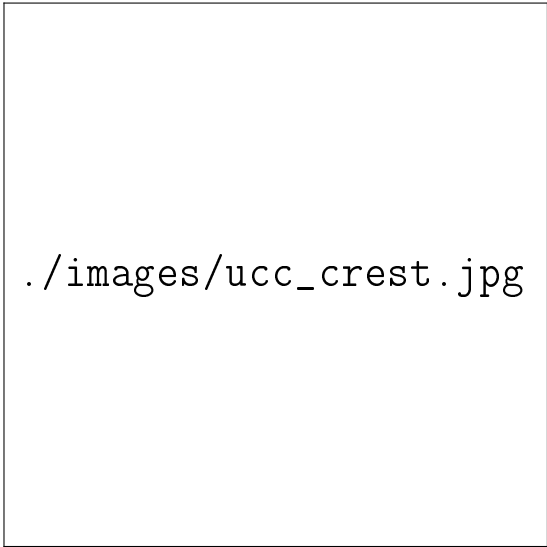


University College Cork



`./images/ucc_crest.jpg`

CS3205 Lab Report 1

HDI Trends and Multidimensional Projections

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# 1 Introduction

## 1.1 The Problem

the problem

## 1.2 The Datasets

the datasets

## 1.3 The Role of Visualisations

the role of visualisations

# 2 Data Description

## 2.1 hdi.xlsx

Description of data.

## 2.2 hdi.csv

Description of data.

# 3 Task 1

## 3.1 Free Exploration

In the free exploration section of the assignment I have created visualisations which give a broad overview of the general distribution of HDI across countries when looking at specific attributes of those countries.

Each of the following visualisations will include:

- A graphic
- A description of a pattern (or lack of)
- A hypothesis as to the cause of this pattern
- The dataset from which the data came

### 3.1.1 HDI Histogram

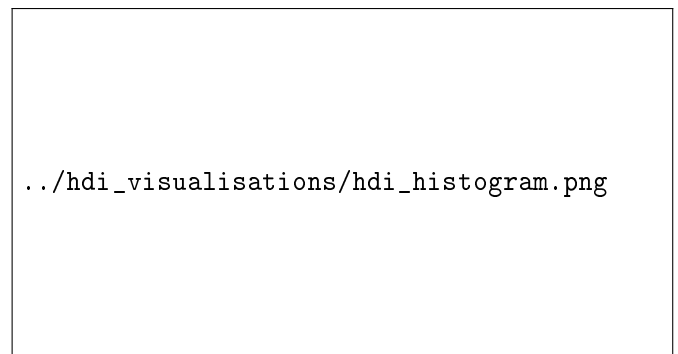


Figure 3.1: my hdi caption

### 3.1.2 HDI Global Heatmap

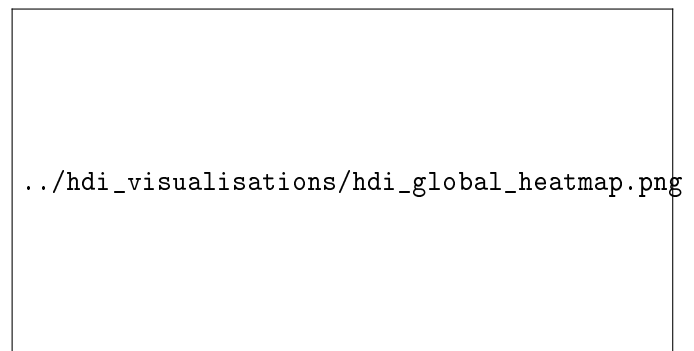


Figure 3.2: what a pretty map

### 3.1.3 Average HDI Trend

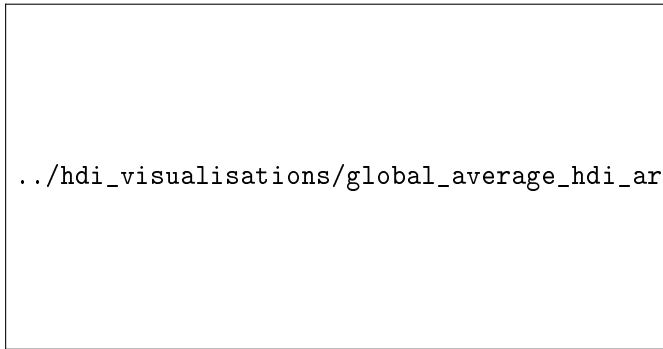


Figure 3.3: no dips

### 3.1.5 Male/Female Mean Years Education



Figure 3.5: girl power

### 3.1.4 Min/Max HDI

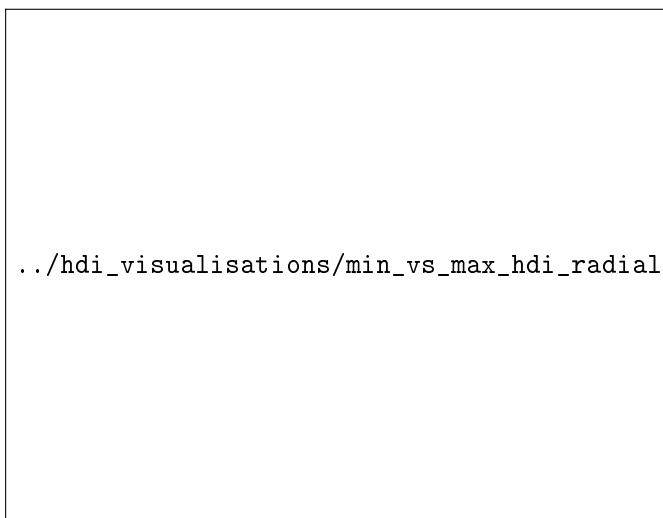


Figure 3.4: going in circles

## 3.2 Specific Observations

In the specific observations section of the assignment I have created visualisaions in line with the task list specifications.

### 3.2.1 Spurious Values

#### Expected Population Growth

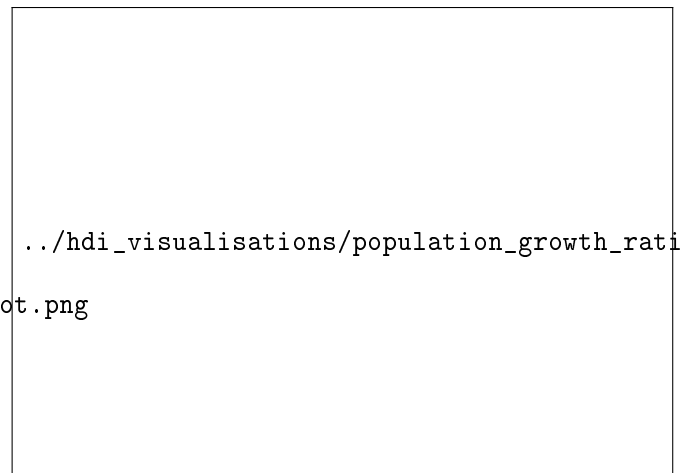


Figure 3.6: sexy visual spurious values

### Mean vs Expected Years Schooling



Figure 3.7: spurious value 2



Figure 3.9: GNI accounts almost totally for HDI

**3.2.2 Correlated Attributes**

**Fertility Rate vs Adolescent Birth Rate**



Figure 3.8: Early have children more children you have

**3.2.3 Uncorrelated Attributes**

**Women Share of Seats in Government vs Average Years Education**



Figure 3.10: Surprising

**HDI vs Gross National Income**

**Labour Force Participation vs GDP**

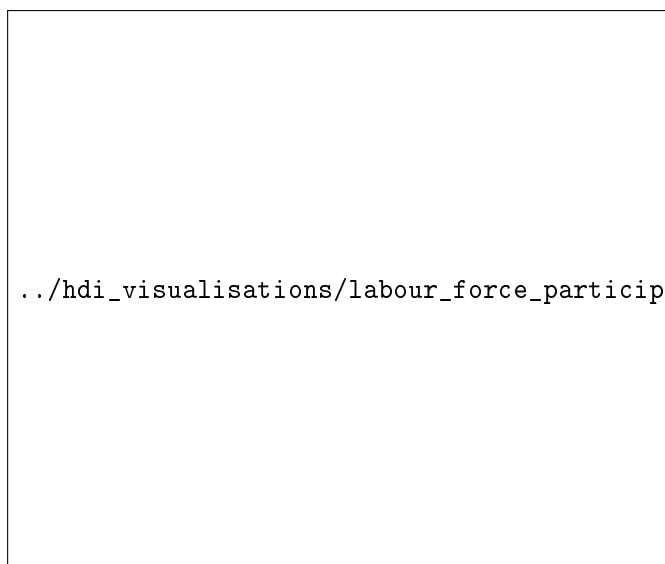


Figure 3.11: Surprising

### 3.2.4 Hypotheses for Previous Patterns

#### Health Expenditure ordered by Life Expectancy

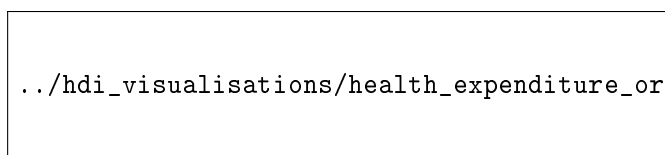


Figure 3.12: think of caption

### 3.2.5 Usefulness of All Visualisations

### 3.2.6 Alternative Visualisations

#### Min/Max HDI Alternative

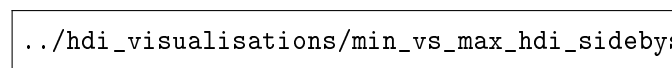


Figure 3.13: too long for computer screen, can do horizontal line comparisons

#### Mean vs Expected Years Schooling

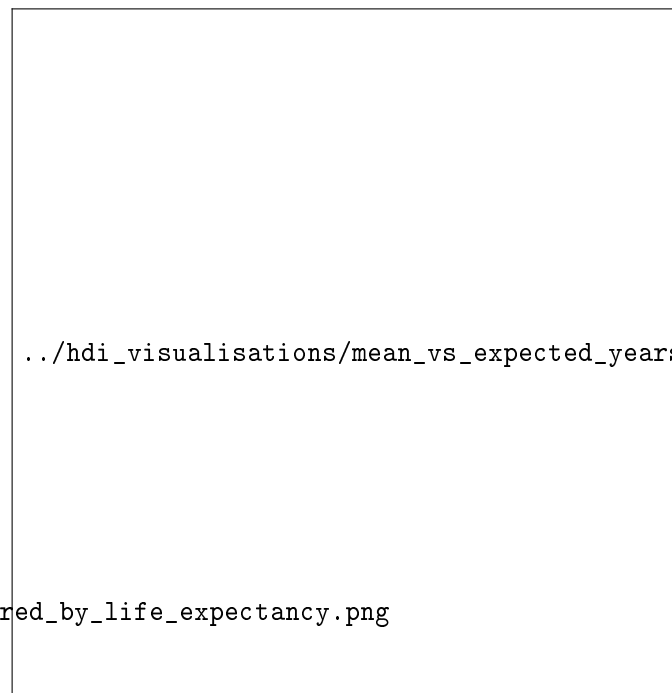


Figure 3.14: Lose individual countries

## 4 Task 2

Results for task 2.

### 4.1 Corel Projections Comparison

#### 4.1.1 LSP

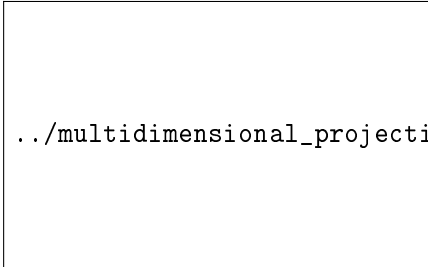


Figure 4.1: first projection

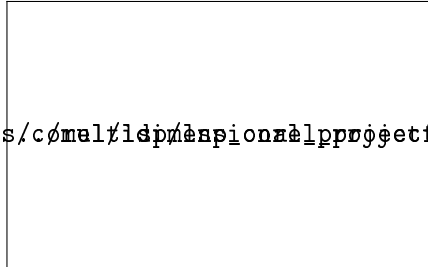


Figure 4.2: second projection

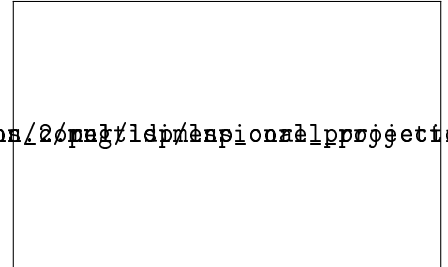


Figure 4.3: third projection

### 4.1.2 t-SNE

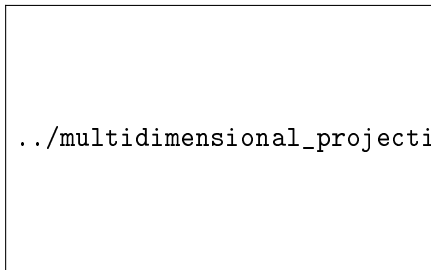


Figure 4.4: first projection

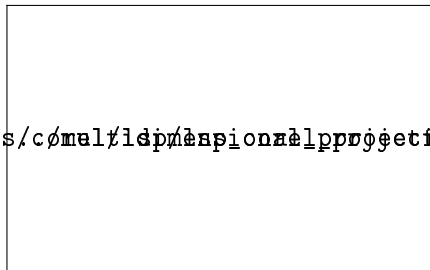


Figure 4.5: second projection

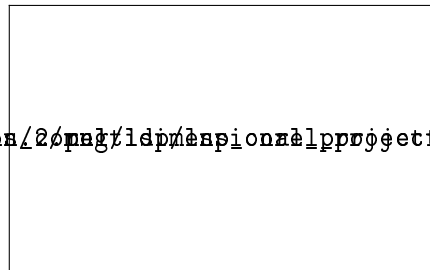


Figure 4.6: third projection



### 4.1.3 PCA

## 4.2 CBR Projections Comparison

### 4.2.1 LSP

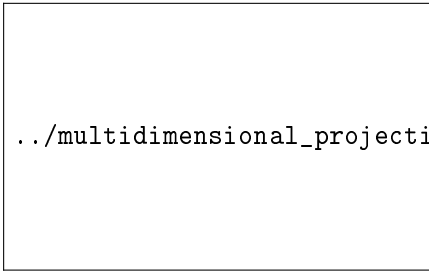


Figure 4.7: first projection



Figure 4.8: second projection

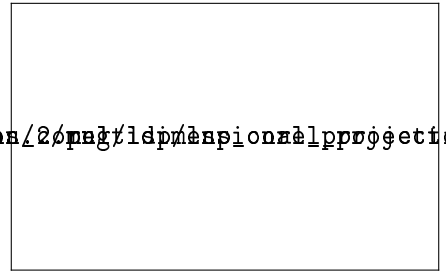


Figure 4.9: third projection

### 4.2.2 t-SNE

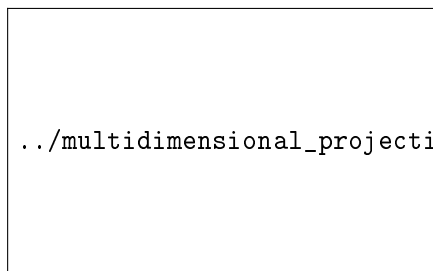


Figure 4.10: first projection

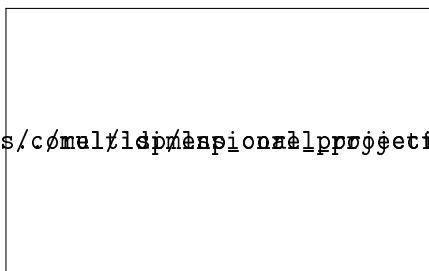


Figure 4.11: second projection

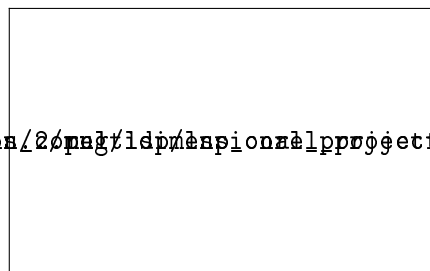


Figure 4.12: third projection

### 4.2.3 ProjClus

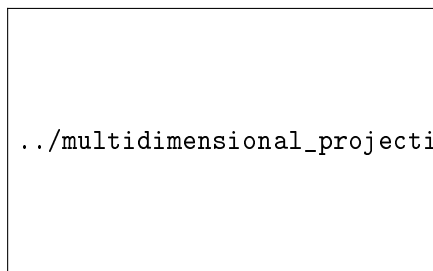


Figure 4.13: first projection

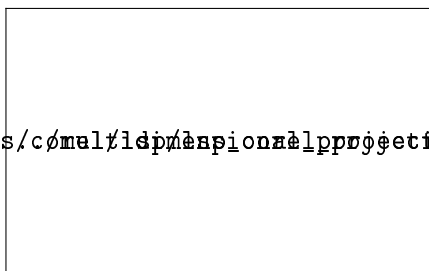


Figure 4.14: second projection

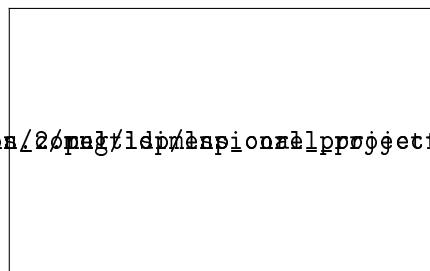


Figure 4.15: third projection

## 4.3 Medical Images Projections Comparison

### 4.3.1 LSP

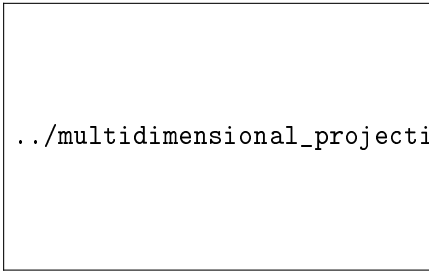


Figure 4.16: first projection



Figure 4.17: second projection

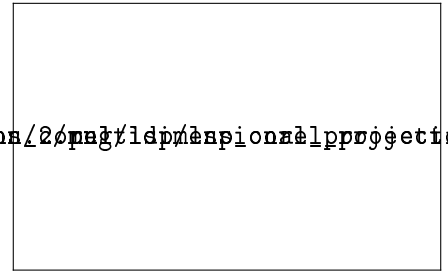


Figure 4.18: third projection

### 4.3.2 t-SNE

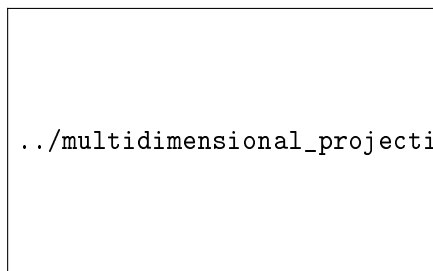


Figure 4.19: first projection

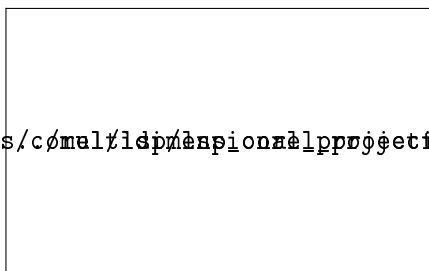


Figure 4.20: second projection

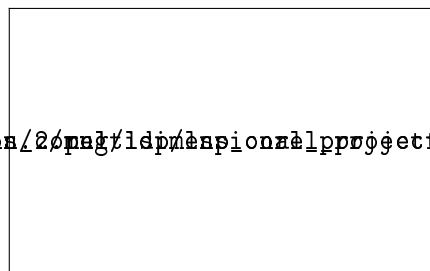


Figure 4.21: third projection

### 4.3.3 PCA

#### 4.4 News Headlines Projections Comparison

#### 4.4.1 LSP

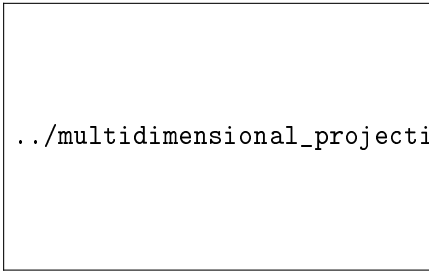


Figure 4.22: first projection



Figure 4.23: second projection

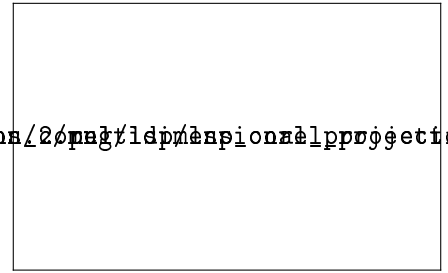


Figure 4.24: third projection



#### 4.4.2 t-SNE

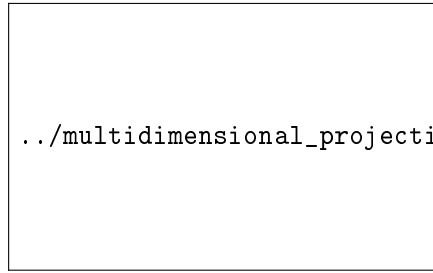


Figure 4.25: first projection

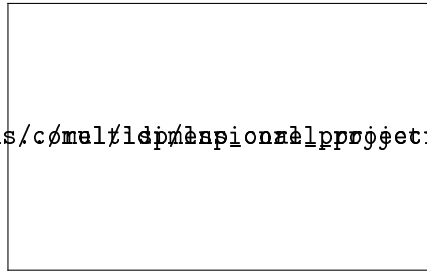


Figure 4.26: second projection

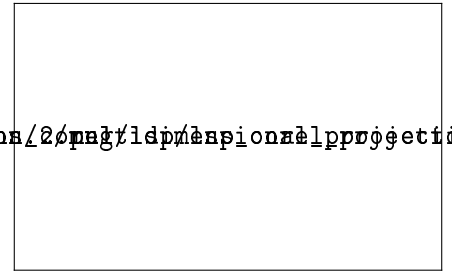


Figure 4.27: third projection

### 4.4.3 ProjClus

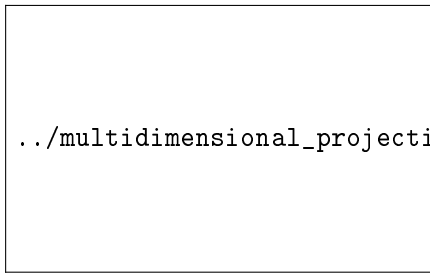


Figure 4.28: first projection

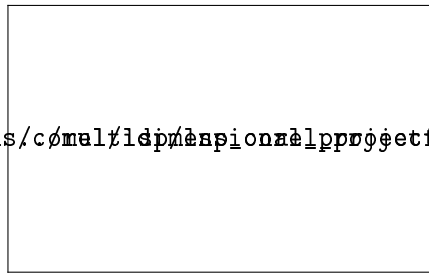


Figure 4.29: second projection

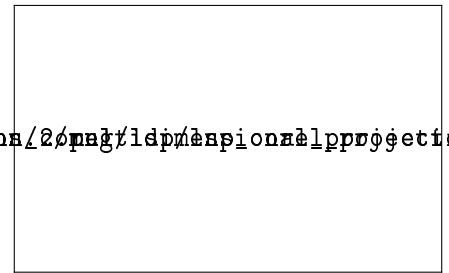


Figure 4.30: third projection

## 4.5 Projections of HDR

### 4.5.1 LSP

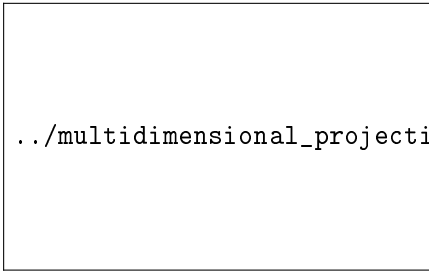


Figure 4.31: first projection



Figure 4.32: second projection

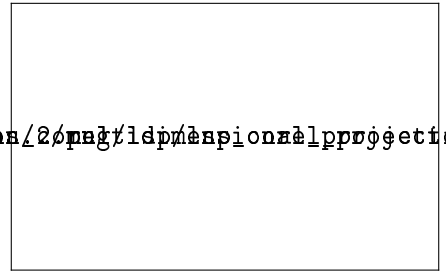


Figure 4.33: third projection

### 4.5.2 t-SNE

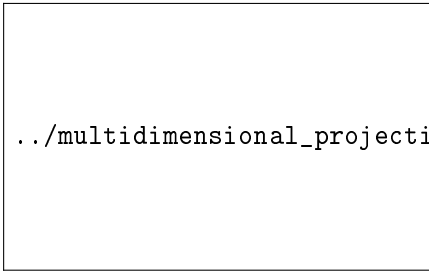


Figure 4.34: first projection



Figure 4.35: second projection

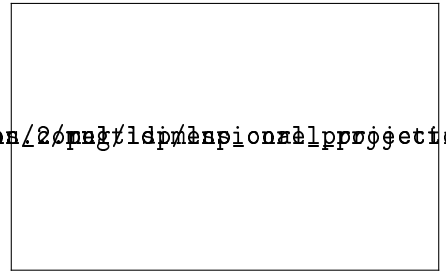


Figure 4.36: third projection

### **4.5.3 PCA**

## **5 Conclusions**

Conclusions from overall assignment, emphasis on data sets, exercises and using visualisations.

## **6 References**

References?