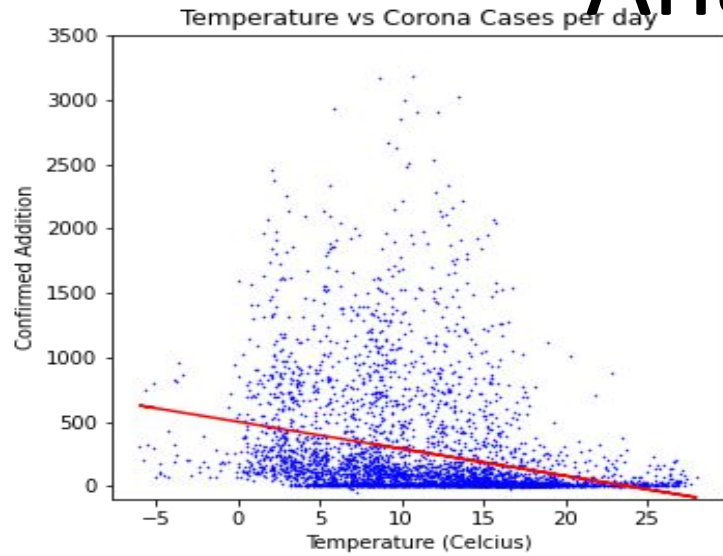
Maps of Key Variables

Statistical Testing

Pearson Test
Tests a linear relationship

Correlation Coefficient of UV index: -0.467

Spearman Test
Linear relationship based on rank

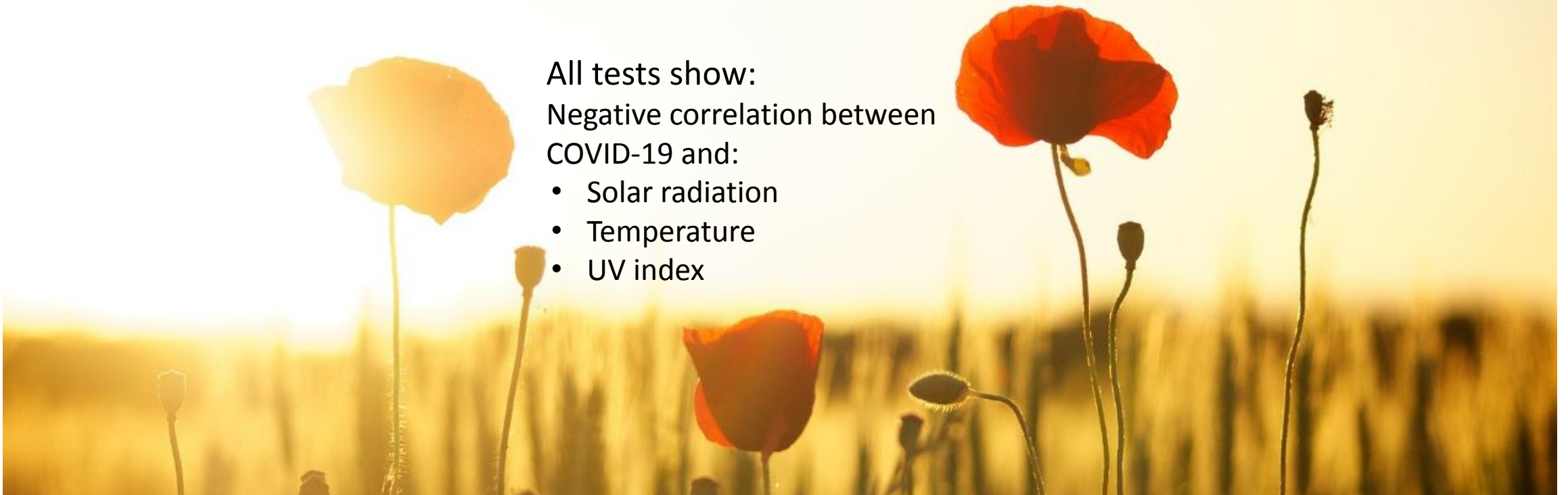Correlation Coefficient of UV Index: -0.703

Pearson with log-transformed data
Handles skewed data

Correlation Coefficient of UV Index: -0.655

All tests show:
Negative correlation between COVID-19 and:
- Solar radiation
- Temperature
- UV index

Confounding Factors

A Timeline of Covid-19 Restrictions in the Netherlands
and Total Daily UV-Index and Daily New COVID-19 Cases in the Netherlands
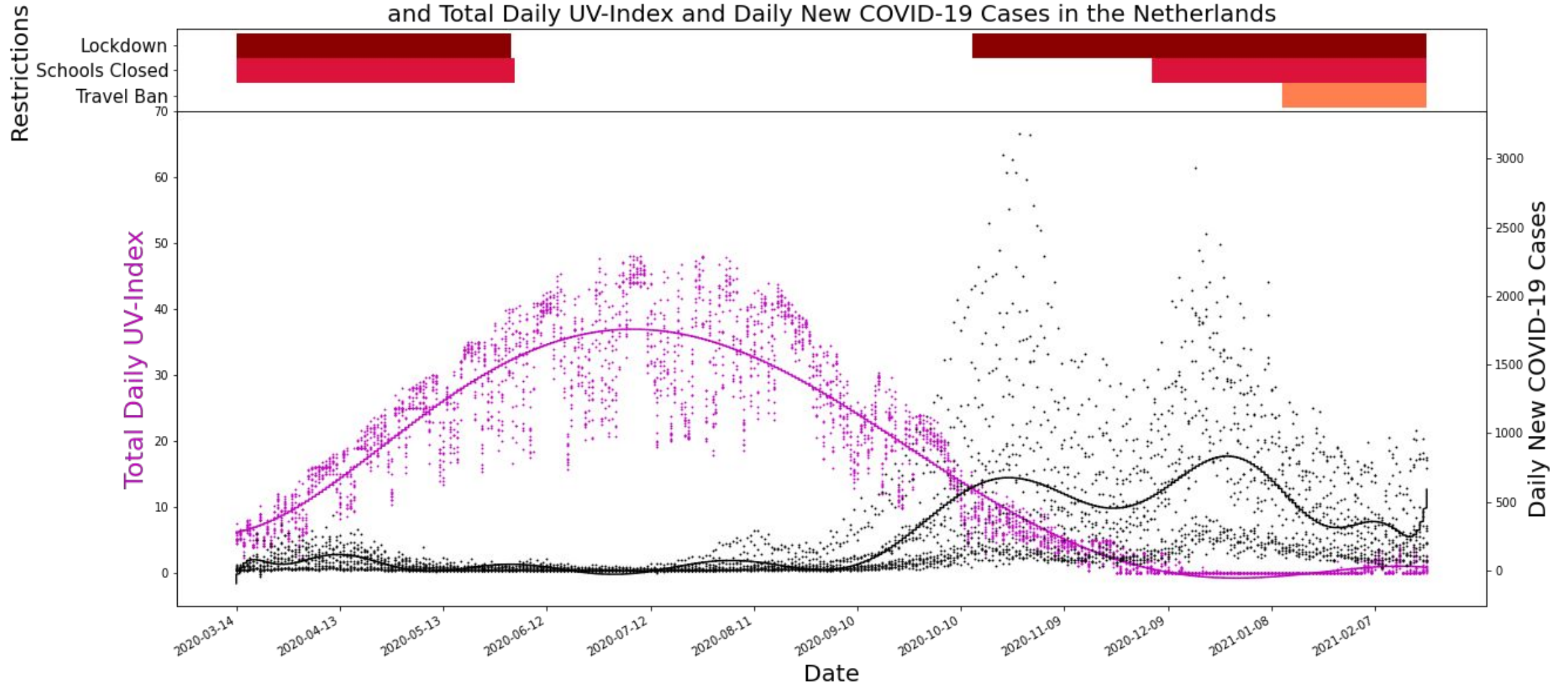
Multivariate Linear Regression

1. Weather Variables Only

R-squared: 0.463
UV P-Value: 0
UV T-Value: -35.195

2. With Lockdown Measures Added

R-squared: 0.481
UV P-Value: 0
UV T-Value: -30.464

Results:

UV Index is negatively correlated

Limitations in the Data
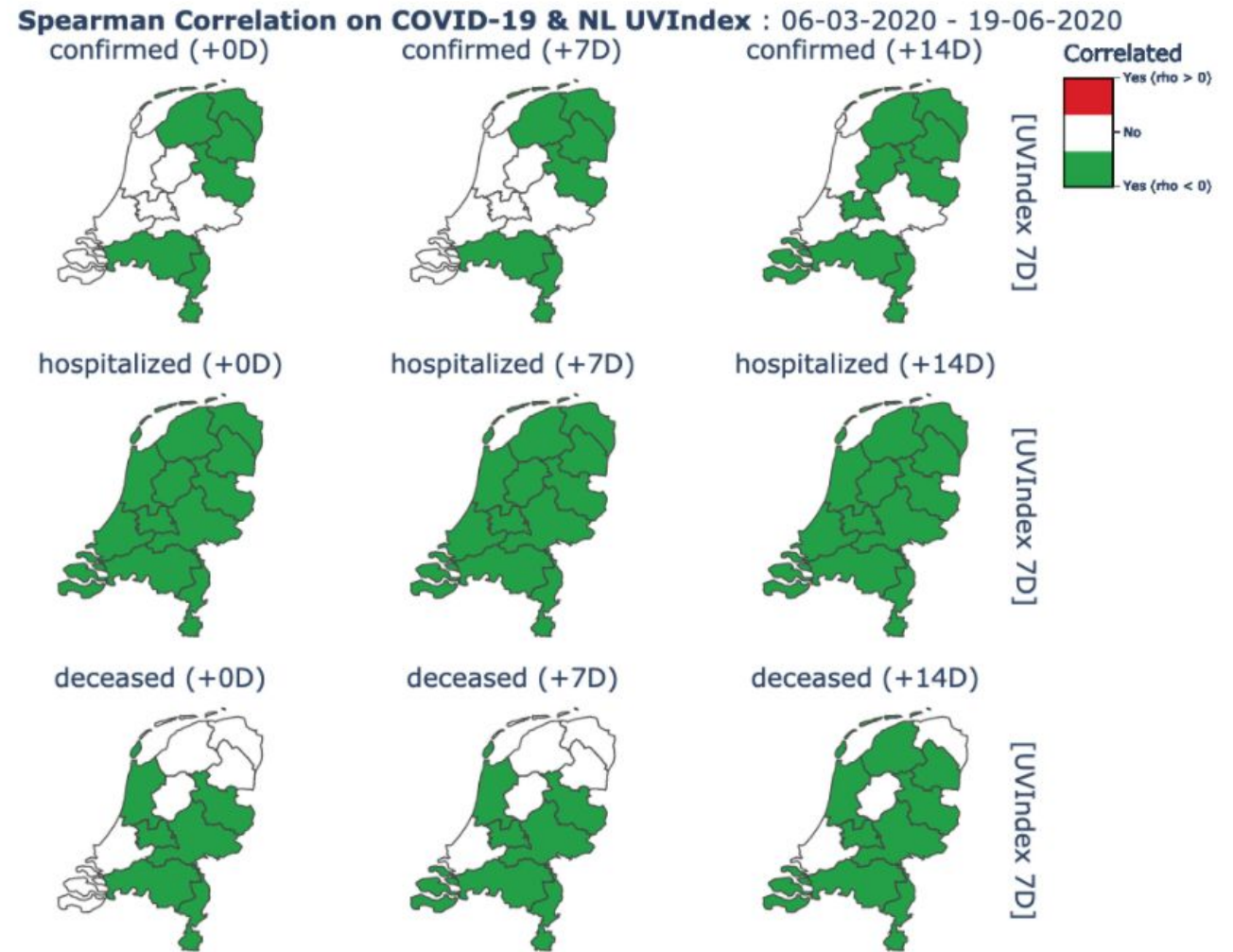
- Not generalizable without analysis
- Confounding Factors
- More precise location data

Limitations in Our Analysis

Improvements to be incorporated:

- Using a 7-day rolling sum to account for irregularities
- Using a precise incubation time

Spearman Correlation on COVID-19 & NL UVIndex : 06-03-2020 - 19-06-2020

Conclusions and Future Work

Thank you for your time

References

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