Provincial Poverty Trends in the Netherlands: 2011–2017

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Part 1. Identify a Social Problem

1.1 Describe the Social Problem

Has the number and proportion of people living below the poverty line increased or decreased over time in different provinces of the Netherlands and how does the amount of children who experience this change over the years?"

This project investigates trends in poverty across Dutch provinces from 2011 onward, using CBS microdata on low-income households. We analyze both the absolute number and the relative percentage of people in poverty to determine whether provincial disparities are narrowing or widening. This analysis will help identify where poverty is structurally persistent versus where progress is being made.

Poverty is still a serious concern in the Netherlands, even though it is considered one of the wealthier countries in the world. Recent figures from the Sociaal en Cultureel Planbureau (SCP) show that around 6% of Dutch households have to get by on a low income (SCP, 2022). This issue hits children especially hard—growing up in poverty can lead to worse outcomes later in life, including problems in school and with health (OECD, 2020). In this project, we take a closer look at poverty at the provincial level, because national averages often hide the fact that certain regions are doing much worse than others.

Although poverty levels in the Netherlands have gone up and down over the years, the differences between provinces remain clear. Areas like Groningen, Limburg, and Flevoland tend to score consistently higher on poverty indicators. By also looking specifically at child poverty, we hope to see whether children are more affected than the population as a whole—something that isn't always visible in general reports or statistics.

With this research, we want to give a clearer picture of how poverty varies across time and place in the Netherlands. By comparing poverty among all people with poverty among children, we can better understand where support is most needed and for whom.

Part 2. Data Sourcing

2.1 Load in the data

For this project we used publicly available data from CBS statline. This data shows variables focusing on household-level and income.
https://opendata.cbs.nl/statline/#/CBS/nl/dataset/86006NED/table
To combine the data we copy and paste all datasets from different years (2011, 2014, 2017) into one excel file and delete the double row and column names.

2.2 Provide a short summary of the dataset

The dataset "combined_poverty_data.csv contains information on poverty in different provinces in the Netherlands in the years 2011, 2014 and 2017. It provides both absolute and relative measures such as the total number of people and their respective percentages within their provinces.
Limitations include the dataset's restricted frequency of observation (3-year intervals). This restricts more detailed analysis into short term trends or policy changes.

```
Inkomensgrens        Duur inkomenspositie
 Length:36            Length:36
 Class :character     Class :character
 Mode  :character     Mode  :character




 Kenmerken van huishoudens    Regio's
 Length:36                    Length:36
 Class :character             Class :character
 Mode  :character             Mode  :character




    Perioden      Particuliere huishoudens (x 1 000)
 Min.   :2011    Min.    :   14.0
 1st Qu.:2011    1st Qu.: 116.2
 Median :2014    Median : 275.0
 Mean   :2014    Mean    : 391.1
 3rd Qu.:2017    3rd Qu.: 455.5
 Max.   :2017    Max.    :1466.0
 Personen (x 1 000) Minderjarige kinderen (x 1 000)
 Min.   :  39.0     Min.    :  11.0
 1st Qu.: 287.5     1st Qu.:  77.5
 Median : 613.5     Median :106.5
 Mean   : 833.7     Mean    :201.5
 3rd Qu.:1166.0     3rd Qu.:284.5
 Max.   :2818.0     Max.    :699.0
 Particuliere huishoudens relatief (%)
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Min.   :  8.00
1st Qu.: 66.75
Median : 72.50
Mean   : 71.97
3rd Qu.: 83.25
Max.   :105.00
Personen relatief (%)
Min.   :  5.00
1st Qu.:54.25
Median :61.00
Mean   :59.89
3rd Qu.:69.00
Max.   :84.00
Minderjarige kinderen relatief (%)      year
Min.   :  7.00                     Min.   :2011
1st Qu.: 68.75                     1st Qu.:2011
Median : 84.00                     Median :2014
Mean   : 77.28                     Mean   :2014
3rd Qu.: 89.75                     3rd Qu.:2017
Max.   :118.00                     Max.   :2017
```

2.3 Describe the type of variables included

Inkomensgrens: income threshold (low-income threshold)
Duur inkomenspositie: Duration of low income status
Kenmerken van huishouden: Type of households (Private households)
Regio's: Province names
Perioden: years of observation (2011,2014,2017)
Particuliere huishoudens (x 1 000): Number of low income private households(thousands)
Personen (x 1 000): Number of people in households (in thousands).
Minderjarige kinderen (x 1 000): Number of children in households (in thousands).
Particuliere huishoudens relatief (%): Percentage of all households that are low-income.
Personen relatief (%): Percentage of all people living in low-income households
Minderjarige kinderen relatief (%): Percentage of all children in low-income households
Year: this is manually added in excel to combine datasets.

The dataset however is limited as there is no information included on socio-economic drivers such as: education, housing cost or overall economic welfare of the rest of the nation's inhabitants. This limitation restricts the reliability of the conclusions that can be drawn.

Part 3. Quantifying

3.1 Data cleaning

The original data was downloaded from CBS Statline in a .csv format. Initially we copied and pasted all the datasets from 2011, 2014 and 2017 to one dataset named "combined_poverty_data.csv".

-In excel we added a column "year". in the dataset to make temporal analysis easier.

In R we then followed, we then corrected the first column in which there was a formatting error and called it "Inkomensgrens". CBS uses commas for decimal points which complicates R calculations so we converted them to periods.
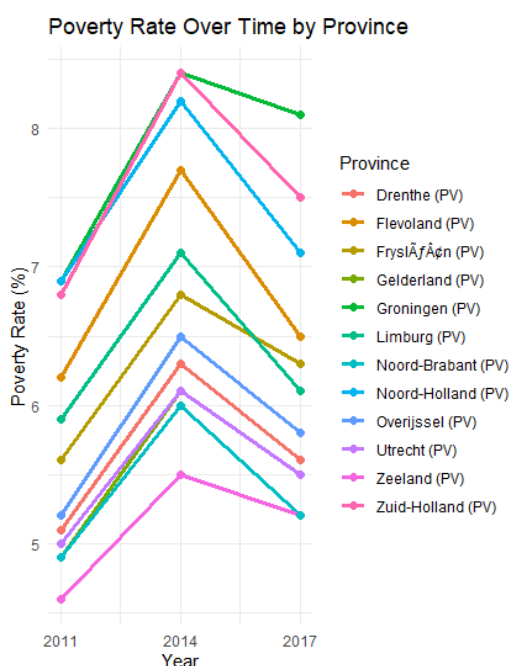
3.2 Generate necessary variables

We created 2 new variables to visualize some key findings in the data,
firstly the poverty-rate-change which measures the change in poverty rate between years for each province.
Secondly we added the child-to-total poverty ratio. Which compares the percentage of children in poverty to the total poverty rate, This will highlight the provinces where child poverty is disproportionally high compared to the total population.
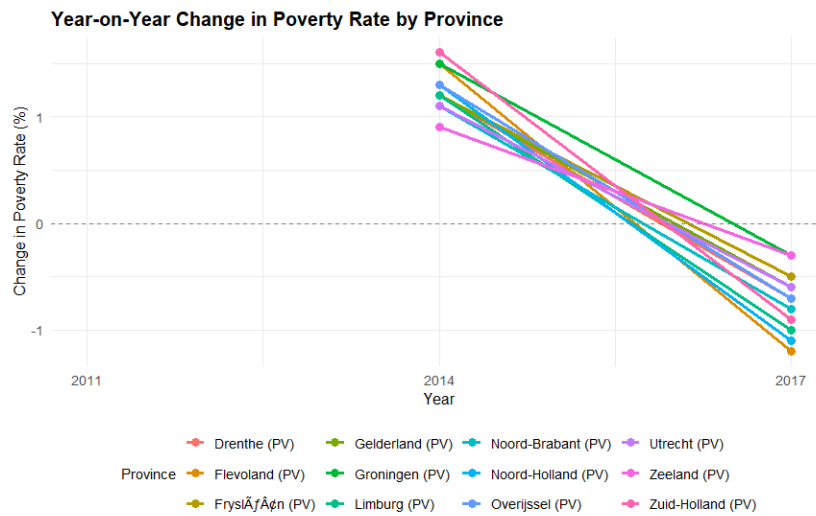
3.3 Visualize temporal variation

This first plot shows the poverty rate of each province over the years 2011, 2014 and 2017. It is observable that Groningen, Flevoland and Limburg consistently have the highest poverty rates. Utrecht and Noord Holland are among the lowest over the years.

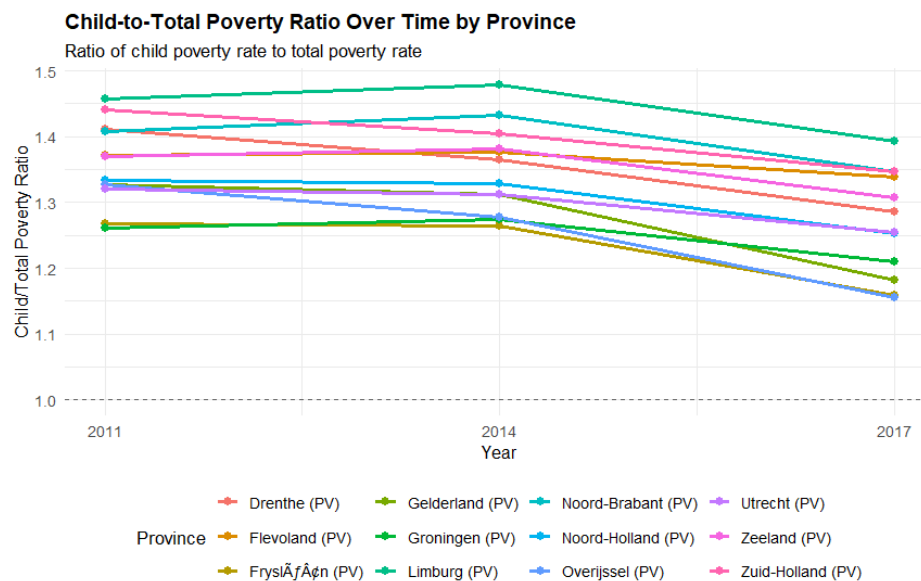Poverty Rate Over Time by Province

In this second plot we calculated the difference in poverty rate between each time point per province. In most provinces you can observe an increase in poverty between 2011 and 2014

and a decline from 2014 to 2017. Once again Groningen stands out with the high initial increase and a relatively slow recovery.
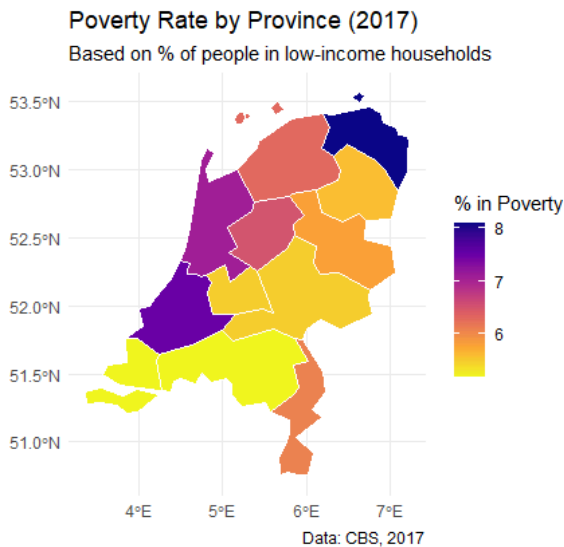

In this last plot we calculated the ratio between child poverty and total poverty to see whether children are affected disproportionately. A ratio greater then 1 shows that children are more likely to live in poverty, this seems to be the case in all provinces but in Flevoland and Limburg it consistently shows the highest ratio.
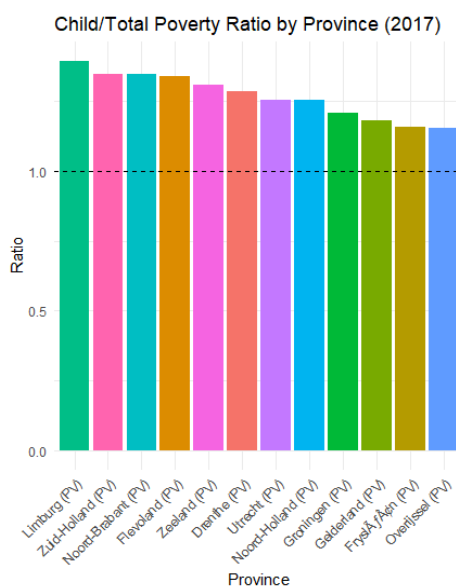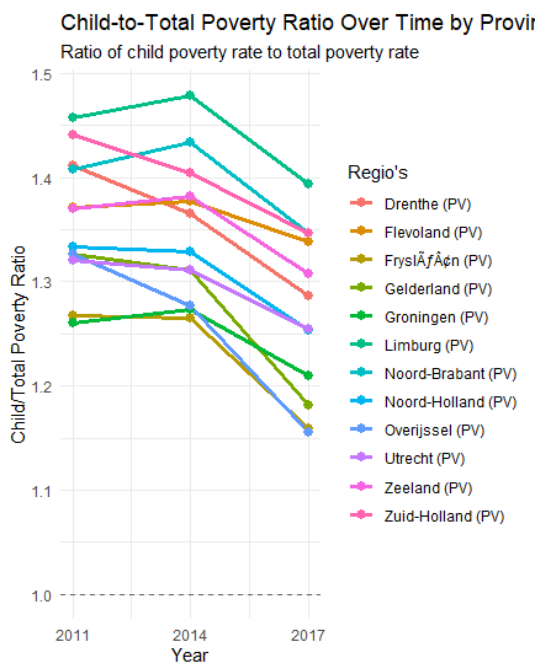

3.4 Visualize spatial variation

We used a map function to visualize poverty across provinces in the netherlands. It is observable that Groningen, Friesland and Limburg show higher poverty rates and Utrecht and Noord Holland show lower relative rates.
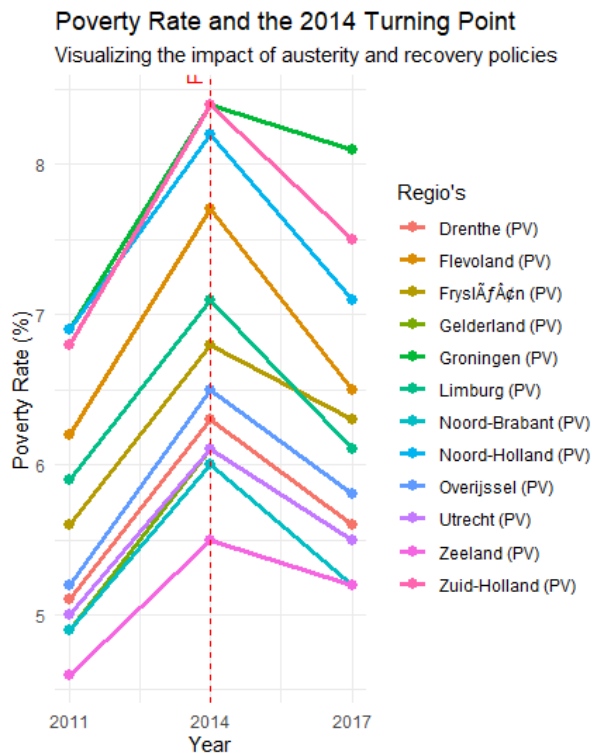
Poverty Rate by Province (2017)
Based on % of people in low-income households
Data: CBS, 2017

3.5 Visualize sub-population variation

The child to total poverty ratio makes it possible to analyze whether children are more affected by poverty than the general population. The ratio being over 1 shows that it disproportionately affects children which appears to be the case throughout the country. We see in the graph from 2017 that in Provinces such as Limburg and Zuid-Holland and Noord Brabant these ratios are highest. This shows that there are structural disadvantages for families with children in these regions.

Child-to-Total Poverty Ratio Over Time by Provin
Ratio of child poverty rate to total poverty rate

Child/Total Poverty Ratio by Province (2017)

3.6 Event analysis

The Eurozone crisis in 2009 caused a lot of economic policy changes. The dotted line denotes the austerity period (2011-2014) and the recovery period (2014-2017). This graph shows that most provinces experienced a severe upturn in the years after the Eurozone crisis. And shows a decline in the following period. The recovery however was uneven, as certain provinces such as Groningen and Friesland still exhibited elevated poverty rates.

Poverty Rate and the 2014 Turning Point
Visualizing the impact of austerity and recovery policies

Part 4 - Discussion

4.1 Discuss your findings

The analysis we conducted on poverty in provinces in the Netherlands has revealed some disparities in the spatial, temporal and subgroup categories.

Firstly we found that poverty is not evenly distributed spatially across the Netherlands. Provinces like Groningen, Friesland and Limburg consistently show elevated poverty rates than the National average. On the contrary, provinces such as Utrecht, Noord Holland and Zuid Holland show lower poverty rates. These consistent differences are very likely influenced by disparities in the labor market, variations in economic prospects or a difference in the quality of education.

Most provinces experienced a rise in poverty between 2011 and 2014. This is likely to be caused by post-financial crisis austerity policies. On average, this rise quickly stabilized from 2014 till 2017 where most provinces returned to their previous poverty levels. However, Friesland and Groningen continued to show elevated poverty levels, indicating that recovery was uneven throughout the country.

The child to total poverty ratio highlighted that families with children are more severely impacted by poverty than those without children. In Flevoland and Limburg families with children were 20% more likely to live in poverty compared to the general population. This pattern is not limited to just a few regions. Across the entire nation children were more likely to live in poverty compared to adults, underscoring great importance in implementing interventions to support families with children to prevent transgenerational poverty.
We selected the Eurozone crisis as the anchor point for our event analysis as it began two years before our first dataset and it had long lasting visible effects across Europe. All Dutch provinces show a severe incline in poverty over the period 2011-2014 very likely to be caused by reduced public spending or a delayed impact of financial strain. The period from 2014-2017 showed a stabilization nationwide, though the unevenness of this recovery undermines the importance of province-specific strategies.

Part 5 - Reproducibility

5.1 Github repository link

5.2 Reference list

Sociaal en Cultureel Planbureau. (2022). *Armoede in Nederland: cijfers en trends*.

Geraadpleegd op 8 juni 2025, van
https://www.scp.nl/publicaties/publicaties/2022/03/15/armoede-in-nederland

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Centraal Bureau voor de Statistiek. (2023). *Armoede en sociale uitsluiting 2023*.

Geraadpleegd op 8 juni 2025, van
https://www.cbs.nl/nl-nl/publicatie/2023/45/armoede-en-sociale-uitsluiting-2023