



Impact analysis of COVID19 using alternative indicators

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Introduction

- An initial wave of infections started in **nightlife venues** and a **boxing match** in **Bangkok**, peaked on 22 March 2020.
- December 2020, a surge of infections primarily clustered around **large migrant worker communities** in **Samut Sakhon Province** which was the second large cluster in Thailand.
- Thailand was relatively successful in containing the pandemic throughout most of 2020, but has been experiencing an uncontrolled resurgent outbreak since April 2021.
- As preventive measures were implemented, the outbreak subsided by May.
- There have been **2,071,009 confirmed cases** of COVID-19 with **20,436 deaths**, reported to WHO. As of 12 November 2021, a total of **81,708,694 vaccine doses** have been administered.

Introduction

Source

Methodologies

Result

Summary

Introduction

- Thailand's economy is expected to be impacted severely by the COVID-19 pandemic, the GDP output levels **shrinking** by at least **5 percent** in 2020 and taking more than **two years** to return to pre-COVID-19 levels.
- Thailand's GDP fell by 6.1 percent in 2020 which is one of the steepest contractions among ASEAN.
- **Exports** are expected to **decline by 6.3 percent** in 2020, the sharpest quarterly contraction in five years, as demand for Thai goods abroad remains **weakened** by the global slowdown.
- **The tourism sector** has been hit hard, with a near cessation of international tourist arrivals since March 2020.
- **Poverty rates** would have increased by 1.6 percent in rural areas and by 1 percent in urban centers, with the **largest increase in northeastern Thailand**.

Introduction

Source

Methodologies

Result

Summary

Sources of data



Google Earth Engine

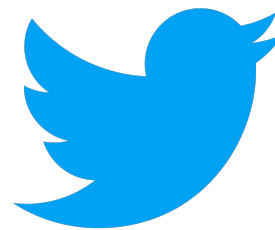
Nighttime Light Data
(from Google Earth Engine)

Apple Maps

Mobility Trends



Apple Mobility



Average Sentiment Index
(Twitter)

Introduction

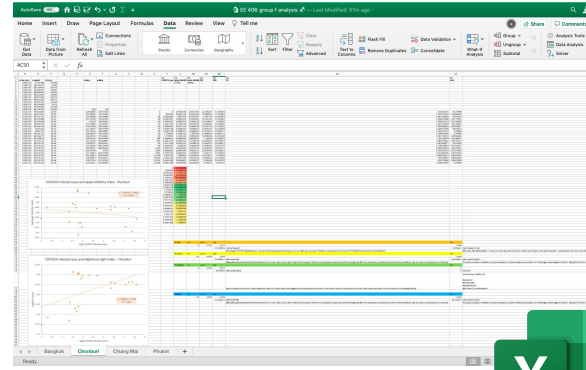
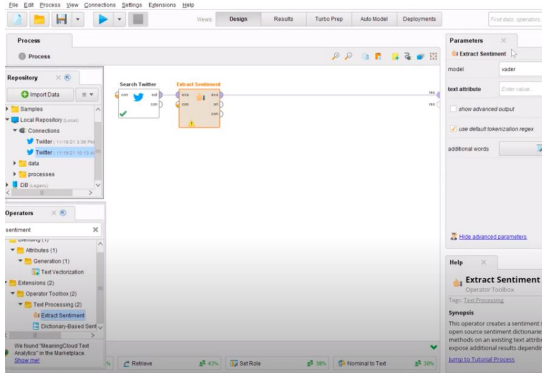
Source

Methodologies

Result

Summary

Briefs of analytical methodologies



- Use Excel to generate the COVID-19 infected cases and alternative indicators graphs
- Compute the provincial sentiment index by using Rapidminer (21.11.2021)
 - Keyword: “ COVID ”
 - Limit 1,000 number of tweets
 - Language: English
 - Input the geo-location of selected provinces

Introduction

Source

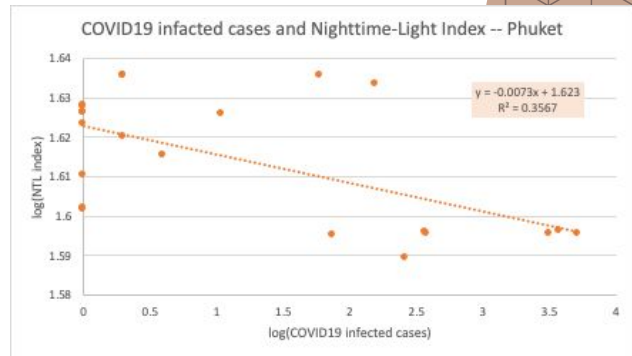
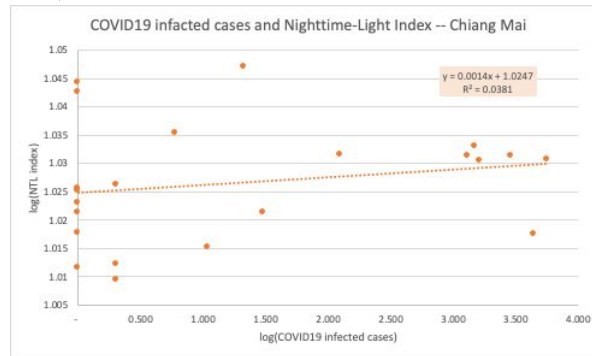
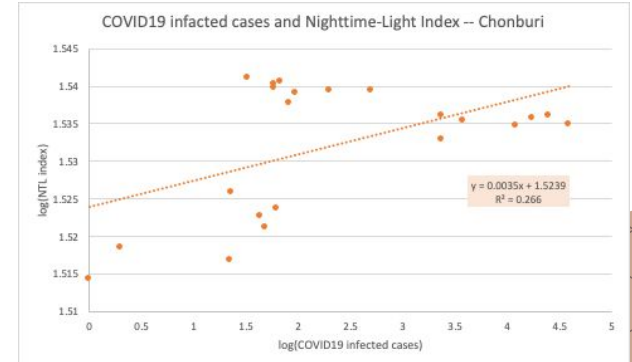
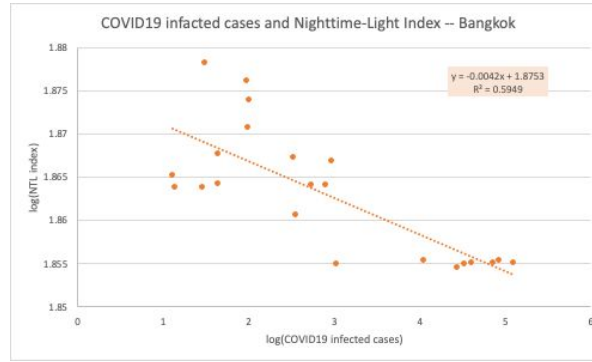
Methodologies

Result

Summary

Task #I: COVID19 and Nighttime Light

- During lockdown, province with a **strict policy** tends to have **lower number of nighttime light**
- Policy in Chiang Mai and Chonburi is not **as strict as Bangkok**
 - It shows that high infected cases and nighttime light are both **increased**



Introduction

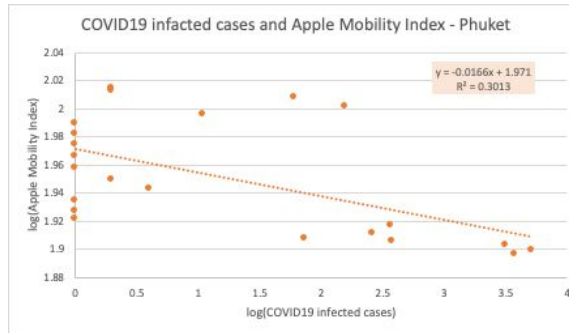
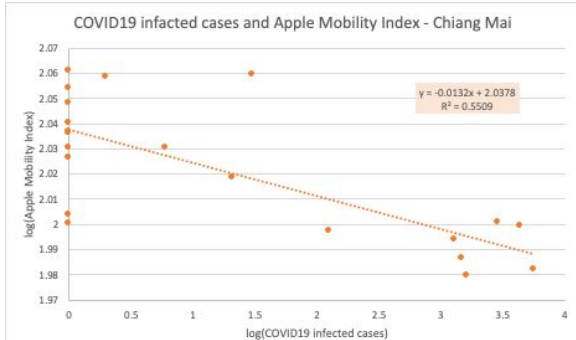
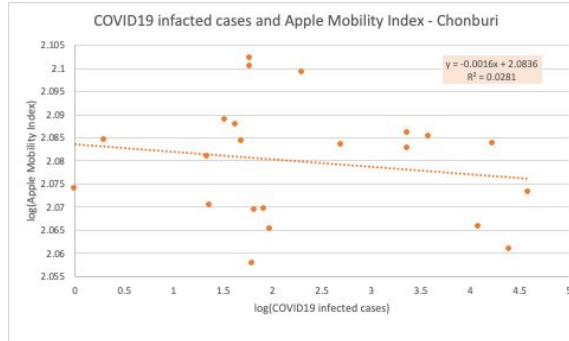
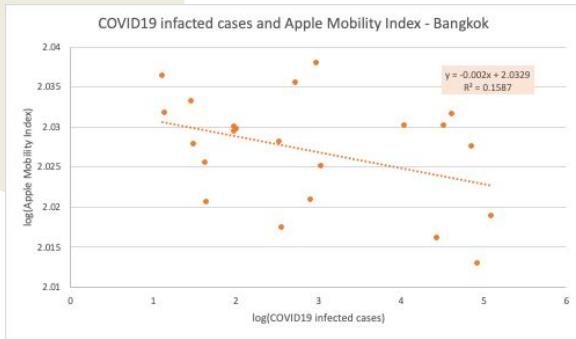
Source

Methodologies

Result

Summary

Task #2: COVID19 and Apple Mobility Index



- We notice the pattern of the **decreasing trend** of Apple Mobility Index in all 4 provinces
 - people tends to **stay home more** due to the higher number of Covid-19 infected cases

Introduction

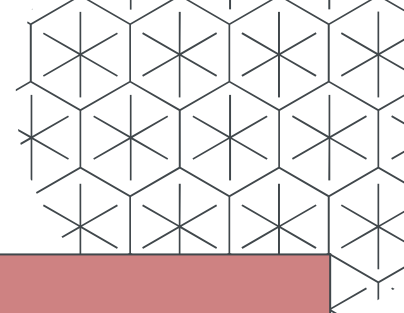
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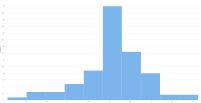
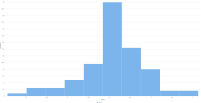

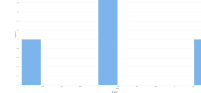
Methodologies

Result

Summary

Task #3: COVID19 and Sentiment Index (based on Twitter data)



Provinces	Number of related tweets	Average sentiment index	Distribution Chart
Bangkok	91	0.083	
Chonburi	92	0.079	
Chiang Mai	8	0.324	
Phuket	4	0.122	

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Introduction

Source

Methodologies

Result

Summary

Task #4: Result discussion

Are Nighttime Light Index and Apple Mobility Index correlated with the COVID-19 cases?

- From the Nighttime-light data, *some are correlated and some are not* since all provinces have different regulation and policy
- *Apple mobility index is correlated with the covid-19 cases* since all results in the second task went to the same direction

Can both indicators represent the economic impact of COVID19?

- *Both indicators can represent the economic impact of the COVID-19* because the government policies and regulations drive people to have more awareness of the society and have more social response

Introduction

Source

Methodologies

Result

Summary

Task #4: Result discussion

With the lessened restrictions of government's COVID19 containment policies, are the sentiment indices currently reflecting the positive attitude and recovering situation in those provinces?

- If the *sample size is higher, the sentiment indices are reflecting the positive attitude and recovering situation* in these four provinces in Thailand.
- The *keyword search should be more specific* to make it more effective.

Introduction

Source

Methodologies

Result

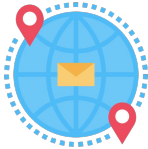
Summary

Policy Recommendation



- **Organize a national public health strategy to safe move beyond the crisis**

congress must ensure that public health organizations have fiscal resources to plan for and amount an effective response to this and future outbreaks



- **Focusing the data on the internet**

By using the data from rapidminer, government should observe how much the policy is perceived by the public



- **To ensure accuracy, put more specific keywords**
by adding more specific keywords, this will reduce errors and increase the accuracy of data results

Introduction

Source

Methodologies

Result

Summary

The background features several abstract, organic shapes in muted colors: a large brown shape on the left, a large light green shape in the center, and a large grey shape on the right. A small, dark grey oval is positioned in the lower right. At the top center, there is a black line-art illustration of a leafy branch.

THANK YOU