

**NANYANG TECHNOLOGICAL UNIVERSITY**

**EE5087 Living with Mathematics**

**REPORT**

**Topic of Project:**

**Income affecting Birth Rates**

Group Members:

Tan Keng Kai Luke (U1921535H)

Singhal Raghav (U2023945J)

Muhammad Azfar Nasri Bin Azman (U2222289H)

Tsai Pei Yu (U2223001F)

Augustine Jeow Kai Loon (U1920288K)

[1 Introduction 2](#_Toc809795885)

[2 Objectives 3](#_Toc2146634527)

[3 Motivation 3](#_Toc1503746030)

[4 Related Works 3](#_Toc942101100)

[5 Problem Fomulation 3](#_Toc1118904051)

[6 Mathematical derivation 3](#_Toc988875673)

[7 Model Justification 3](#_Toc985762000)

[8 Data Collection/Validation 3](#_Toc857677206)

[9 Algorithms 3](#_Toc997380813)

[10 Results 3](#_Toc1746625020)

[11 Observation 3](#_Toc1624161647)

[12 Conclusion 3](#_Toc1980617292)

[References 3](#_Toc728123748)

# Introduction

In recent years, Singapore suffered a decline of birth rate. This can be due to various factors including employment related matters. Thus, this report aims to find a connection between newly graduates starting salary to the birth rate of Singapore. Linear Regression will be used to predict the birth rates Singapore might observe soon. Additionally, this report also aims to find other factors that might contribute to the decline of birth rate.

# Data Collection

There will be 2 datasets used for this project. Both are retrieved from <https://data.gov.sg/>. The mean of both Basic and Gross Salary will be compared with each other to determine if there is an increase of workload. The salary is then compared against the birth rate of that year to determine the correlation between them.

# Statistics and Exploratory Data Analysis

Chart, line chart

Description automatically generated

Figure 1: Average Birth Rate from 2013 to 2021

Chart, line chart

Description automatically generated

Figure 2: Basic Mean Salary from 2013 to 2021

# 6 Mathematical derivations

# 7 Model Justification

# 8 Data Collection/Validation

# 9 Algorithms

# 10 Results

# 11 Observation

# 12 Conclusion

# References

**There are no sources in the current document.**

TODO:  
-Linear regression for birth rate and salary. To predict for the upcoming years. – create formula for each.

* Linear regression for Gross - Basic