

Universal Basic Income: the future of social welfare?

Trade-off between acceptance of Universal Basic Income and labor participation in the Netherlands

by

C.W. Ouwehand

To obtain the degree of Master of Science in Engineering and Policy Analysis
at the Delft University of Technology,
to be defended publicly on Nog in te vullen.

Student number: 4293053
Project duration: June 29th, 2023 – Nog in te vullen, 2024
Thesis committee:
S. Renes, TU Delft, first supervisor
M. Kroesen TU Delft, chair of the committee and second supervisor



Summary

The tax system in the Netherlands is complex, with certain individuals facing marginal taxation rates as high as 80% or even exceeding 100% (Quist, 2015; Goderis & Vlekke, 2023). These elevated rates stem from the loss of allowances, tax deductions, and other social benefits as income rises, affecting around 66% of households and discouraging them from increasing their labor participation. This effect is called the welfare cliff. Simultaneously, approximately one million inhabitants, constituting 6.8% of the population, live below the poverty line (Goderis, Hulst, Wildeboer Schut, & Ras, 2018). This is partly due to the non-uptake of allowances, driven by fears of repayment if income exceeds certain thresholds, as well as eligibility criteria based on factors beyond income and wealth, such as rental costs.

To address poverty and alleviate the welfare cliff phenomenon, there is a proposed solution in the form of Universal Basic Income (UBI). UBI entails providing every regular resident of the Netherlands with a monthly, unconditional sum of money. The primary objective of UBI is to establish a baseline of financial security and stability, thereby reducing poverty and inequality (Van Parijs, 2004). Additionally, UBI serves as an incentive for individuals to engage in employment, as it removes the disincentive posed by the welfare cliff, ensuring that income increases gradually with work participation.

Although the idea counted large support at first due to its calculated potential to reduce poverty by 60% (ING Bank, 2018; I&O research, 2020), the conversation regarding UBI in the Netherlands took a turn after macroeconomic studies suggested that its implementation would require an additional tax increase of 50 to 100 billion euros decreasing the support and could potentially lead to a 4 to 8% decrease in labor participation (Olsthoorn et al., 2020). An overview of how to finance UBI policies is given in Table 2 at the end of the summary. In response to these findings from micro simulations, there is a growing interest in validating these outcomes using alternative methods, such as surveying the behavior of Dutch citizens.

This investigation involves the construction of a linear regression model based on a conjoint experiment, which assesses various UBI policies and funding mechanisms. To facilitate respondents in making informed responses, the survey estimates the disposable monthly income the respondents would have under different profiles within the experiment. This is aimed at avoiding prejudice in UBI opinions based on political views and informing respondents about the potential implications of UBI for them.

Using the coefficients obtained from the conjoint analysis, two UBI policies will be formulated: a high-UBI policy providing 1200 euros per month per adult and 300 euros per month per child, funded by the removal of tax deductions and allowances; and a mid-UBI policy offering 630 euros per month and 185 euros per child, financed by making UBI taxable and eliminating allowances.

To derive estimates regarding both labor participation, support for UBI policies and to investigate what people will do with their time and (extra)money, this study will strategically concentrate on distinct demographic groups that are likely to exhibit unique behavioral tendencies. The targeted groups include second earners in households or part-time workers, with a particular emphasis on women; single-parent households; families with children under 12 years old (due to insufficient data for children under 5 years old, the analysis will focus on this broader age range); individuals receiving welfare payments; young adults aged 18 to 27 years; and elderly workers aged 55 to 67 years.

0.1. How do labor participation and support change across the population?

The first objective of this study is to examine the balance between the support of UBI and labor participation in the Netherlands across different financial policies. Table 1 gives an overview of the change in labor participation and support due to the implementation of the policies. To address the issue of representativeness in the survey responses, adjustments are made to the regression coefficients for income and housing type

Table 1: Summary of change in labor participation (hours per week) for the population and the study group under high- and mid-UBI policies, and support (grade out of 5)

	Labor Participation		Support	
	High-UBI policy	Mid-UBI policy	High-UBI policy	Mid-UBI policy
General population	0.75 (-2.20, 3.69)	1.49 (-1.29, 4.28)	2.98 (2.40, 3.56)	3.01 (2.45, 3.56)
Women	+1.24 (-0.60, 1.50)	+1.52 (+0.83, 2.22)	3.33 (2.95, 3.72)	3.00 (2.70, 3.31)
Part-time workers	+1.39 (-0.45, 3.24)	+2.06 (1.21, 2.91)	3.21 (2.81, 3.60)	3.02 (2.83, 3.20)
Single parents	+3.06 (3.00, 3.32)	+4.83 (0.02, 6.10)	0.65 (0.04, 1.24)	0.00 (0.00, 0.00)
Parents with children younger than 12 years old	+1.21 (-0.68, 3.10)	+2.28 (3.47, 1.09)	3.92 (3.24, 4.61)	3.23 (3.10, 3.36)
Inhabitants receiving welfare payments	+3.81 (3.52, 10.12)	+4.46 (5.13, 9.95)	2.94 (1.21, 4.67)	2.06 (0.42, 3.70)
Young adults	+0.66 (-0.98, 2.29)	+1.46 (0.71, 2.21)	3.14 (2.76, 3.52)	3.00 (CI: 2.71, 3.30)
Elderly workers	+0.11 (-1.33, 1.54)	+0.61 (0.13, 1.09)	3.38 (3.02, 3.73)	3.17 (3.07, 3.26)
Notes:	(,) = 95% Confidence Interval			

(homeowners and social housing), as these factors exhibit statistical significance in the model.

The change in labor participation is measured hours work per week. The regression model indicates that implementing a high UBI policy is associated with an average increase of 0.75 hours of labor per week, while a mid-UBI policy is linked to an average increase of 1.49 hours per week. However, there's uncertainty around these estimates, reflected in wide confidence intervals. For the high-UBI policy, the interval ranges from a decrease of 2.20 hours to an increase of 3.69 hours per week, and for the mid-UBI policy, it spans from a decrease of 1.29 hours to an increase of 4.28 hours per week.

Analysis of labor participation across sub-groups reveals consistent increases with the mid-UBI policy, particularly notable among citizens receiving welfare payments who show an average increase of 4.46 hours per week. However, the high UBI policy exhibits similar uncertainty patterns among sub-groups, with only single parents and citizens receiving welfare payments showing an increase in labor participation across their confidence intervals.

With support measured on a five-point Likert scale, where a score above three signifies support for UBI and below three signifies opposition, the average scores for both the high UBI policy (2.98) and the mid UBI policy (3.01) among the broader Dutch population suggest a lack of conclusive evidence regarding overall support. This uncertainty is further underscored by the varying values of the confidence intervals, which encompass both supportive and unsupportive values.

Sub-group analysis reveals that single parents and citizens receiving welfare payments exhibit the highest increase in labor participation but the lowest support for the policies. In contrast, families with children under 12 and elderly workers consistently demonstrate support for UBI, as indicated by their support across all values within the confidence interval.

Understanding the discrepancy between the findings of this study, which suggest an inconclusive trend on labor participation across the general population, and the projected decline in labor participation highlighted in academic literature, requires consideration of the impact of the disposable income generated by these UBI policies. The beneficiaries of UBI predominantly include households with two or more adults, while single-adult households, particularly single parents, with low incomes emerge as the primary losers. It is therefore not strange that the poorest members of society exhibit the lowest support for the policy since they are worse off, and therefore in need of working more. When analyzing the respondent data even deeper, it can be observed that the group of respondents receiving a net increase in income, due to loss of allowances, is lower

than for the general Dutch population. This lead to an increase in labor participation.

0.2. Trade-off between labor participation and support

The trade-off between support and labor participation for UBI policies reveals that a UBI of 1200 euros per month generates the highest support increase but also the largest labor participation decline, while a UBI of 630 euros per month induces a smaller decrease in labor participation with less impact on support. Introducing a UBI of 300 euros per child slightly boosts support without significantly affecting labor participation, but reducing this amount leads to decreased support.

Financing mechanisms like removing allowances and eliminating tax deductions decrease support and increase labor participation, whereas making UBI taxable has a minor impact on labor participation but increases support. Maximizing support may benefit from making UBI taxable, while efforts to enhance labor participation may be better served by eliminating tax deductions.

Demographic analysis shows that higher income groups contribute to decreased labor participation and do not positively influence support levels. Additionally, individuals in social housing positively contribute to UBI support, while homeowners tend to oppose it, decreasing support levels.

0.3. What will people do with their time and money?

The second objective of this research aims to discern the anticipated behaviors of Dutch citizens under the mid and high UBI policies. This has been analyse with a traditional survey where respondents could see the impact the mid and high UBI would have on their monthly available income.

Contrary to findings in UBI literature from Western economies, there is no significant indication of increased investment in education among respondents. This absence may be attributed to the substantial proportion of highly educated and student respondents in the dataset. Another plausible explanation could be the accessibility of the Dutch education system.

However, under a high-UBI policy, there is a discernible inclination among respondents, particularly secondary earners, women, part-time workers, and young adults, notably students, towards seeking employment opportunities that align better with their preferences. This trend suggests a potential shift in labor market dynamics, with individuals opting for roles that offer greater personal fulfillment or align more closely with their career aspirations.

Secondly, a significant proportion of respondents, particularly those from lower and middle-income brackets residing in households with two or more adults, indicated their intention to save more money under both mid and high UBI policies. These groups, which are the target beneficiaries of the policy aimed at boosting income, are inclined to allocate a portion of their additional funds to savings. However, single adult households expressed concerns about the risk of further descent into poverty under these UBI policies.

The study further explores the potential health implications of UBI policies. It posits that the introduction of UBI may result in favorable health outcomes, such as decreased stress levels, improved access to healthier food choices, increased frequency of medical consultations, enhanced levels of physical activity, and reduced occurrences of mental health issues. Specifically, households with children and individuals receiving welfare payments anticipate notable reductions in stress levels and enhancements in dietary practices.

0.4. How to finance UBI?

Table 2: How to finance UBI

Policy	Explanation	Estimated revenue
No allowance system	Removed allowances: <ul style="list-style-type: none"> Rent allowance Health allowance Student allowance General child allowance Income-specific child allowance Childcare allowance 	27.4 billion euros <ul style="list-style-type: none"> 4.0 billion euros 6.6 billion euros 5.3 billion euros 6.8 billion euros 2.5 billion euros 4.2 billion euros
No tax deduction	The following tax deduction will be removed: <ul style="list-style-type: none"> General tax deduction Work tax deduction Individual tax deduction Mortgage interest rate deduction Other tax deduction 	76.3 billion euros <ul style="list-style-type: none"> 28.7 billion euros 24.7 billion euros 4.8 billion euros 14.7 billion euros 3.3 billion euros
Inefficient fiscal exemptions	From the 116 fiscal exemptions, 73 were analyzed by Ministerie van Financien (2023): 41 were categorized as uncertain in their effects, and 21 identified as inefficient. The ramifications of these uncertainties and inefficiencies translate into significant missed opportunities for the Dutch government.	47 billion euros
Increase income tax	New four bracket income tax policy: <ul style="list-style-type: none"> 0 to 27.000 36% 27.000 to 65.000 40% 65.000 to 100.000 50% 100.000 + 60% 	14 billion euros <ul style="list-style-type: none"> 0 euro 4 billion euros 8 billion euros 2 billion euros
Make UBI taxable	Implementing a tax on UBI and subjecting it to income tax for citizens, while considering whether to maintain existing tax deduction policies, could be a viable strategy. This approach would involve taxing the UBI received by higher-income individuals, effectively redistributing wealth to support lower-income residents.	Depending on the level of the UBI. <ul style="list-style-type: none"> 210 euros per month: 14.7 billion euros 1200 euros per month: 71.0 billion euro
Flat income taxation rate	This means that every individual pays the same tax rate over their income. There are two calculated optima with UBI: 56% with the current welfare system running parallel to 600 euro UBI, or 27% with 1200 euro UBI and no welfare system. Noteworthy is that no decline in labor participation is observed with an income tax below 36% (Heijman & van Ophem, 2005). A policy with a flat tax of 36% and UBI policy could be interesting to investigate.	There is no estimation of the revenue since it is only calculated budget neutral by Jongen, de Boer, and Dekker (2015) and Aerts, Marx, and Verbist (2023).
Land value and property tax	These are taxes based on the value of the land, and the value of the property an individual owns. These taxes have the potential for UBI since land is a finite attribute and properties are always owned by someone.	16.5 billion euros for the property tax, no estimate is found or made for the land value tax.
Less governmental employees	The introduction of a 1200 euro UBI engages that fewer employees are needed to control the condition of the welfare program.	7.4 billion (estimation)

Contents

Summary	iii
0.1 How do labor participation and support change across the population?	iii
0.2 Trade-off between labor participation and support	v
0.3 What will people do with their time and money?	v
0.4 How to finance UBI?	v
List of Tables	xi
List of Figures	xiii
Acronyms and vocabulary	xv
1 Introduction	1
1.1 Poverty and the welfare cliff in the Netherlands: What is the problem?	1
1.2 Is it the right time for Universal Basic Income?	2
1.3 Research questions for this study	3
2 Literature overview and background	5
2.1 What do we know about UBI in western countries?	5
2.1.1 What were the policies?	5
2.1.2 How did the labor participation evolve?	6
2.1.3 What advantages were observed?	7
2.1.4 What can we learn from previous conjoint analysis on UBI?	7
2.2 UBI in the Netherlands: a recap from 2013 until today	8
2.2.1 What UBI policies were calculated for the Netherlands?	8
2.2.2 Labor participation and poverty development based on microsimulations in the Netherlands	9
2.2.3 What can we learn from other survey research on UBI in the Netherlands?	10
2.3 Literature on UBI in the Netherlands and other Western countries: a synthesis	11
2.3.1 What have we learned from other experiments?	11
2.3.2 What have we learned from other surveys?	12
2.4 How to finance a UBI policy in the Netherlands?	13
2.4.1 Restructuring of the welfare system towards UBI.	13
2.4.2 Increasing current taxes or are there new forms of taxes to introduce?	13
3 Methods	17
3.1 Population and variables of interest for UBI.	17
3.1.1 Second earners, part-time workers and women	17
3.1.2 Single-Parent Household and families with children under 5 years old.	17
3.1.3 Inhabitants receiving welfare payments	18
3.1.4 Young adults	18
3.1.5 Elderly workers	18
3.2 Survey set-up	19
3.3 The conjoint experiment	20
3.3.1 Attribute selection	20
3.3.2 Governmental budget impact of the profiles	23
3.4 Which UBI policies will be analyzed?	23
3.4.1 The mid- and high-UBI policies, an introduction	23
3.4.2 How do these policies transform the welfare cliff?	24
3.4.3 How does these policies affect income?	25

3.5 Minimal number of respondents to achieve statistical significance	25
3.5.1 How to obtain respondents?	27
3.6 Data encoding of the sample for the regression analysis	27
3.6.1 Coding categorical variables for the regression analysis	27
4 Results	31
4.1 Population sample	31
4.1.1 Response.	31
4.1.2 Post hoc power analysis of the sample	33
4.2 Estimation of change in labor participation and the trade-off with support for the UBI policies .	34
4.2.1 Sub-set analysis for labor participation	34
4.2.2 Sub-set analysis for support of UBI	37
4.2.3 Estimate for change in labor participation for the Netherlands	39
4.2.4 The trade-off between support and labor participation for the UBI policies	40
4.3 Effect of UBI on the population of interest	42
4.4 What will people do with UBI?	43
4.4.1 Leaving their jobs	43
4.4.2 What will citizens do: an overview of their responses	44
4.5 Political support	46
4.5.1 Taxation	47
4.5.2 Poverty alleviation	48
4.5.3 How do sub-groups influence these results?	48
5 Discussion and limitations of this study	51
5.1 Limitations of the model	51
5.1.1 Limitations of the conjoint experiment: the impact of non-budget neutrality of the profiles	51
5.1.2 The limitation of the survey calculations: UBI at individual level	52
5.2 Discussion of the results	52
5.2.1 A decrease in labor participation was expected, why is it not observed?	52
5.2.2 The influence of an unbalanced population sample	54
5.2.3 Lack of power	55
5.2.4 Financial assumptions	55
5.3 Potential further research with this data set and this methodology	55
5.3.1 Information from the data set not used in this study	55
5.3.2 Re-use of the survey	56
6 Conclusion	57
References	61
References	61
A Appendix A: Welfare cliff and Income	67
A.1 Assumptions of the welfare cliff.	67
A.2 Individual plot of the welfare cliff for every household type	67
A.3 Change in income due to high- and mid-UBI policies.	72
B Appendix B: additional information regarding Dutch tax system and potential reforms	75
B.1 How to finance UBI	75
B.2 Old en new taxation systems	76
B.3 How to finance UBI?	76
B.3.1 Political analysis of property and land value tax	76
B.4 Estimation of the effect UBI has on governmental employees.	77
C Appendix C: The survey	79
C.1 The survey part 1: information about the respondent.	79
C.1.1 Informed consent	79
C.1.2 Questionair general information	80
C.2 The survey part 2: the conjoint experiment	82
C.2.1 Introduction text for the conjoint experiment	82

C.2.2 The conjoint questionair.	83
C.3 The survey part 3: the tradition questions.	84
D Appendix D: Demographic information & methods	87
D.1 Assumptions made for population statistics	87
D.2 Detailed population statistics and the equivalent number of respondents	87
D.3 Exemple of effect coding	87
E Appendix E: Results	89
E.1 Correlation between indicators	89
E.2 Change in labor participation in the Netherlands: An estimate	91
E.3 Change in labor participation and support regression tables for the sub groups	91
E.4 What will inhabitants do with UBI?	95
E.4.1 Resign for their jobs	95
E.4.2 Overview of the response	98
E.5 Political support	100

List of Tables

1	Summary of change in labor participation (hours per week) for the population and the study group under high- and mid-UBI policies, and support (grade out of 5)	iv
2	How to finance UBI	vi
3	List of vocabulary	xvi
2.1	Estimates of the change in labor participation in Mincome, APDF, CCDF, and the Finish experiment	6
2.2	Overview of calculated UBI policies in the Netherlands	9
3.1	Attributes and levels of the conjoint experiment	20
3.2	New income tax system used for conjoint experiment	21
3.3	Overview of the impact of each profile on the Dutch governmental budget	23
3.4	Population statistics of the Netherlands	26
3.5	Minimum number of respondents needed for each indicator.	27
3.6	Coefficient added to the attribute levels in effect coding	29
3.7	Overview of the dummy coding for the population of interest, interaction effects, and the other effect	30
4.1	Percentage of respondents per group compared to Dutch population statistics	32
4.2	Power for sub-groups that have less than 30 respondents	34
4.3	Regression results for change in labor participation due to UBI	36
4.4	Regression results for support of UBI	38
4.5	The percentage of each income group present in the population and the type of house they are living in	39
4.6	Regression results for change in labor participation and trade-off between acceptance	40
4.7	Change in labor participation (hours per week) for the study group under high- and mid-UBI policies, and support (grade out of 5)	42
4.8	Subsets that have a statistical significant different vision than the population	49
5.1	Financial requirements for allowances	53
B.1	Income generated by the financial plan of UBI from Table 2.2	75
B.2	Old and new taxation system in the Netherlands	76
D.1	annual gross income data per individual Dutch citizen	87
D.2	Example of a regression model	88
E.1	Regression table women	92
E.2	Regression result parttime	92
E.3	Regression table single parents	92
E.4	Regression results parent with children younger than 12	93
E.5	Inhabitants receiving welfare payments	93
E.6	Age group 18 to 27	93
E.7	Age group 51 to 67	94
E.8	Chi-square test to verify if the difference in observation on resigning jobs between High- and Mid-UBI policies is statistically significant	95
E.9	Chi-square test to verify if the difference in observation on what people will do with High- and Mid-UBI policies is statistically significant	98
E.10	Results of t-tests	103

List of Figures

1.1 Marginal taxation rate for different types of household as income is increasing	2
2.1 Overview of the tax deduction dependent on yearly income	12
3.1 Set-up of the three-part survey questionnaire	19
3.2 Basic Plan 2	20
3.3 Amount of health allowance depending on yearly income and the number of adults living in it .	22
3.4 Amount of rent allowance depending on your monthly rent and yearly income for households with more than one adult living in it	22
3.5 Amount of rent allowance depending on your monthly rent and yearly income	22
3.6 Welfare cliff created by rent allowance in the Netherlands	22
3.7 Marginal taxation rates under the proposed UBI policies	24
3.8 Change in income for single household due to UBI policies	25
4.1 Overview of the number of respondents per category	33
4.2 Trade-off between support and labor participation	41
4.3 Distribution of the respondents that would resign their job under a high-UBI policy	44
4.4 Distribution of the respondents what respondents will do with their time and money under a high-UBI policy	45
4.5 Above average valuation of UBI replacing the allowances, the welfare payments, no financial degradation, and UBI as form of social security	47
4.6 Below average valuation of a UBI value that is sufficient to live from	48
A.1 Marginal taxation rate for an individual household	68
A.2 Marginal taxation rate for a single parent with two children	68
A.3 Marginal taxation rate for a two-person household with no children	69
A.4 Marginal taxation rate for a two-person household with no children	69
A.5 Marginal taxation rate for a two-person household earning the same with no children	70
A.6 Marginal taxation rate for a two-person household earning the same with two children	70
A.7 Marginal taxation rate for a two-person household where one is earning 66% of the income and the other 34% with no children	71
A.8 Marginal taxation rate for a two-person household where one is earning 66% of the income and the other 34% with two children	71
A.9 Income for different household types with two children	72
A.10 Income for a household with two adults and one earner	72
A.11 Income for a household with two adults and one earner	73
A.12 Income for a household with two adults earning the same	73
A.13 Income for a household with two earners one earning 66% and the other 34%	74
C.1 Profile 2 on PC	83
C.2 Profile 2 on smartphone.	83
C.3 Overview of profile 2 on different device	83
D.1 Example plot of effect coding	88
E.1 Correlation between the variable	90
E.2 Distribution of young that would resign their job under a high-UBI policy	95
E.3 Distribution of women that would resign their job under a high-UBI policy	96
E.4 Distribution of students that would resign their job under a high-UBI policy	96
E.5 Distribution of part-time workers that would resign their job under a high-UBI policy	97

E.6 Distribution of citizen in the welfare gap that would resign their job under a high-UBI policy	97
E.7 Distribution of second earners that would resign their job under a high-UBI policy	98
E.8 Percentage of what will people do per category	99
E.9 The government should not increase tax to finance UBI	100
E.10 UBI should be paid by the highest earners	100
E.11 The poorest members in society should benefit from UBI	101
E.12 The government should help the poorest members in society	101
E.13 You should not have to pay your allowance back if you have earned over the limit	102
E.14 You should not have to pay your welfare payments back if you have earned over the limit	102

Acronyms and vocabulary

Vocabulary	Acronym	Definition
A		
Adverse selection		A motivation to work less since you are not gaining any money
Alaska Permanent Dividend Fund	APDF	UBI in Alaska
Allowance		A conditioned sum of money from the Netherlands
C		
Caregiving		Provision of physical support to individuals who are unable to fully care for themselves due to age, illness, or disability
Care work		The same as caregiving
Centraal Plan Bureau	CPB	Dutch economic bureau for policy analysis
Cherokee Casino Dividend Fund	CCDF	UBI for the members of the Cherokee clan
Crowding out		The phenomenon where increased government spending leads to offsetting the investment in other sectors
Confidence Interval	CI	Statistical range within the true parameter lies with 95% chance. The CI quantifies the uncertainty
E		
Elderly workers		Citizen between 51 and 67 years old
F		
Full-time		Working more than 35 hours per week
G		
General tax deduction		Tax deduction scheme for people earning less than 75.518 euros gross
I		
Individual tax deduction		A deduction up to 60.360 of gross income for self-employed
J		
Job-less		Having no work, even if you want to
L		
Labor participation		Amount of hours worked in a week
M		
Marginal taxation rate		It is the tax rate over 1000 euros of extra gross income
Minimum income experiment	Mincome	UBI pilot in Canada between 1974 and 1979
Manitoba		
P		
Part-time		Working between 12 and 36 hours a week
Poverty line		This 70% of the minimal wages, or 1216 euros per month in the Netherlands
Poverty gap		The extent by which the income of households living in poverty fall below the poverty line by a change in policy
S		
Side-job		Working between 1 and 12 hours a week
Significant		The probability that an observed result in a study is not due to random chance but represents a true effect in the population
T		
Tax deduction		A reduction of your income tax based on a condition
U		
Undeclared work		Work where no income tax is payed on
Universal Basic Income	UBI	Monthly, unconditional sum of money to every regular inhabitant of the Netherlands
Y		
Young adults		Adults between 18 and 27 years old
W		
Welfare cliff		If you are losing allowances and or welfare payments due to higher labor participation
Welfare payments		Conditioned sum of 1212 euro per month for the poorest inhabitants of the Netherlands, also called 'bijstand' in Dutch
Welfare program		All policies to support citizen of a country against poverty.
Work tax deduction		A tax deduction scheme for people earning less than 115.295 euros of gross income

Table 3: List of vocabulary

1

Introduction

1.1. Poverty and the welfare cliff in the Netherlands: What is the problem?

In the current tax system of the Netherlands, some individuals face marginal tax rates exceeding 100% due to its complexity, which includes various allowances, deductions, and social benefits (Quist, 2015; Goderis & Vlekke, 2023). These allowances are provided when gross income falls below a specific threshold to reduce poverty, with approximately 66% of Dutch households receiving them (Ministerie van Financiën, 2023; Centraal Bureau Voor de Statistiek, 2023a). However, crossing a certain income threshold leads to a gradual loss of these benefits, resulting in a higher marginal tax rate, known as the welfare cliff¹.

This situation creates adverse incentives, discouraging low and middle-income individuals from increasing their work efforts to avoid losing government assistance or allowances. Consequently, many find themselves caught in a poverty trap, unable to substantially improve their financial situation through increased work. For instance, Figure 1.1². middle-income earners in the Netherlands face significant marginal tax rates, ranging from 9% to 109%, primarily due to reductions in allowances (Rijksoverheid, 2023).

This phenomenon contributes to the high percentage of part-time workers in the Netherlands, currently at 48% of the workforce (De Nederlandse Bank, 2023; Centraal Bureau Voor de Statistiek, 2021; Eurostat, 2023). Income inequality in the country has remained stable since 1990³, with approximately one million individuals persistently living below the poverty line⁴ (Caminada, Jongen, Bos, Brakel, & Otten, 2021; OECD, 2023; Goderis & Vlekke, 2023; Ince, 2021).

Two key factors contribute to the persistence of poverty in the Netherlands: a significant portion of approximately 18%⁵ do not claim allowances they are entitled to. These numbers are even higher within the subgroup of the poorest members in society, those receiving welfare payments, where 35% does not pick up its allowances due to fear of paying them back or mistrust in the government (Berkhout, Koot, & Bosch, 2019; Arbeidsinspectie, 2023). Additionally, the rent allowance, a potent poverty reduction tool, has limitations, excluding households with rents above a certain threshold, estimated at around 136,000, thus contributing to poverty (Olsthoorn et al., 2020; van Elk, Griffioen, Verberk, & Weyzig, 2023).

Secondly, the rent allowance, acknowledged as one of the most effective tools in poverty reduction (Olsthoorn et al., 2020), faces additional non-financial constraints. An estimated 136,000 individuals experience poverty as they are ineligible for the allowance due to these constraints. Extending eligibility for this allowance to such households could potentially reduce overall poverty rates by 1.3% or 19% of total poverty (van Elk et al., 2023).

¹In the Netherlands, citizens earning up to 38.520 euro gross income can lose allowances, and earning up to 115.000 euro lead to a loss of tax deduction

²Assumptions of this plot can be found in Appendix A

³The Gini coefficient for the Netherlands stood at 0.291 in 2019 a relatively low figure compared to the OECD average of 0.315.

⁴Approximately 6.8% of the adult population and 3.9% of the child population

⁵156.000 households

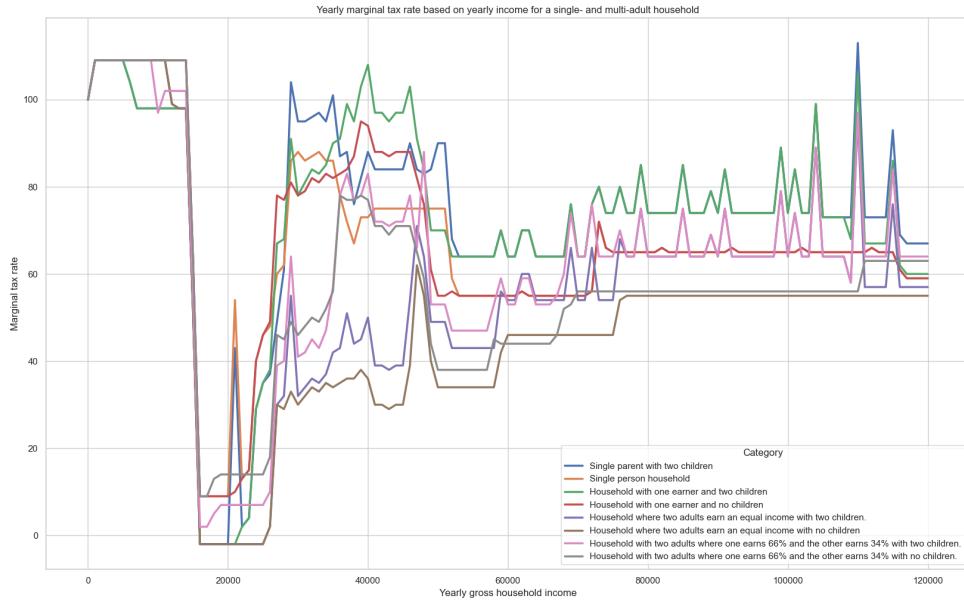


Figure 1.1: Marginal taxation rate for different types of household as income is increasing

In summary, the current system's high and inconsistent marginal taxation rates discourage labor participation, as seen in studies showing reduced participation rates when taxation rates exceed 60% (Van Ravestein & Vlijbrief, 1988; Heijman & van Ophem, 2005). Despite aiming to alleviate poverty, the allowance system paradoxically contributes to its perpetuation by factors such as non-uptake or ineligibility for rental allowances, which are significant contributors to poverty in the Netherlands.

1.2. Is it the right time for Universal Basic Income?

A potential solution to reduce poverty and remove the welfare cliff is universal basic income (UBI), a social welfare policy that provides a monthly, unconditional sum of money to every regular inhabitant of the Netherlands. UBI aims to provide a minimum level of financial security and stability for individuals to reduce poverty and inequality (Van Parijs, 2004). For example, introducing a monthly UBI of 1200 euros would completely eliminate the welfare cliff for the least advantaged individuals in the Netherlands, incentivizing them to accept a job, and is projected to reduce poverty by 60% (Bos & Verberk-De Kruik, 2019).

The removal of the welfare cliff is expected to lead to an increase in labor participation. However, the discourse surrounding UBI in the Netherlands shifted following the release of macroeconomic studies by the Dutch Economic Bureau for Policy Analysis (CPB) on the impact of UBI on the government's budget and labor participation. These studies indicated that implementing UBI would necessitate an additional tax income of 50 to 100 billion euros (depending on the UBI amount), and labor participation would decline by 4 to 8% (Olsthoorn et al., (2020); Jongen et al., (2015)). Consequently, it appears that the effect of unconditional income on labor participation outweighs the impact of the welfare cliff. Since these findings are derived from simulations, it is valuable to corroborate them through alternative methods, such as surveying the behavior of Dutch citizens (Ping Jr, 2004), to explore similarities and discrepancies in outcomes.

In the event that citizens choose to reduce their work hours as a result of UBI policy, it is important to consider the potential actions they may undertake. The Mincome experiment conducted in Canada from 1974 to 1979 provides some insights into this matter. Calnitsky and Latner (2017) and Marinescu (2018) reported a comparable reduction of between 4.0 and 11.3% in labor force participation among citizens. This decline was particularly noticeable among households headed by single parents, older inhabitants, and young adults. In their study, several factors explained the observed decrease in labor force participation. Caregiving re-

sponsibilities, illness, and investment in education are three notable findings for individuals opting to work fewer hours. Pursuing higher education can lead to increased labor productivity in the mid- long term and skill development among individuals, ultimately benefiting the economy. Similarly, individuals with caregiving responsibilities, such as caring for children or elderly family members, may allocate more time to these important responsibilities and reduce the need for professional, and expensive care. Understanding these dynamics is crucial for designing effective UBI policies that balance individual freedom, societal well-being, and economic sustainability. For example, in the Mincome experiment, they observed an 8.5% reduction in hospitalizations and mental health disorders (Marinescu, 2018). These are notable potential reductions⁶ in spending on health care since they are expected to crowd out in the following years (Aalbers & Roos, 2022).

The final aspect to be investigated is the feasibility of financing UBI. Previous studies conducted by ING Bank (2018) and I&O Research (2020) have revealed that Dutch citizens generally support the concept of UBI. However, this support tends to waver when individuals become aware of the associated increase in taxes required to finance such a program. The UBI proposals put forth by Nibud, as outlined by Bos and Verberk-De Kruik (2019), involve funding through an augmented income tax system and adjustments to the allowance system. It is important to note that Nibud's proposals provide a narrow framework for financial implementation and do not fully account for potential alternative approaches. The same observation can be made for Olsthoorn et al. (2020) while analyzing different UBI proposals and their economic impact. These works are limited to a redesign of the welfare program combined with an increase in income taxation. However, these calculations may not encompass the full range of possibilities, such as the exploration of new forms of taxation, the potential simplification of governmental finances that are narrowly related to the philosophical origins of UBI, and the examination of additional financial benefits, such as those related to healthcare or governmental employees that can be relocated. This research will delve deeper into these potential financing mechanisms to broaden and open the discussion on potential reforms that can be introduced to facilitate a UBI.

1.3. Research questions for this study

By (partially) removing the welfare cliff, reducing poverty, and simplifying the Dutch welfare system, it is evident that UBI offers some advantages. However, the significant cost associated with this policy, along with uncertainties regarding its impact on labor force participation, pose challenges in garnering support. The primary objective and main research questions of this study are to investigate the relationship between the acceptance of UBI and labor participation in the Netherlands under various financial policies. Additionally, the research aims to analyze the behavioral responses of Dutch citizens under UBI policies to explore whether other, less quantifiable advantages may also be applicable for the Netherlands.

To address this objective, the following research questions will be investigated:

1. What are potential financial policies for UBI?
2. Which specific groups within the Dutch population may differ in behavioral patterns from the rest of the population in response to UBI?
3. How will labor participation patterns evolve in the Netherlands under different UBI policies?
4. What is the level of support for various UBI policies amongst the Dutch population?
5. How would Dutch citizens allocate their financial resources and utilize their time if UBI were implemented in the Netherlands?

⁶The cost of hospitalization for the Dutch government is 29 billion euros per year (Ministerie van Financiën, n.d.)

2

Literature overview and background

In the present day, no country has fully implemented a Universal Basic Income (UBI) program. Nevertheless, there are specific geographical regions that have either experimented with or briefly implemented UBI-like policies. This literature review aims to provide a comprehensive overview of the findings and insights of prior researchers who have examined such policies and conducted microsimulations of basic income schemes. The primary focus of these reviews is on assessing their impact on labor participation, the financial mechanisms underpinning these policies, as well as the observed advantages and disadvantages in the regions where they were introduced. The review begins with an examination of international experiments related to basic income initiatives. In the subsequent section, the focus shifts to a more localized context, specifically within the Netherlands. From this background overview, more attention to financial policies for UBI will be presented.

2.1. What do we know about UBI in western countries?

The most important UBI schemes presented were held in Canada, the United States, and Finland. All these initiatives unconditionally provide cash transfers to members of their Western society. These experiments were selected because these countries have similar economic patterns as those of the Netherlands. It is important to acknowledge that UBI was one of the research topics that led Banerjee, Duflo, and Kremer (2007) to winning the Nobel prize in 2019 for their work on understanding poverty and how to fight it in third-world countries. In their research, they compared how basic income experiments could help decrease poverty and increase economic activity in Kenya. They fund a general increase in nutrition quality, a shift away from agricultural economics, and a more self-employed economy.

2.1.1. What were the policies?

Mincome, conducted in Dauphin, Manitoba, Canada, from 1974 to 1979, was a pivotal basic income pilot project. It was meticulously designed to evaluate the consequences of offering a guaranteed minimum income, equivalent to 60% of the poverty line, to all residents of the city. This unique experiment provided each recipient with an income substantial enough to cover their living expenses, amounting to approximately €24,600¹. The disbursement was made every month to all residents and was financed through a higher income tax rate (Forget, 2011).

In 1982, the Alaska Permanent Dividend Fund (APDF) was established to allocate a portion of the earnings generated from oil extraction to the residents of Alaska, United States. The exact dividend amount fluctuates annually and is determined through a formula that takes into account the fund's performance over five years. Consequently, the value of the dividend varies between \$1,000 and \$2,000 per annum. This dividend was included in the total income of each Alaskan resident and was subject to standard income tax rates.

Similarly, the Cherokee clan members in North Carolina, United States, are receiving an annual dividend

¹adjusted to today's euros

(CCDF) that ranges from \$4,000 to \$6,000 from the clan's casinos (Marinescu, 2018). Since this income is designated for a specific group within the state, it is subject to standard income tax rates.

Finland conducted a two-year trial of universal basic income between 2017 and 2019, which offered a monthly payment of 890² euros net to a randomly selected group of 2,000 unemployed individuals. The regular Finnish social welfare program remained available to these individuals alongside the basic income scheme (De Wispelaere, Halmetoja, & Pulkka, 2018) (Allas et al., 2020). This initiative served as a trial run to evaluate its feasibility before potential nationwide implementation. As of now, there have been no formal plans established for financing it on a larger scale (Kangas, Jauhiainen, Simanainen, & Ylikännö, 2019).

Several smaller-scale experiments were conducted in the United States. These include the "Minneapolis Income Experiment" in the 1970s, the "RISE" (Real Income Simulation Experiment) in Gary, Indiana, in the 1980s, and the "Guaranteed Income Demonstration" in Denver, Colorado, during the 1990s. These studies found that the programs did not have a significant impact on employment or the number of hours worked. However, they did result in improvements in recipients' mental health and overall well-being (Widerquist (2017) & Hoynes and Rothstein, (2019)). Due to the relatively small number of participants in these studies (30 to 200), I will not delve into further details.

It will be particularly interesting to monitor the progress of a new UBI pilot program in the UK, specifically in Wales. In this pilot, 500 young people between the ages of 18 and 25 will receive a monthly UBI of £1,600 for a duration of 2 years. The selection of participants for this project will take place over the next 3 years. The primary objective of this pilot is to assess the long-term impact of basic income on poverty, and unemployment, as well as its potential to enhance overall health and well-being within this population demographics (Wales Government, 2023). In the United States, the Stanford University has established the Basic Income Lab, a novel department dedicated to investigating Universal Basic Income (UBI) (Hasdell, 2020). They have initiated an experiment across various cities in the U.S. involving thousands of participants, with UBI ranging from 500 to 1200 dollars per month (Stanford Basic Income Lab, 2024).

2.1.2. How did the labor participation evolve?

Table 2.1 presents a comprehensive summary of the overall effects of UBI policies on labor participation.

Experiment	Effect on labor participation	Source
Mincome	11.3% reduction	(Calnitsky & Latner, 2017)
	4% reduction	(Marinescu, 2018)
	3.3% reduction	(Price & Song, 2018)
	Between 1 and 5% reduction	(Hum & Simpson, 2001)
APDF	No significant effect on full time employment 17% increase in part time work	(Jones & Marinescu, 2022)
CCDF	No significant effect on labor participation	(Singh, Brown, Copeland, Costello, & Bruckner, 2020) (Marinescu, 2018) (Lewis, 2017)
Finland	No increase nor decrease 6 days increase per year	(Kangas & Pulkka, 2016) (Van Parijs, 2020)

Table 2.1: Estimates of the change in labor participation in Mincome, APDF CCDF, and the Finish experiment

The Mincome experiment had the highest value for UBI. However, within the academic discourse, there is no consensus on its exact effect on labor participation. According to Calnitsky and Latner (2017), there was a significant 11.3% reduction in labor participation, particularly among single-parent households and young adults. Price and Song (2018) conducted an estimation of the revenue decline that Canadian families would have experienced as a result of the Mincome experiment. Their findings indicate a 3.3-percentage-point reduction in labor participation, leading to a 7.4% decrease in earnings (equivalent to €1,700 annually) for individuals who were part of the experiment, and this reduction persisted for several years after the experiment concluded. On the other hand, Hum and Simpson (2001) indicated that participants reduced their labor supply by 1% for men, 3% for married women and 5% for unmarried women. Hum and Simpson classified these disincentive effects as minimal. This suggests that determining the impact of a higher UBI on labor

²560 euros of UBI, and 330 euro of housing allowance (Allas, Maksimainen, Manyika, & Singh, 2020)

participation is a challenging endeavor.

In the Finnish UBI pilot, divergent findings have emerged across various research studies. Initially, Kangas et al. (2019) noted no significant impact on the total hours worked or overall labor market engagement. However, upon closer examination of sub-groups within the Finnish pilot, Van Parijs (2020) uncovered notable discrepancies in the results. Specifically, during the second year of the pilot, statistically significant increases in labor participation were observed. For instance, compared to the control group (comprising unemployed individuals not receiving UBI), there was a documented increase of 6 days in labor participation. Moreover, immigrants experienced a noteworthy 13-day rise in labor participation, while individuals residing in rural areas exhibited an 8-day increase compared to their counterparts in the capital city, Helsinki. Additionally, households with children demonstrated significant increases in labor participation, with single-parent households showing a 9-day increase and dual-parent households experiencing a 14-day increase. These disparities may be attributed to the existence of a welfare cliff, particularly in rural regions where housing benefits are less prevalent and lower in comparison to Helsinki. In the latter, certain individuals receive up to 600 euros per month in income-tested rent allowance.

2.1.3. What advantages were observed?

According to Calnitsky and Latner (2017), the reason for a drop in labor participation in the Mincome experiment is majorly for care work, disability, illness, or educational investment. Care work and educational investment are interesting because these are good reasons for a decline in labor participation. Higher education level is good for labor productivity of individuals and more care limits crowding out health expenditure for the government (Aalbers & Roos, 2022). In this experiment, health outcomes were investigated, and it found that recipients experienced an 8.5 percent decrease in hospitalizations compared to the control group, especially for mental health, accidents, and injuries (Forget, 2011). Also, an observation was made that Canadian citizen increased their expenditures on food. Salkind and Haskins (1982) interpreted this as a potential increase in nutrition quality. School attendance, grades, and test scores for the children of Mincome recipients were typically higher than the control population, especially for younger and poorer children (Marinescu, 2018). From a criminal perspective, violence and property crime decreased during the Mincome experiment (Calnitsky & Gonalons-Pons, 2021)

Some conclusions of Mincome are shared by Kangas et al. (2019) and Van Parijs (2020) for the Finish experiment, UBI did also lead there to improvements in recipients' mental and financial well-being (Allas et al., 2020). The Average life satisfaction among the treatment group was 7.3 out of 10, compared with 6.8 in the control group. To experience a similar lift in life satisfaction, Allas et al. estimate that a person's income would need to go up by as much as €800 to €2,500 per month in Finland, or 60 to 170 percent of the average per-capita household income in the European Union. Specifically, the study found that the program led to a significant reduction in stress and an increase in self-reported well-being among recipients. In the open response survey research from Kangas (2021) individuals who received UBI indicated that it "more sense financially to accept a job offer and would be easier to start a business [...] and reduce the bureaucracy involved when accepting a job offer." A major disadvantage of the Finish experiment was is lack of political viability since it has a 11 billion euro budget deficit where there was yet no plan to finance the policy (Kangas & Pulkka, 2016). De Wispelaere et al. (2018) concluded therefore that the different tax treatment of the experiment introduces distortions that affect the internal validity of the experiment. There is limited information available regarding the health implications of this experiment. One possible explanation for this gap is the general generous nature of the healthcare system in Scandinavian countries.

The Cherokee casino Dividend helped reduce criminality and school dropouts among members of the clan and poverty in general (Singh et al., (2020); Lewis, (2017)). The additional \$4,000 to \$6,000 per year for the poorest households in the casino dividend program increased educational attainment by one year (Marinescu, 2018). Casino dividend payments improved mental health among members of the clan. Once they reached adulthood, children who received casino dividends were significantly less likely to experience alcohol or cannabis use or dependence (Costello, Erkanli, Copeland, & Angold, 2010).

2.1.4. What can we learn from previous conjoint analysis on UBI?

The selection of a conjoint experiment as the chosen type of survey for this study is motivated by the significant role played by the attributes of a component, which exhibit variations based on personal characteristics.

They can also be used in policy research to assess public preferences and inform decision-making on trade-offs between the attributes. The trade-off I want to investigate in this research is the trade-off between labor participation and acceptance of UBI.

This methodology has previously been applied in studies examining support for welfare and labor market policies (Gallego & Marx, 2017). They found that higher benefit support, financed by the wealthiest members of society, received the highest level of support. Similar approaches have been utilized in the evaluation of Universal Basic Income (UBI) support (Stadelmann-Steffen & Dermont, 2020; Rincon, 2023; Rincón, Vlandas, & Hiilamo, 2022; Wispelaere & Noguera, 2012; Rincón & Hiilamo, 2019). Studies conducted in Spain, Switzerland, the United Kingdom, and Finland revealed that individuals were more supportive of a high-value UBI restricted to nationals, but faced opposition due to its universality, particularly in Spain where preference was shown for means-tested policies. Conditional policies, requiring recipients to actively seek employment or demonstrate genuine inability to work, were preferred. However, implementing such policies without creating a "welfare cliff" effect poses a challenge, particularly if the tax-back rate is not appropriately structured, as is currently observed in the Netherlands. Additionally, individuals showed less inclination to endorse UBI if it involved reducing existing benefits but expressed greater support when funded through increased taxation on the wealthiest members of society.

Differences between these studies and the presented one lie in their respective objectives. While previous studies aimed to assess respondents' evaluation of the unconditional aspect of UBI, changes in taxation, alterations to welfare programs, shifts in poverty levels, and adjustments in inequality, the current study seeks to investigate the impact of UBI on labor participation and explore potential trade-offs with public support.

Today, the application of conjoint experiments for estimating labor participation has been constrained. Prevailing literature utilizing this method predominantly concentrates on evaluating the social acceptance of UBI. Nevertheless, the exploration of conjoint experiments for investigating labor participation, particularly in the specific context of the Netherlands, is conspicuously underrepresented in academic discourse.

2.2. UBI in the Netherlands: a recap from 2013 until today

In the Netherlands, despite the interest of several cities (Deventer, Groningen, Nijmegen, Tilburg, Utrecht, and Wageningen), there has not yet been a UBI experiment (Betkó, 2023). These cities have participated in research on the effectiveness of Dutch welfare programs conducted by De Boer, Bolhaar, Jongen, and Zulkarnain (2020) and Betkó (2023), specifically focusing on welfare payments (1216 euro per month) for the most economically disadvantaged individuals in society.

2.2.1. What UBI policies were calculated for the Netherlands?

Several UBI policies have been proposed for the Netherlands, with some designed to be budget-neutral. Table 2.2 provides an overview of these policies, which can be broadly categorized into two types: those implemented at the household level and those provided to every adult (Bidananure, 2019). Appendix B, specifically Table B.1, offers estimates of the financial implications associated with these policies.

In all proposed policies, welfare payments are reduced by the amount of individual UBI provided. This adjustment serves to diminish the welfare cliff effect for the affected demographic. For instance, under a UBI of 600 euros per month, individuals currently receiving welfare payments would still obtain a total monthly income of 1212 euros, comprising 600 euros from UBI and 612 euros from welfare payments. Consequently, the threshold to exit the welfare system is lowered, requiring a minimum of 12 hours of work per week compared to the previous 23 hours³. This signifies a significant reduction in the welfare cliff due to the UBI policy.

Table 2.2 reveals a noteworthy resemblance in the differentiation between moderate and high values of UBI when compared to American and Canadian models from section 2.1.1. An intriguing distinction in these proposals is the introduction of a UBI per child to mitigate child poverty, as cited in (Ince, 2021). Of particular academic interest is the persistence of allowances in schemes featuring lower UBI values. This approach is aimed at shielding society's most financially vulnerable members from potential income reductions. It is worth noting that the concept of allowances, with its specific and targeted nature, enjoys substantial favor in

³Based on a minimum wage of 13 euro per hour and 4.2 weeks per month on average.

Table 2.2: Overview of calculated UBI policies in the Netherlands

Researcher	UBI Value	Financial plan
Jongen et al. (2015) (CPB)	<ul style="list-style-type: none"> • 600 euro per individual • Keep other forms of allowances 	<ul style="list-style-type: none"> • Flat tax rate at 56.6% • No work tax credit
Bos and Verberk-De Kruik (2019) (Nibud, verified by CPB)	<ul style="list-style-type: none"> • 525 euro per individual • 500 euro per household • Keep allowances <ul style="list-style-type: none"> • 600 euro per individual • 600 euro per household • 300 euro per child 	<ul style="list-style-type: none"> • No tax deduction • Increase income tax category 2 to 47,85%^a <ul style="list-style-type: none"> • No tax deduction • No allowances • Increase income tax category 2 to 50% and category 3 to 72%^a • No child benefit
Aerts et al. (2023) (verified by Euromod)	<ul style="list-style-type: none"> • 205 euro per individual • 60 euro per child • Keep allowances <ul style="list-style-type: none"> • 618 euro per individual • 185 euro per child • Keep health & rental allowances <ul style="list-style-type: none"> • 1235 euro per individual • 300 euro per child <ul style="list-style-type: none"> • 1235 euro per individual • 300 euro per child 	<ul style="list-style-type: none"> • No work tax credit <ul style="list-style-type: none"> • No tax deduction • The basic income is taxable • No child benefits <ul style="list-style-type: none"> • No tax deduction • The basic income is taxable • No child benefits • No allowances • Increase income tax category 2 to 51% and category 3 to 65%^a <ul style="list-style-type: none"> • No tax deduction • The basic income is taxable • No child benefits • No allowances • Flat tax rate at 27%
Denktank Basisinkomen (2023) (Verified by CPB)	<ul style="list-style-type: none"> • 600 euro per individual • 300 euro per child <ul style="list-style-type: none"> • 900 euro per individual • 300 euro per child 	<ul style="list-style-type: none"> • No tax deduction • No allowances • No child benefits <ul style="list-style-type: none"> • No tax deduction • No allowances • No child benefit • Extra income tax category 50% Highest income tax category at 60%^a

^a Based on the old Dutch tax system (see Table B.2 in the appendix)

public discourse, as the universality of UBI remains a contentious subject in political circles (Rincon, 2023); (Rincón et al., 2022) & (Rincón & Hiilamo, 2019).

2.2.2. Labor participation and poverty development based on microsimulations in the Netherlands

Some macroeconomic simulations have been conducted to make estimates for the labor participation. The impact of UBI on the labor participation rate in the Netherlands has been examined by the Dutch Economic Bureau (CPB). Their model has been employed between 2015 and 2020 to estimate labor participation rates and levels of inequality.

According to pre-COVID-19 research conducted by Jongen et al. (2015), the implementation of a UBI scheme with a monthly amount of 600 euros⁴ (see Table 2.2) is projected to result in a reduction of the labor participation rate by 4 to 5%. This UBI policy is anticipated to lead to an 8% reduction in income inequality due to the higher taxation rate based on the MICSIM model of the CPB (Jongen, De Boer, & Dekker, 2014). However,

⁴half of the social minimum in the Netherlands

no specific information regarding the impact on poverty reduction is provided in this analysis.

In a subsequent simulation study, van Gils (2020) and Olsthoorn et al. (2020) estimate a higher decrease in the labor participation rate ranging from 6 to 8%. It should be noted that the proposed UBI values in these policies are based on household size. Their UBI policies were based on two proposals from Bos and Verberk-De Kruik (2019) where households are receiving higher values of UBI than other experiments (Table 2.2). Importantly, these policies have the potential to significantly reduce poverty, with a projected poverty reduction of 60%. Consequently, the implementation of such UBI policies could lead to a reduction of inequality by approximately 10 to 11%. In their study, Goderis and Vlekke (2023) adopted the UBI proposals initially put forth by Bos and Verberk-De Kruik.

The research conducted by Aerts et al. (2023) focuses on examining the impact of UBI on poverty reduction, the poverty gap⁵, and income inequality. Notably, their study did not delve into the labor participation of UBI recipients. The findings of this investigation yielded two significant conclusions. Firstly, it was observed that a higher value of UBI (up to a maximum of 1235 euros, as indicated in Table 2.2) did not necessarily translate to a proportionally higher level of poverty reduction, particularly concerning the magnitude of the reform itself. In this context, a partial UBI approach appeared to offer more favorable outcomes. Secondly, the study revealed that policies geared towards greater efficiency in reducing poverty and minimizing the poverty gap were not congruent. Specifically, a lower UBI (amounting to 205 euros per adult and 60 euros per child) exhibited the most substantial reduction in the poverty gap, whereas a medium UBI (comprising 618 euros per adult and 185 euros per child) emerged as the most effective in reducing overall poverty levels. However, it was noted that this medium UBI policy led to a 3.2 percent increase in the poverty gap compared to the baseline and a 5.3 percent point difference with the low UBI value. This research underscored the intricate dynamics of UBI reforms, wherein they had the potential to diminish the percentage of individuals living in poverty while simultaneously pushing the most vulnerable households further into poverty.

2.2.3. Wat can we learn from other survey research on UBI in the Netherlands?

Before the COVID-19 crisis, in the Netherlands, surveys conducted by the ING Bank bank revealed that a larger group of Dutch citizens were in favor of UBI (39% positive, 29% neutral, 28% negative and 4% have no idea) when they know the definition of Van Parijs (2004). However, this opinion changed when respondents are informed of an increase in tax (20% positive, 24% neutral, 51% negative, and 5% have no idea). Thus, it is important to have a low tax increase to finance UBI and to keep political support. Restructuring of social welfare policies and the current tax system seems to be more supported by the Dutch population.

The survey conducted by De Nederlandse Bank in (2023) diverged from a focus on UBI and instead sought to comprehend the prevalence of part-time employment within Dutch workforce. The primary reasons reported by respondents for opting for part-time work include caregiving responsibilities for children (approximately 27%), a desire for more leisure time (33%), and pursuit of educational objectives (21%). A noteworthy 36% of participants identified the potential for higher net income growth as a motivating factor for increasing their working hours. Additionally, a significant portion (22%) indicated that a loss of household income would prompt an elevation in labor participation.

ING also investigated the respondents' expectations for labor participation of others, and the results indicated that 74% of individuals believe that unemployed people will not find a job more quickly with UBI, while 26% believe that UBI will lead to a faster return to the workforce. For employed individuals, a majority (77%) believe that Dutch citizens will work less, while 23% think that people will work more or the same number of hours. These findings are consistent with the conclusions drawn by Chrisp, Pulkka, and García (2020) in their examination of UBI surveys conducted throughout the European Union. Chrisp et al. determined that the level of detail and information provided regarding UBI significantly can bias the outcomes of such surveys. This insight aligns with prior research on tax acceptance and elasticity conducted by Kuziemko, Norton, Saez, and Stantcheva (2015).

In the study conducted by Gielens, Roosma, and Achterberg (2023), comprehensive survey research was conducted to assess public support for the universal, redistributive, and unconditional aspects of UBI in the Netherlands. The findings of the study reveal distinct patterns in public attitudes. Conservative voters, tend

⁵The poverty gap refers to the extent by which the income or resources of households living in poverty fall below the poverty line by a change in policy. It measures the depth or severity of poverty and represents the shortfall between the actual income of those living in poverty and the income required to meet their basic needs.

to express greater support for the redistributive elements of UBI while simultaneously rejecting its unconditional nature. Conversely, liberals and self-employed individuals exhibit a preference for universal benefits while opposing redistribution, reflecting their support for policies aligned with social investment principles. Meanwhile, left-wing voters tend to prioritize the importance of redistribution towards the least fortunate. Of particular significance is the study's conclusion that educational attainment levels do not exert a significant influence on the level of support for UBI. These three dimensions contribute significantly to the ongoing welfare controversy associated with UBI, rendering it a complex and politically challenging issue of citizen view on UBI.

Combining the findings of Chrisp et al. (2020), Kuziemko et al. (2015), and Gielens et al. (2023), it becomes evident that individuals harbor certain predispositions toward UBI, underscoring the importance of providing comprehensive information regarding its implications. Interestingly, increased awareness of financing policies correlates with reduced overall support for UBI. However, this trend varies among different sub-groups, with several exhibiting similar levels of support despite varying degrees of information provided.

2.3. Literature on UBI in the Netherlands and other Western countries: a synthesis

2.3.1. What have we learned from other experiment?

Based on previous international and domestic studies, the implementation of a Universal Basic Income (UBI) policy in the Netherlands is anticipated to result in a decrease in labor participation. This decline is estimated to be in the range of 3% to 11%. Examining the general relationship between UBI and labor participation reveals a discernible pattern: as the UBI value increases, the decline in labor participation also increases. This observation is intriguing as lower UBI values (around 600 euros per citizen) have a more substantial impact on reducing poverty and are more manageable within the government budget (Aerts et al., 2023). This finding contrasts with the conclusion drawn by ING Bank, who asserted that a UBI is either "Unaffordably high or socially low."

In the Mincome experiment, a substantial number of individuals who opted to decrease their labor participation chose to engage in caregiving activities or pursue educational programs. Furthermore, noteworthy reductions were observed in hospitalization rates, stress levels, school results, and instances of violence. These outcomes are particularly intriguing in light of projections indicating potential crowding-out effects in healthcare expenditures in the coming years (Aalbers & Roos, 2022). Additionally, the emphasis on education as a response aligns with the broader economic benefits associated with increased labor productivity.

Given the relevance of these findings, the survey questionnaire will incorporate inquiries regarding how individuals would allocate their basic income. This investigation aims to discern whether the Dutch population would similarly choose paths such as caregiving, education, less stress, and better food quality aligning with the outcomes observed in the previous experiments.

An essential justification, as articulated by Olsthoorn et al., is that nearly every citizen in the Netherlands receives financial assistance from the government. While the most economically disadvantaged individuals receive direct monetary support in the form of welfare payments and allowances, tax deductions also represent a form of government-to-citizen transfer. Notably, these benefits hold greater appeal for citizens with higher incomes as well as shown in Figure 2.1. Additionally, homeowners, who often belong to higher income brackets, can avail themselves of mortgage rate tax deductions based on their property values, indebtedness, and interest rates. This mortgage rate tax deduction can be comparable to rent allowances for certain households, it remains unaffected by increases in income. This constitutes a form of income inequality in governmental aid as individuals with lower incomes face a higher marginal taxation rate compared to wealthier inhabitants.

While the welfare system in the Netherlands is generally perceived as designed to assist households in greater need, it is inaccurate to assert that only the disadvantaged receive governmental assistance. Although effective in reducing poverty, it also creates strong incentives to work less, as evidenced by the loss of allowances for many lower- and middle-class individuals, as indicated in the tables provided by Goderis and Vlekke (2023). The effectiveness of the welfare system becomes questionable in this context. However, the question arises: would unconditional support enhance labor participation? Previous experiments with citizens

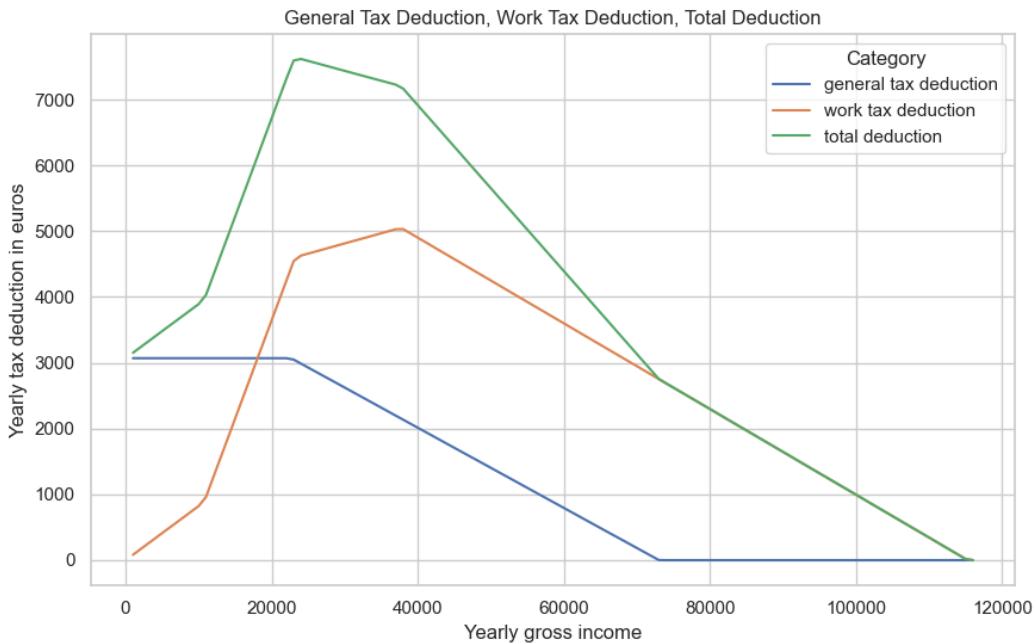


Figure 2.1: Overview of the tax deduction dependent on yearly income

receiving welfare payments and the unemployed (Betkó, 2023) & (Kangas & Pulkka, 2016) provide no clear indication. While these initiatives reduce the welfare cliff, they do not eliminate it. Therefore, a closer examination of these groups in scenarios involving a high value of UBI could be particularly insightful. It is also important to acknowledge one of the major disadvantages of UBI: if implemented incorrectly, it could potentially exacerbate poverty among certain individuals.

2.3.2. What have we learned from other surveys?

Prior surveys conducted in OECD countries have predominantly focused on exploring the acceptance of various UBI policies (Chrisp et al., 2020); (Wispealaere & Noguera, 2012); (Lee, 2021); (Stadelmann-Steffen & Dermont, 2020); (Rincon, 2023); (Rincón et al., 2022) & (De Wispealaere et al., 2018). However, these investigations primarily delve into the political policy window for UBI, with a notable absence of economic considerations. This omission is significant, given the crucial role economic aspects play in the discourse, especially in light of the fiscal challenges faced by the Finnish government following the conclusion to end the UBI pilot (Kangas, 2021).

To ensure a comprehensive understanding of UBI in a survey context, it is crucial to consider the impact of the information provided to respondents, as demonstrated by Stadelmann-Steffen and Dermont (2020) and Kuziemko et al. (2015). Notably, survey designs should carefully consider the framing of information, as illustrated by ING Bank (2018), who, by simply indicating an increase in taxes associated with UBI, stimulated tax aversion among Dutch citizens. In contrast, the research by Rincon (2023); (2022); (2019) emphasized the re-distributive effects of tax increments by including taxes for the wealthiest members of society, potentially fostering more favorable attitudes. Given these nuances, it is imperative to maintain a neutral stance in survey design, particularly regarding one's opinion on UBI and its financial mechanisms. Given that political opinions appear to significantly influence the biases of Dutch citizens regarding their views on UBI (Gielens et al., 2023), it becomes crucial to incorporate a customized implication for each survey respondent.

To achieve this neutrality, the survey will provide respondents with detailed information on the financial implications of their available monthly budget for each measure, allowing them to form opinions grounded in factual financial data rather than personal impressions on the policy. This approach aims to foster opinions rooted in factual financial data rather than subjective impressions of the policy. By prioritizing transparency in conveying the effects on available income, the survey seeks to mitigate biases and empower respondents to

make well-informed judgments. The provision of information regarding the reduction or elimination of the welfare cliff through UBI may introduce a positive bias toward the policy. However, this disclosure is intended to inform respondents of the potential reduction or elimination of the welfare cliff, ensuring transparency in the survey process.

2.4. How to finance a UBI policy in the Netherlands?

In this section, we will provide an overview of potential UBI financing mechanisms essential for funding and aligned with the philosophical ideology. Additionally, we will delineate the specific policy to be employed for both the model and the survey. There is a lot of resemblance between all the previously analyzed UBI proposals (Table 2.2) from a financial point of view. The most frequently mentioned financial approach to fund UBI policies involves two main components: tax increases and the restructuring of the existing tax system.

2.4.1. Restructuring of the welfare system towards UBI

The allowance system

To implement an unconditional income for everyone, it is essential to assess the existing financial support provided to individuals. In almost all the proposals outlined in Table 2.2, allowances are suggested as a funding source for UBI. Some variations, especially those with the most significant impact on poverty reduction (such as rent and health allowances), are retained. Currently, the allowances in the Netherlands encompass health allowances, rental allowances, income-specific child allowances, general child allowances, childcare allowances, student allowances, disabled (WAO/WIA/Wajong) allowances, welfare payments, and retirement pensions. Collectively, these allowances constitute a budget of 91.2 billion euros (Ministerie van Financiën, n.d.) (a detailed breakdown is provided in Table B.1). Since retired citizens are beyond the scope of this project, and the disabled allowances operate as insurance, where citizens' contributions fund these budgets, they won't be utilized to finance UBI. This results in a remaining budget of 27.4 billion euros. To remove the welfare cliff, the allowance system is crucial to use in the model.

Tax deduction to finance UBI

The second component of the existing financial support consists of tax deductions, which encompass the general tax credit deduction, work tax credit deduction, individual worker tax credit deduction, mortgage interest deduction, and other minor tax deductions (see Appendix B). Together, these deductions amount to a budget of 76.3 billion euros. Similar to allowances, tax deductions play a crucial role in the model, as they are disbursed to a large group of workers, contributing to the welfare cliff, and to homeowners, indicating a substantial portion of the population receiving government funds. Moreover, the budget freed up by these deductions is essential to address the gap in governmental expenditures.

The analysis conducted by Ministerie van Financien (2023) critically evaluated the efficiency of 116 fiscal exemptions in the Netherlands. Among these exemptions, 73 underwent analysis, with only 11 deemed efficient, 41 categorized as uncertain in their effects, and 21 identified as inefficient. The ramifications of these uncertainties and inefficiencies translate into a significant missed opportunity for the Dutch government, resulting in a loss of 47 billion euros in tax revenue. This substantial amount represents a potential source of funding that could be harnessed to support the implementation of a UBI. These inefficiencies are used to fill up budget-neutral profiles of the conjoint experiment but are not varied in the survey itself.

2.4.2. Increasing current taxes or are their new forms of taxes to introduce?

Increasing income tax

In Table 2.2, many UBI policy proposals incorporate an increase in income tax. This is partly due to the Dutch Economic Bureau (CPB) using this tax in a non-dynamic manner to achieve budget neutrality for the policies. However, raising income tax is not a guaranteed means of generating higher governmental revenue. This is because elevated tax rates can potentially discourage economic activity, diminish incentives for work, investment, entrepreneurship, foster undeclared work, and may promote tax evasion and other avoidance strategies. This phenomenon is referred to as the Laffer Curve, suggesting that there exists an optimal income tax rate in the economy, and surpassing this point might result in a decrease in revenue. It's essential to

acknowledge that the Laffer Curve is a theoretical concept, and the precise shape and location of the curve are subjects of debate. The optimal tax rate is likely to vary based on economic conditions, the tax system's structure, and other influencing factors. Previous research on the subject indicates that the peaks of the Laffer curves generally fall between 50% and 60% for the top income (Van Ravestein & Vijlbrief, 1988; Heijman & van Ophem, 2005). This makes the proposals of Bos and Verberk-De Kruik and the second proposal of Aerts et al. unrealistic to be budget neutral. An increase in income tax as suggested by Denktank Basisinkomen (see Table 3.2) would lead to an increase in governmental income of 14 billion euros (Koot, Kempen, Tommelen, & Verkade, 2020). Since the increase in income tax has a high impact on reducing income inequality it is introduced in the conjoint experiment.

Forget (2011) also used the Laffer curve as a potential explanation for the reduction in labor participation during Mincome. Therefore, the highest value of income tax will be assumed as the top of the Laffer curve for this study. This joins the wishes of a large group supporting UBI when it is paid by the richest in society.

Make UBI Taxable

The "Make UBI taxable" policy, proposed by Aerts et al. in (2023), aims to include the annual value of UBI in an individual's existing income and calculate the tax based on the combined total. This approach serves as an effective means to recapture UBI funds from the wealthiest members of society and increase the progressive taxation system. Taxing UBI could be perceived as contradictory to the idea of providing a basic income without conditions. It may lead to public resistance if not communicated effectively. For instance, with a UBI of 1200 euros per month, as per Euromod calculations, it could generate 71 billion euros in revenue for the government. The APDF and in the Cherokee Casino dividend are forms of UBIs that are taxable for the US federal income tax. Like the tax deductions, making UBI taxable has a large potential to fill the gap in governmental expenditures. In some policies of Aerts et al. (2023) they even combined both policies. The tax back of UBI for high incomes is also close to the philosophical origin of UBI. Therefore this financial policy is included in the model.

Flat tax rate

Another proposed policy by Jongen et al.,(2015) and Aerts et al., (2023) is the implementation of a flat taxation system, where individuals contribute the same percentage of their income in taxes irrespective of their earnings. The simplicity inherent in a flat tax is considered a primary advantage, streamlining tax codes and alleviating administrative burdens. Advocates assert that a flat tax fosters fairness by treating all taxpayers equally, eliminating loopholes exploitable by the affluent. This is also close to the origin of UBI.

However, critics argue that a flat tax may disproportionately burden low-income individuals, as a uniform percentage could constitute a larger proportion of their overall income compared to higher earners. The disparity in proposed policies is notable; Jongen et al. suggests a flat tax of 56.6%, maintaining the existing welfare system alongside a UBI of 600 euros monthly. In contrast, Aerts et al. proposes a flat tax of (only) 27% with a UBI of 1235 euros, excluding any additional welfare system. Despite these differences, both studies converge on the conclusion that a flat tax would exacerbate income inequality.

An intriguing finding from Heijman and van Ophem (2005) is that, even with a low willingness to pay taxes, the optimal marginal tax rate never falls below 36% (similar to the first income tax bracket). This suggests that Aerts' policy could incorporate a 9% increase in income tax, potentially mitigating income inequality through the establishment of a general poverty allowance (Olsthoorn et al., 2020). However, this prospective policy combination requires further research and is not explored in this thesis.

Land Value tax and Property tax

Land valuation tax and property tax are subjects frequently deliberated in the philosophical discourse on UBI, aligning with the principles highlighted by Van Parijs (2004). Property tax is a levy imposed on the assessed value of properties such as residential homes, commercial establishments, and land owned by individuals. In contrast, a land value tax is specifically imposed on the assessed value of the land itself, rather than on any structures or improvements (such as buildings) that may be situated on the land.

These taxes, esteemed for their progressive nature, target economic rent derived from valuable assets like land or property. As significant components of individual wealth, taxing these immobile assets allows governments to generate revenue without discouraging economically desirable activities.

According to Kuiiper and Kaathman (2015), the property tax in the Netherlands generates 16.5 billion euros per year. This amounts to approximately 1.6% of the Dutch Gross Domestic Product (GDP), 5% of the total federal tax income, and 8 to 10% of municipal income. In comparison to countries such as the United Kingdom and France, the Netherlands collects a relatively modest amount of tax on properties. In these countries, property taxes contribute from 3 to 4% of GDP, indicating the potential for the Netherlands to potentially double its income through this tax revenue. This policy is politically difficult to implement, therefore it is not included in the experiment. A more in-depth political analysis and explanation is given in the Appendix B.3.1.

Less Governmental employees

This assessment explores the potential reduction or restructuring of the civil service workforce, particularly those engaged in the management of social welfare programs and taxation, following the introduction of a comprehensive UBI set at 1200 euros⁶. The insights from this assessment will be utilized in evaluating the budget neutrality of profiles with the highest UBI allocations.

The projected cost savings stem from an anticipated reduction in the workforce by approximately 114,000 employees, equating to a financial impact of €7.4 billion annually. Details regarding the calculation methodology for this estimation are provided in Appendix B.4.

⁶The level of the welfare payments

3

Methods

This chapter is organized into five sections. Initially, it delineates the study population to answer research question 2. Subsequently, it presents an overview of the survey and elucidates its design to address the last three research questions. In the third section, a comprehensive explanation of the conjoint experiment's configuration is provided. The fourth section focuses on calculating the minimum number of respondents necessary to achieve statistically significant results within the study population and the strategy for recruiting the survey participants. The final part of this chapter outlines how I will encode the data for the regression analysis.

3.1. Population and variables of interest for UBI

3.1.1. Second earners, part-time workers and women

Empirical research based on econometric analyses consistently demonstrates that the responsiveness of labor supply varies between primary earners and secondary earners, often working part-time in the Netherlands (De Nederlandse Bank, 2023). Specifically, primary earners exhibit relatively low sensitivity to labor market activation, whereas secondary earners show a higher degree of responsiveness to such activation (Robins (1985); Saez, Slemrod, and Giertz, (2012); Boone et al. (2018)). For example, Robins conducted a study in the United States and estimated that the implementation of a UBI policy would lead to an average reduction of approximately three weeks in the number of work weeks for women or second earners compared to primary earners. In a separate study in 2012, Saez et al. examined the elasticity of labor supply among the US population using taxation data and found that an increase in the taxation rate would result in a decrease in labor supply for secondary earners within households. These findings have been further supported and generalized by Sociaal Cultureel Planbureau (2020), Boone et al. (2018) and Jongen et al. (2015) in their studies on the labor effects of UBI in the Netherlands. Given the significance of secondary earners in understanding the dynamics of labor participation, it is crucial to investigate their behavior through surveys that specifically focus on labor participation.

3.1.2. Single-Parent Household and families with children under 5 years old

Single-parent households and families with young children often bear significant caregiving responsibilities. In the context of UBI, these households may experience changes in labor force participation due to the availability of financial support and the alleviation of immediate employment needs. With UBI providing a stable income, individuals in these households may choose to allocate more time to caregiving activities, such as attending to the needs of children or other family members. This phenomenon, observed in the data of Calnitsky and Latner (2017), reflects the potential of UBI to enable parents to prioritize their caregiving roles and reduce their reliance on external employment.

Families with young children commonly face substantial childcare costs, which can often outweigh the financial benefits of engaging in paid work for women. Prescott, Swidinsky, and Wilton (1986) found that prior

to the implementation of UBI in the Mincome experiment, the expenses associated with childcare often exceeded the earnings of women, discouraging their labor force participation. However, the introduction of UBI can potentially mitigate these costs by providing a basic income that helps cover daily expenses, including childcare expenses. As a result, families may find it more feasible to re-enter the workforce or increase their labor force participation as observed by Van Parijs (2020) for the Finland experiment.

Conversely, UBI's financial support can also enable parents to spend more time with their children and reduce their reliance on external childcare services. This may lead to a reduction in labor participation as parents prioritize caregiving responsibilities over paid work. The impact of UBI on labor participation in families with young children is thus multifaceted, and its effects may vary depending on individual circumstances and preferences.

3.1.3. Inhabitants receiving welfare payments

Individuals who receive welfare payments in the Netherlands often encounter the welfare cliff phenomenon, as highlighted by Quist (2015) and Goderis and Vlekke (2023). This situation creates a significant discontinuity in their benefits as they transition into employment, which can deter them from re-entering the labor force. However, under UBI policies, these individuals may experience greater flexibility and incentives to reintegrate into the workforce, as indicated by research conducted by Mastrogiamomo, Bosch, Gielen, and Jongen (2017) and Boone et al. (2018).

Interestingly, findings from the UBI pilot study conducted in Finland by Kangas et al. (2019) did not reveal statistically significant impacts on labor force participation for this group of individuals. Despite this lack of significance, the potential for individuals receiving welfare payments to re-enter the working population under UBI policies remains an intriguing area for investigation. Understanding the dynamics and responses of this group to UBI can shed light on the effectiveness and implications of UBI as a social policy tool.

3.1.4. Young adults

Many young adults (18 to 27 years old) place a high priority on pursuing higher education or acquiring additional skills during their formative years. The implementation of UBI can potentially provide these individuals with the financial freedom necessary to invest more time and resources in their educational pursuits, without the immediate pressure to enter the workforce. By offering a basic income, some of the financial burdens associated with education are alleviated, allowing young adults to dedicate themselves more fully to their studies or training.

This phenomenon has been observed in previous studies. For example, Calnitsky and Latner (2017), analyzing data from the Mincome program, identified young adults as a group that significantly reduced their labor force participation to pursue educational opportunities. Furthermore, Robins (1985) estimated that, on average, young adults would reduce their labor participation by approximately four weeks per year under a UBI policy. By investigating the behavior and choices of young adults in response to UBI, we can gain a deeper understanding of the potential impacts of UBI on educational attainment and workforce entry. This knowledge can inform policy discussions and help shape effective strategies to support the educational aspirations of young adults within the context of UBI implementation.

3.1.5. Elderly workers

Elderly workers (50 to 67) often find themselves approaching or already in the retirement phase of their lives. UBI can play a significant role in providing financial stability and security for this demographic, reducing their reliance on employment income and easing the transition into retirement. It can create opportunities for them to explore non-remunerated activities that align with their interests and values, such as engaging in voluntary work, providing care for family members, or contributing to community service. This allows them to remain active and involved in meaningful pursuits that contribute to society. Robins (1985) estimated that, on average, elderly male workers would reduce their work time by approximately two weeks per year under a UBI policy. These findings further highlight the potential impact of UBI on the labor force participation of elderly individuals, suggesting that it can provide them with the means to gradually transition into retirement and pursue activities that bring them fulfillment and purpose in their later years.

3.2. Survey set-up

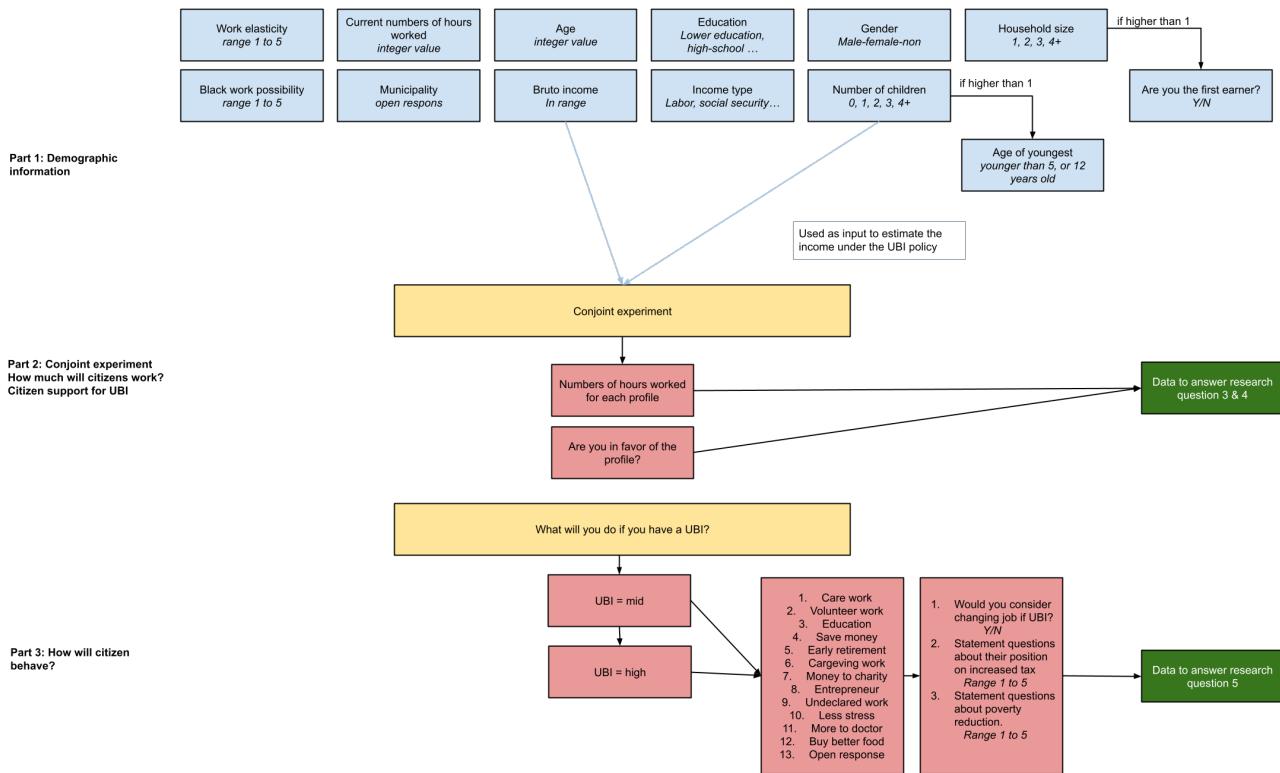


Figure 3.1: Set-up of the three-part survey questionnaire

Figure 3.1 provides an overview of the survey structure comprising three distinct parts. The first part focuses on gathering respondent information, including details such as their number of working hours, age range, education level, income range, gender, income type, and household size. To further evaluate the individual's role as the primary earner within the household, a follow-up question is posed in relation to the household size. If the respondent indicates having children, an additional question is included to determine whether the children are below the age of 5 or 12 (individuals in the Netherlands receive a tax benefit if they have young children). Furthermore, respondents are asked about their housing type to assess their eligibility for mortgage rent deductions or housing benefits. The final question in this first part pertains to work elasticity, acknowledging that certain individuals may not have the flexibility to increase or decrease their working hours. These questions are used to categorise a respondent in the category of the population of interest. All other demographic information will be added to the regression model as constant (more information in Section 3.6). The questionnaire can be found in Section C.1.

The second part of the survey entails the implementation of a conjoint experiment, with Section 3.3 providing a detailed explanation of the model. The data obtained from this experiment will be used to make a regression analysis with the number of hours worked and the acceptance of the policy as independent variable dependent on the value of UBI, the value of UBI per child, the change in the taxation system, and the change in the allowance system. This data will aim to answer research questions 3 and 4.

The third part of the survey comprises a traditional questionnaire. In this section (Appendix C.3), data will be collected to address research question 5. Respondents will be asked to indicate how they would allocate the additional money or time gained from a reduction in labor participation for each UBI value presented. They will also be asked about their perception of tax increment and poverty reduction.

3.3. The conjoint experiment

The objective of the conjoint experiment is to develop two linear regression models. The first model will be an estimate of the number of hours worked as the independent variable. The second model will be an estimate of the acceptance of the proposed UBI profiles as the independent variables. By analyzing these models, we can examine the trade-off between acceptance of UBI and labor participation. This will allow us to gain valuable insights into the relationship between the two variables and better understand the potential impact of different UBI proposals on labor participation behavior in the Netherlands. This will also be used for a sub-set analysis among the population of interest from Section 3.1.

Table 3.1: Attributes and levels of the conjoint experiment

Attribute	Level
UBI per adult	0. 1200 euro 1. 630 euro 2. 210 euro
UBI per child	0. 300 euro 1. 185 euro 2. 100 euro
Change in tax system	0. No tax deduction 1. Make UBI taxable 2. New income tax system
Allowances	0. Only health allowance 1. No allowances 2. Only rental allowance

Figure 3.2: Basic Plan 2

BASIC PLAN 2:			
1	2	3	4
0	0	0	0
0	1	1	2
0	2	2	1
1	0	1	1
1	1	2	0
1	2	0	2
2	0	2	2
2	1	0	1
2	2	1	0

Since every attribute of Table 3.1 has 3 levels, the conjoint experiment is balanced. This means the occurrence of each level of each attribute is equal and set to 3. Therefore, there is no attribute level biasing the outcome, this is one of the two requirements for an optimal design. The second requirement is that the attributes are designed to be orthogonal, meaning they are not correlated. For this experiment, Basic Plan 2 (Figure 3.2) is used for an optimal design. The basic plan typically includes a limited number of attributes with multiple levels or options.

The four columns of Basic Plan 2 have three levels each, where column one corresponds to UBI per adult, column two to UBI per child, column three to the change in tax system, and column four to the change in allowances. The values 0, 1, and 2 from Figure 3.2 correspond to the value of Table 3.1. In total there will be 9 different UBI profiles or scenarios created. The interpretation is as follows: The first profile (0, 1, 1, 2) can be read as: UBI per adult = 1200 euro, UBI per child = 185 euro, Change in taxation: make UBI taxable, Allowance = only rental allowance.

3.3.1. Attribute selection

For each of the four attributes, the third level of Table 3.1 is selected as the reference category as it closely resembles the current situation in the Netherlands.

Attribute 1: UBI per adult

Table 2.2 presents recurring levels of UBI proposals, categorized as low, medium, and high values. The low value ranges from 200 to 300 euros, the medium value is approximately 600 euros, and the high value exceeds 1000 euros per month. Aerts et al. (2023) determine the value of UBI based on percentages of the median income, specifically 10%, 30%, and 60%. According to Centraal Bureau Voor de Statistiek (2023a), the median

income in the Netherlands amounts to 25,200 euros per year, equivalent to 2,100 euros per month. Consequently, the monthly UBI values at 10%, 30%, and 60% of the median income are calculated as follows: 210, 630, and 1,260 euros. As the latter exceeds the monthly welfare payments in 2023, it will be adjusted to 1,200 euros.

210 euro per month is selected as the reference value because it represents the lowest UBI policy. This amount is anticipated to result in the most significant decline in income for the majority of individuals, potentially incentivizing them to increase their work efforts (De Nederlandse Bank, 2023). As a result, it is expected to receive the lowest level of support.

Attribute 2: UBI per child

In Aerts et al. (2023), the authors utilize the OECD equivalence scale to determine the UBI per child. They estimate that 30% of the UBI value allocated to an adult is required for each child. Referring to the previously calculated UBI levels, this would result in UBI per child values of 63, 189, and 378 euros per month. Considering the current value of the general child allowance, which stands at 69 euros per month per child for children younger than 5, 84 euros per month per child for children between 6 and 11, and 100 euros per month per child for children between 12 and 18 years old. 63 euros a month will be too low. Therefore the current level of 100 euros per month will be considered as the lowest chosen level and the reference category.

The UBI per child attribute aligns with one of the fundamental concepts of UBI, as it has the potential to replace existing allowances. The other proposed levels per child will be set based on the framework presented by Aerts et al., with a second level at 185 euros per month and the highest level at 300 euros per month, as proposed in the UBI policies by Bos and Verberk-De Kruik (2019) and Denktank Basisinkomen.

Attribute 3: Change in the tax system

In order to finance UBI, significant tax restructuring is required.

Level 1: The tax deductions would be abolished. This includes the general tax credit, work tax credit, individual tax credit, and mortgage tax deduction. Tax deductions are contributing to the welfare cliff as presented in Figure 2.1 and are a current large redistribution mechanism in the Dutch welfare system.

Level 2: Make UBI taxable, meaning that the UBI amount would be added to an individual's income, and subsequently, income tax would be calculated based on the revised total income. These tax restructuring measures are fundamental aspects of UBI proposals aimed at ensuring the financial feasibility and sustainability of the program. This is in line with the UBI's of the Alaskan Permanent Dividend Fund and the Cherokee Casino Dividend.

Level 3: Increase the income tax rates as suggested by the CPB. Table 2.2 presents various mechanisms proposed for this purpose. These mechanisms include increasing income tax through higher top-income tax rates and an augmented tax percentage in the middle bracket. Table 3.2 provides an overview of the proposed tax reform. It is chosen as the reference since in nearly all proposal an increase of income tax is needed to make the policy budget neutral.

Table 3.2: New income tax system used for
conjoint experiment

Tax bracket	Tax rate
0 to 27.000 euro	36%
27.000 to 65.000 euro	40%
65.000 to 100.000 euro	50%
100.000+ euro	60%

The proposed tax reform is based on the calculations of Koot et al. (2020), which incorporates a four-layer income taxation system. Additionally, UBI proposals commonly suggest reducing or eliminating various tax cuts and implementing taxation on UBI itself.

In various proposals, these three forms are often amalgamated to achieve budget neutrality for the policy. However, in this experiment, the decision has been made not to combine them, as the combination of making UBI taxable and eliminating tax deductions could disproportionately impact lower incomes, rendering the profile politically unviable.

Attribute 4: Value of the allowances

The experiment will also consider three different levels of allowances: health allowance only, no allowance at all, and rental allowance only.

Level 1: "The health allowance" is a specific allowance aimed at ensuring that every individual in the Netherlands can afford mandatory health insurance. The Dutch government has prioritized universal access to healthcare as one of its key missions (Ministerie van Volksgezondheid, Welzijn en Sport., 2022). Therefore, this allowance is included in the experiment. Since health insurance is individual, the allowance is also provided on an individual basis. Citizens with an income below 37,496 euros or households with two or more adults with a combined income below 47,368 euros per year will be eligible for this benefit. The maximum benefit is 123 euros for individuals earning less than 26,000 euros per year and is gradually phased out with 14.4%¹. An overview of this allowance is given in Figure 3.3.

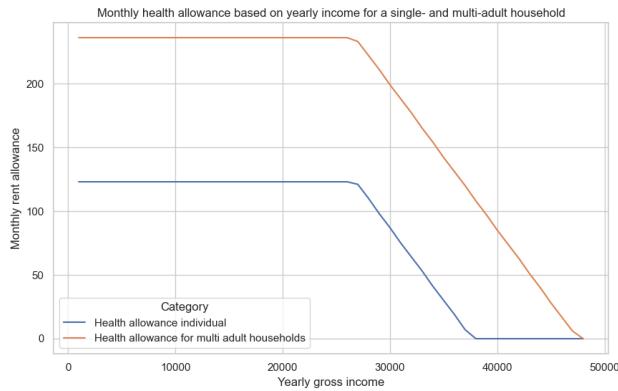


Figure 3.3: Amount of health allowance depending on yearly income and the number of adults living in it

Level 2: "No allowance at all," which aligns with one of the fundamental principles of UBI: providing a single budget for each citizen. This approach can be particularly interesting when combined with high values of UBI and/or UBI per child. Replacing existing allowances with UBI can have positive effects on the welfare cliff. If the total impact of a column on the budget is negative, it does not necessarily imply that every alteration in the tax system, allowance, or correction must be executed.

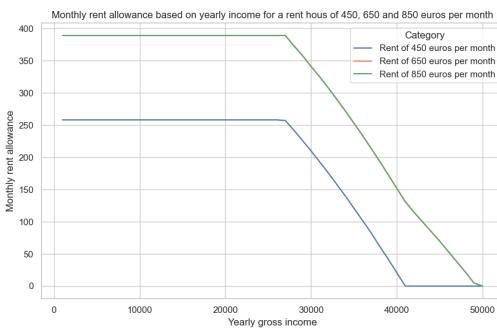


Figure 3.4: Amount of rent allowance depending on your monthly rent and yearly income for households with more than one adult living in it

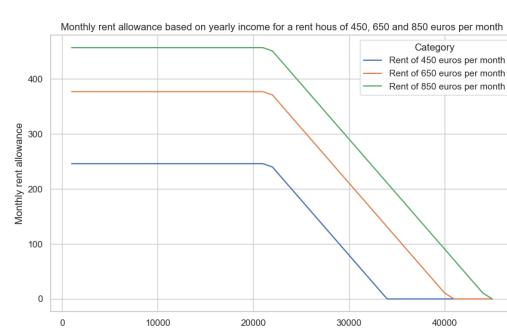


Figure 3.5: Amount of rent allowance depending on your monthly rent and yearly income

Figure 3.6: Welfare cliff created by rent allowance in the Netherlands

¹With a yearly gross income increase of 1000 euros, citizens will lose 12 euros per month of allowance or 144 euros per year.

Level 3: “The rental allowance”. This targeted allowance is provided to single-household citizens with individual incomes below 32,500 euros or multi-citizen households below 40,500 euros. Individuals earning less than 20,700 euros per year or households earning less than 25,000 euros per year are eligible for the maximum rental allowance of 457 euros per month (see Figure 3.5 (Ministry van Volkshuisvesting, 2024)). Although this allowance currently contributes to the welfare cliff², it has been identified by Olsthoorn et al. (2020) as the most efficient allowance for reducing poverty. This is why it is retained in the experiment and chosen as the reference category. An overview of the effect of rent allowance is given in Figure 3.6.

3.3.2. Governmental budget impact of the profiles

In order to provide an overview of the impact on the governmental budget for each profile, a calculation has been conducted. The input values used for the calculation can be found in Section 2.4 and Tables B.1 of the Appendix B. Table 3.3 provides an overview of the budget neutrality of each profile, expressed in billion euros. A positive value indicates a governmental expense, while a negative value indicates a revenue or budget reduction.

Table 3.3: Overview of the impact of each profile on the Dutch governmental budget

Profile	UBI per adult	UBI per child	Change in tax system	Allowances	Correction ^a	Total impact on budget
0	163.44	14.94	-76.30	-22.90	-54.4	24.78
1	163.44	9.21	-71.00	-25.50	-54.4	21.75
2	163.44	4.98	-14.00	-29.50	-54.4	70.52
3	85.80	14.94	-35.10	-29.50	-47.0	-10.85
4	85.80	9.21	-14.00	-22.90	-47.0	11.12
5	85.80	4.98	-76.30	-25.50	0	-11.01
6	28.60	14.94	-14.00	-25.50	0	4.04
7	28.60	9.21	-14.70	-29.50	0	-6.39
8	28.60	4.98	-11.30	-22.90	0	-0.62

^a Correction for inefficient tax exemptions and governmental employees

It is observed that profiles 2, 4, and 6 result in the largest governmental budget deficits per value of UBI, indicating that the increased governmental income from the new income taxation scheme is not sufficient. Nearly all profiles are budget neutral except profiles 0, 1, 2 & 4 because there is a large deficit larger than 10 billion euros. This is because, as shown in Table 2.2, a combination of proposed allowance deductions and tax reforms is necessary to achieve budget neutrality for UBI. Consequently, correlations between the policy recommendations are introduced, making it challenging to analyze the acceptance of each attribute level by the respondents. By utilizing this model, the effect of each attribute level can be estimated separately in terms of acceptance and labor participation among the respondents. Due to the orthogonal design, it is not possible to analyze the interaction between specific effects as is done in Jongen et al. (2014), Bos and Verberk-De Kruik (2019), Aerts et al. (2023), and (Denktank Basisinkomen, 2023) (2023).

From Section 2.4, the elimination of inefficient tax deductions is also integrated into the financing framework of UBI for profiles 0 to 4, given its significant impact on the overall government budget. Additionally, for profiles 0 to 2, the reductions in civil service personnel costs are included, as these profiles receive a 1200 euro UBI.

3.4. Which UBI policies will be analyzed?

3.4.1. The mid- and high-UBI policies, an introduction

To analyze the trade-off between UBI acceptance and changes in labor participation, it is crucial to calculate policies that are more politically feasible. In the current debate, a high UBI of 1200 euros per month or a mid UBI of 630 euros per month is more likely to be implemented. To address child poverty, these UBI policies will

²With a yearly gross income increase of 1000 euros, citizens will lose 20 euros per month of allowance or 240 euros per year. This leads to a marginal taxation rate of 24%

be coupled with mid and high values (e.g., 185 and 300 euros per month per child). Given that abandoning the tax deduction system is the most lucrative means to finance UBI, it will be used for the high-value policy, while making UBI taxable will be employed to finance the mid-value policies. Both policies will not have an allowance system in parallel, aligning with the preferences of most political parties who aim to abolish them (CPB, 2023).

Therefore, the analyze the trade-offs, the following policies will be used in Chapter 4:

1. High-UBI: A 1200 euro UBI, with 300 euro UBI per child, no tax deduction, and no allowance. This policy is coded as: 0, 0, 0, 1. The implication for the governmental budget is a deficit of 18.18 billion euros.
2. Mid-UBI: A 630 euro UBI, with 185 euro UBI per child, making UBI taxable, and no allowance. This policy is coded as: 1, 1, 1, 1. The implication for the governmental budget is a surplus of 16.59 billion euros if all inefficient tax exemptions are corrected to finance UBI.

3.4.2. How do these policies transform the welfare cliff?

The effect on the welfare cliff compared to Figure 1.1 is presented in Figure 3.7.

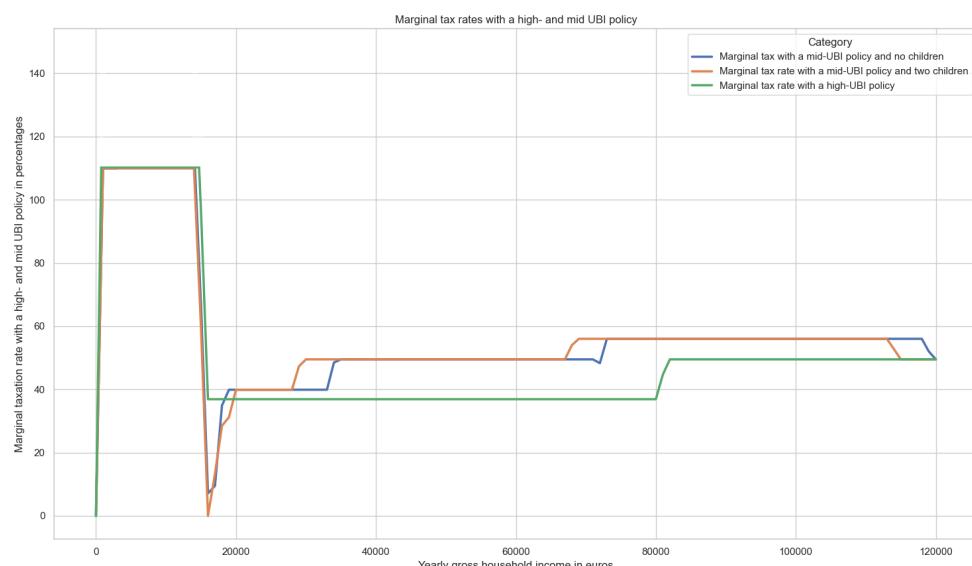


Figure 3.7: Marginal taxation rates under the proposed UBI policies

A noticeable observation is that only half of the welfare cliff has been mitigated. This partial reduction stems from the imperative to retain welfare payments as a vital tool in combating poverty, given the targeted nature of the allowance system. Utilizing these allowances to fund UBI would entail reallocating resources from the most economically disadvantaged individuals who rely on targeted welfare support. Despite the potential reduction in marginal tax rates, estimated to hover around the lowest income tax bracket (36.9%), and the resultant incentive for increased workforce participation, the financial ramifications for these individuals could exacerbate their plight, driving them deeper into poverty, as demonstrated by Aerts et al. (2023). Retaining welfare payments as part of the social welfare system preserves a scenario wherein a marginal tax rate exceeding 100% applies to the first 14,400 euros of income, this can be seen as the poverty allowance policy from CPB (2023). The welfare cliff is subsequently eliminated afterward by the UBI policies.

3.4.3. How does these policies affect income?

One significant drawback of these policies is their adverse impact on the financial support provided to single-parent households. Figure 3.8 demonstrates how UBI policies affect the income of this demographic. To maintain or surpass their current financial standing, single parents would need to earn approximately €65,000 in gross income with the high-UBI policy. Figure A.9 depicts the relationship between the income of single parents with two children and that of other households with two children. From this comparison, it is observed that single parents receive significant governmental aid compared to other households with the same number of children.

Similarly, single adults with no children would experience a decrease in their financial status if their income drops below €37,000 for a high UBI policy and €52,000 for a mid-UBI policy. This demographic represents the group most directly affected by the existing allowance system. Those can be identified as the net "losers" of UBI.

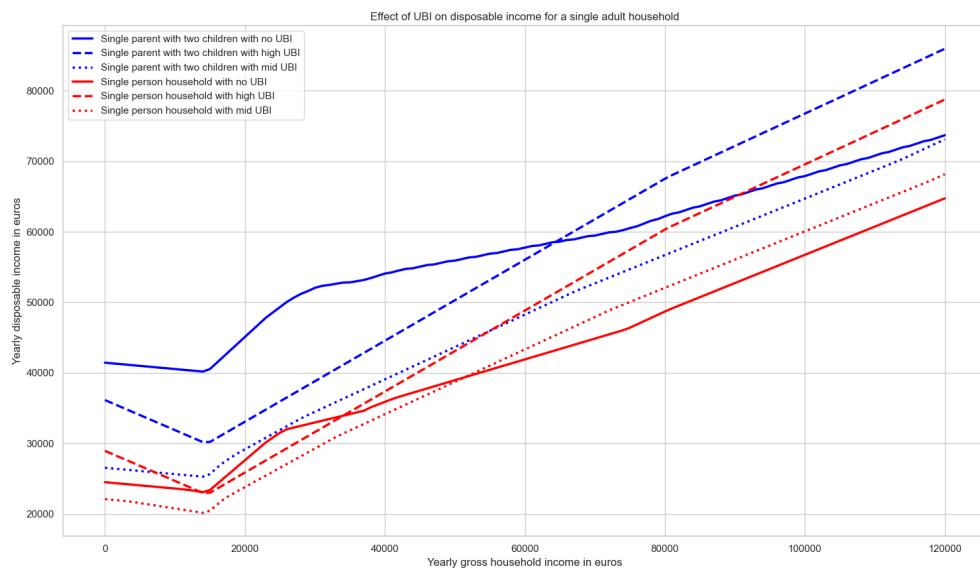


Figure 3.8: Change in income for single household due to UBI policies

The income fluctuations for other household types are comparatively less pronounced. Similar graphs depicting these relationships can be found in the Appendix: Figure A.10 for households with two adults with one earner, Figure A.12 for households with two earners earning equal incomes, and Figure A.13 for households with one adult earning 64% of the income and the other 36%. It's crucial to acknowledge that these graphs do not consider the cost of loss of mortgage rate deduction, which can significantly impact the increase in disposable income, particularly for higher-income earners.

A consistent trend observed across these figures is that a high UBI policy tends to increase household income for multi-adult households, irrespective of whether they have children. In contrast, a mid-UBI policy initially leads to a slight decrease in income for households earning up to 25,000 euros, after which it begins to enhance the annual household budget. These households can be regarded as the beneficiaries or "winners" of the UBI policies.

3.5. Minimal number of respondents to achieve statistical significance

From Section 3.1, the interesting population characteristics are second earners and women, single-parent households, families with children under 5 years old, inhabitants receiving welfare payments, young adults (18 to 27 years old), and elderly workers (55 to 67 years old). A division of the population statistics can be

found in Table 3.4. The assumptions behind this table can be found in the Appendix D.1. Besides the number of women and second earners, these groups are small proportions of the Dutch population. Therefore, these specific groups will be oversampled to obtain statistical significant results. The study cohort consists of adults below the age of 67, constituting approximately 64.5% of the total population. Individuals aged 67 and above are not included in this group, as they are already beneficiaries of a Universal Basic Income in the form of a state pension. The percentages presented in the third column represent the proportion of the given indicator within the population aged 18 to 67 years old.

Table 3.4: Population statistics of the Netherlands

Indicator	Value	Percentage of the population
Citizens between 18- and 67-years old ^a	11,349,542	64.5% ^d
Citizens between 18- and 27-years old ^a	2,882,605	25.4% ^e
Citizens between 28- and 50-years old ^a	5,636,021	49.7% ^e
Citizens between 51- and 67-years old ^a	2,830,916	24.9% ^e
Citizens receiving welfare payments ^b	394,000	3.7%
Number of single parents' households ^{c*}	566,972	4.2% ^e
Children under 5 years old ^a	864,653	-
Average amount of children per family ^c	1.66	-
Number of women with children under 5 years old	520,875	9.2%

^a (Centraal Bureau Voor de Statistiek, n.db)

^b (Centraal Bureau Voor de Statistiek, 2023b)

^c (Nederlands Jeugdinstituut, 2022)

^{c*} (Nederlands Jeugdinstituut, 2022) corrected for the the age groups

^d of the total dutch Population of 17.590.672 (Centraal Bureau Voor de Statistiek, n.db)

^e Of the citizens between 18- and 67-years old

In general, larger sample sizes are known to offer more precise and dependable outcomes. The widely accepted convention is that a minimum sample size of 30 is frequently employed as the lowest threshold for statistical analyses in a conjoint experiment.³ However, the suitability of this threshold may be dependent on the nature of the research question and study design. Table 3.5 gives an overview of the number of respondents needed in this survey.

The total number of participants in the study will be determined by setting the population proportion of the lowest minority group, which corresponds to citizens receiving welfare payments (3.7% based on Table 3.4), at 30 respondents. To maintain a proportional representation of different segments of the Dutch population, a total of 810 individuals⁴ should be included in the survey. However, reaching respondents may present challenges. Therefore, it is necessary to reweight the sample size to ensure representativeness. To achieve this, weighing coefficients will be applied within the range of 0.1 to 3, resulting in a minimum of 270⁵ respondents for the survey.

To address the objective of oversampling specific age groups, the proportion of citizens aged 28 to 50, whose behavior is deemed less significant for this study, will be under-sampled. This will be achieved by assigning an equal number of 90 respondents to each age category within this range. To maintain representative sampling, the number of female respondents will be set at half of the total sample size. Similarly, at least 30 respondents will be included in specific strata such as women with children under 5 years old and single parents. These strata will be part of the larger age group category. If survey responses permit, efforts will be made to distribute them equally according to their respective age distributions.

It is important to recognize that the numbers presented in Table 3.5 represent the minimum required respondents, and obtaining a larger sample size may yield more precise and reliable results. However, it should be noted that failing to reach the specified numbers does not automatically render the results uninterpretable or statistically insignificant. The interpretation of the data will depend on various factors and should be evaluated at the time of analysis, considering the specific context and research objectives. For strata in which the

³ According to Faul, Erdfelder, Lang, and Buchner's GPower software (2007), a large effect is obtain with an effect size of at least 0.5, with an α of 5% and a minimal power of 80% this leads to a sample size of at least 30 for a model with four predictors

⁴ $30/0.037 = 810$

⁵ $810/3 = 270$

Table 3.5: Minimum number of respondents needed for each indicator.

Indicator	Number of respondents
Minimum total number of respondents	270
Number of women	135
Citizens between 18- and 27-years old	90
Citizens between 28- and 50-years old	90
Citizens between 51- and 67-years old	90
Citizens receiving welfare payments	30
Number of women with children under 5 years old	30
Number of single parents	30

theoretical minimum of 30 respondents is not attained, a post hoc power analysis will be conducted using G*Power by Faul et al. to ascertain whether the effect size and power fall below the threshold of 80%.

3.5.1. How to obtain respondents?

From my network

Within my personal network, I intend to approach individuals whom I am acquainted with and request their participation in the survey. Additionally, I have encouraged them to share the survey with their families, particularly those who belong to the identified strata that may be challenging to reach through other means, especially single parents, elderly workers, and citizens receiving welfare payments. It is worth noting that within my network, a significant proportion of individuals falling within the age range of 18 to 30 can be identified of which a large number are students or respondents with a higher education degree.

Help from municipalities in the Netherlands

Given that municipalities are tasked with overseeing welfare payments and have extensive connections with hard-to-reach demographics, I sought their assistance. However, this proved challenging due to the decentralization of social welfare services to inter-municipal organizations. Ultimately, support was obtained from Delft municipality (via Werkse, the entity overseeing work rehabilitation in Delft), as well as from Diemen, Amsterdam, and Etten-Leur municipalities (via Werkplein, responsible for welfare services in the North-west Brabant region). This method proved to be time-consuming, although it holds significant potential. However, it requires extensive advance planning and may fall outside the scope of a master's thesis. Notably, I did not share any data with the municipality, adhering to the data management plan established for this study.

From SurveySwap & SurveyCircle

Survey Swap and SurveyCircle are platforms that facilitates the free sharing of surveys among students (SurveySwap, n.d) & (SurveyCircle, n.d.). Utilizing these platforms, I will distribute my survey to a wide range of potential respondents; however, at this stage, I have limited knowledge regarding the specific characteristics or demographics of the respondents who will ultimately participate in the survey.

3.6. Data encoding of the sample for the regression analysis

3.6.1. Coding categorical variables for the regression analysis

Categorical variables play a crucial role in regression analysis, enabling researchers to incorporate qualitative information into models. However, to include these variables in regression models, appropriate coding schemes are essential. Two common coding methods are dummy coding and effect coding, each serving distinct purposes in capturing categorical information within a regression framework.

Given that the survey provided an estimate of the respondent's monthly available budget, I proceeded to compare this value with the calculated impact of UBI on the budget across all nine profiles. The alteration in the available budget minus the estimate of the current situation, will be divided by 100 to gauge the effect of a budget change on labor participation and support for UBI.

Effect Coding

Effect coding is a technique employed for coding categorical variables within regression models, especially beneficial when dealing with variables that possess more than two levels. In effect coding, each level of a categorical variable is encoded as the deviation from the overall mean of the variable. This results in contrast coefficients that can be interpreted as the effect of each level in comparison to the grand mean. In effect coding, the categorical variable is encoded such that the sum of the coded values for each level is zero. This is achieved by assigning values of -1 to the reference category and 1 to the other categories.

Effect coding will be employed for the primary effects in the conjoint experiment, representing the levels of the attributes outlined in Section 3.3.1. For instance, Table 3.6 illustrates that the value of UBI per adult is encoded in two variables (1200 euros & 630 euros). To contrast this with a UBI of 210 euros per adult, it will be encoded as 1200 euros being -1, and 630 euros being -1.

Dummy Coding

Dummy coding, also known as indicator coding, is a widely employed technique for representing categorical variables with two or more levels in regression analysis. In this method, a categorical variable with k levels is encoded into $k-1$ binary variables, or "dummy variables." Each dummy variable represents the presence or absence of a specific category, with one category designated as the reference category.

For example, consider a categorical variable *Age* with three levels: *18 to 27*, *28 to 50*, and *51 to 67*. According to Table 3.7 Dummy coding would create two dummy variables $D_{18 \text{ to } 27}$ and $D_{51 \text{ to } 67}$ where $D_{18 \text{ to } 27}$ equals 1 if the observation is that the respondent has an age between 18 and 27 years old. If not it would be coded 0. $D_{51 \text{ to } 67}$ equals 1 if the respondent is between 51 and 67 years old, and 0 otherwise. In this context, the middle age group, *18 to 27*, serves as the reference category since it is not identified as the group of interest in Section 3.1. The results for the other two dummy variables are then compared to this reference group. Specifically, our study aims to ascertain the change in support for the age group *18 to 27* concerning the reference group *28 to 50* years old. By designating one category as the reference, the dummy variables capture deviations from the reference category, allowing the model to estimate unique coefficients for each category. This coding scheme also aids in interpreting regression coefficients as the effect of moving from the reference category to the specified category. If the dummy is deemed statistically insignificant, it implies no significant difference between the respective category and the reference category.

When to use which coding?

Choosing between dummy coding and effect coding depends on the research question and the desired interpretation of regression coefficients. While dummy coding is well-suited for estimating category-specific effects relative to a reference category, effect coding emphasizes the average effect of each category relative to the grand mean. Dummy coding will be used to code the potential demographic diversion on UBI support or labor participation from the population of interest. It will also be used to mark the interaction effect within the sample that took the survey. Effect coding will be used to show the impact of the UBI policies of the conjoint experiment.

Effect coding model

Table 3.6 is giving an overview of the coding scheme used to analyze the effect of each policy.

Table 3.6: Coefficient added to the attribute levels in effect coding

UBI per adult	1200 euro	630 euro
1200 euro	1	0
630 euro	0	1
210 euro	-1	-1
UBI per child	300 euro	185
300 euro	1	0
185 euro	0	1
100 euro	-1	-1
Change in tax system	No tax deduction	Make UBI taxable
No tax deduction	1	0
Make UBI taxable	0	1
New income tax system	-1	-1
Allowances	Only health allowance	No allowance
Only health allowance	1	0
No allowances	0	1
Only rental allowance	-1	-1

Dummy coding model

Table 3.7 provides an overview of the coding scheme utilized to assess the impact of each policy on various population groups. The table is divided into two sections. The first section presents the coding scheme for the population of interest. The second section outlines other characteristics queried in the survey (see Figure 3.1 and Appendix C.1) that may influence or elucidate changes in labor participation and support for UBI.

Table 3.7: Overview of the dummy coding for the population of interest, interaction effects, and the other effect

Population of interest	Level	Code		
Woman	Man Woman	Woman 0 1		
Second earner	First earner Second earner	Second earner 0 1		
Part-time workers	Full-time Job-less Side-job Part-time	Jobless	Side-job	Part-time
		0 1	0 1	0 1
Single-parents	Two-parent household Single parents	Single-parent 0 1		
Families with children	No children Younger than 5 years old Between 5 and 12 Older than 12	Younger than 5 0 1 0 0	Between 5 and 12 0 0 1 0	Older than 12 0 0 0 1
Inhabitants receiving welfare payment	No welfare payments Receiving welfare payment	Welfare payments 0 1		
Age group	28 to 50 years old 18 to 27 years old 51 to 67 years old	18 to 27 years old 0 1 0	51 to 67 years old 0 0 1	
Other characteristics of interest				
Income	Low Welfare-cliff Mid-income High	Welfare-cliff 0 1 0 0	Mid-income 0 0 1 0	High-income 0 0 0 1
Housing type	Others ^a Social housing Homeowner ^b	Social housing 0 1 0	Homeowner 0 0 1	
Student	No student Student	Student 0 1		
Can easily change their working hours	Can not easy Can easy	Can easy 0 1		
Education level	High ^c Low ^d	High 0 1		

^a Student room, non social housing (rent), home owner with no mortgage rate deduction^b Home owner with mortgage rate deduction^c HBO, university bachelor, university master, and PhD^d Lower education, high school, and MBO

4

Results

4.1. Population sample

4.1.1. Response

Missing values and division of the response

In total, 535 citizens entered the survey. Given respondents had the option to abstain from answering questions they chose not to address, the dataset exhibited a notable presence of missing values. In an effort to address this issue, respondents who failed to respond to at least 80% of the questions were excluded from the analysis, resulting in a reduction of 157 respondents. Additionally, instances where missing values were observed in the conjoint questions prompted the exclusion of respondents (32 in total). Consequently, the dataset was refined to encompass a total of 346 valid responses. The division of the respondents can be found in Figure 4.1 and Table 4.1.

Table 4.1: Percentage of respondents per group compared to Dutch population statistics

Sub-group	Percentage in sample	Percentage in population
Man ^a	51.4	50.0
Women ^a	48.6	50.0
First earner in household ^d	56.4	62.1
Second earner in household ^d	43.6	37.9
Working full time ^g	56.3	38.1
Working parttime ^g	30.1	35.1
Having a side job ^g	12.1	18.1
Jobless ^g	17.9	8.4
Single parents ^c	6.4	4.2
Household with children ^c	17.6	38.8
Citizens with children younger than 5 ^c	5.8	11.2
Citizens with children between 5 and 12 ^c	5.8	8.0
Citizens with children older than 12 ^c	6.1	8.3
Citizens receiving welfare payments ^b	7.8	3.7
Age group between 18 and 27 ^a	45.7	25.4
Age group between 28 and 50 ^a	31.5	49.7
Age group between 51 and 67 ^a	22.8	24.9
Income lower than 18.750 ^d	40.4	32.3
Income between 18.751 and 38.520 ^d	16.5	33.5
Income between 38.521 and 50.000 ^d	19.1	12.3
Income higher than 50.000 ^d	24.0	21.9
Homeowners ^e	27.1	56.7
Social housing ^e	20.0	28.4
Other form of housing ^e	52.9	14.9
Students ^f	27.7	6.0
Low educated ^f	14.7	25.8
High educated ^f	85.3	74.2

^a (Centraal Bureau Voor de Statistiek, n.db)^b (Centraal Bureau Voor de Statistiek, 2023b)^c (Nederlands Jeugdinstituut, 2022)^d (Centraal Bureau Voor de Statistiek, n.da)^e (Centraal Bureau Voor de Statistiek, 2024)^f (van der Mooren & de Vries, 2022)^g (Centraal Bureau Voor de Statistiek, 2023)

From Table 4.1, can be seen that the sample exhibits a balanced distribution across gender and the status of being a second or first earner. However, there is an overrepresentation of full-time workers and unemployed individuals in the work division category. Additionally, both single parents and households with children are underrepresented among the respondents.

The age distribution also indicates an overrepresentation of individuals aged 18 to 27, with approximately 60% of them being students. Conversely, the mid-age group is somewhat underrepresented; however, this deviation is deemed less significant given that this group was not specifically targeted (see Section 3.5).

In terms of income distribution, the sample composition is noteworthy. Due to the over-representation of students, there is a higher number of individuals in the lowest income bracket. However, this segment does not perfectly reflect this income group, as students' financial status tends to improve post-graduation. The group earning between 18,751 and 38,520, which experiences the highest exposure to the welfare cliff, is also underrepresented. Conversely, there is a slight over-representation of individuals in the modal and high-income brackets.

A correlation plot is available in Figure E.1 in the Appendix. The most notable correlations are: students and side jobs (0.44), students and age group 18 to 27 (0.58), welfare payments with social housing (0.56), single parents with young children (0.39), social housing and part-time employment (0.56), and high income and

age group 18 to 27 (-0.42).

Furthermore, the prevalence of students and young citizens in the sample leads to an under-representation of homeowners, while other forms of housing (particularly student housing) are disproportionately represented. Social housing, meanwhile, exhibits a slight under-representation.

An educational bias is also observed, with a higher proportion of highly educated individuals (those with a higher vocational education or higher) compared to the general population.

To address these biases, reweighting the groups with a factor lower than 3, as discussed in Section 3.5, is a viable approach. Additionally, the selection of groups for estimating the total change in labor participation will be based on the statistical significance of demographic indicators.

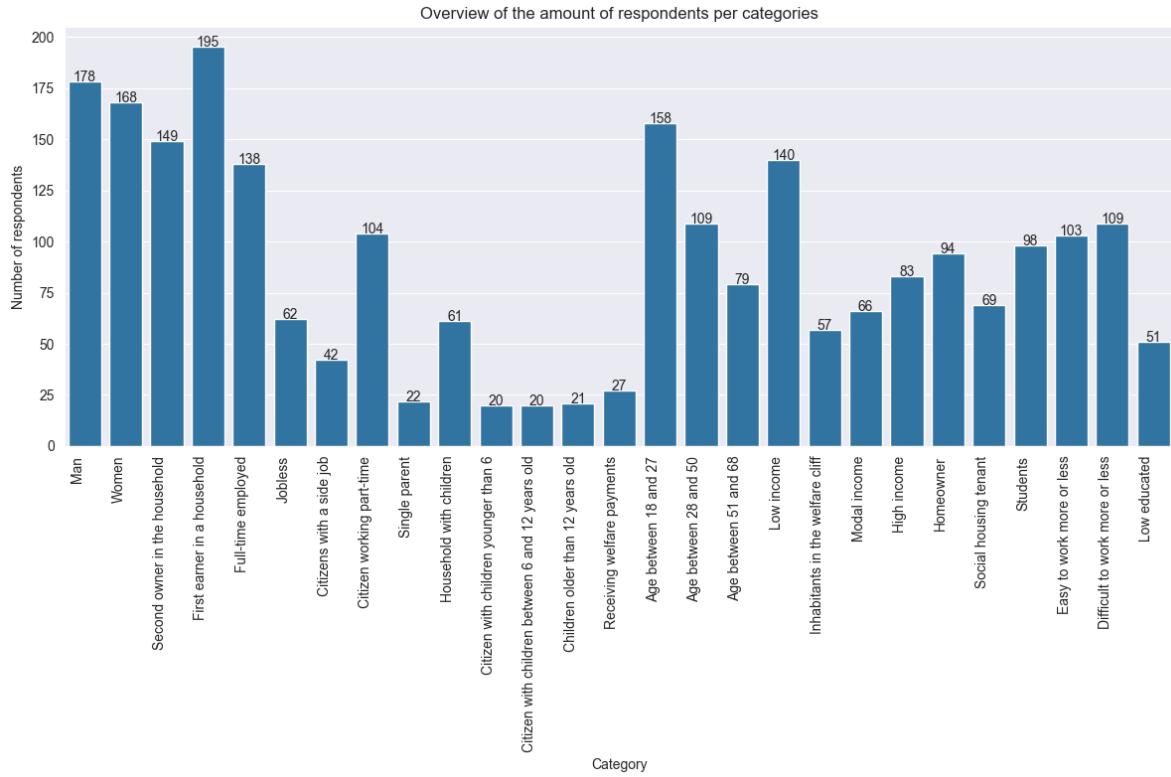


Figure 4.1: Overview of the number of respondents per category

4.1.2. Post hoc power analysis of the sample

Statistical power refers to the probability that a study will accurately reject a false null hypothesis, thus detecting a true effect if it exists. Therefore, a value of 0.8 should be achieved to provide meaningful results to the total population. Notably, some of the specified sub-groups outlined in Section 3.1 did not meet the theoretical minimum of 30 respondents, as detailed in Section 3.5. Consequently, a post hoc power analysis was conducted to determine the effect size and power of these sub-groups. The analysis utilized G*Power, following the methodology outlined by Faul et al. (2007), and the results are presented in Table 4.2.

The F-test was employed to assess the power of each subgroup. This test evaluates whether the independent variables collectively have a statistically significant effect in explaining the variability in the dependent variable. It tests the null hypothesis that all regression coefficients are equal to zero, indicating no explanatory power in the model. Additionally, R^2 , a statistical measure indicating the proportion of variance in the dependent variable explained by independent variables in a regression model, was utilized. Effect size, a statistical concept quantifying the magnitude of a relationship or difference between groups, was derived from R^2 and used to calculate the statistical power. In simpler terms, R^2 illustrates how well independent variables account for the variability of the dependent variable. Effect size provides a standardized measure to

understand the practical significance of findings.

Table 4.2: Power for sub-groups that have less than 30 respondents

Societal sub-group	Number of Respondents	R ²	Estimated Effect Size	Estimated Power
Single parents	22	0.451	0.821	0.857
Citizen receiving welfare payments	27	0.545	1.198	0.991
Children younger than 6 years old	20	0.261	0.416	0.481
Children between 6 and 12 years old	20	0.185	0.227	0.272
Children older than 12 years old	21	0.049	0.052	0.09
Children under 12 years old	40	0.249	0.332	0.786
Children	61	0.182	0.222	0.819

The analysis of Table 4.2 reveals an insufficient number of responses for different age groups of children, as the estimated power is below 0.8. Consequently, there is an inadequacy of responses in these specific groups.

To present results for young children in a more generalized manner as identified in Section 3.1, a test was conducted to assess whether the power was sufficiently high when the age groups of 0 to 5 and 6 to 12 were combined. The results indicated that this was nearly the case (power = 0.79) the case. Therefore, going forward, the outcomes will be generalized for citizens with children younger than 12.

Additionally, it is noteworthy that the effect sizes for the indicators "Single parents" and "Citizens receiving welfare payments" exceed 0.35. This implies that only large effects will be statistically significant. In the case of "Children under 12 years," the effect size ranges between 0.15 and 0.35, indicating that medium effects will also achieve statistical significance (Faul et al., 2007).

4.2. Estimation of change in labor participation and the trade-off with support for the UBI policies

In Tables 4.3 and 4.4, you will find subset analyses for the dependent variables of labor participation and support for UBI policies, respectively. These tables showcase the results of conjoint analysis conducted for each subgroup, comparing them to the overall estimates derived from the survey respondents using linear regression (specifically, the least squares method). This regression approach aims to identify the line that minimizes the sum of squared differences between observed values (i.e., actual data points) and the values predicted by the regression line. Essentially, it determines the "best fit" line through the data, minimizing the overall discrepancy between observed and predicted values.

These tables will serve as the foundation for estimating the overall shifts in labor participation and support across the Netherlands. Subsequent sections will offer detailed insights into the outcomes for each subgroup, providing a deeper exploration of the uncertainty and reliability of the results.

4.2.1. Sub-set analysis for labor participation

When examining labor participation across all demographic groups as outlined in Table 4.3, several notable observations emerge. Notably, the regression constant for all groups indicates an inclination toward increased weekly working hours under UBI policies, with the exception of women and individuals aged 18 to 27 years old. It's important to note that the UBI policies are effect coded, meaning that in the context of linear regression, the regression constant signifies the value of the dependent variable when all independent variables in the model, including the UBI policies and demographic factors, are set to zero. Specifically, for demographic factors that are dummy coded, the regression constant represents the labor participation of the reference category of those demographic factors in the absence of UBI policies. Thus, it serves as a foundational reference point for interpreting the impacts of changes in UBI policies and demographic factors on labor participation.

The financing mechanism "No tax deduction" exhibits a notable increase in labor participation across all subgroups. This effect is attributed to the significance of the tax deduction mechanism as a substantial component of income for the majority of the Dutch population. For further details, refer to Figure 2.1. Conversely,

the other funding mechanisms, namely "Make UBI taxable" and "Increase income tax," do not demonstrate statistical significance. This is primarily because these mechanisms have a lesser impact on disposable income and are more geared toward affluent individuals within the Netherlands.

Allowances play a role in the income of up to 66% of the Netherlands' population (Ministerie van Financiën, 2023), particularly for those with children. This is because child-specific allowances and childcare allowances constitute a significant portion of their monthly budget. Consequently, the coefficients associated with allowances are most pronounced for single parents and families with children under 12 years old. Additionally, individuals receiving welfare payments are highly incentivized to increase their labor participation through the removal of these allowances.

Interestingly, only the UBI of 1200 euros per month per adult is statistically significant and leads to a decline in labor participation across all respondent groups. This outcome was expected, as it also increases the net income for a sizable portion of the population. Additionally, the UBI of 630 euros is statistically significant for citizens receiving welfare payments. Conversely, the UBI per child does not appear to have a statistically significant influence on labor participation for the overall population. However, upon analyzing subsets, it is not surprising that single parents and families with children under 12 years old show significant effects, as they are significantly impacted by such policies. One reason for the less influential effect of UBI per child on the total population could be the underrepresentation of citizens with children in the dataset.

The first demographic indicator pertains to income. The variable "Change of 100 euros net income" signifies the alteration in labor participation for each 100 euros of additional income. For instance, if a citizen gains an extra 200 euros of net income per month, their labor participation will decrease by 0.078 hours per week. Conversely, if their net income decreases by 200 euros, their labor participation will increase by 0.156 hours per week. This variable demonstrates statistical significance in the population and generally leads to a decline in labor participation.

Consequently, an increase of 100 euros in net income per month would result in a reduction of 8.19 euros in monthly labor income¹. This effect is lower than that observed in a study by Marinescu on lottery winners in Sweden, who estimated a decrease of 11 dollars in labor income per month for every 100 dollars of monthly lottery winnings.

When analyzing specific demographic groups, divergent outcomes emerge. Part-time workers and individuals aged 51 to 67 are anticipated to experience a decline in labor participation. In contrast, women, single parents, families with children under 12, recipients of welfare payments, and individuals aged 18 to 27 are expected to see an increase in labor participation.

If we examine the income categories, we observe their significance across nearly all subsets, rendering them valuable indicators for evaluating population policies. However, other demographic factors do not exhibit statistical significance, except for education level. This finding is intriguing, as it nuances the conclusion by Gielens et al. (2023) that education level does not significantly impact support but appears to do so for labor participation.

¹Based on a average salary of 25 euros per hour

Table 4.3: Regression results for change in labor participation due to UBI

	Labor participation							
	All respondents	Women	Part-time	Single parents	Children under 12	Welfare payments	Age 18 to 27	Age 51 to 60
Constant	2.286***	-0.252	2.638***	2.550	2.558**	4.465*	-0.477	2.950***
No tax deduction	0.513**	0.994***	0.668**	0.824*	0.519*	1.930***	1.018**	0.467**
Make UBI Taxable	-0.155	-0.330	-0.212	0.330	0.126	-0.628	-0.313	-0.042
Increase income tax	-0.358	-0.664	-0.456	-1.154	-0.645	-1.302	-0.705	-0.976
Health allowance	-0.293*	-0.382*	-0.397*	-0.651	0.067	-0.602	-0.559**	-0.020
No allowances	0.669***	0.817***	1.139***	2.473***	1.179***	3.237***	0.605**	0.589**
Rental allowance	-0.382	-0.435	-0.742	-1.822	-1.246	-2.635	-0.046	-0.569
1200 euro UBI	-1.083***	-1.364***	-1.230**	-2.222***	-1.265***	-1.809***	-2.638***	-0.930***
630 euro UBI	0.094	0.002	0.038	0.476	-0.166*	-0.614**	0.260	0.270
210 euro UBI	0.991	1.362	1.192	1.746	1.431	2.423	2.378	0.660
300 euro UBI per child	-0.120	-0.270	-0.271	-0.668*	-0.530*	-0.902**	-0.133	-0.012
185 euro UBI per child	0.112	0.272	-0.065	0.437	0.161	1.112**	0.267	0.191
100 euro UBI per child	-0.100	-0.002	0.336	0.231	-0.21	-0.134	-0.203	
Change of 100 euro net income	-0.078**	0.015	-0.066	0.097	0.042	0.076	0.187	-0.058
Income lower than 18.750	0.000							
Income between 18.751 to 38.520	-2.425**	-3.431***	-2.140***	-0.774	-2.319**	(-)	0.357	-3.699***
Income between 38.521 and 50.000	-2.498***	-2.605***	-2.779***	-8.410**	-6.064***	(-)	-0.564	-3.503***
Income higher than 50.000	-2.825***	-3.637***	-2.691***	-8.237***	-3.619***	(-)	-0.647	-3.340***
Other form of housing	0.000							
Social housing	0.850	0.720	-0.158	4.595**	3.468***	-1.389	0.815*	-0.475
Home owners	0.386	0.717**	-0.083	6.216**	0.503	(-)	-0.184	0.381
No Student	0.000							
Student	-0.186	-0.660*	-1.131**	(-)	(-)	(-)	1.108**	(-)
Difficult change work hours	0.000	-0.322*	0.267	0.010	2.280**	-2.283**	-0.450	0.368
Easy change work hours	-0.322*	0.267	0.010	2.280**	-2.283**	-0.450	-0.401	
Low education level	0.000							
High education level	-0.709***	-0.370	0.705*	-4.455**	1.234	0.705	-1.365***	-0.422
R-squared:	0.094	0.122	0.125	0.355	0.365	0.403	0.075	0.115
Adj. R-Squared:	0.083	0.112	0.108	0.298	0.366	0.367	0.064	0.091
Number of respondents:	346	168	104	22	40	27	158	70
Notes:	*p<0.1	**p<0.05;	***p<0.01	(-) no value				

4.2.2. Sub-set analysis for support of UBI

To measure support, respondents were queried in the survey regarding their stance on the proposed UBI policies outlined in Table 3.1 and Figure 3.2, utilizing a five-point Likert scale. A score exceeding three indicates support for the policy. Analysis of the support regression model in Table 4.4 reveals that, on average, respondents favor UBI, with a constant of 3.071. The highest constants are observed for part-time workers and citizens with children under 12 years old. Notably, relatively low support is evident among single parents (constant = 0.639) and recipients of welfare payments (constant = 2.210).

The statistical significance of taxation reforms. 'No tax deduction' and 'Make UBI taxable', in measuring support is notable. While the former decreases support for the policy, the latter increases it. These findings are consistent with the anticipated impact of these policies on disposable monthly income. Moreover, the removal of allowances, as proposed in the policies under evaluation, is associated with a decrease in support across all respondents.

Of particular interest is the substantial increase in support observed for a UBI of 1200 euros per month per adult. This increase is most pronounced among citizens receiving welfare payments and single parents. However, it falls short of raising support for the latter group above a threshold of three out of five. Additionally, the moderate value of UBI per adult per month is statistically significant but does not significantly influence the level of support.

In contradiction to labor participation, the highest level of UBI per child per month is statistically significant making it an important attribute to increase support for the policies. If we look at the demographic factors, the change of 100 euro of extra net income is increasing support among all subsets. This is an interesting trade-off for certain sub groups that can be made since we evaluated the effect of 100 euro extra net income as uncertain for labor participation since it for some sub groups decreased the hours worked and for others it led to more labor. The fact that more available money per month increase support is therefor more in line with expectation.

The demographic factors that exhibit statistically significant effects on support for UBI include housing type and student status. Citizens residing in social rental housing demonstrate a positive level of support, whereas homeowners are less favorable toward UBI, potentially due to the loss of mortgage rent deductions.

Students also display a statistically significant decrease in support for UBI. A more comprehensive analysis of this phenomenon will be provided in the Political section (Section 4.5). Contrary to previous findings by Gielens et al. ((2023)), education level does not significantly impact the level of support for UBI. However, exceptions are observed within the age group of 18 to 27 and part-time workers, as these groups exhibit a considerable overlap with students.

Table 4.4: Regression results for support of UBI

	Support							
	All respondents	Women	Part-time	Single parents	Children under 12	Welfare payments	Age 18 to 27	Age 51 to 60
Constant	3.071 **	2.936 ***	3.767 ***	0.639	3.839 ***	2.210 ***	2.994 ***	2.977 ***
No tax deduction	-0.187 ***	-0.214 ***	-0.161 **	-0.340	-0.182 **	-0.379 ***	-0.131	-0.264 ***
Make UBI Taxable	0.100 ***	0.089 **	0.057	0.144	0.089	0.086 **	0.115 **	
Increase income tax	0.087	0.125	0.104	0.196	0.065	0.045	0.149	
Health allowance	0.074 **	0.098 **	0.054	-0.063	-0.072 *	0.047	0.081 *	0.08
No allowances	-0.132 ***	-0.142 ***	-0.194 ***	0.013	-0.032 *	-0.227 ***	-0.173	-0.067
Rental allowance	0.058	0.044	0.257	0.05	0.104	0.18	0.092	0.059
1200 euro UBI	0.191 ***	0.242 ***	0.221 ***	0.749	0.485 ***	1.552 ***	0.030	0.363 ***
630 euro UBI	0.057 **	0.052	0.107 **	0.093	0.099	0.102	0.051	0.085
210 euro UBI	-0.248	-0.294	-0.328	-0.842	-0.584	-1.654	-0.054	-0.448
300 euro UBI per child	0.091 ***	0.110 **	0.075	0.238	0.137	0.384 ***	0.077 *	0.097
185 euro UBI per child	-0.041	-0.055	-0.053	0.078	-0.06	-0.111	-0.043	-0.04
100 euro UBI per child	-0.050	-0.055	-0.022	-0.316	-0.197	-0.273	-0.034	-0.093
Change of 100 euro net income	0.060 **	0.063 ***	0.063 ***	0.07	0.063 ***	0.065 ***	0.074 **	0.037 ***
Income lower than 18.750	0.000							
Income between 18.751 to 38.520	0.078	0.179	-0.322 **	0.211 ***	-0.883 ***	(-)	0.008	0.321 *
Income between 38.521 and 50.000	0.025	0.024 *	-0.267 **	1.615 *	0.616 *	(-)	0.05	-0.027
Income higher than 50.000	0.006	0.119	-0.335 **	1.135	-0.486	(-)	0.369 **	-0.115
Other form of housing	0.000							
Social housing	0.123 **	0.220	0.045 *	1.038 ***	-1.279 ***	0.722	0.140 *	0.647 ***
Home owners	-0.243 ***	-0.114 **	-0.360	0.913	-0.519 **	(-)	-0.138 *	0.111
No Student	0.000							
Student	-0.281 ***	-0.155 *	-0.798 ***	(-)	(-)	(-)	-0.275 ***	(-)
Difficult change work hours	0.000	-0.04	-0.216 ***	0.051	-0.446 ***	0.302	0.022	-0.199
Easy change work hours	-0.009							
Low education level	0.000							
High education level	-0.029	-0.062	-0.294 **	1.257	0.840 ***	0.064	-0.166 **	-0.144
R-squared:	0.160	0.204	0.634	0.419	0.625	0.145	0.221	
Adj. R-Squared:	0.155	0.195	0.602	0.391	0.602	0.135	0.201	
Number of respondents:	346	168	104	22	40	27	158	70
Notes:	*p<0.1	**p<0.05;	***p<0.01	(-) no value				

4.2.3. Estimate for change in labor participation for the Netherlands

To estimate changes in labor participation at the country level, we employed income division as a demographic indicator, categorizing the population into measurable sub-groups. Our analysis revealed the significant relevance of income indicators, as evidenced in Table 4.3 for the change in labor participation. Furthermore, upon scrutinizing demographic indicators for support (refer to Table 4.4), housing type emerged as a notable factor. This is interesting since home ownership is an important indicator of wealth and therefore a criterion for allowances. A cross-division of income and housing type can be found in Table 4.5. While these values were not statistically significant in both regression models (although significant in some sub-sets), they serve as crucial indicators for understanding the mechanisms underlying labor participation and support. Every indicator utilized holds statistical significance ($p < 0.05$) in either (or both) the 'All respondent' regression with the dependent variable of support or labor participation.

Conversely, statistically significant demographic characteristics such as education level, student status, and changes in net income of 100 euros were not selected from a data standpoint. Students constitute a small portion of the Dutch population, rendering them unsuitable as indicators. While education level was only significant in the change in labor participation model and strongly correlated with income, the latter was deemed a more appropriate metric for population segmentation, especially since it was statistically significant in some sub-sets of the support data as well. Moreover, the variation in net income of 100 euros is heavily dependent on factors such as salaries, eligibility for allowances and other governmental support, making it challenging to accurately categorize the Dutch population using this variable.

To estimate a change in labor participation, the sample needs to be reweighted following patterns from the Dutch population. The distribution of income and housing type per income can be found in Table 4.5. This table is based on the work of Centraal Bureau Voor de Statistiek (n.da) and Groot, Mohlmann, and Lejour (2016). For a more detailed division of income statistics, please refer to Table D.1 of Appendix D.

Table 4.5: The percentage of each income group present in the population and the type of house they are living in

Income bracket^a	% in population	% living in social housing	% of home-owner	% living in other types of houses
Less than 18.750 euro	28%	60%	35%	5%
Between 18.751 and 38.520	28%	60%	35%	5%
Between 38.521 and 50.000 euro	12%	36%	55%	9%
Over 50.000 euros	32%	8%	85%	7%

^a (Centraal Bureau Voor de Statistiek, n.da)

The effect of the high-UBI policy

The methodology for calculating the change in labor participation is detailed in Appendix E.2. According to the regression model, implementing a high-UBI policy would result in an average increase of 0.75 hours per week in labor participation. Given that the average working hours for a Dutch citizen is 33.2 hours per week (Centraal Bureau Voor de Statistiek, 2021), this translates to an increase of approximately 2.26%.

However, it's crucial to acknowledge the uncertainty associated with these estimates. Accounting for the confidence interval, the change in labor participation ranges from a decrease of 2.20 hours per week (-6.63%) at the lower end of the confidence interval to an increase of 3.69 hours per week (11.11%) at the upper end. This variability underscores the uncertainty surrounding the impact of this policy.

Support for the UBI policy is evaluated using a 5-point Likert scale, where a score of at least 3 out of 5 indicates a positive evaluation. The average level of support for the high-UBI policy is 2.98, which falls below the threshold for positivity.

However, accounting for the uncertainty associated with the estimates, it's important to consider that the confidence interval for support ranges from 2.40 to 3.56 out of 5. This wide range illustrates the lack of a clear consensus among respondents regarding support for the high UBI policy, underscoring the ambiguity surrounding public opinion on this matter.

Table 4.6: Regression results for change in labor participation and trade-off between acceptance

A summary of the regression models is provided in Table 4.6. This Table also includes the 95% confidence interval since the regression coefficients are estimates and therefore introduce uncertainty in the calculations.

		Labor participation			Support		
		Coefficient	0.025	0.975	Coefficient	0.025	0.975
Attributes	Constant	2.286***	1.592	2.979	3.071**	2.934	3.208
	No tax deduction	0.513**	0.186	0.839	-0.187***	-0.252	-0.123
	Make UBI Taxable	-0.155	-0.454	0.145	0.100***	0.041	0.160
	Increase income tax	-0.358	(-)	(-)	0.087	(-)	(-)
	Health allowance	-0.293*	-0.595	0.009	0.074**	0.014	0.134
	No allowances	0.669***	0.370	0.968	-0.132***	-0.191	-0.073
	Rental allowance	-0.382	(-)	(-)	0.058	(-)	(-)
	1200 euro UBI	-1.085***	-1.517	-0.652	0.191***	0.105	0.276
	630 euro UBI	0.094	-0.206	0.395	0.057*	-0.002	0.117
	210 euro UBI	0.991	(-)	(-)	-0.248	(-)	(-)
	300 euro UBI per child	-0.120	-0.421	0.091	0.120**	0.031	0.150
	185 euro UBI per child	0.112	-0.191	0.415	-0.041	-0.101	0.019
	100 euro UBI per child	-0.100	(-)	(-)	-0.050	(-)	(-)
Demographic factors	Income lower than 18.750	0.00	(-)	(-)	0.000	(-)	(-)
	Income between 18.751 to 38.520	-2.425**	-3.117	-1.733	0.078	-0.059	0.215
	Income between 38.521 and 50.000	-2.498***	-3.171	-1.826	0.025	-0.108	0.158
	Income higher than 50.000	-2.825***	-3.555	-2.095	0.006	-0.138	0.151
	Other form of housing	0.000	(-)	(-)	0.000	(-)	(-)
	Social housing	0.850**	0.244	1.455	0.123**	0.003	0.243
	Home owners	0.386	-0.154	0.927	-0.243***	-0.350	-0.136
Notes:		*p<0,1	**p<0,95	***p<0,99	(--) no value		

The effect of the mid-UBI policy

Similar trends in labor participation are observed for the mid-UBI policy, albeit with a slightly greater increase. This is largely due to a decrease in disposable income for a significant portion of the population, as illustrated in Figures A.10 to A.13. On average, the mid-UBI policy results in an additional 1.49 hours of weekly work, equivalent to a 4.49% increase. However, it's important to note the wide confidence interval, spanning from -1.29 (-3.89%) to 4.28 (12.89%) hours per week, reflecting the uncertainty surrounding these estimates.

The level of support for the mid-UBI policy is comparable to that of the high variant, with an average score of 3.01, indicating a slightly positive reception. The confidence interval for support ranges from 2.45 to 3.56, showing a narrower range compared to the high-UBI policy.

From a broader perspective within the general population, there appears to be no definitive consensus regarding whether UBI has a positive or negative effect on labor participation. Similarly, assessing support for UBI proves challenging, further complicating efforts to identify a trade-off between these factors. To gain deeper insights, let's examine specific subsets of the data to ascertain if any consensus can be discerned within these groups.

4.2.4. The trade-off between support and labor participation for the UBI policies

To analyze the trade-off between support and labor participation for UBI across the entire population, the average regression coefficients extracted from Table 4.6 are depicted as scatter plots in Figure 4.2, with the change in labor participation represented on the x-axis and the change in support on the y-axis.

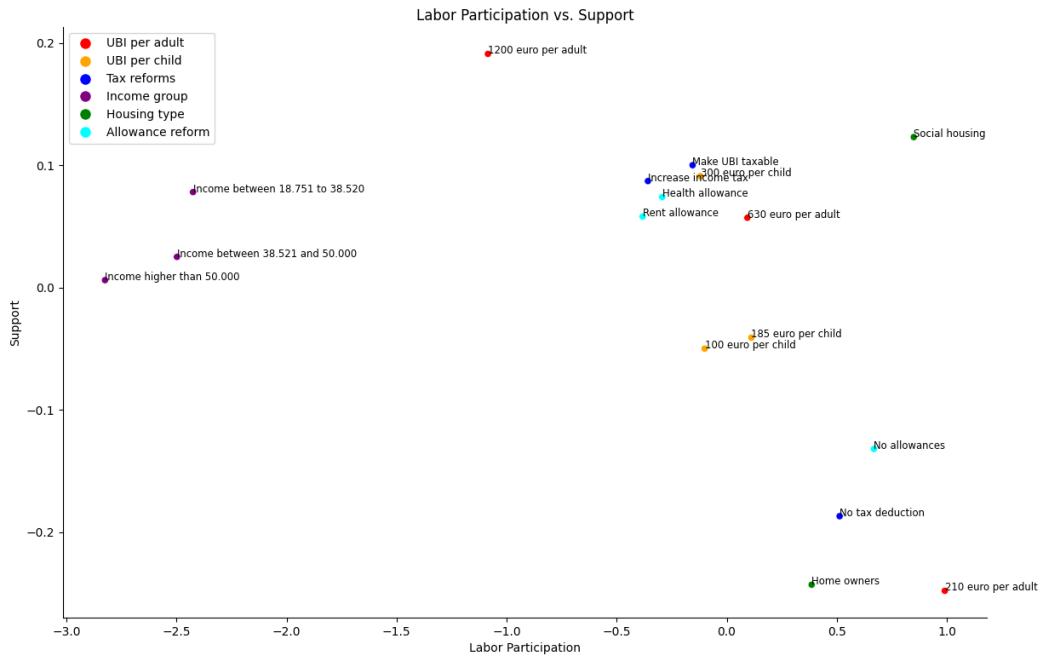


Figure 4.2: Trade-off between support and labor participation

From the various UBI policies considered, it's evident that implementing a UBI of 1200 euros per month generates the highest increase in support but also results in the largest decline in labor participation. Conversely, a UBI of 630 euros per month induces a lower decrease in labor participation but does not substantially enhance support. Given the relatively modest average level of support across all policies, it becomes imperative to acknowledge the trade-off between changes in labor participation resulting from a high UBI and efforts to mitigate this through financing policies aimed at boosting labor participation.

Indeed, the introduction of a UBI of 300 euros per child results in a slight increase in support while having minimal adverse effects on labor participation. This suggests that such a policy could be beneficial in boosting overall support levels without significantly impacting labor participation. However, reducing this amount, as seen with the 185 euros per month per child policy, leads to a decrease in support, indicating the importance of maintaining a certain level of support for families with children.

From a budgetary perspective, it may be worth considering excluding UBI per child from the policies altogether. This is because the policy does not contribute significantly to increasing support levels, nor does it have a substantial impact on labor participation. By reallocating resources from UBI per child to other areas where they may have a greater impact, policymakers can ensure that resources are utilized more effectively to achieve desired outcomes.

Analyzing the financing mechanisms, both the removal of allowances and the elimination of tax deductions are positioned in the bottom-right quadrant of the figure, indicating their simultaneous reduction in support and increase in labor participation. Surprisingly, making UBI taxable has a relatively minor effect on labor participation while increasing support. However, it's noteworthy that despite similar impacts on the government budget, as observed in Tables 2 and B.1, the two policies exhibit contrasting effects on support and labor participation. Therefore, maximizing support would benefit from making UBI taxable, while efforts to enhance labor participation would be better served by eliminating tax deductions.

From the demographic analysis, income groups across the board are associated with a decrease in labor participation of approximately two and a half hours per week when compared to individuals with incomes lower than 18,750 euros. Additionally, these income groups do not contribute positively to support levels.

Conversely, housing types, specifically social house rentals and home ownership, exhibit contrasting effects on labor participation. Individuals residing in social housing rentals and homeownership tend to have higher levels of labor participation compared to those living in other forms of housing. Interestingly, there is a notable trade-off within this group: while individuals in social housing, who typically receive rent allowances, contribute to the support of UBI, homeowners tend to oppose it, thereby decreasing support levels.

4.3. Effect of UBI on the population of interest

In the broader population, although the average level of support was moderate and the change in labor participation was slightly positive, a conclusive consensus regarding the expected impact of the proposed policies on both support for the policy and labor participation remained undecided. This uncertainty was evidenced by a range of outcomes, including both declines and increases in labor participation, as well as assessments of support that varied both below and above the average when the confidence intervals were examined. To obtain additional insights, a more thorough investigation of subgroup dynamics is necessary to identify potentially robust patterns within these subsets.

Table 4.7 provides a comprehensive overview of the labor participation and support exhibited by respondents from various subgroups towards different UBI policies and the corresponding confidence intervals. For a more detailed analysis comparable to Table 4.6, additional information can be found in the appendix, specifically in Tables E.1 to E.7.

Table 4.7: Change in labor participation (hours per week) for the study group under high- and mid-UBI policies, and support (garage out of 5)

	Labor Participation		Support	
	High-UBI policy	Mid-UBI policy	High-UBI policy	Mid-UBI policy
Women	+1.24 (-0.60, 1.50)	+1.52 (+0.83, 2.22)	3.33 (2.95, 3.72)	3.00 (2.70, 3.31)
Part-time workers	+1.39 (-0.45, 3.24)	+2.06 (1.21, 2.91)	3.21 (2.81, 3.60)	3.02 (2.83, 3.20)
Single parents	+3.06 (3.00, 3.32)	+4.83 (0.02, 6.10)	0.65 (0.04, 1.24)	0.00 (0.00, 0.00)
Parents with children younger than 12 years old	+1.21 (-0.68, 3.10)	+2.28 (3.47, 1.09)	3.92 (3.24, 4.61)	3.23 (3.10, 3.36)
Inhabitants receiving welfare payments	+3.81 (3.52, 10.12)	+4.46 (5.13, 9.95)	2.94 (1.21, 4.67)	2.06 (0.42, 3.70)
Young adults	+0.66 (-0.98, 2.29)	+1.46 (0.71, 2.21)	3.14 (2.76, 3.52)	3.00 (CI: 2.71, 3.30)
Elderly workers	+0.11 (-1.33, 1.54)	+0.61 (0.13, 1.09)	3.38 (3.02, 3.73)	3.17 (3.07, 3.26)
Notes:	(,) = 95% Confidence Interval			

For a high UBI policy, assessing the direction of labor participation presents challenges, as most demographic groups display both positive and negative values within their 95% confidence intervals. However, single parents and citizens receiving welfare payments consistently exhibit solely positive values within their confidence intervals, indicating a probable increase in labor participation under such a policy. This outcome is attributable to their loss of income. Regarding support for the high UBI policy, single parents show support ranging from 0.4 to 1.24 on a 5-point scale, indicating a lack of support within this population subgroup. In the welfare payment subgroup, the average support is below 3, although the confidence interval spans a wide range across various response possibilities. In contrast, parents with children under 12 years old and elderly workers are likely to favor the high-UBI policy, as each confidence interval value exceeds the average support level of three on a five-point Likert scale.

Upon examination of the mid-UBI policy, a consistent increase in labor participation is observed across nearly all groups within the study. Confidence intervals for most groups solely contain positive values, suggesting a probable rise in labor participation, as expected due to the decrease in disposable income for certain

groups. Once again, single parents exhibit a support of 0.00 for this policy.

Parents with children under 12 years old and elderly workers display support levels higher than the average, indicating a favorable inclination toward the policy within these specific demographic groups. The results between the high and mid-UBI policies are therefore highly similar.

In terms of trade-offs, a higher UBI policy introduces more uncertainty regarding its impact on labor participation, albeit with potentially positive effects for specific groups. While average support values may be higher than those for a mid-UBI policy, both policies have an equivalent number of subgroups with a 95% likelihood of favoring them: Parents with children younger than 12 and elderly workers.

Conversely, the mid-UBI policy demonstrates a more consistently positive impact on labor participation across various groups, although certain groups may still exhibit mixed outcomes. Despite potentially lower support values compared to a high UBI, it remains a noteworthy aspect.

4.4. What will people do with UBI?

To evaluate the potential actions of citizens under mid- and high-UBI policies, respondents were presented with two questions, detailed in Appendix C.3. Initially, they were asked whether they would contemplate resigning from their current employment to seek a more suitable position. Subsequently, they were prompted to choose from twelve different options regarding their intended actions under these UBI policies, with the opportunity to add additional behaviors. This section will first outline the responses regarding job resignations and then present the outcomes of the actions selected by respondents under the two policy scenarios. This analysis is geared towards addressing research question 5: How would Dutch citizens allocate their financial resources and utilize their time if UBI were implemented in the Netherlands?

4.4.1. Leaving their jobs

First, let's examine whether citizens would entertain the idea of leaving their current jobs to seek better-suited employment. The responses are illustrated in Figure 4.3. A comparison between the two figures suggests that individuals in the Netherlands are more inclined to contemplate job changes under a high-UBI policy compared to a mid-UBI policy. To ascertain if this difference is statistically significant, a Chi-square test was conducted. The results of this analysis are presented in Table E.8. With a p-value of 0.0431, it can be inferred that a mid-UBI has a lesser impact on individuals resigning from their jobs to seek better-suited ones compared to a high-UBI policy.

This inclination is particularly pronounced when accounting for citizens who are currently unemployed, with 9.9% expressing a strong likelihood of changing jobs and 25% indicating openness to the idea². Moreover, upon further analysis, considering individuals satisfied with their current employment, 12.7% express a strong likelihood of changing jobs, with 32.3% being open to the prospect³. The implementation of a high UBI policy could significantly facilitate the reallocation of jobs according to individuals' preferences.

The particular sub-groups showing openness to changing jobs under a high-UBI policy if accounted for the two non-applicable bars include second earners (44.4%), women (37.7%), part-time workers (42.7%) and young adults (38.7%) (especially students (56.6%), as depicted in Figure E.4). Their distribution is illustrated in the bar diagrams provided in Appendix E, spanning from Figure E.2 to Figure E.7. Since students may opt to stop working due to UBI, several industries like food services, consumer retail, or administrative workers may encounter labor shortages on the short-time introduction of a UBI policy. This behavior was also observed by the reintroduction of the student allowance in September 2023 (Advalvas VU, 2024).

²They are open to the idea if they have chosen likely or very likely

³When accounting for both, the non-applicable bars

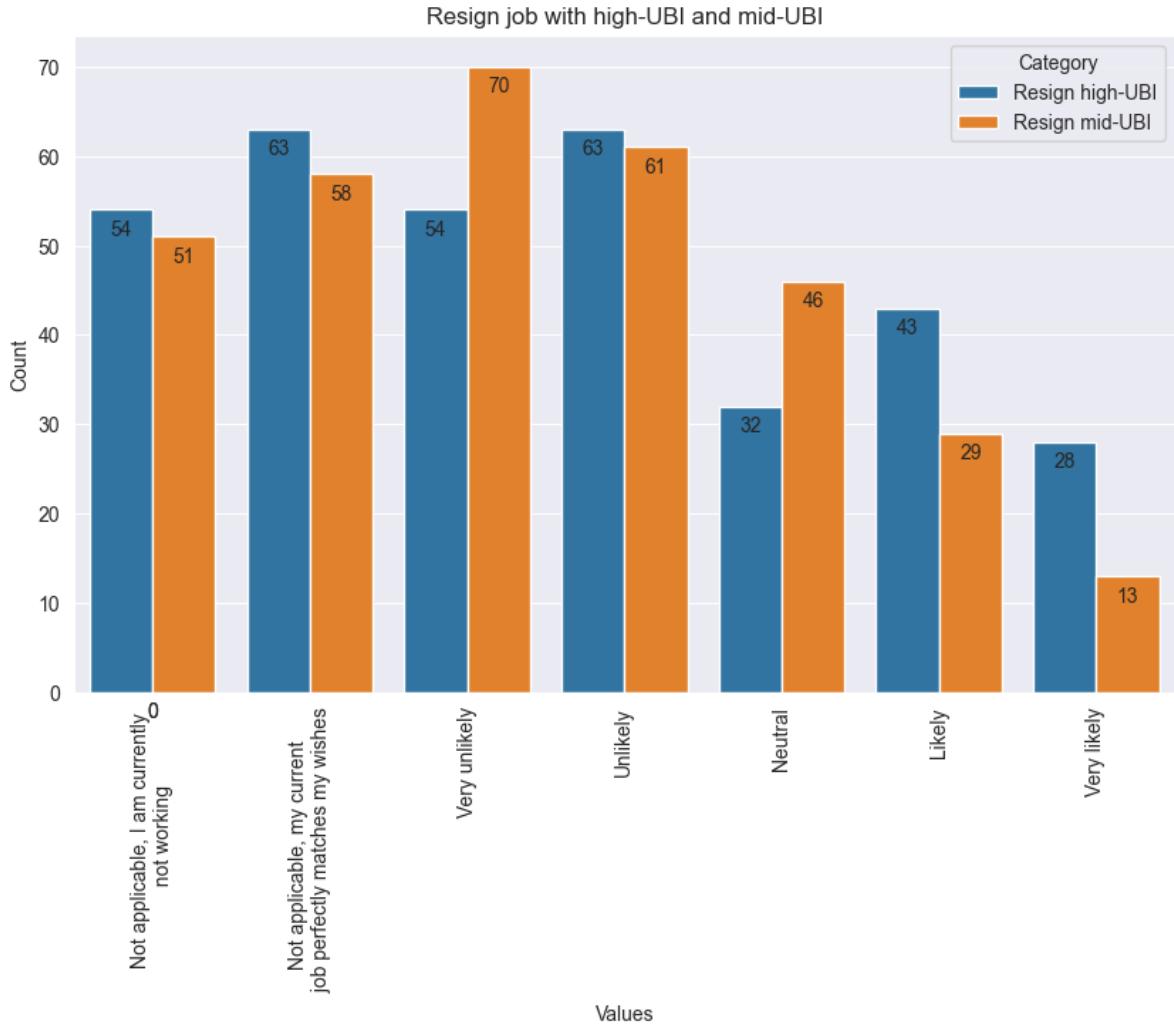


Figure 4.3: Distribution of the respondents that would resign their job under a high-UBI policy

4.4.2. What will citizens do: an overview of their responses

Now, let's examine the general responses regarding what citizens would do if they received a mid- and high-UBI. Figure 4.4 provides an overview of respondents' intended actions with their time and money. It is noteworthy that there are fewer responses regarding the mid-UBI policy compared to the high-UBI policy. To compare both bars another Chi-square test was conducted (Table E.9). Since the p-value is 0.901, no statistically different effect is observed between a high and mid-UBI.

From the Figure, it is observed that both UBI policies would elicit similar reactions, as the top four responses are consistent (albeit in varying order). Citizens express their intention to save more money, experience less stress, purchase healthier food, and allocate more time to leisure activities.

Interestingly, the data reveals that few respondents choose to pursue additional education or increase their study time, despite the significance of such outcomes in the Mincome experiment or of the study of De Nederlandse Bank (2023). Also, it seems that respondents would live healthier with UBI policies since a large group is indicating they will go to the doctor more often and buy healthier food. One notable difference is the proportion of individuals expressing a desire to engage in volunteer work. This proportion is twice as high for those favoring the high-UBI policy compared to those supporting the mid-UBI policy.

When examining specific sub-groups of the population to discern their preferences regarding a high- or mid-UBI, several noteworthy findings emerge. The percentage of respondent from each groups choosing what they will do with UBI are very similar for both policies. These results are depicted in Figure E.8, provided in

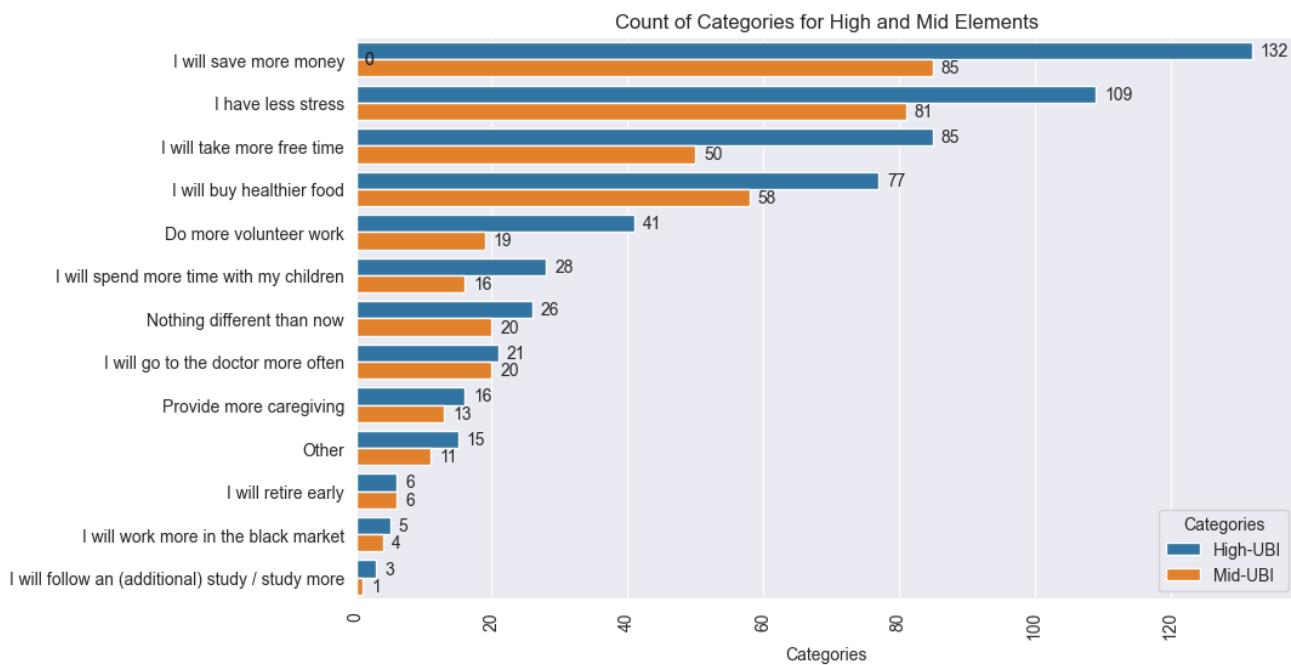


Figure 4.4: Distribution of the respondents what respondents will do with their time and money under a high-UBI policy

Appendix E.

Households with children predominantly lean towards the health-related benefits of a high UBI, as evidenced by their reported reductions in stress (48%), increased doctor visits (37%), and more frequent purchase of healthy food items (35%). In terms of income categories, expected behaviors are observed. Individuals with mid and low incomes express intentions to save more money (52% for high, 36% for mid), aligning with the targeted assistance offered by UBI policies (if they are living in a multi-adult household). Surprisingly, high-income earners indicate similar intentions to save more (30% for high, 7% for mid), despite UBI aiming to provide a net benefit to this demographic. This discrepancy could stem from a lack of understanding regarding the direct effects of UBI, particularly regarding changes in mortgage rate deductions and other tax adjustments.

Notably, a significant reduction in stress levels is reported by unemployed individuals and those currently receiving welfare payments (48% for high, 44% for mid). This finding is intriguing, considering that UBI does not increase the monthly budget for these individuals; in fact, it may lead to a decrease in income, especially for those currently receiving substantial allowances. One possible explanation for this phenomenon is that the existing conditions within the Dutch welfare system may be a significant source of stress for beneficiaries.

Among other demographic groups, preferences are less distinct. Notably, there is no significant indication from any group regarding an intention to increase caregiving activities, although there is a notable overall increase in this activity across all groups.

Here are the responses provided when "Other" was selected in the survey, along with the frequency of each response:

- "I will work more" (12 times)
- "I will have more time for sportive activities" (2 times)
- "Pay off my (mortgage or study) debt faster" (3 times)
- "Moving to a more comfortable apartment/house" (3 times)
- "Due to the introduction of UBI I will lose money (mortgage tax deduction...)" (2 times)
- "Invest money in sustainable initiatives"

- "Buy sustainable food"
- "Doing more charity gifts"
- "Less mental health issues"

If the survey has to be retaken, it can be interesting to include these options in the question to see if they are widely supported by the rest of the population. The division of work responses reveals a nuanced picture: 7 out of the 12 respondents were in the welfare cliff category and indicated that they would work more under both the mid and high-UBI policies, as it would be financially beneficial for them. However, 5 respondents, classified as low-income and highly dependent on the allowance system, stated that they would need to work more under both policies because they would lose money as a result of the policy changes. This increase in work could potentially lead to less time available for caregiving and volunteer work. Respondents expressing concerns about income loss were classified as high-income earners, underscoring the policy's complexity and the lack of a one-size-fits-all solution. A poorly implemented UBI policy has the potential to cause more harm than good.

Three respondents expressed a desire to utilize UBI for sustainable development or to donate it to charity. Interestingly, these respondents were categorized in the high-income group. This phenomenon echoes similar behavior observed with the introduction of the Energy Allowance at the end of 2022, when every Dutch household received 380 euro in compensation for rising energy prices due to the conflict in Ukraine. Many households chose to donate this money as they did not require it for their own needs (De Volkskrant, 2022).

4.5. Political support

In this political analysis, we aim to delve into public sentiment regarding UBI through the exploration of survey responses. The survey, conducted using a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree," focuses on two key areas: taxation and poverty alleviation. The questions on taxation are:

- I believe that taxes should not be increased to finance the universal basic income.
- I think the universal basic income should be funded by higher incomes.
- I believe the universal basic income should replace the allowances.
- I think the universal basic income of 1200 euros should replace the welfare payments.

The questions on poverty alleviation are:

- I found it important that I do not end up worse off if a universal basic income is introduced.
- I believe it is important that the poorest people in the Netherlands benefit from UBI, even if it means I am worse off.
- I think the universal basic income should be high enough to live on, even if it makes working less attractive.
- I believe the government should focus on helping people in poverty, even if it makes working less attractive.
- I think people should not have to repay benefits if they work more hours.
- I think people should not have to repay welfare if they work more hours.
- The universal basic income, for every Dutch citizen, is a good form of social security.

In this section, only Likert means that exceed 3.50 or fall below 3 will be addressed, as respondents are demonstrating either predominantly positive or below-average opinions on the subject. These are shown in Figure 4.5 and 4.6. The remaining six statements have mean values ranging between 3 and 3.50 and are available in the Appendix, Figures E.9 to E.14.

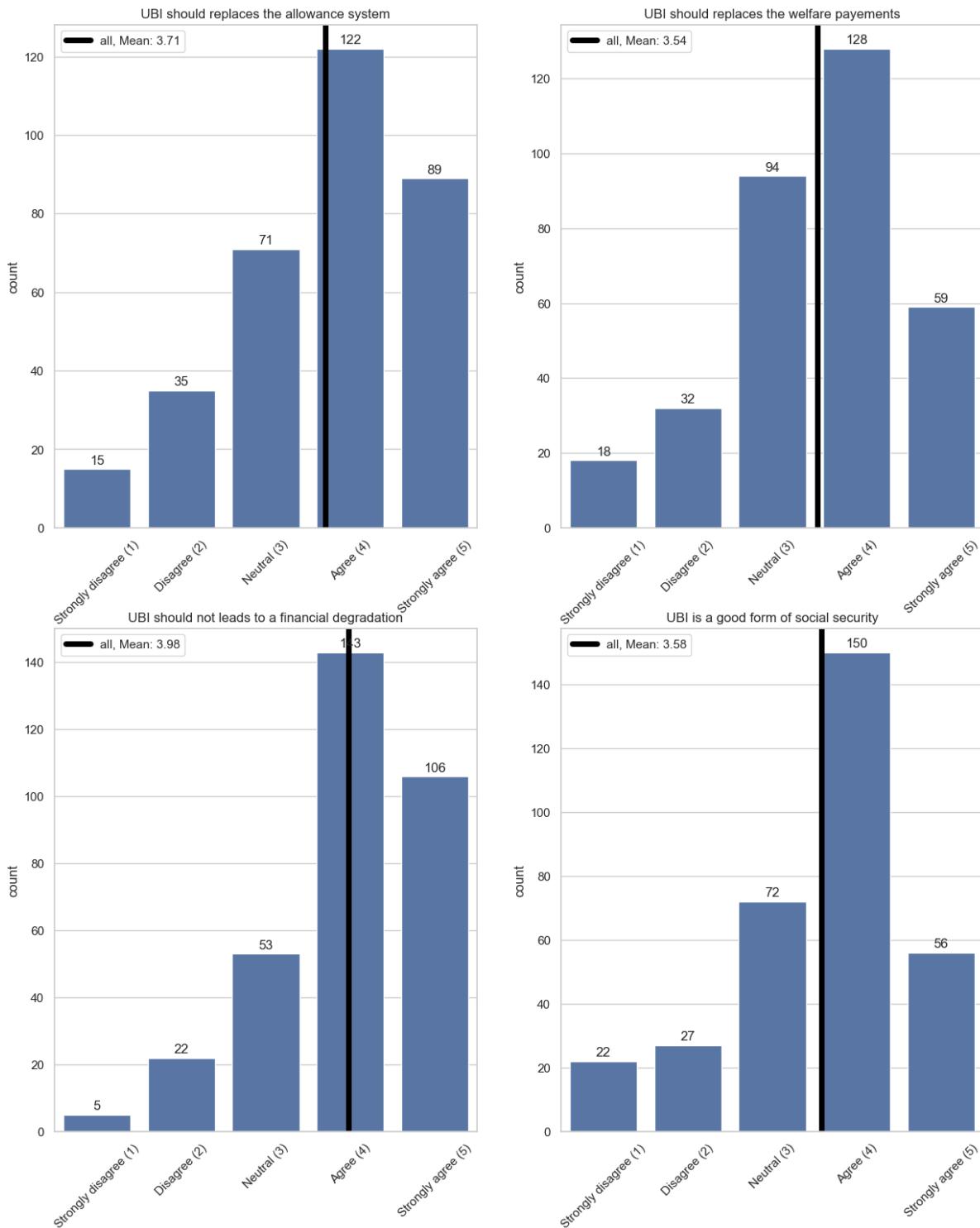


Figure 4.5: Above average valuation of UBI replacing the allowances, the welfare payments, no financial degradation, and UBI as form of social security

4.5.1. Taxation

The first set of statements pertains to taxation and how UBI should be financed. Among the four questions, respondents rated higher than 3.50 only the statement advocating for UBI to replace allowances and welfare payments as presented in the two sub-plots at the top of Figure 4.5. This suggests that respondents generally support the idea of UBI being provided unconditionally. This inclination could be influenced by various fac-

tors, including the fallout from the childcare allowance scandal that began in 2018. This scandal significantly eroded trust in the Dutch government (Fenger & Simonse, 2024).

Contrary to the findings of Rincon (2023), respondents in this study do not appear to favor a strong redistribution effect with UBI. Figure E.10 illustrates that only a small segment of the population supports the notion that taxation rates should be increased for the wealthiest individuals in society.

4.5.2. Poverty alleviation

The second set of statements revolves around poverty alleviation and the role of UBI in improving individuals' financial situations. In Figure 4.5, the bottom two graphs display the statements with a mean score higher than 3.50. It is noteworthy that respondents highly value the idea that UBI should not worsen their personal financial situation. This is interesting because respondents also do not prioritize the improvement of others' financial positions. Figure E.12 indicates that respondents do not particularly view UBI as a solution to poverty, as they are not inclined to prioritize increasing the financial position of the poorest members of society if it might affect labor participation. This sentiment is reflected in the graph shown in Figure 4.6, where respondents do not particularly favor a UBI sufficient to live on. This may pose political challenges for the implementation of a high-UBI policy. However, the last sub-plot of Figure 4.5 suggests that respondents do view UBI as a solid foundation for social welfare, as they consider it a good form of social security. This presents political opportunities for a mid-UBI policy.

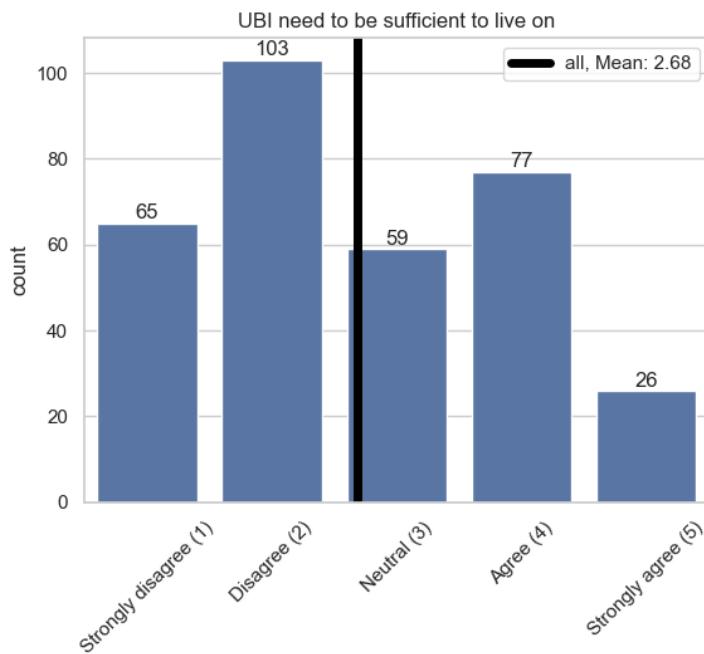


Figure 4.6: Below average valuation of a UBI value that is sufficient to live from

4.5.3. How do sub-groups influence these results?

From Figure 4.1 we can see that the sample is not a perfect representation of the population. This is due to oversampling of certain subgroups and some under representation of others.

To assess whether various subgroups within the population exhibit divergent opinions regarding the survey questions, statistical analysis is utilized to discern the statistical significance of any observed differences. This involves examining the mean difference between the study groups and the overall population⁴ to determine if it deviates significantly from what would be anticipated by chance alone. This is accomplished through the application of t-tests, which allow for the comparison of means between different groups and the identification of statistically meaningful distinctions. An overview of the statistical results can be seen in Table E.10 in the Appendix.

⁴All the respondents of the survey

Table 4.8: Subsets that have a statistical significant different vision than the population

Survey question	Increasing the average	Decreasing the average
Taxes should not be increased to finance UBI.	1. Single parents 2. Welfare payments 3. Social housing tenants	1. Students
UBI should be funded by higher incomes.	1. Single parents 2. Children between 6 and 12 3. Welfare payments 4. Age group 28-50 5. Social housing 6. Low educated	1. High income 2. Students
A UBI should replace the allowances.	1. Children younger than 6 2. Age group 51 to 68	1. Single parents 2. Welfare payments 3. Students
A UBI of 1200 euros should replace the welfare payments.	1. Receiving welfare payments 2. Single parents 3. Social housing	1. High income 2. Students
I do not end up worse off if a universal basic income is introduced.	1. Receiving welfare payments	
The poorest people in the Netherlands benefit from UBI, even if it means I am worse off.	1. Receiving welfare payments	1. Working part time 2. Students
UBI should be high enough to live on, even if it makes working less attractive.	1. Jobless 2. Single parents 3. Receiving welfare payments	1. Students
The government should focus on helping people in poverty, even if it makes working less attractive.	1. Jobless 2. Single parents 3. Receiving welfare payments 4. Age group 51 to 68 5. Social housing 6. Low educated	
People should not have to repay benefits if they work more hours.	1. Citizens with side jobs 2. Single parents 3. Household with children 4. Receiving welfare payments 5. Low income 6. Social housing	1. High income
People should not have to repay welfare if they work more hours.	1. Citizens with a side job 2. Single parents 3. Receiving welfare payments 4. Low income 5. Social housing tenants	1. Citizens in the welfare cliff 2. High income

Firstly, it is evident that most subgroups respond to the questions based on their individual interests: lower-income groups tend to support funding mechanisms where wealthier members contribute to UBI, while citizens receiving welfare payments prefer UBI policies that do not worsen their financial situation and provide sufficient income to live on. This self-interested behavior is logical, as individuals prioritize their own financial well-being when evaluating policy options. Analyzing mean values alone does not reveal solidarity towards the poor, as respondents tend to prioritize personal gain over collective welfare. Higher-income individuals may resist paying higher taxes, while part-time workers may not prioritize assisting the poorest members of society if they are worse off for example.

Significant differences emerge when examining subgroups regarding the question of replacing allowances. Single parents and welfare recipients are generally opposed to replacing allowances, as they would incur financial losses under such a policy. Conversely, households with children, across all age groups, tend to support the replacement of allowances with UBI. This support for unconditioned support among households with children contrasts with the current means-tested allowance system, which is generous toward children.

In considering whether a UBI of 1200 euros should replace welfare payments, single parents and welfare recipients express greater support for the idea compared to other respondents, indicating strong support for unconditional support among these groups. Conversely, high-income individuals and students tend to support the conditional nature of this policy since it is a solidarity mechanism of 'last resort'.

Students stand out in this survey, primarily due to their overrepresentation. Despite benefiting from student allowances, which resemble a form of targeted Basic Income, students are not universally supportive of UBI policies. They tend to oppose increasing taxes to finance UBI and taxing the highest incomes for this purpose. This reluctance may stem from their perspective as future graduates, potentially indicating a reluctance to contribute to UBI once their financial circumstances change. Additionally, students express strong opinions on dilemmas related to UBI's impact on labor participation and poverty reduction.

5

Discussion and limitations of this study

5.1. Limitations of the model

5.1.1. Limitations of the conjoint experiment: the impact of non-budget neutrality of the profiles

Conjoint experiments typically involve selecting a subset of attributes and levels due to practical constraints such as respondent fatigue and complexity of analysis. Consequently, not all funding mechanisms outlined in Section 2.4 are included in the experiment. However, to achieve a budget-neutral UBI, it is imperative to incorporate the inefficient tax mechanism proposed by Ministerie van Financien (2023). Unfortunately, the experiment does not gauge respondents' attitudes toward these measures, limiting the overall understanding of the calculation of the monthly budget. Furthermore, opinions on new forms of taxation, such as land value and property tax, are omitted from consideration. This exclusion of crucial attributes may result in biased results or overlook opportunities to gain valuable insights into consumer preferences.

To address these limitations, conducting pilot studies or utilizing advanced techniques like Adaptive Conjoint Analysis (ACA) could prove beneficial. ACA dynamically adjusts the attributes presented to respondents based on their previous choices, thereby optimizing attribute selection and enhancing the validity of the experiment (Huertas-Garcia, Gázquez-Abad, & Forgas-Coll, 2016).

Another notable limitation of conjoint analysis lies in the simplification of the profiles it presents. As illustrated in Table 3.3, certain profiles pose political challenges in achieving budget neutrality, resulting in a substantial increase in the available monthly budget for profiles 0, 1, 2, and 4. Conversely, profiles 3 and 5 exhibit negative values, indicating governmental austerity measures to finance UBI. This limitation may compromise the accuracy of the results by failing to fully capture the complexity and nuances of respondents' decision-making processes. To address this issue, incorporating interviews with respondents could provide deeper insights into decision-making processes within real-world contexts. This approach holds particular promise for understanding the behavior of citizens receiving welfare payments, who have demonstrated intriguing patterns that defy rational decision-making based solely on available monthly budgets.

However, the introduction of the calculation of monthly available budget may also influence respondents' behavior, potentially promoting more rational decision-making. This calculation could lead respondents to focus solely on the presented budget, diminishing their personal opinion on the proposed policy. Consequently, it becomes more challenging to discern potential emotional factors that may influence respondents' attitudes toward specific UBI financial policies. For instance, policies introducing new, higher-income tax systems may garner significant support from lower-income groups, as they perceive minimal impact on their financial circumstances. This behavior aligns with rational budgetary calculations; however, it contrasts with observed phenomena in the Netherlands, where lower-income individuals have been known to vote against their own social interests (Achterberg & Houtman, 2006; Derkx, 2006).

A third limitation of this study is the absence of interaction effects between attribute levels. Many of the

calculated UBI policies for the Netherlands, as outlined in Table 2.2, involve interactions between attributes such as 'No tax deduction' and 'New form of income tax'. These interactions are crucial for achieving budget neutrality in UBI implementations. Moreover, for UBI amounts of 1200 euros per month, the combination of 'No tax deduction' and 'Make UBI taxable' requires analysis. Advanced techniques like Hierarchical Bayes modeling or Choice-based conjoint analysis can partially detect interaction effects, they may struggle to fully capture all possible interactions realistically.

However, it is important to note that the primary goal of the experiment was to assess individual perspectives on policy options rather than interaction effects. Explaining which factors cause changes in labor participation or support for the policy becomes challenging when considering interaction effects.

This limitation in design aligns with the findings of De Wispelaere et al. (2018), who noted that the different tax treatments and lack of budget neutrality in the Finnish experiment introduced distortions affecting internal validity. Similarly, in this study, the UBI policies lack budget neutrality, not all potential financial plans are included, and the interaction effects of important financial policies could not be fully examined.

5.1.2. The limitation of the survey calculations: UBI at individual level

As delineated by Bidadanure (2019), the initial decision in designing a social welfare policy revolves around whether it will operate at the household level or the individual level. In the context of my UBI design, I opted to assess the trade-off between labor participation and support at the individual level, aligning with the ideology advocated by Van Parijs ((2004)), which I personally endorse. However, this choice diverges from many welfare policies in the Netherlands, which are calculated at the household level.

This individual-centric approach introduced challenges for some respondents in predicting their behavior, particularly concerning changes in labor participation that might depend on their household partner's choices. Practically, this complexity complicated the calculation of individual allowance amounts and was thus excluded from the survey's monthly budget estimation.

To navigate this issue, certain assumptions were made in the analysis: firstly, it was assumed that citizens receiving allowances possess knowledge of the precise amount they receive each month, enabling them to evaluate changes in the allowance system accurately. Secondly, for the analysis of low- and mid-income groups, it was assumed that these groups fully avail themselves of the allowances to which they are entitled.

A similar rationale applies to the estimation of mortgage rate deduction. Gathering additional information about respondents' housing situations would necessitate more questions, potentially leading to respondent fatigue or non which to respond, particularly among wealthier participants. Consequently, the analysis for these groups is restricted to distinguishing between citizens eligible for the deduction and those who are not.

If the survey were to be conducted again, conducting it at the household level would offer valuable insights. This approach would provide a comprehensive understanding of how benefits and challenges associated with UBI are distributed among household members. By capturing the dynamics within households, researchers can explore how UBI impacts decisions related to labor participation, household finances, and overall well-being. Furthermore, conducting the survey at the household level allows for the investigation of potential trade-offs and synergies between the preferences and behaviors of household members regarding UBI policies. This approach aligns closely with the structure of the current welfare system and provides a more holistic perspective on the implications of UBI for households.

5.2. Discussion of the results

5.2.1. A decrease in labor participation was expected, why is it not observed?

The Netherlands has seen a consistent trend of reduced work hours in previous studies on UBI and labor participation, with declines ranging from 3% to 11%. This decline is primarily attributed to increased income or a high marginal tax rate, prompting individuals to opt for fewer work hours in exchange for more leisure time. However, our findings reveal an inconclusive trend, showing an average increase in labor participation (2.26% for high UBI and 3.56% for mid UBI). It's worth noting that these results come with uncertainty, as both positive and negative values were observed in the confidence interval.

Table 5.1: Financial requirements for allowances

	Maximum income (in euros)	Maximum wealth (in euros)
Health allowance	Single adult household: 37.496	140.213
	Multi adult household: 47.368	177.301
Rent allowance	Single adult household: 34.000	36.952
	Multi adult household: 44.540	73.904
Child allowance	Single adult household: 150.185	140.213
	Multi adult household: 108.820	177.301
Childcare allowance	All households: No income limit	No wealth limit

One of the primary objectives of UBI is to mitigate high marginal taxation rates and eliminate the welfare cliff. The welfare cliff, particularly pronounced after a gross income of 27,000 euros, arises from the loss of allowances (refer to Figure 1.1). Table 5.1 provides an overview of the financial eligibility criteria for obtaining allowances. Notably, most allowances have both an income cap and a wealth cap, wherein exceeding the specified value of assets disqualifies individuals from receiving the allowance.

Homeownership emerges as the most significant factor contributing to wealth, with 56.7% of the population identified as homeowners (refer to Table 4.1). For homeowners, exceeding the mortgage payment value of €177,301 for a couple or €140,213 for an individual disqualifies them from receiving allowances other than childcare, even if their income falls below the specified threshold. Given that only 27.1% of the respondents are homeowners, it suggests that the respondents are not particularly affluent, as homeownership correlates strongly with wealth (See Figure E.1).

Within the highest income group, comprising 83 respondents or 24% of the total sample are ineligible for allowances. Conversely, 76% of the respondents are entitled to receive some form of allowance, slightly higher than the population statistics indicating that 66% of households receive allowances. However, when recalculating the percentage of citizens receiving allowances, considering that rent, child, and childcare allowances are paid at the household level while health allowance is individual, only approximately 42% of individuals are eligible for allowances (Ministerie van Financiën, 2023). This indicates that a significant portion of respondents stand to lose some form of government assistance with the implementation of UBI. However, due to the compensation provided by UBI, the net increase in monthly disposable income is less substantial for lower and mid-income individuals. Given that this demographic constitutes the majority of respondents (76%), compared to the actual 42% of individuals eligible for allowances and the 56% of homeowners in the Netherlands, the proportion of respondents experiencing significant losses in allowances is higher among survey respondents than in reality. Consequently, their increase in income is less pronounced compared to higher-income individuals who primarily lose tax deductions (in the case of the high UBI policy) and mortgage rate deductions.

For instance, let's examine the scenario of an individual earning €65,000 annually with no dependents. Under the high UBI policy, they would experience a loss of €3,763 in tax deductions. To compensate for this loss and maintain their previous income level, they would require a mortgage interest deduction of €10,637 annually. This implies an annual mortgage interest payment of €29,547, which would necessitate a mortgage of €738,000¹. However, given their income, they would only be eligible for a mortgage of €311,000². If the individual's actual interest payments are lower, they would benefit (a lot) from the high UBI policy.

In contrast, consider an individual earning €27,000 annually, residing in social housing with no dependents. Under the same high UBI policy, they would lose €7,527 in tax deductions, €7,826 in rent allowance, and €1,332 in health allowance. Consequently, they would experience a net loss of €2,285, necessitating an increase in their work hours to maintain their previous income level.

Applying the same analogy to the mid-UBI policy, the individual earning €65,000 annually would receive an additional €7,560, of which €3,745 would be taxed back. This would result in a net increase of €3,815 in income. To offset this increase and maintain their previous budget, they would need to pay €10,310 annually towards their mortgage, suggesting a more plausible mortgage value of €257,000.

¹based on a 4% interest rate

²Based on data from (Independer.nl, 2024)

Similarly, for the individual earning €27,000 annually, the increase of €7,560 in income would result in €3,025 being taxed back. However, the loss of €7,826 in rent allowance and €1,332 in health allowance would lead to a net loss of €4,623 per year.

These examples illustrate that a bias towards low-income, single-household earners and allowance recipients may lead to a higher emphasis on labor participation among respondents. Individually, respondents perceive themselves as worse off under the UBI policy, necessitating increased work efforts to maintain their income levels biasing the outcome result of the survey towards an increase in labor participation. Since in the Netherlands there is a large group of homeowners who are therefore less dependent from the allowance system, they would be faster net beneficiaries of UBI. This could explain why other researchers found a decrease in labor participation while I found the opposite behavior.

Although the impact of the unbalanced survey is corrected based on housing type and income category there still are some balance issues, these are highlighted in the next subsection.

5.2.2. The influence of an unbalanced population sample

From Figure 4.1 and Table 4.1 can be seen that the sample is not well-balanced for every subgroup in the population. The most important source of distraction is the high amount of students in the sample creating a bias in the income group since students are mostly low-income, but with a bright wealth perspective. This was also seen from the Political analysis from Section 4.5 where students have a strong opinion, more leaning towards the higher income groups than the low-income group where they are quantified.

For the estimation of labor participation and support at the level of the Netherlands low income, and therefore students, are taken as the reference category of the dummy coding. Dummy coding assumes a linear relationship between the categorical variable and the dependent variable. Since this relationship is not linear, dummy coding may not accurately capture the relationship and lead to a loss of information, in this case, the student behavior and the low-income behavior.

It is noteworthy that the calibration of the effect in the total population relies on the dummy coding scheme. This correction addresses the bias resulting from the unequal sample sizes in the main effects of the policy. Consequently, interpreting the main effects of the policies for the total population without demographic corrections can be challenging. Conversely, the values in the subset analysis are more interpretable as they pertain specifically to a subgroup.

The bias stemming from the high number of students, low-income individuals, and young adults is particularly present in Section 4.4, as recalibration was not conducted in this section. While the strong inclination of students and young adults towards seeking better-suited employment may influence the outcomes, the conclusion remains robust due to the representative nature of gender and first and second-earner characteristics, which also seek alternative employment. However, the issue of employment better suited to the preferences of employees remains an intriguing question for further exploration in this survey, particularly with a more representative sample of the population in future research.

Another bias introduced by the high number of students and already highly educated respondents pertains to educational investment. It is unsurprising to see that the option of quitting labor for educational investment is not highly favored, as depicted in Figure 4.4, given that a significant portion of respondents is already highly educated or on track to attain higher education.

The observation that people indicate to save more money under UBI policies is intriguing, considering that these policies are not explicitly designed for saving. The following groups generally stand to benefit more from UBI, these benefits could lead to more savings:

1. High-income respondents, who may save more money depending on their tax deductions (other than labor) and their mortgage rate deductions.
2. Respondents living in a multi-adult household.
3. Respondents who receive a low amount of allowances.
4. Respondents with zero income from labor or welfare payments, often students.

In Figure E.8, it is noteworthy that low-income households indicate a propensity to save more in 56% of

cases, particularly when they reside in multi-adult households. This observation aligns with the assumption that 76% of respondents in the low-income category are situated in multi-adult households, whereas 8% are single parents and 16% are single households.

5.2.3. Lack of power

Table 4.2 showed a lack of statistical power for the interesting sub-group citizens with children younger than 5 years old. This is specifically the groups where women, second earners, and part-time workers are opting out of caregiving responsibilities for their young ones. This trade-off within these subgroups is not measured. Due to the addition of children up to 12 years, the effect of children going to daycare and after-school care is still present in combination with the loss of childcare allowance in all profiles, since this allowance is very high to motivate this group to take part in labor a higher drop was expected. All other sub-group achieved the wished power of 80%.

5.2.4. Financial assumptions

The adjustment for inefficient tax exemptions is applied in a static manner, implying an anticipation of the government reclaiming the current cost of 47 billion euros. However, this assumption does not inherently hold true, as each tax increment possesses its unique Laffer curve effect. These effects can potentially hinder economic activity, reduce incentives for work, investment, and entrepreneurship, encourage undeclared work, and foster tax evasion and other avoidance strategies.

5.3. Potential further research with this data set and this methodology

5.3.1. Information from the data set not used in this study

Recalibration of students and housing types

As discussed before in Section 5.2.2, students are forming a form of bias in the data set. It could be very interesting to re-run the analysis with this group in ratio to their proportion of their income and housing group to see if this affects results.

Geographical location

Another aspect of the survey that remains unanalyzed is the geographic location of the respondents. This could be of interest, as it was found in a study by Van Parijs (2020) that the geographic dimension can influence perceptions of UBI. For instance, in Finland, a more positive response and increase in labor participation in responses to UBI were observed by residents outside Helsinki. Similarly, the Netherlands exhibits cultural differences between urban and rural areas, suggesting that geographic location may play a role in shaping attitudes toward UBI.

Diminishing marginal utility of income

Indeed, the concept of diminishing marginal utility of income is pertinent in understanding how individuals perceive and value changes in income, particularly in the context of UBI policies. As income increases, the additional satisfaction or utility gained from each additional unit of income tends to decrease.

In the context of UBI, this concept suggests that individuals with lower incomes may place a higher value on each additional unit of income, such as the extra 100 euros, due to their limited disposable income. Consequently, they may perceive greater utility from such an increase and may be more supportive of policies aimed at income redistribution, such as UBI.

Conversely, individuals with higher incomes may experience diminishing marginal utility of income, indicating that they derive less additional satisfaction from each additional unit of income. Consequently, they may attach less importance to a similar increase in income. Higher-income groups might perceive UBI as a way to sustain their utility while also providing them with the choice to withdraw from the labor force.

Given the imbalance in income and wealth levels within the dataset, it would be compelling to reassess the coefficient value of 'Change of 100 euro net income.' Currently, this coefficient averages the benefits and losses without considering the impact of allowances. One potential approach to address this issue is to cre-

ate two new variables: one representing an increase of 100 euros in net income and another representing a decrease of 100 euros in net income. By analyzing these variables separately, we can gain insights into how the impact on support and labor participation varies across different income groups.

5.3.2. Re-use of the survey

In Tables 4.3 and 4.4, many predictors are found to be statistically insignificant, indicating a lack of evidence to conclude that their coefficients are different from zero. This could stem from the relatively small sample size of the survey.

For instance, studies like those conducted by Rincón and Hiilamo ((2019), (2022), (2023)) have larger and more representative sample sizes with 1000 well-selected respondents. In contrast, our study involved 346 respondents, which may have contributed to fewer predictors being statistically significant. The ideal number for our design with well-selected respondents would have been 810. Increasing the sample size could potentially yield more statistically significant results, making it easier to assess the impact of different UBI policies on labor participation and support. Another advantage of a large sample size is that it will narrow down the confidence intervals leading a more precise estimation of support and labor participation. Table 4.6 shows quite a large variation of these intervals which leads to insignificant effects at the scale of the Netherlands.

However, it's crucial to acknowledge that the lack of significance may also be influenced by sampling variability. With larger sample sizes, even small effects can become statistically significant. Therefore, non-significance may be a result of limited sample size rather than a true absence of an effect.

Furthermore, it's important to note that a statistically significant result doesn't necessarily imply practical significance or relevance for analysis. For example, while the effect of income on labor participation may be strongly significant, it may not be as relevant for analyzing support. Thus, careful consideration of both statistical significance and practical relevance is essential in interpreting the results.

6

Conclusion

In conclusion, this research highlights the broad range of government financial aid available in the Netherlands, which caters to various segments of the population through a variety of support programs. As stated by Olsthoorn et al. (2020), this assistance spans from direct monetary aid, such as allowances and welfare payments targeting socioeconomically disadvantaged individuals, to tax deductions and mortgage interest tax relief primarily benefiting higher-income groups. Consequently, this system contributes to income inequality in governmental aid, with lower-income individuals facing a disproportionate marginal taxation compared to their wealthier counterparts, potentially perpetuating a cycle of poverty. Considering the widespread presence of governmental support, there emerges the idea of streamlining the system by implementing universal assistance for all Dutch citizens through a monthly Universal Basic Income (UBI). This study aims to investigate five essential questions crucial to the ongoing discussion on UBI.

What are potential financial policies for UBI?

To institute a UBI, it is imperative to scrutinize existing financial support systems. In the Netherlands, prevalent allowances encompass health, rental, income-specific child, general child, childcare, and student allowances, amounting to 27.4 billion euros.

The second facet of existing financial support for UBI involves tax deductions, including general tax credit, work tax credit, individual worker tax credit, mortgage interest, and other minor deductions, summing up to 76.3 billion euros. Additionally, the Netherlands features 116 fiscal exemptions, with the effects of 62 being deemed inefficient or uncertain, resulting in a missed opportunity for the government of 47 billion euros.

Commonly proposed in the UBI discourse as a measure to reduce income inequality is an elevation in income taxation. However, augmenting income tax rates may not guarantee heightened government revenue due to potential adverse impacts on economic activity, work incentives, and tax evasion, as expounded by the Laffer Curve, suggesting an optimal taxation rate of 50 to 60%. A restructuring of the income tax could potentially yield an increase of 14 billion euros.

Another suggested policy is to make UBI taxable by incorporating its annual value into an individual's existing income and calculating taxes based on the combined total. This approach seeks to recapture UBI funds from the wealthiest individuals, thereby fortifying the progressive taxation system. For instance, with a UBI of 1200 euros per month, it could generate 71 billion euros in government revenue.

A land value and property tax are particularly suitable for financing a basic income, given the finite nature of land and the perpetual ownership of property which leads to minor deter of economically desirable activity. By raising the property tax rate to levels comparable to the United Kingdom and France, there is a potential revenue generation of 16 to 20 billion euros.

Lastly, if a full UBI of 1200 euros per month is implemented, a substantial portion of the public workforce could transition to alternative occupations. In this study, the budget impact of this workforce transition is estimated at 7.4 billion euros.

Which specific groups within the Dutch population may exhibit interesting behavioral patterns in response to the implementation of UBI?

The Netherlands boasts the highest part-time workforce in Europe, predominantly comprising women. Single parents and families with children under the age of 5 are particularly noteworthy, as they might choose to assume additional caregiving responsibilities if a portion of their income is secured through a UBI.

Citizens reliant on welfare payments constitute another intriguing group, as the implementation of UBI would eliminate the welfare cliff, potentially encouraging them to engage in part-time employment without the risk of losing governmental aid.

Additionally, young and elderly workers merit attention. Young adults may postpone entry into the labor market to pursue educational endeavors, while elderly workers may consider early retirement or assume family care responsibilities. These diverse groups present unique dynamics that warrant careful consideration in the context of UBI implementation.

How will labor participation patterns evolve in the Netherlands under different UBI policies?

Based on pre-COVID-19 macroeconomic studies conducted in the Netherlands, a decline in labor participation varying from 3 to 11% is expected on average. From the regression model, the implementation of a high UBI policy results in an average increase of 0.75 hours of labor per week. However, the degree of this increase is subject to uncertainty, as evidenced by the wide range of the confidence interval, which spans from a decrease of 2.20 hours per week to an increase of 3.69 hours per week.

Similar trends are observed with the mid-UBI policy, wherein an average increase in labor participation of 1.49 hours per week is anticipated. However, the confidence interval for this policy also demonstrates uncertainty, ranging from a decrease of 1.29 hours per week to an increase of 4.28 hours per week.

Upon analyzing the labor participation of sub-groups to gain insights into the uncertainties within the population, it becomes evident that the mid-UBI policy consistently leads to an increase in labor participation across all sub-groups within their confidence intervals. Particularly noteworthy is the substantial increase observed among citizens receiving welfare payments, who show an average increase of 4.46 hours per week.

In contrast, the high UBI policy exhibits similar uncertainty patterns among sub-groups as observed in the entire population. Notably, only single parents and citizens receiving welfare payments display an increase in labor participation under this policy across their confidence interval.

What is the level of support for various UBI policies amongst the Dutch population?

Drawing from existing literature, evaluating the extent of support among Dutch citizens for UBI policies poses challenges. Prior studies have relied on survey methodologies, where the quality and comprehensiveness of information play pivotal roles in shaping political attitudes towards UBI.

When analyzing support with the regression model for the policies, both receive relatively average scores across the broader Dutch population. This suggests that similar to labor participation, there is insufficient evidence to conclusively determine overall support for these policies at the national level. However, upon examining sub-groups, it becomes apparent that single parents and citizens receiving welfare payments exhibit the highest increase in labor participation but the lowest support for these policies. This can be attributed to the perceived risk of losing their monthly disposable income, as these vulnerable groups heavily rely on the current welfare system in the Netherlands. Conversely, families with children under 12 and elderly workers (aged 51 to 67) consistently demonstrate support for UBI, as indicated by their support across all values within the confidence interval.

How would Dutch citizens allocate their financial resources and utilize their time if UBI were implemented in the Netherlands?

Based on UBI literature from Western economies, it is anticipated that recipients of UBI would allocate more time to caregiving responsibilities for children or elderly family members, experience reduced stress levels, have lower hospitalization rates, and make increased educational investments.

Firstly, findings suggest that there is no significant indication of increased investment in education. This may be attributed to the accessibility of higher education in the Netherlands or the relatively high educational

attainment levels among respondents. However, under a high-UBI policy, respondents express a strong inclination towards seeking employment opportunities better suited to their preferences, particularly among secondary earners, women, part-time workers, and young adults, notably students.

Secondly, a substantial portion of respondents, particularly those from lower and middle-income brackets targeted by the policy (households with dual earners), indicated their intention to save more money under both mid and high UBI policies.

The study investigates the potential health benefits of UBI policies. It suggests that implementing UBI may lead to improved health outcomes, including reduced stress levels, access to healthier food options, increased medical consultations, higher physical activity levels, and decreased mental health issues. Specifically, households with children and those receiving welfare payments anticipate significant stress reduction and improved dietary habits. Despite the possibility of income decrease in some household configurations, such as single-income or single-parent households, UBI is expected to have positive health impacts across various demographic groups.

It is noteworthy that UBI may have implications for poverty levels, as suggested in prior research. Responses from the survey's open-ended questions indicated that individuals highly reliant on the allowances of the existing welfare system may fare worse under UBI, particularly single-parent or single-income households earning below the specified threshold. Notably, in the Netherlands, where single-person households are increasingly common, UBI aligns with liberal economic principles regarding economies of scale at the household level. Unlike the current welfare system, which may disincentivize increasing household size due to loss of benefits, UBI could encourage cohabitation and discourage living alone.

What is the trade-off between support and labor participation?

Examining the trade-off between support for UBI policies and labor participation reveals distinct patterns. A high UBI policy, offering 1200 euros per month, is associated with a decrease in labor participation due to the substantial increase in disposable income it provides. However, this policy garners the highest level of support. Conversely, the policy 'no tax deduction' leads to an increase in labor participation by substantially reducing disposable income, but it diminishes support for the policy. These opposing effects tend to balance each other out.

In contrast, a mid-level UBI of 630 euros per month has marginal effects on both labor participation and support. Further reductions in the monthly UBI amount are anticipated to significantly decrease support while increasing labor participation. The mid-UBI policy appears to strike a balance between the two. Making UBI taxable has little impact on labor participation as it primarily affects high-income earners, without substantially increasing income for lower-income groups.

The trade-off between labor participation and support can be understood through the lens of disposable monthly income. Higher-income levels are associated with lower labor participation and higher support. This outcome aligns with the individualistic nature of respondents' responses, which was a deliberate focus of the research aimed at tailoring the survey budget to each respondent.

However, trade-offs extend beyond individual considerations to societal perspectives. The elimination of the allowance system is crucial for financing UBI policies and serves to smooth marginal tax rates while removing the welfare cliff for middle incomes. Yet, this change significantly heightens the risk of poverty for single-person and single(-parent) households, particularly those with low incomes, as none of the UBI policies adequately offset their income losses.

Furthermore, the implementation of a high UBI policy may prompt job relocation, leading to a temporary decline in labor participation. Nevertheless, this outcome could prove advantageous if individuals subsequently reintegrate into the labor force in more suitable roles. These societal trade-offs merit careful consideration.

Similarly, this study underscores UBI's potential to improve the health of Dutch citizens by reducing stress, enhancing food quality, and expanding access to healthcare. It underscores the importance of exploring new trade-offs between labor participation and quality of life.

References

References

- Aalbers, R., & Roos, A.-F. (2022). Zorguitgaven, ons een zorg? *Centraal Plan Bureau*.
- Achterberg, P., & Houtman, D. (2006). Why do so many people vote ‘unnaturally’? a cultural explanation for voting behaviour. *European Journal of Political Research*, 45(1), 75–92.
- Advalvas VU. (2024). *Studenten hoeven minder te werken voor hun geld*. (<https://advalvas.vu.nl/wetenschap-onderwijs/europese-studenten-hoeven-minder-te-werken-voor-hun-geld/>)
- Aerts, E., Marx, I., & Verbist, G. (2023). Not that basic: How level, design and context matter for the redistributive outcomes of universal basic income. *IZA Discussion Paper No. 15952*.
- Allas, T., Maksimainen, J., Manyika, J., & Singh, N. (2020). An experiment to inform universal basic income. *McKinsey & Company*.
- Arbeidsinspectie. (2023). *Niet-gebruik toeslagenwet leidt tot leven onder sociaal minimum*. (<https://www.nlarbeidsinspectie.nl/actueel/nieuws/2023/10/25/niet-gebruik-toeslagenwet-leidt-tot-leven-onder-sociaal-minimum>)
- Banerjee, A. V., & Duflo, E. (2007). The economic lives of the poor. *Journal of economic perspectives*, 21(1), 141–167.
- Banerjee, A. V., Duflo, E., & Kremer, M. (2016). The influence of randomized controlled trials on development economics research and on development policy. *The state of Economics, the state of the world*, 482–488.
- Belastingdienst. (2023). *Werken bij de belastingdienst*. <https://werken.belastingdienst.nl/daarom-de-belastingdienst#:~:text=Onze%20ruim%202020.000%20medewerkers%20werken,kunnen%20maken%20van%20hun%20rechten..>
- Berkhout, E., Koot, P., & Bosch, N. (2019). *Gebruik (en niet-gebruik) van toeslagen in nederland [take-up (and non-take-up) of benefits in the netherlands]*. The Hague: CPB Netherlands Bureau for Economic Policy Analysis. Available at
- Betkó, J. (2023). *Effects of welfare policies based on autonomy and unconditionality: A social experiment with social assistance recipients* (Unpublished doctoral dissertation). Sl: sn.
- Bidananure, J. U. (2019). The political theory of universal basic income. *Annual Review of Political Science*, 22, 481–501.
- Boone, J., Marchal, S., Marx, I., Van Cant, L., Van Lancker, W., & Verbist, G. (2018). *Feit en fictie omtrent het basisinkomen in nederland: een wetenschappelijke verkenning mogelijk gemaakt door instituut gak* (Unpublished doctoral dissertation). Universiteit Antwerpen.
- Bos, J., & Verberk-De Kruik, M. (2019). Inkomenseffecten van het basisinkomen 2.0. *NIBUD*. (<https://basisinkomen.nl/wp-content/uploads/Inkomenseffecten-basisinkomen.pdf>)
- Calnitsky, D., & Gonalons-Pons, P. (2021). The impact of an experimental guaranteed income on crime and violence. *Social Problems*, 68(3), 778–798.
- Calnitsky, D., & Latner, J. P. (2017). Basic income in a small town: Understanding the elusive effects on work. *Social Problems*, 64(3), 373–397.
- Caminada, C., Jongen, E., Bos, W., Brakel, M., & Otten, F. (2021). Inkomens verdeeld, 40 jaar in vogelvlucht. *CBS-Webmagazine*(14 October 2021).
- Centraal Bureau Voor de Statistiek. (2021). *Arbeidseename van de nederlandse bevolking gesorteerd op geslacht en leeftijd*. <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82309NED/table?dl=9C20A>.
- Centraal Bureau Voor de Statistiek. (2023a). *Huishoudens nu*. <https://www.cbs.nl/nl-nl/visualisaties/dashboard-bevolking/woonsituatie/huishoudens-nu#:~:text=Huishoudens%20zijn%20er%20in,gemiddelde%20huishoudengrootte%20nog%203%2C53>.
- Centraal Bureau Voor de Statistiek. (2023b). *Personen met bijstand*. <https://www.cbs.nl/nl-nl/cijfers/detail/82016NED#>.
- Centraal Bureau Voor de Statistiek. (n.da). *Inkomensverdeling nederland*. <https://opendata.cbs.nl/statline/?dl=D4D1#/CBS/nl/dataset/83931NED/tab1>.

- Centraal Bureau Voor de Statistiek. (n.db). *Mannen en vrouwen*. <https://www.cbs.nl/nl-nl/visualisaties/dashboard-bevolking/mannen-en-vrouwen>.
- Centraal Bureau Voor de Statistiek. (2023). *Samenstelling beroepsbevolking*. The Hague. (<https://www.cbs.nl/nl-nl/visualisaties/dashboard-beroepsbevolking/deeltijd>)
- Centraal Bureau Voor de Statistiek. (2024). *Voorraad woningen*. The Hague. (<https://opendata.cbs.nl/CBS/nl/dataset/82900NED/table>)
- Chrisp, J., Pulkka, V.-V., & García, L. R. (2020). Snowballing or wilting? what affects public support for varying models of basic income? *Journal of International and Comparative Social Policy*, 36(3), 223–236.
- Costello, E. J., Erkanli, A., Copeland, W., & Angold, A. (2010). Association of family income supplements in adolescence with development of psychiatric and substance use disorders in adulthood among an american indian population. *Jama*, 303(19), 1954–1960.
- CPB. (2023). *Keuze in kaart 2025-2028*. <https://www.cpb.nl/sites/default/files/omnidownload/Keuzes-in-Kaart-2025-2028.pdf>.
- De Nederlandse Bank. (2023). *Wat mensen prikkelt om meer of minder te werken?* <https://www.dnb.nl/algemeen-nieuws/dnbulletin-2023/wat-mensen-prikkelt-om-meer-of-minder-te-werken/#:~:text=Eind%20vorig%20jaar%20werkten%204,kan%20dit%20de%20krapte%20verlichten>.
- De Volkskrant. (2022). *Doneer je 190 euro energietoeslag en andere manieren om geld te delen in december*. (<https://www.volkskrant.nl/beter-leven/doneer-je-190-euro-energietoeslag-en-andere-manieren-om-geld-te-delen-in-december~b7012ed8/?referrer=https://www.google.com/>)
- De Boer, H., Bolhaar, J., Jongen, E., & Zulkarnain, A. (2020). Evaluatie experimenten participatiewet: Effecten op de uitstroom naar werk. *Evaluatie experimenten Participatiewet: Effecten op de uitstroom naar werk*, 1–68.
- Denktank Basisinkomen. (2023). *Eerlijker & eenvoudiger: het bescheiden basisinkomen*. Internal communication between Alexander de Roo, GronLinks and Denktank Basisinkomen. (This was a preparation for the GroenLinks Party Congress)
- Derks, A. (2006). Populism and the ambivalence of egalitarianism. how do the underprivileged reconcile a right wing party preference with their socio-economic attitudes? *World Political Science*, 2(3).
- De Wispelaere, J., Halmetoja, A., & Pulkka, V.-V. (2018). The rise (and fall) of the basic income experiment in finland. In *Cesifo forum* (Vol. 19, pp. 15–19).
- Eurostat. (2023). *Part-time and full-time employment - statistics*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Part-time_and_full-time_employment_statistics#Worker_profile_and_countries.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G* power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, 39(2), 175–191.
- Fenger, M., & Simonse, R. (2024). The implosion of the dutch surveillance welfare state. *Social Policy & Administration*.
- Forget, E. L. (2011). The town with no poverty: The health effects of a canadian guaranteed annual income field experiment. *Canadian Public Policy*, 37(3), 283–305.
- Gallego, A., & Marx, P. (2017). Multi-dimensional preferences for labour market reforms: a conjoint experiment. *Journal of European public policy*, 24(7), 1027–1047.
- Gielens, E., Roosma, F., & Achterberg, P. (2023). Dimensions of controversy: Investigating the structure of public support for universal basic income in the netherlands. *International Journal of Social Welfare*.
- Goderis, B., Hulst, B. v., Wildeboer Schut, J. M., & Ras, M. (2018). De scp-methode voor het meten van armoede. *Sociaal en Cultureel Planbureau*.
- Goderis, B., & Vlekke, M. (2023). Tax and benefit policies to reduce poverty in the netherlands: A microsimulation analysis. *International Journal of Microsimulation*, 16(1), 108–133.
- Groot, S., Mohlmann, J., & Lejour, A. (2016). *De positie van de middeninkomens op de woningmarkt (the position of medium incomes on the housing market)*. The Hague.
- Hasdell, R. (2020). What we know about universal basic income. *A cross-synthesis. Standfor Basic Income Lab*.
- Heijman, W. J., & van Ophem, J. A. (2005). Willingness to pay tax: The laffer curve revisited for 12 oecd countries. *The Journal of Socio-Economics*, 34(5), 714–723.
- Hoynes, H., & Rothstein, J. (2019). Universal basic income in the united states and advanced countries. *Annual Review of Economics*, 11, 929–958.

- Huertas-Garcia, R., Gázquez-Abad, J. C., & Forgas-Coll, S. (2016). A design strategy for improving adaptive conjoint analysis. *Journal of Business & Industrial Marketing*, 31(3), 328–338.
- Hum, D., & Simpson, W. (2001). A guaranteed annual income: From mincome to the millennium. *POLICY OPTIONS-MONTREAL-*, 22(1), 78–82.
- Ince, D. (2021). *Cijfers over armoede in gezinnen*. <https://www.nji.nl/cijfers/armoede-gezinnen#:~:text=Minderjarige%20kinderen%20met%20risico%20op,gezin%20met%20een%20aag%20inkomen>.
- Independer.nl. (2024). *Maximale hypotheek*. (https://www.independer.nl/hypotheek/info/maximale-hypotheek-berekenen?refer=adwordshypotheek-touch08&gad_source=1&gclid=Cj0KCQjwwMqvBhCtARIxAIXsZpbnUHTwSNxofj077Yp9SUBkNhpVtqWCDkN9gANIs9jLPA900cu4BdUaAhDOEALw_wCB)
- ING Bank. (2018). *'basisinkomen? meerderheid ziet het eigenlijk niet zitten'*. https://www.ing.nl/media/ING_EBZ_basisinkomen_tcm162-151961.pdf.
- I&O research. (2020). *Basisinkomen: nu meer voor- dan tegenstanders*. <https://www.ioresearch.nl/actueel/basisinkomen-nu-meer-voor-dan-tegenstanders/>.
- Jones, D., & Marinescu, I. (2022). The labor market impacts of universal and permanent cash transfers: Evidence from the alaska permanent fund. *American Economic Journal: Economic Policy*, 14(2), 315–340.
- Jongen, E., De Boer, H.-W., & Dekker, P. (2014). Micsim—a behavioural microsimulation model for the analysis of tax-benefit reform in the netherlands. *CPB Background Document*, 27.
- Jongen, E., de Boer, H.-W., & Dekker, P. (2015). De effectiviteit van fiscaal participatiebeleid, cpb policy brief. *De effectiviteit van fiscaal participatiebeleid, CPB Policy Brief*.
- Kangas, O. (2021). 3. making of the finnish basic income experiment. *Experimenting with Unconditional Basic Income*, 18.
- Kangas, O., Jauhainen, S., Simanainen, M., & Ylikännö, M. (2019). The basic income experiment 2017–2018 in finland: Preliminary results. *Julkaisurakisto Valto*.
- Kangas, O., & Pulkka, V. (2016). From idea to experiment: Report on universal basic income experiment in finland. *Kela Report*, 88.
- Koot, P., Kempen, M. V., Tommelen, A., & Verkade, E. (2020). Doorrekening herziening socialezekerheids- en belastingstelsel groenlinks. *CPB Policy Brief*.
- Kuiiper, M., & Kaathman, R. (2015). Property valuation and taxation in the netherlands. *Land Tenure Journal*, 15(2), 47–62.
- Kuziemko, I., Norton, M. I., Saez, E., & Stantcheva, S. (2015). How elastic are preferences for redistribution? evidence from randomized survey experiments. *American Economic Review*, 105(4), 1478–1508.
- Lee, S. (2021). Politics of universal and unconditional cash transfer: Examining attitudes toward universal basic income. *Basic Income Studies*, 16(2), 191–208.
- Lewis, C. (2017). Betting on western north carolina: Harrah's cherokee casino resort's regional impacts. *Journal of Appalachian Studies*, 23(1), 29–52.
- Marinescu, I. (2018). No strings attached: The behavioral effects of us unconditional cash transfer programs. *NBER publications*.
- Mastrogiacomo, M., Bosch, N. M., Gielen, M. D., & Jongen, E. L. (2017). Heterogeneity in labour supply responses: Evidence from a major tax reform. *Oxford Bulletin of Economics and Statistics*, 79(5), 769–796.
- Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2018). *Jaarrapportage*. <https://www.rijksoverheid.nl/onderwerpen/overheidspersoneel/documenten/rapporten/2018/05/01/jaarrapportage-bedrijfsvoering-rijk-2017>.
- Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2022). *Trends en cijfers over aantal ambtenaren*. <https://www.kennisvandeoverheid.nl/cijfers-overheidspersoneel/documenten/rapporten/2022/10/01/trends--cijfers-2022>.
- Ministerie van Financiën. (n.d.). *Jaarverslag 2022*. <https://www.rijksfinancien.nl/visuals/2022/jaarverslag/uitgaven?graph=pie>.
- Ministerie van Financien. (2023). *Ambtelijk rapport aanpak fiscale regelingen*. <https://www.rijksoverheid.nl/ministeries/ministerie-van-financien/documenten/rapporten/2023/06/30/ambtelijk-rapport-aanpak-fiscale-regelingen>.
- Ministerie van Financiën. (2023). *Feiten en cijfers over toeslagen*. <https://www.overtoeslagen.nl/over-ons-werk/feiten-en-cijfers>.

- Ministerie van Volksgezondheid, Welzijn en Sport. (2022). *Missie en visie. over ons | zorginstituut nederland.* <https://www.zorginstituutnederland.nl/over-ons/organisatie/missie-en-visie>.
- Ministry van Volkshuisvesting. (2024). *Werking en berekening huurtoeslag.* (<https://www.volks huisvestingnederland.nl/onderwerpen/huurtoeslag/werking-en-berekening-huurtoeslag>)
- Nederlands Jeugdinstituut. (2022). *Cijfers over gezinnen.* <https://www.nji.nl/cijfers/gezinnen#:~:text=Gegevens%20in%20een%20tabel&text=In%202022%20zijn%20er%20596.408,eenoudergezin%2Dtweeoudergezin%20percentueel%20hetzelfde%20gebleven>
- NOS. (2023). *Overheid neemt maatregelen tegen woz-bezwaarbureaus.* (<https://nos.nl/artikel/2466369-overheid-neemt-maatregelen-tegen-woz-bezwaarbureaus>)
- OECD. (2023). Income inequality (indicator). DOI: 10.1787/459aa7f1-en.
- Olsthoorn, M., Koot, P., Hoff, S., Ras, M., Hulst, B. v., Wildeboer Schut, J. M., ... Haard, M. (2020). *Kansrijk armoedebeleid.* Centraal Plan Bureau (CPB).
- Ping Jr, R. A. (2004). On assuring valid measures for theoretical models using survey data. *Journal of business research*, 57(2), 125–141.
- Prescott, D., Swidinsky, R., & Wilton, D. A. (1986). Labour supply estimates for low-income female heads of household using mincome data. *Canadian Journal of Economics*, 134–141.
- Price, D. J., & Song, J. (2018). The long-term effects of cash assistance. *Industrial Relations Section working paper*, 621.
- Quist, A. (2015). Marginale druk en participatiebelasting per huishoudtype in 2015. *CPB Background Document, The Hague*.
- Rijksoverheid. (2023). *Marginale en gemiddelde belastingdruk.* <https://www.rijksoverheid.nl/onderwerpen/belastingplan/belastingplanstukken>.
- Rincon, L. (2023). A robin hood for all: a conjoint experiment on support for basic income. *Journal of European Public Policy*, 30(2), 375–399.
- Rincón, L., & Hiilamo, H. (2019). Understanding multidimensional preferences towards basic income policy: A conjoint experiment. In *Proceedings of ecp general conference 2019*.
- Rincón, L., Vlandas, T., & Hiilamo, H. (2022). What's not to like? benefit design, funding structure and support for universal basic income. *Journal of European Social Policy*, 32(4), 467–483.
- Robins, P. K. (1985). A comparison of the labor supply findings from the four negative income tax experiments. *Journal of human Resources*, 567–582.
- Saez, E., Slemrod, J., & Giertz, S. H. (2012). The elasticity of taxable income with respect to marginal tax rates: A critical review. *Journal of economic literature*, 50(1), 3–50.
- Salkind, N. J., & Haskins, R. (1982). Negative income tax: The impact on children from low-income families. *Journal of Family Issues*, 3(2), 165–180.
- Singh, P., Brown, R., Copeland, W. E., Costello, E. J., & Bruckner, T. A. (2020). Income dividends and subjective survival in a cherokee indian cohort: a quasi-experiment. *Biodemography and social biology*, 65(2), 172–187.
- Sociaal Cultureel Planbureau. (2020). *Willen vrouwen meer werken, en mannen minder?* (<https://digitaal.scp.nl/emancipatiemonitor2020/willen-vrouwen-meer-werken-en-mannen-minder>)
- Stadelmann-Steffen, I., & Dermont, C. (2020). Citizens' opinions about basic income proposals compared—a conjoint analysis of finland and switzerland. *Journal of Social Policy*, 49(2), 383–403.
- Standford Basic Income Lab. (2024). *Experiment map.* (<https://basicincome.stanford.edu/experiments-map/>)
- SurveyCircle. (n.d.). *Respondenten gezocht?vind respondenten ondersteun onderzoek.in de grootste community voor online onderzoek.* (<https://www.surveycircle.com/nl/surveycircle>)
- SurveySwap. (n.d.). *Find survey participants today.* <https://surveyswap.io/nl/students>.
- van der Mooren, F., & de Vries, R. (2022). *Steeds meer hoogopgeleiden in nederland: wat voor beroep hebben ze?* Centraal Bureau voor de Statistiek. (<https://www.cbs.nl/nl-nl/longread/statistische-trends/2022/steeds-meer-hoogopgeleiden-in-nederland-wat-voor-beroep-hebben-ze-onepage=true#:~:text=Was20in20198120nog2011,tot20752Djarigen20in202021.>)
- van Elk, R., Griffioen, E., Verberk, M., & Weyzig, F. (2023). *Doorrekening beleidsopties voor terugdringen armoede.* (<https://www.cpb.nl/sites/default/files/omnidownload/CPB-Publicatie-Doorrekening-beleidsopties-voor-terugdringen-armoede.pdf>)

- van Gils, s. (2020). Vermindering armoede mogelijk maar kost geld en banen. *Sociaal en Cultureel Planbureau*.
- Van Parijs, P. (2004). Basic income: a simple and powerful idea for the twenty-first century. *Politics & Society*, 32(1), 7–39.
- Van Parijs, P. (2020). Basic income: Finland's final verdict. *Recuperado de https://socialeurope.eu/basic-income-positive-results-from-finland*.
- Van Ravestein, A., & Vijlbrief, H. (1988). Welfare cost of higher tax rates: An empirical laffer curve for the netherlands. *De Economist*, 136(2), 205–219.
- Wales Governement. (2023). *Basic income for care leavers in wales, pilot announced*. <https://www.gov.wales/basic-income-care-leavers-wales-pilot-announced>.
- Widerquist, K. (2017). The basic income guarantee experiments of the 1970s: a quick summary of results. *Basic Income News*.
- Wispelaere, J. D., & Noguera, J. A. (2012). On the political feasibility of universal basic income: An analytic framework. In *Basic income guarantee and politics: International experiences and perspectives on the viability of income guarantee* (pp. 17–38). Springer.

A

Appendix A: Welfare cliff and Income

A.1. Assumptions of the welfare cliff

The assumptions behind Figure 1.1 are:

1. Citizens earning less than 43.000 euros gross income have a lower total asset value than 37.000 euros. This entitles them to rent and health allowances.
2. Citizens earning less than 43.000 euros of gross income have a rent of 850 euros per month. This is the maximum rent that allows you to obtain rent allowance.
3. Citizens earning more than 43.000 euros gross income have a lower total asset value than 177.000 euros. This entitles them to child-specific and childcare allowances.
4. The different household types are stereotyped households as defined by Bos and Verberk-De Kruik (2019). They are:
 - (a) Single person
 - (b) Single-parent with two children
 - (c) Two-person households with one earner
 - (d) Two-person households with one earner and two children
 - (e) Two-person households with two earners earning the same
 - (f) Two-person households with two earners earning the same with two children
 - (g) Two-person households with one earner earning 66% and the other 34% of the income
 - (h) Two-person households with one earner earning 66% and the other 34% of the income with two children
5. The children in the household are younger than 5
6. The childcare allowance is based on 42 hours per month of childcare per child (10 hours per week).
7. The cost of Childcare are 7 euros per hour (the maximum allowed to obtain the allowance)

A.2. Individual plot of the welfare cliff for every household type

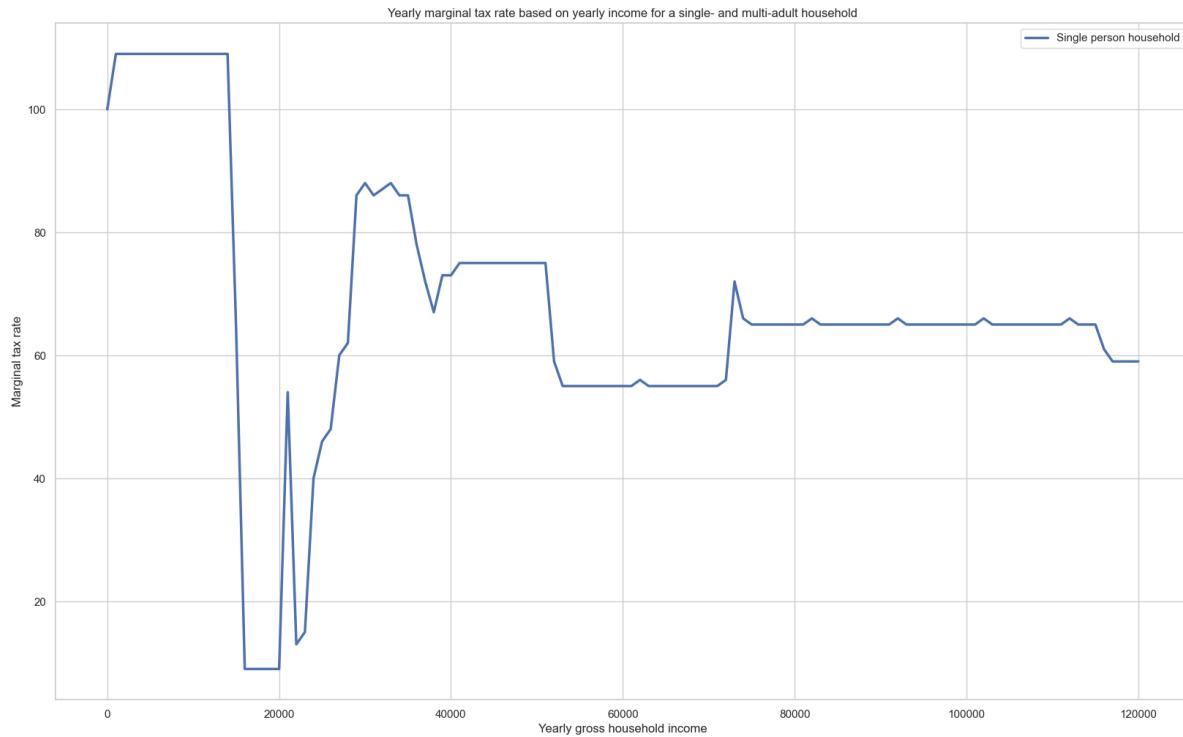


Figure A.1: Marginal taxation rate for an individual household

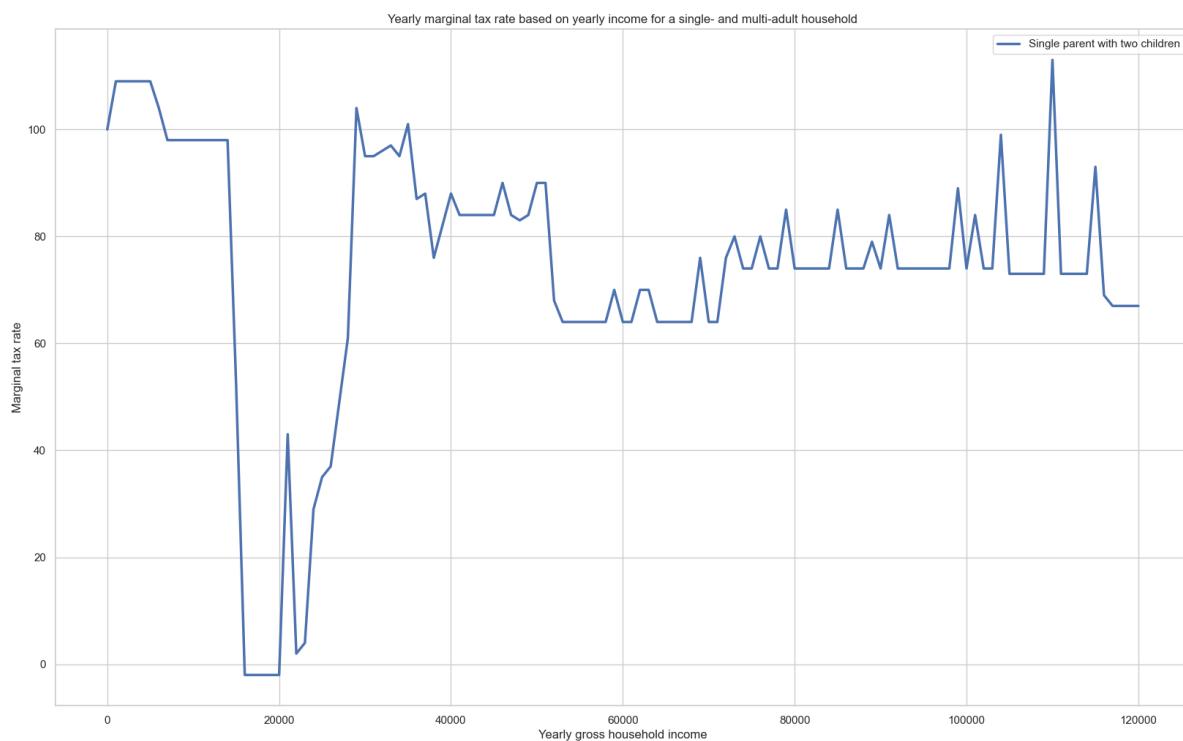


Figure A.2: Marginal taxation rate for a single parent with two children

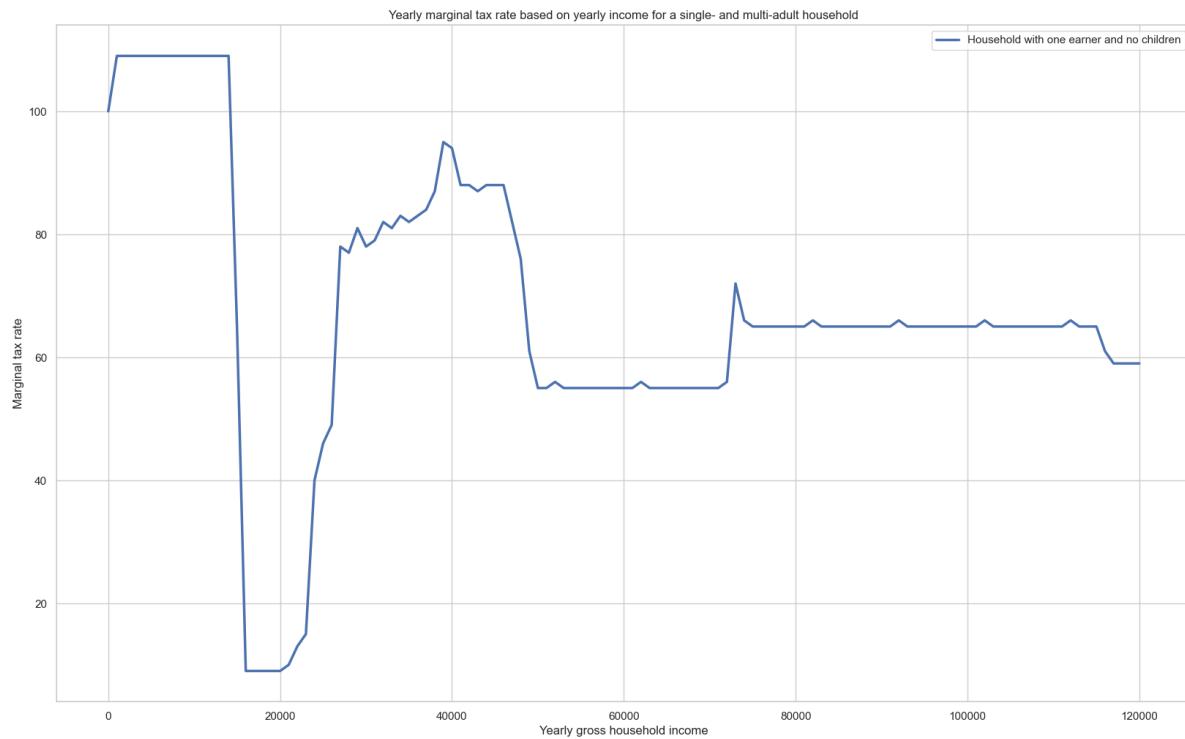


Figure A.3: Marginal taxation rate for a two-person household with no children

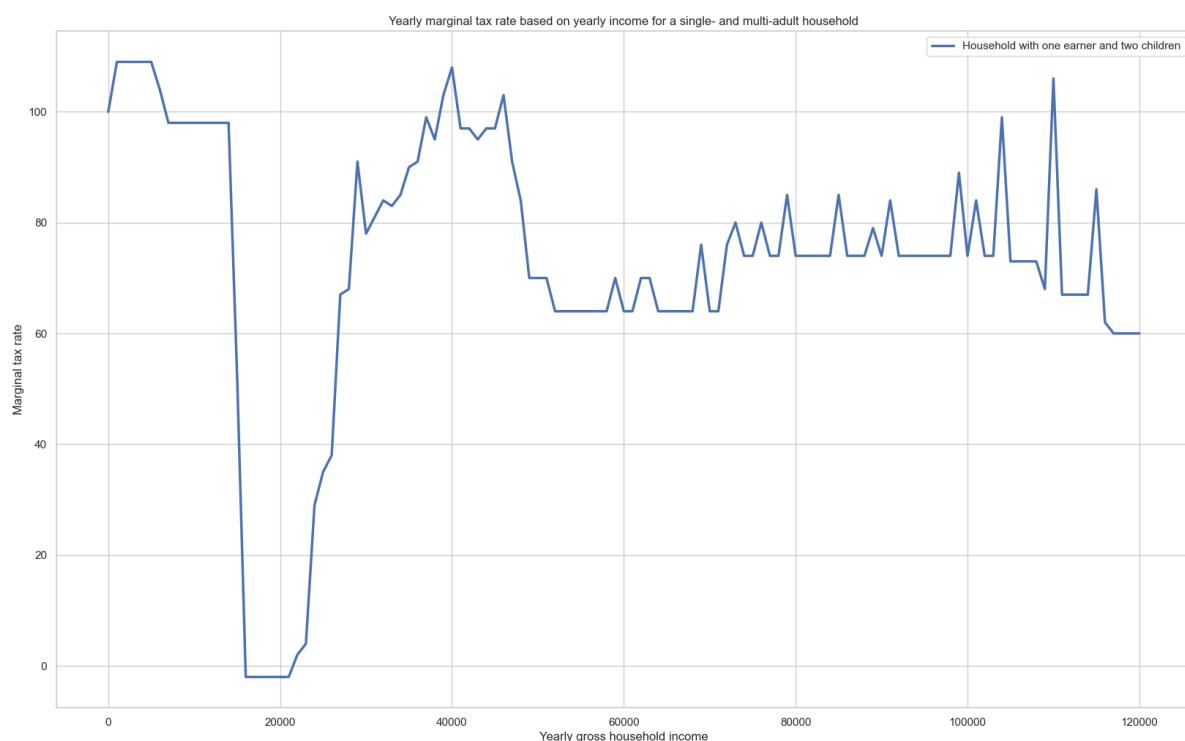


Figure A.4: Marginal taxation rate for a two-person household with no children

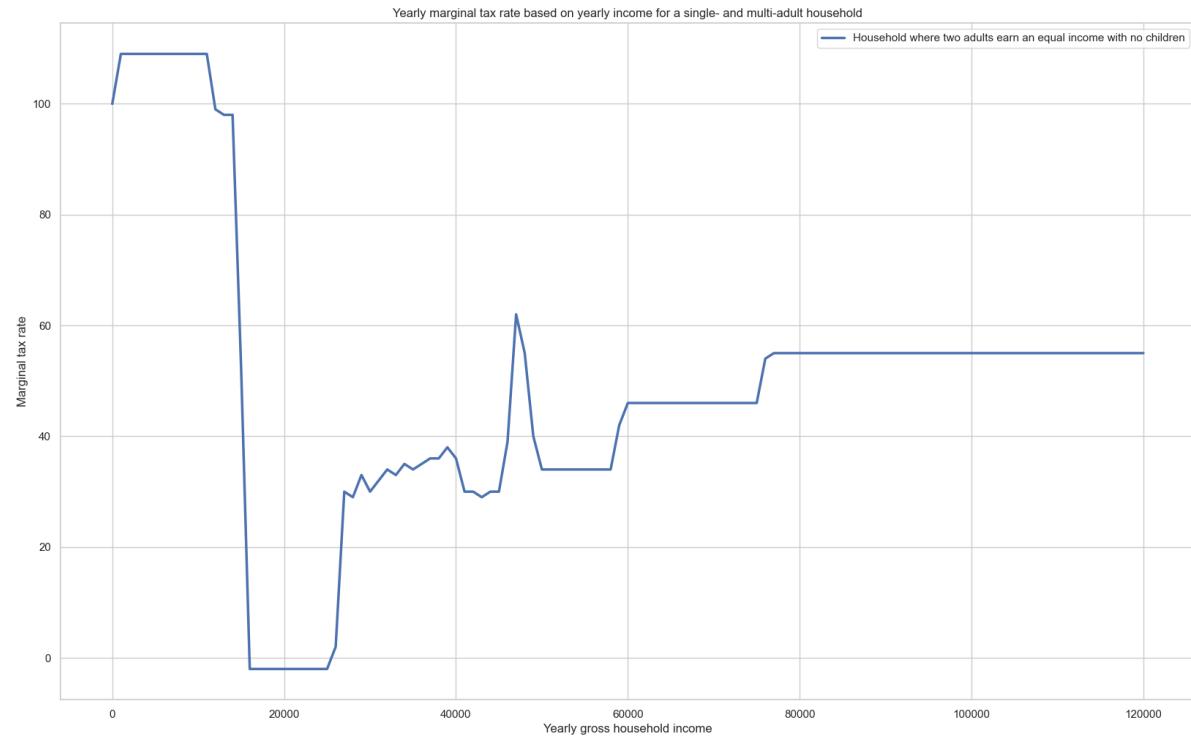


Figure A.5: Marginal taxation rate for a two-person household earning the same with no children

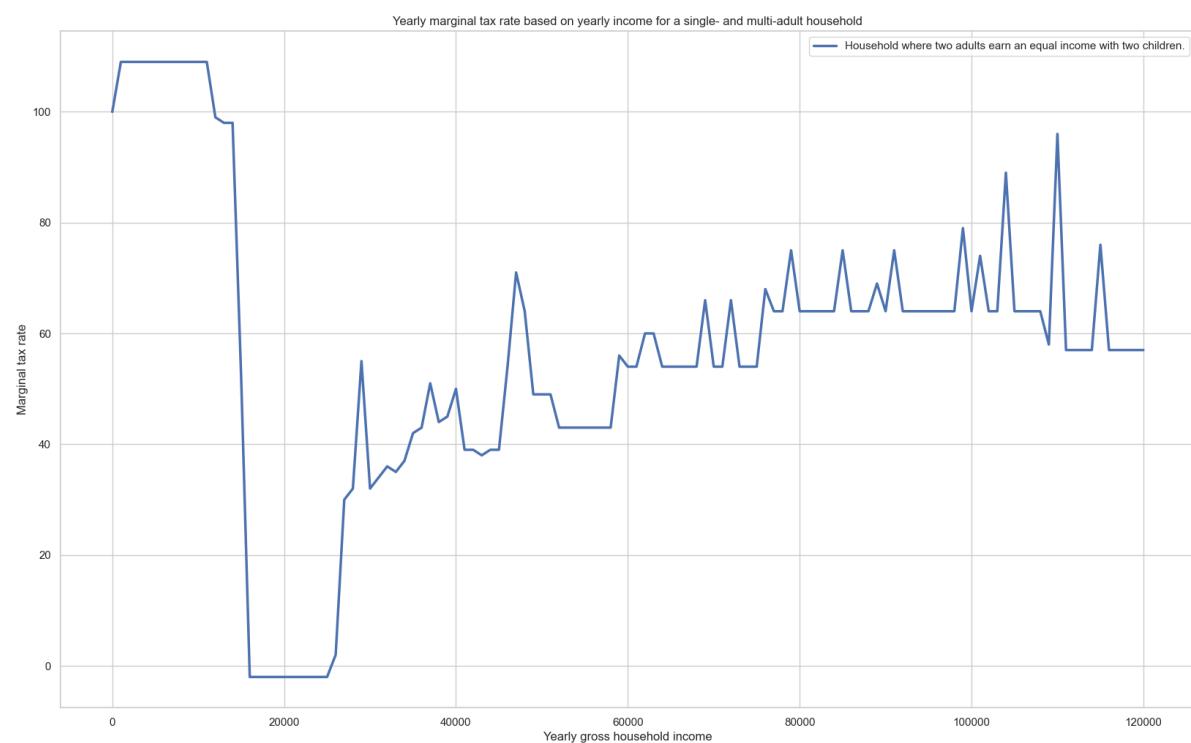


Figure A.6: Marginal taxation rate for a two-person household earning the same with two children

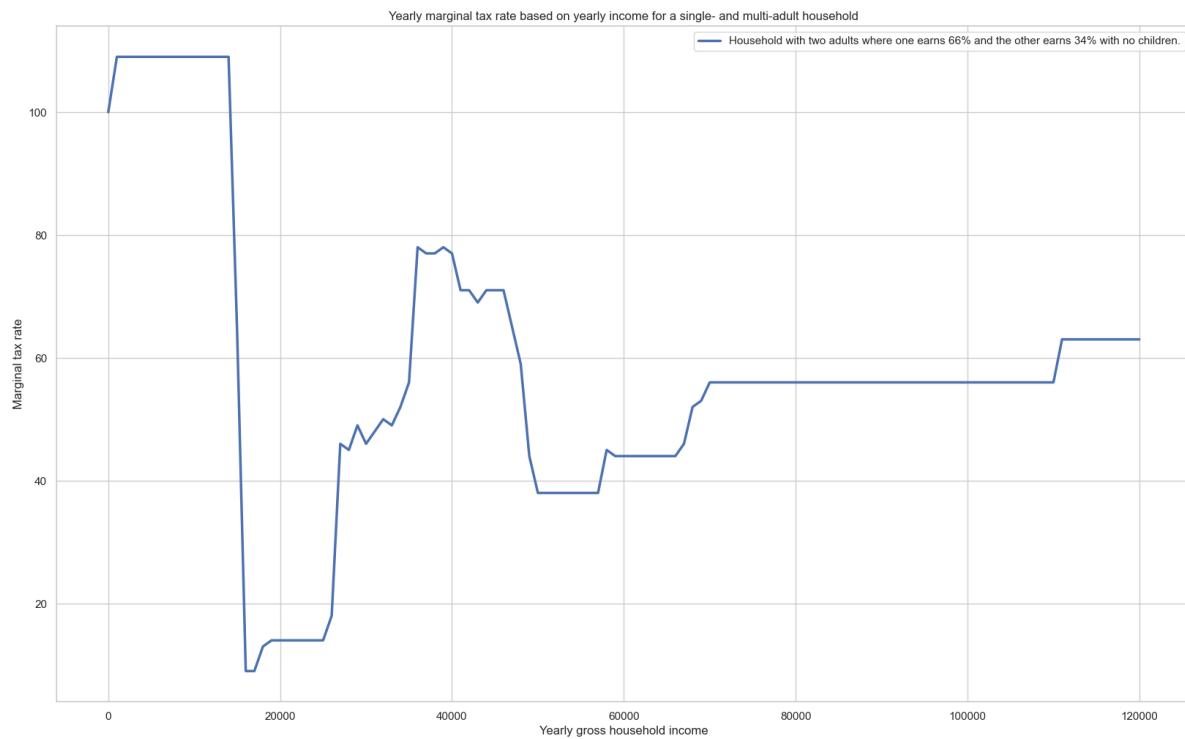


Figure A.7: Marginal taxation rate for a two-person household where one is earning 66% of the income and the other 34% with no children

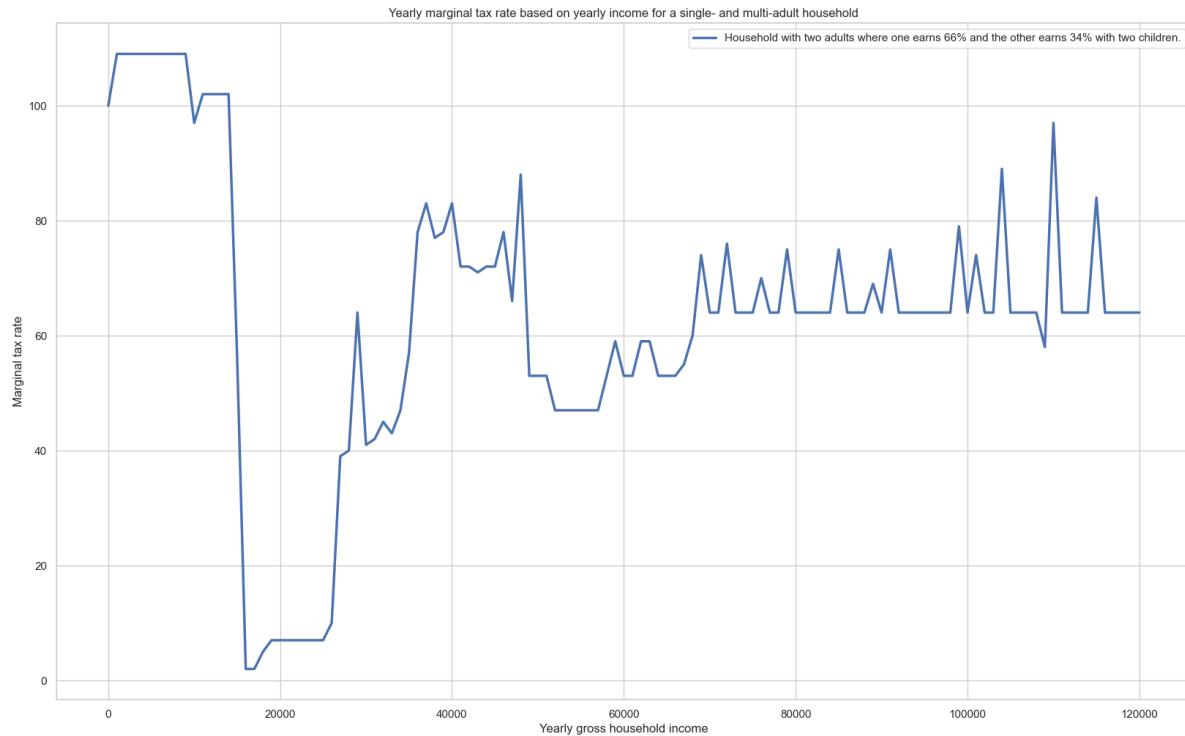


Figure A.8: Marginal taxation rate for a two-person household where one is earning 66% of the income and the other 34% with two children

A.3. Change in income due to high- and mid-UBI policies

It's crucial to acknowledge that these graphs do not consider the cost of loss of mortgage rate deduction, which can significantly impact the increase in disposable income, particularly for higher-income earners.

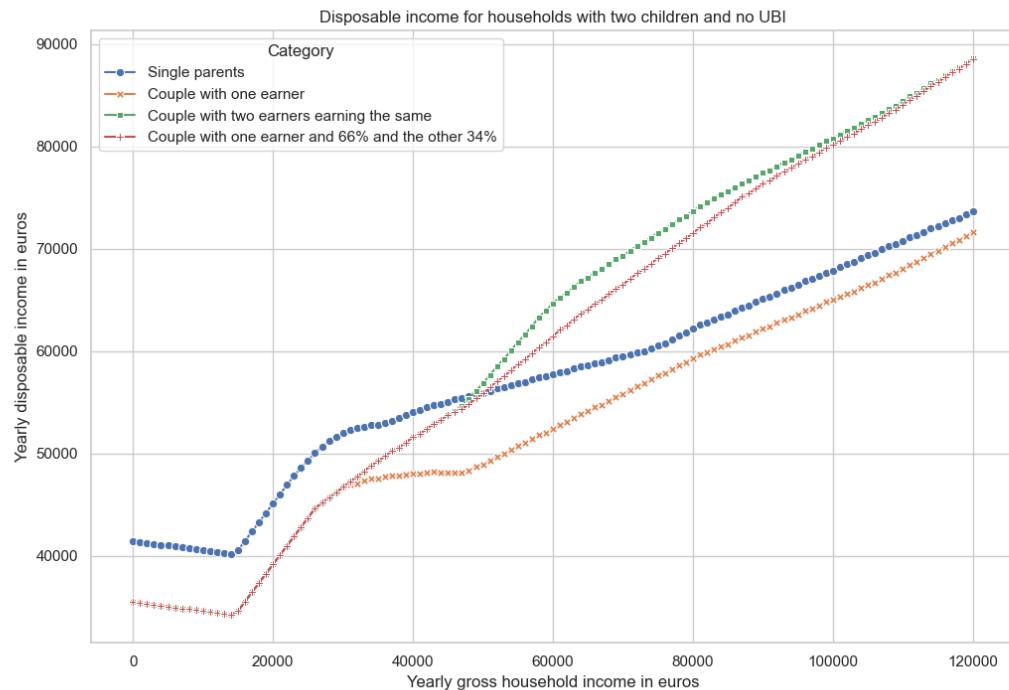


Figure A.9: Income for different household types with two children

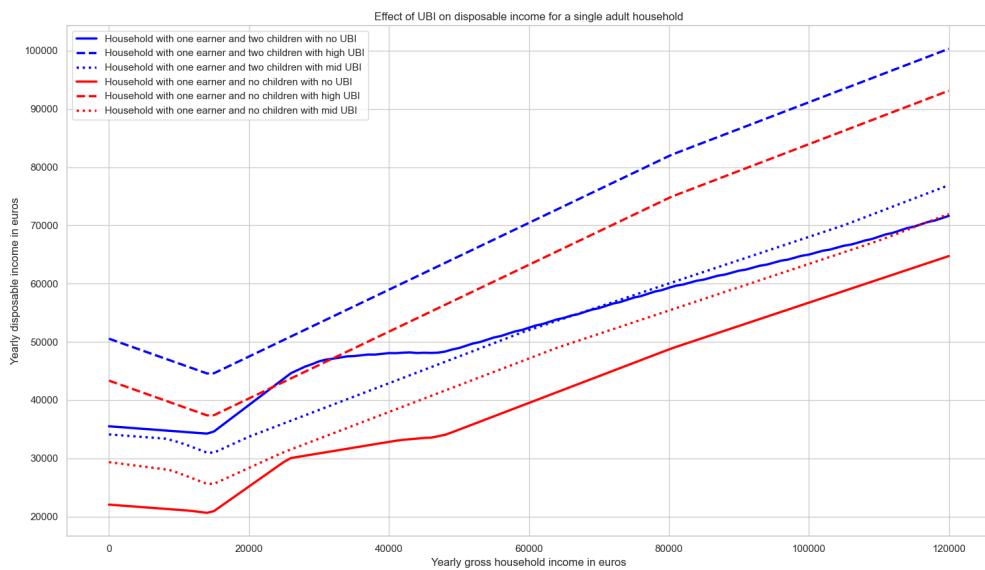


Figure A.10: Income for a household with two adults and one earner

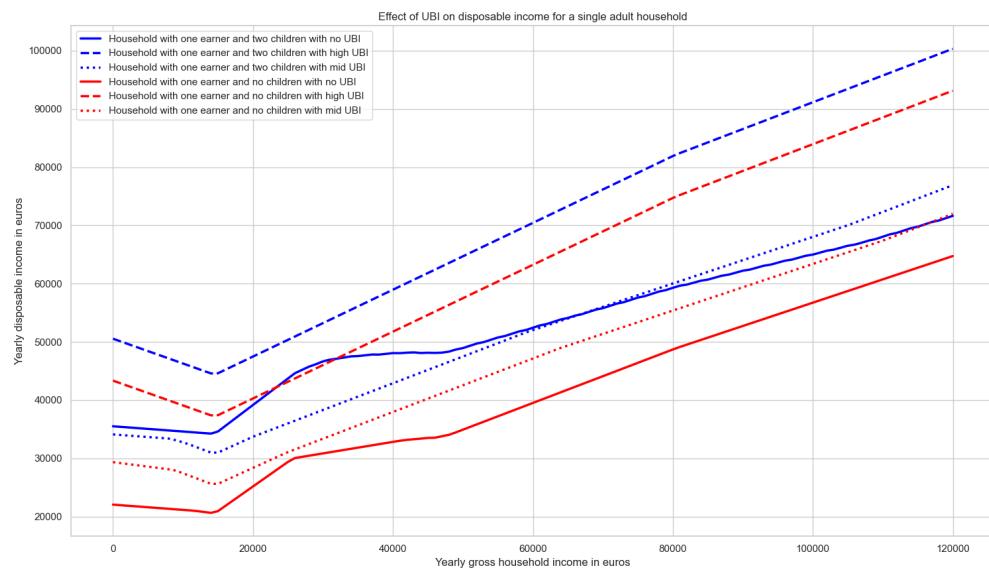


Figure A.11: Income for a household with two adults and one earner

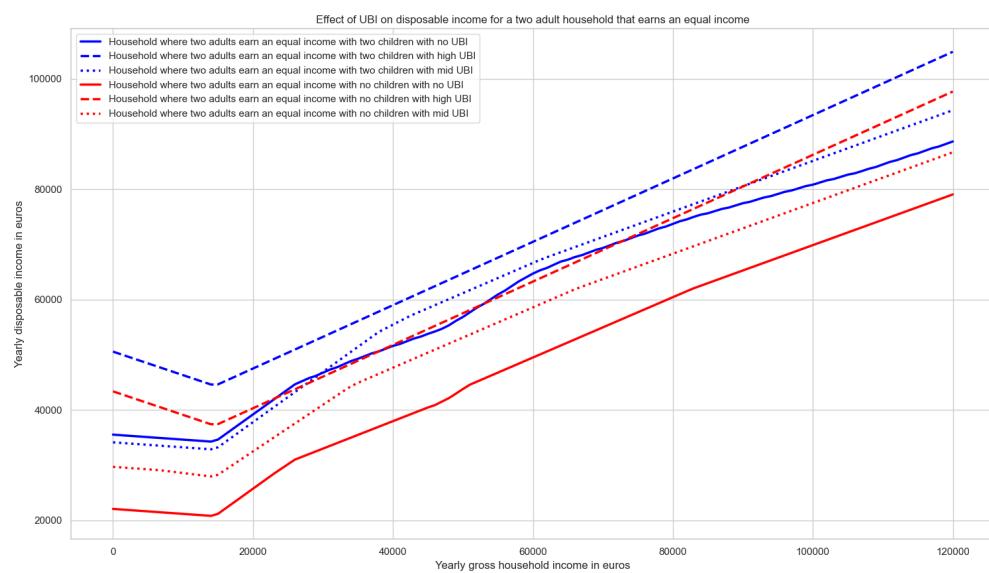


Figure A.12: Income for a household with two adults earning the same

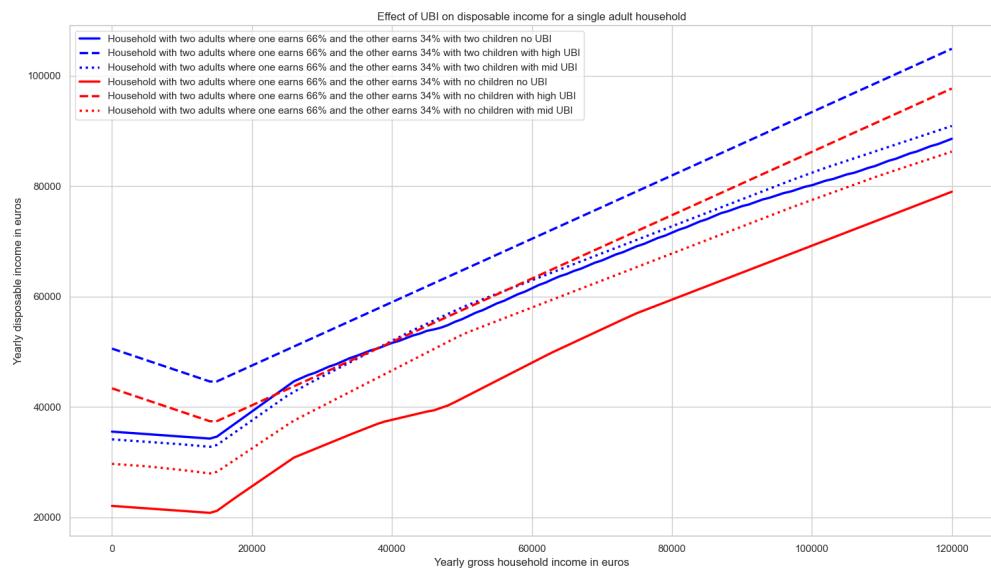


Figure A.13: Income for a household with two earners one earning 66% and the other 34%

B

Appendix B: additional information regarding Dutch tax system and potential reforms

B.1. How to finance UBI

Table B.1: Income generated by the financial plan of UBI from Table 2.2

Allowance/tax cut/tax increase	Estimate income (in billion euros)
<i>Allowances</i>	
Health allowance	6.6
Rental allowance	4
Income-specific child allowance	2.5
General child allowance	6.8
Childcare allowance	4.2
Student allowance	5.3
WAO/WIA/Wajong allowances	9.8
AOW	44
<i>Tax cut</i>	
General tax credit	28.7
Work tax credit	24.8
Individual worker Tax credit	4.8
Elderly tax credit deduction	5.3
Reduction in welfare payments (partially and full)	5 or 8
Mortgage interest deduction	14.7
Other tax deduction	3.3
<i>Increase in income tax</i>	
New middle-income tax (27.000 to 65.000) of 40%	4
New middle-income tax (65.000 to 100.000) of 50%	8
Top income (100.000 euro +) tax at 60%	2
Making UBI taxable (630 or 1200 euro)	35.1 or 71
Tax on AOW	6.1
Make welfare tax (Box 3) equal to income tax (box 1)	2.3
<i>Company taxes</i>	
Increase company taxes to 30%	4.2
Financial transaction tax	1

This data is based on (Koot et al., 2020), and (Aerts et al., 2023), (Ministerie van Financiën, n.d.)

All tax deduction = General tax credit + Work tax credit + Individual worker + Tax credit + Mortgage interest deduction

B.2. Old en new taxation systems

Table B.2: Old and new taxation system in the Netherlands

Year	Income tax bracket (euros)	Tax rate (%)
2023	0 to 73.031	36.93
	+ 73.031	49.50
2019	0 to 20.384	36.65
	20.385 to 68.507	38.1
	+ 68.507	51.57

Assumptions of Table B.2

As the Dutch Statistics Bureau (CBS) does not provide the amount of Dutch citizens between 18 and 67 years old directly, the number of 18 to 20 years old was estimated by dividing the total number of young adults between 15 and 20 four years old by 5 and multiply it by 3. The same has been done for the population between 65 and 70. This number was divided by 5 and multiplied by 2 to get the number of citizens between 65 and 67. The percentage of citizens receiving welfare payments is calculated by dividing the number of inhabitants that receive the payment by the number of inhabitants between 18 and 67 years old. The number of women with children under 5 years old was calculated by dividing the total number of children 5 years and younger by the average amount of children in a family. It should be noted that this method provides a rough approximation of the target population.

B.3. How to finance UBI?

B.3.1. Political analysis of property and land value tax

Land valuation tax and property tax are subjects frequently deliberated in the philosophical discourse on UBI, aligning with the principles highlighted by Van Parijs (2004). Property tax is a levy imposed on the assessed value of properties such as residential homes, commercial establishments, and land owned by individuals. In contrast, a land value tax is specifically imposed on the assessed value of the land itself, rather than on any structures or improvements (such as buildings) that may be situated on the land.

These taxes, esteemed for their progressive nature, target economic rent derived from valuable assets like land or property. As significant components of individual wealth, taxing these immobile assets allows governments to generate revenue without discouraging economically desirable activities.

According to Kuiiper and Kaathman (2015), the property tax in the Netherlands generates 16.5 billion euros per year. This amounts to approximately 1.6% of the Dutch Gross Domestic Product (GDP), 5% of the total federal tax income, and 8 to 10% of municipal income. In comparison to countries such as the United Kingdom and France, the Netherlands collects a relatively modest amount of tax on properties. In these countries, property taxes contribute from 3 to 4% of GDP, indicating the potential for the Netherlands to potentially double its income through this tax revenue.

Although these forms of taxes seem very efficient, the general tax aversion is a serious political burden. The perception that governments are taking a larger share of individuals' hard-earned assets can lead to resentment and resistance. Critics argue that property and land taxes may disproportionately affect lower-income individuals or retirees on fixed incomes who own property. This creates concerns about exacerbating existing socioeconomic disparities. There's a fear that property taxes could negatively impact the real estate market. Higher property taxes may lead to reduced property values or discourage real estate investments, affecting housing markets. Critics worry that higher property taxes may lead to increased rents, making housing less affordable for tenants. This is a particular concern for those who do not own property but may face indirect

consequences. For instance, between 2013 and 2023, the Dutch government implemented a tax on social housing for corporations owning more than 50 houses. Since the maximum rent is regulated in the Netherlands, this taxation did not directly impact the monthly budget for the less affluent. However, it resulted in a halt in the construction of social housing. This tax has been identified as one of the primary factors contributing to the housing crisis, particularly in the social housing sector, in the Netherlands.

The practical implementation of property tax and land valuation tax, particularly in the context of the Netherlands, remains a formidable challenge. Effectively executing property or land taxes necessitates precise assessments of the value of each property. This undertaking is intricate, and inaccuracies in the evaluation process may result in discontent and legal disputes, as evidenced by existing challenges (NOS, 2023). Despite the potential advantages, none of the victorious political parties in the 2023 election incorporated these taxes into their programs. In contrast, some potential opposition parties advocated for their adoption (CPB, 2023). The current dual nature of property tax in the Netherlands, wherein homeowners pay 0.35% of the government-estimated value (WOZ) of their houses as additional income tax, and municipalities collect property tax to balance their budgets, presents both opportunities and challenges in utilizing this taxation framework for financing a UBI.

B.4. Estimation of the effect UBI has on governmental employees

The Netherlands currently harbors a public workforce comprising 361,000 individuals, distributed across various governmental entities. Specifically, 139,000 individuals are employed by the national government, with 29,000 personnel at the Ministry of Finance (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2018), and 20,000 at the Tax and Customs Administration (Belastingdienst, 2023). Municipalities engage 163,000 individuals, a third of whom are dedicated to tasks related to social welfare (Betkó, 2023). Additionally, 23,000 individuals are employed by water boards and provinces, and 30,000 work at the Employee Insurance Agency (UWV), administering diverse social insurance programs (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022).

This assessment delves into the potential reduction or reorganization in/of the number of civil servants, specifically those occupying roles connected to the administration of social welfare programs and taxation, as a consequence of the implementation of a comprehensive UBI set at 1200 euros. The magnitude of the national government's revenue collection efforts is considerable, with responsibilities encompassing the oversight of four major allowances totaling €29.4 billion and the management of 116 regulations resulting in a reduction of tax payments amounting to €150 billion, equivalent to 40% of the total Dutch tax revenue (Ministerie van Financien, 2023) and the collection of in total 360.9 billion euro (Ministerie van Financien, n.d.).

This contrasts markedly with the operational efficiency demonstrated by the Sociale Verzekering Bank (SVB), responsible for the administration of generic schemes applicable to all, such as the general child allowance (6.8 billion euros) and old-age pension (AOW, 44 billion euros), with a workforce comprising only 3,000 officials. The absence of conditionality further underscores the efficiency of these operations.

An estimation of potential cost savings is derived from a projected reduction in the workforce by 114,000 employees¹. This estimation places the financial impact at €7.4 billion on a yearly basis and incorporates an analysis of the average monthly salary of civil servants, approximately €50,000 gross income per year (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022), with an additional 30% in employer contributions.

¹Comprising 54,000 civil servants at municipalities, 20,000 at UWV (assumption), and 40,000 at the Ministry and Tax and Customs Administration (assumption)

C

Appendix C: The survey

C.1. The survey part 1: information about the respondent

C.1.1. Informed consent

Beste deelnemer,

Hartelijk dank dat u de tijd neemt om deel te nemen aan dit onderzoek. In dit onderzoek wordt de reactie op het basisinkomen van de Nederlandse bevolking bestudeert. Dit onderzoek wordt uitgevoerd door mij, Christiaan Ouwehand van de Technische Universiteit (TU) Delft. De verzamelde, anonieme gegevens worden gebruikt voor mijn afstudeerscriptie. Het invullen van deze enquête duurt ongeveer 20 minuten.

Het doel van deze enquête is om inzicht te krijgen of de Nederlandse bevolking voorstander is van het basisinkomen en op welke manier mensen er gebruik van zouden maken. Deze enquête wordt gebruikt voor onderzoeksdoeleinden en zal op korte termijn geen invloed hebben op uw toeslagen en belastingen.

De enquête bestaat uit drie delen:

1. Algemene informatie.
2. Negen voorstellen voor het basisinkomen.
3. Wat zou u doen met een basisinkomen?

De enquête is anoniem, er worden geen IP-adressen, e-mailadressen of andere persoonlijke informatie verzameld. Uw identiteit kan niet worden achterhaald op basis van de gestelde vragen. Uw antwoorden worden gebruikt voor wetenschappelijk onderzoek. De resultaten worden verwerkt in mijn scriptie. Hierna worden alle antwoorden zonder identificerende gegevens openbaar gemaakt in de database van de TU Delft voor mogelijk toekomstig onderzoek. Mocht u interesse hebben in de resultaten, mijn scriptie zal naar verwachting rond december 2023 openbaar worden gemaakt in de repository van de TU Delft.

Uw deelname aan dit onderzoek is volledig vrijwillig. U kunt op elk moment stoppen door dit venster te sluiten. In dat geval worden uw antwoorden niet opgeslagen. Het staat u vrij om vragen niet te beantwoorden. Zodra u de enquête heeft ingevuld, is het niet mogelijk om uw anonieme antwoorden te verwijderen want we weten niet welk antwoorden van u zijn.

Indien u gereed bent om de enquête in te vullen en akkoord gaat met de genoemde voorwaarden, klik dan op 'Volgende' en daarna op het pijltje om te beginnen. Dank u wel voor uw waardevolle bijdrage aan mijn onderzoek!

Met vriendelijke groet,

Christiaan Ouwehand
c.w.ouwehand@student.tudelft.nl

C.1.2. Questionair general information

1. Wat is uw geslacht?
 - Vrouw
 - Man
 - Overig
 - Zeg ik liever niet
2. Hoe oud bent u?
3. In welke gemeente woont u?
4. Wat is uw hoogst behaalde opleidingsniveau? Als u in een ander land uw opleiding gevolgd heeft, klik dan de Nederlandse gelijkwaardige opleiding aan.
 - Lagere school
 - Middelbare school
 - MBO
 - HBO of WO bachelor
 - WO Master
 - Doctoraat
5. Hoeveel kinderen onder de 18 heeft u?
 - 5.a Als het antwoord op de vorige vraag 1 of hoger is, de leeftijd van mijn jongste kind is?
 - Jonger dan 6
 - Tussen de 6 en de 13
 - Ouder dan 13
6. Uit hoeveel leden bestaat uw huishouden?
7. Wat is uw huidige werksituatie? Meerdere antwoorden zijn mogelijk.
 - Zelfstandige zonder personeel (ZZP'er)
 - In loondienst
 - Eigenaar van een bedrijf
 - Student
 - Gepensioneerd
 - Arbeidsongeschikt
 - Werkloos
 - Bijstandsgerechtigde
 - Zeg ik liever niet
 - Thuisblijfouder
 - Anders:
8. Hoeveel uur per week werkt u gemiddeld tegen betaling?
9. Over uw persoonlijk inkomen: Reken alleen uw inkomen uit werk of uit een uitkering mee. Als u een toeslag of studiefinanciering ontvangt, telt u deze niet mee. Hoeveel verdient u bruto per jaar?
 - Zeg ik liever niet

- Minder dan 6.500 euro
- Tussen de 6.501 en 14.400 euro
- Tussen de 14.401 en 18.750 euro
- Tussen de 18.751 en 25.000 euro
- Tussen de 25.001 en 30.000 euro
- Tussen de 30.001 en 38.520 euro
- Tussen de 38.521 en 50.000 euro
- Tussen de 50.001 en 65.000 euro
- Tussen de 65.001 en 73.000 euro
- Tussen de 73.001 en 85.000 euro
- Tussen de 85.001 en 100.000 euro
- Tussen de 100.001 en 150.000 euro
- Tussen de 150.001 en 200.000 euro
- Meer dan 200.000 euro

10 Heeft u het hoogste inkomen in uw huishouden?

- ja
- nee

11. In hoeverre kunt u makkelijk meer of minder uur per week werken?

1. Heel makkelijk
2. Redelijk makkelijk
3. Lastig
4. Heel lastig

12. In hoeverre bent u bereid meer of minder uur per week te werken?

1. Veel minder
2. Minder
3. Evenveel
4. Meer
5. Veel meer

13. Ik woon in een ...

- Studentenkamer
- Sociale huurwoning (huur lager dan 808 euro per maand)
- Vrijesector huurwoning (huur hoger dan 808 euro per maand)
- Koopwoning met hypotheekrenteafrek
- Koopwoning zonder hypotheekrenteafrek

C.2. The survey part 2: the conjoint experiment

C.2.1. Introduction text for the conjoint experiment

Hierna volgen 9 ideeën voor het basisinkomen, deze worden in een willekeurige volgorde aan u gepresenteerd. Hierover zou ik graag uw mening willen weten.

Een basisinkomen is een vast bedrag dat elke volwassene die in Nederland ingeschreven staat ontvangt, ongeacht of iemand werkt of hoeveel iemand verdient. Het basisinkomen bestaat uit twee delen: een bedrag per volwassene en een bedrag per kind (jonger dan 18 jaar). Met het basisinkomen zult u minder inkomen verliezen aan extra belastingen en financiële steun wanneer u meer gaat verdienen.

Om een basisinkomen in te voeren, moeten we het belastingsysteem aanpassen. Dit kan op verschillende manieren, zoals het invoeren van nieuwe inkomstenbelastingen, het afschaffen van belastingvoordelen en kortingen, het belasten van het basisinkomen en het herzien van toeslagen. Voor elk voorstel zullen we bekijken hoe het gefinancierd kan worden en welke veranderingen er in toeslagen zullen plaatsvinden.

1. Nieuwe vorm van inkomstenbelasting

- U betaalt 36% inkomstenbelasting over uw inkomsten tot 36.000 euro per jaar.
- U betaalt 40% inkomstenbelasting over uw inkomsten tussen 36.000 en 65.000 euro per jaar.
- U betaalt 50% inkomstenbelasting over uw inkomsten tussen 65.000 en 100.000 euro per jaar.
- U betaalt 60% inkomstenbelasting over uw inkomen boven 100.000 euro per jaar.

Bijvoorbeeld: als u een bruto inkomen heeft van 40.000 euro per jaar, betaalt u 36% belasting over de eerste 36.000 euro en 40% belasting over de resterende 4.000 euro.

2. Afschaffen van aftrekposten en heffingskortingen

Om de invoering van het basisinkomen te financieren komen de volgende aftrekposten en heffingskortingen komen te vervallen:

- Arbeidskortingen (Algemene heffingskorting en arbeidskorting, ook bekend als loonheffing)
- Inkomensafhankelijke combinatiekorting
- Hypotheekrenteafrek
- Kortingen voor zzp'ers

3. Belasting op het basisinkomen

Het basisinkomen wordt bij uw inkomen opgeteld en dit bepaalt volgens het huidige belastingstelsel uw bruto inkomen. Stel dat u een bruto inkomen heeft van 40.000 euro per jaar en dat u twee kinderen heeft. U ontvangt 1.200 euro bruto basisinkomen per maand en 185 euro bruto basisinkomen per kind per maand. Dit betekent dat u 1.570 euro bruto basisinkomen per maand ontvangt, oftewel 18.840 euro bruto basisinkomen per jaar. Uw bruto jaarinkomen is dan 58.840 euro.

4. Hervorming van het toeslagensysteem

Bij instelling van het basisinkomen worden alle toeslagen afgeschaft, waaronder zorg-, huur-, kinderopvang-toeslag, kindgebonden budget, studiefinanciering en kinderbijslag. In bepaalde situaties behoudt u mogelijk de zorg- of huurtoeslag, dit zal specifiek worden vermeld.

Gebaseerd op uw antwoorden op vraag 9 over uw bruto inkomen in deel 1 (u heeft ingevuld: \$q://QID14/ChoiceGroup/Select) schat ik het effect op uw netto maandinkomen. Hiervoor neem ik het midden van de inkomenscategorie die u hebt opgegeven als uitgangspunt. Bijvoorbeeld, als u aangeeft dat uw jaarinkomen tussen de 25.001 en 30.000 euro bruto ligt, gaan we uit van een inkomen van 27.500 euro bruto per jaar.

Ik schat dat u \$e://Field/Huidig euro netto per maand te besteden heeft, plus eventuele toeslagen als u daar recht op heeft. Dit bedrag kunt u gebruiken als referentiepunt voor de volgende 9 voorstellen. Voor elk voorstel zullen we u 2 of 3 vragen stellen.

De volgende tabel leest u als volgt:

- U ontvangt 1200 euro netto basisinkomen
- U ontvangt 100 euro netto per kind
- Het basisinkomen wordt betaald door het nieuwe belastingssysteem.
- U ontvangt geen toeslagen meer.

Basisinkomen	Bedrag per kind	Verandering in belastingssysteem	Toeslagen
1200 euro netto	100 euro netto	Nieuwe belastingssysteem	Geen toeslagen

Dit betekent dat **u per maand 8753 euro netto te besteden heeft** (7553 euro aan salaris, 1200 euro aan basisinkomen).

Hoe waarschijnlijk is het dat u de invoering van deze vorm van basisinkomen zou ondersteunen?

Zeer onwaarschijnlijk
Onwaarschijnlijk
Neutraal
Waarschijnlijk
Zeer waarschijnlijk

Figure C.1: Profile 2 on PC

Figure C.3: Overview of profile 2 on different device

De resultaten kunnen afwijken van de werkelijkheid, aangezien het hier om een schatting van uw inkomsten gaat.

C.2.2. The conjoint questionair

For each of the nine profiles the impact of the tax change system will be calculated so that the respondent has a good view of the impact the policy has for him. The following questions will be asked for every profile:

Hoe waarschijnlijk is het dat u de invoering van deze vorm van basisinkomen zou ondersteunen?

1. Zeer onwaarschijnlijk
2. Onwaarschijnlijk
3. Neutraal
4. Waarschijnlijk
5. Zeer waarschijnlijk

Gaat u hierbij minder, hetzelfde, of meer uur werken?

- Minder
- Hetzelfde
- Meer

Als minder of meer, hoeveel uur denkt u meer of minder te gaan werken per week?

Here is an exemple of the presentation of profiles:



Figure C.2: Profile 2 on smartphone.

C.3. The survey part 3: the tradition questions

The following questions for both the high- and the mid-UBI policy were asked:

1. Hoe waarschijnlijk is het dat u ontslag zou nemen om te zoeken naar een baan die beter bij uw wensen past bij deze vorm van basisinkomen?

- Zeer onwaarschijnlijk
- Waarschijnlijk
- Neutraal
- Waarschijnlijk
- Zeer waarschijnlijk
- Niet van toepassing, mijn huidige baan past perfect bij mijn wensen
- Niet van toepassing, ik heb momenteel geen werk

2. Wat zou u doen met het hierboven gepresenteerd basisinkomen? meerdere antwoorden zijn mogelijk.

- Niets anders dan nu.
- Meer mantelzorg uitvoeren.
- Meer vrijwilligerswerk doen.
- Ik ga een (extra) opleiding volgen/meer studeren.
- Ik ga meer tijd spenderen met mijn kinderen.
- Ik neem meer vijfje tijd.
- Ik ga meer sparen.
- Ik ga meer sparen voor vervroegd pensioen.
- Ik ga met vervroegd pensioen.
- Ik ga een eigen bedrijf beginnen.
- Ik heb minder stress.
- Ik ga vaker naar de dokter.
- Ik ga gezonder voesel kopen.
- Anders

Stellingen over belastingen allemaal in te vullen op de volgende schaal:

1. Zeer oneens
2. Oneens
3. Neutraal
4. Eens
5. Zeer eens

Stellingen over armoede allemaal in te vullen op de volgende schaal:

1. Zeer oneens
2. Oneens
3. Neutraal
4. Eens

5. Zeer eens

- Ik vind het belangrijk dat ik er niet op achteruit ga als er een basisinkomen komt.
- Ik vind het belangrijk dat de armste mensen in Nederland er op vooruit gaan, zelds als dat betekent dat ik er op achteruit ga.
- Ik vind dat het basisinkomen hoog genoeg moet zijn om van te leven ook al betekent dit dat het minder aantrekkelijk wordt om te werken.
- Ik vind dat de overheid erop gericht moet zijn mensen in armoede te helpen, ook al betekent dit dat het minder aantrekkelijk wordt om te werken.
- Ik vind dat men toeslagen niet hoeft terug te betalen als men meer uren gewerkt heeft.
- Ik vind dat men de bijstand niet hoeft terug te betalen als men meer uren gewerkt heeft.
- Het basisinkomen, voor elke Nederlander, is een goede vorm van sociale zekerheid.

D

Appendix D: Demographic information & methods

D.1. Assumptions made for population statistics

As the Dutch statistics bureau (CBS) does not provide the amount of Dutch citizens between 18 and 67 years old directly, the number of 18 to 20 years old was estimated by dividing the total number of young adults between 15 and 20 four years old by 5 and multiply it by 3. The same has been done for the population between 65 and 70. This number was divided by 5 and multiplied by 2 to get the number of citizens between 65 and 67. The percentage of citizens receiving welfare payments is calculated by dividing the number of inhabitants that receive the payment by the number of inhabitants between 18 and 67 years old. The number of women with children under 5 years old was calculated by dividing the total number of children 5 years and younger by the average amount of children in a family. It should be noted that this method provides a rough approximation of the target population.

D.2. Detailed population statistics and the equivalent number of respondents

Table D.1: annual gross income data per individual Dutch citizen

Indicator ^a	Value	Percentage of population	Number of respondents
Less than 10.000 euro	1,830,200	13%	35
Between 10.000 and 20.000 euro	3,106,200	22%	59
Between 20.000 and 30.000 euro	2,474,000	18%	49
Between 30.000 and 40.000 euro	2,045,900	15%	40
Between 40.000 and 50.000 euro	1,353,200	10%	27
Between 50.000 and 100.000 euro	2,459,900	18%	49
Between 100.000 and 200.000 euro	419,100	3%	8
Over 200.000 euro	7,150	1%	3

^a (Centraal Bureau Voor de Statistiek, n.da)

D.3. Exemple of effect coding

As an illustrative example to aid interpretation of effect coding is given in Appendix , Table D.2 present a regression model for UBI support with statistically significant coefficients.

Table D.2: Example of a regression model

Coefficient	
const	2,5
Tax1	-1
Tax2	0,7
Allowance1	0,1
Allowance2	-0,5
UBI1	1,5
UBI2	0,7
UBI_Child1	0,5
UBI_Child2	0,1

For the variable "support," each numerical value signifies a shift in support on a scale ranging from 1 to 5. The regression model of Table D.2 is interpreted as follows:

- The average support for UBI = 2.5
- A UBI of 1200 increases support by 1.5 up to 4.
- A UBI for children of 300 increases support by 0.5 to 4.5
- Make UBI taxable decrease support by 1 to 3.5
- Only health allowance increases support by 0.1 to 3.6

Figure D.1 gives a graphical overview of Table D.2 and Table 3.6 combined to show the condition of the last variable.
So the support for Profile 1 (1200, 300, no tax deduction, only health allowance) would be:

$$\text{Support} = 2.5 + 1.5 + 0.5 - 1.0 + 0.1 = 3.6$$

The support for Profile 7 (210, 300, New Income tax, rent allowance) would be:

$$\text{Support} = 2.5 - 2.2 + 0.5 + 1.5 + 0.4 = 2.7$$

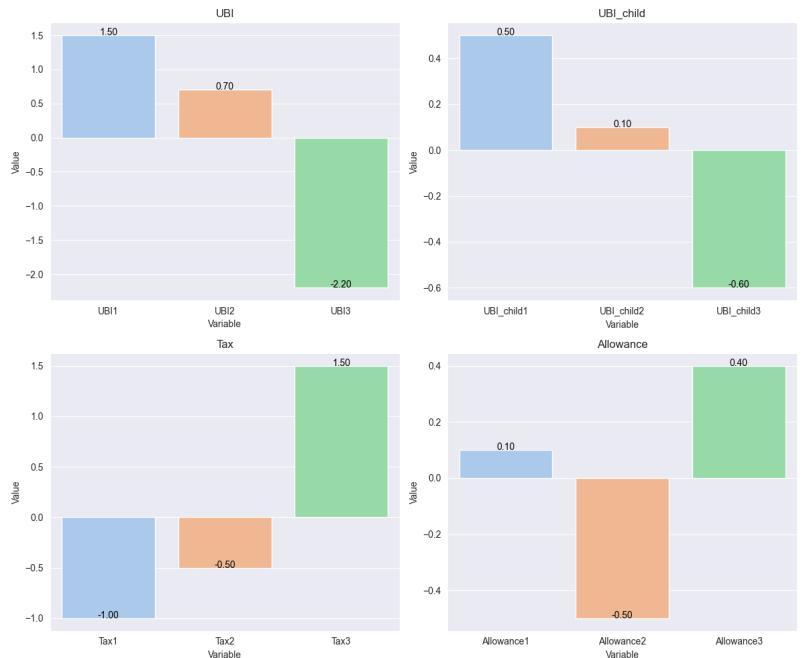


Figure D.1: Example plot of effect coding

E

Appendix E: Results

E.1. Correlation between indicators

In Figure E.1 all correlations between the indicators used for the regression are repressed to ensure visibility.

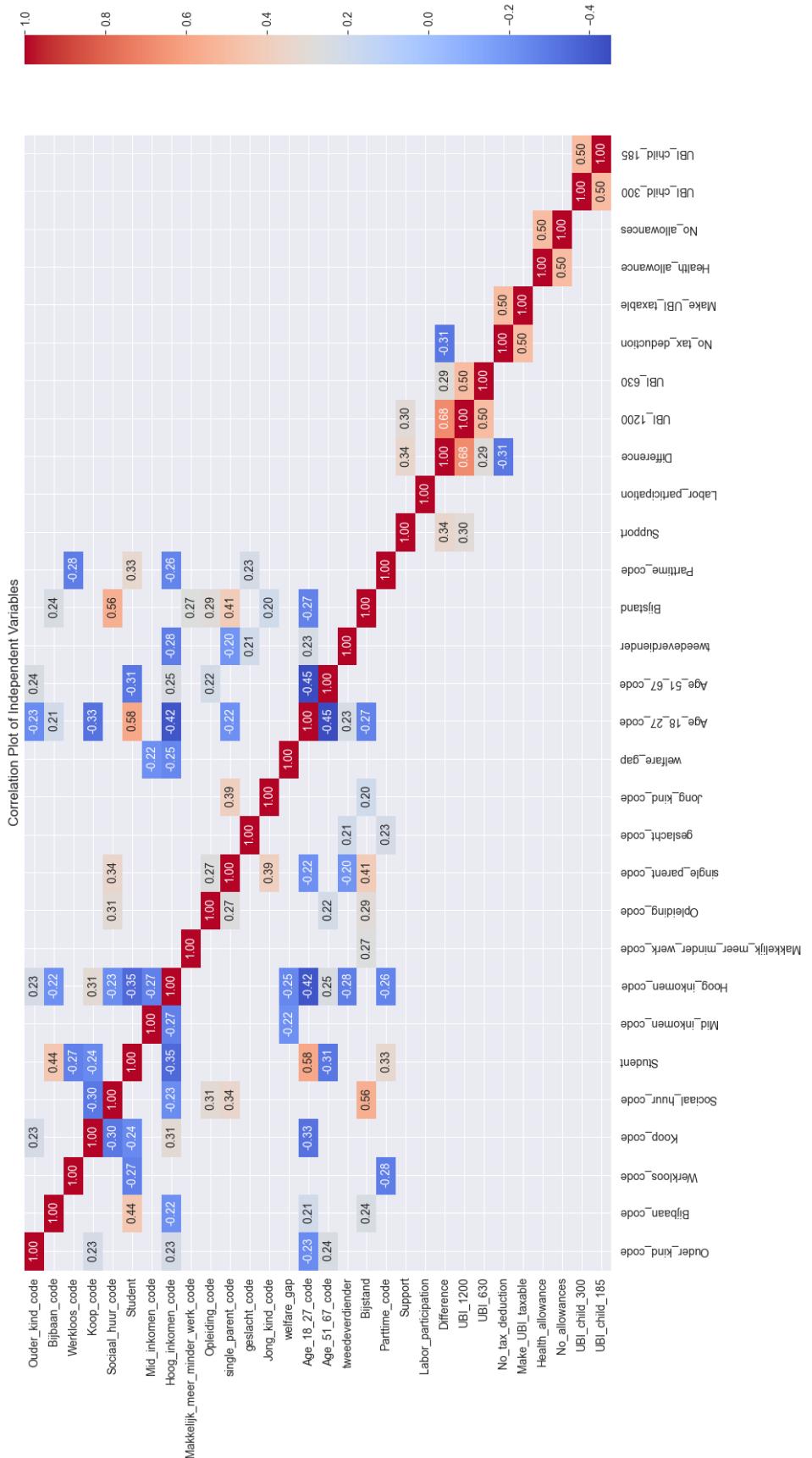


Figure E.1: Correlation between the variable

E.2. Change in labor participation in the Netherlands: An estimate

This is an example calculation of the change in labor participation on average, the low value of the CI, and the high value of the CI. These calculations are based on information from Table 4.6 and 4.5.

Low value of the confidence interval:

The effect of the attributes:

$$1.592 + 0.186 + 0.370 - 1.517 - 0.421 = 0.210$$

This is the sum of all the low values of the confidence interval from Table 4.6.

Demographic effect:

$$\begin{aligned} 0,28 \times (-3,117 + 0,244 \times 0,6 + 0,35 \times -0,154) + \\ 0,12 \times (-3,171 + 0,244 \times 0,36 + 0,55 \times -0,154) + \\ 0,32 \times (-3,555 + 0,0244 \times 0,08 + 0,85 \times -0,154) = -2.410 \end{aligned}$$

This is the percentage each income group has in the population times, in parenthesis the labor decline of the income group corrected for the housing type times the percentage this income group has.

Total change in labor participation:

$$0.210 - 2.410 = -2.20 \text{ hours per week.}$$

High value of the confidence interval:

The effect of the attributes:

$$2,979 + 0,839 + 0,968 - 0,652 + 0,18 = 4.31$$

Demographic effect:

$$\begin{aligned} 0,28 \times (-1,733 + 1,455 \times 0,6 + 0,35 \times 0,927) + \\ 0,12 \times (-1,826 + 1,455 \times 0,36 + 0,55 \times 0,927) + \\ 0,32 \times (-2,095 + 1,455 \times 0,08 + 0,85 \times 0,927) = -0.63 \end{aligned}$$

Total change in labor participation:

$$4.31 - 0.63 = 3.69 \text{ hours per week.}$$

Average change in labor participation

The effect of the attributes:

$$2.286 + 0.513 + 0.669 - 1.085 - 0.120 = 2.26$$

Demographic effect:

$$\begin{aligned} 0,28 \times (-2,425 + 0,85 \times 0,6 + 0,35 \times 0,386) + \\ 0,12 \times (-2,498 + 0,85 \times 0,36 + 0,55 \times 0,386) + \\ 0,32 \times (-2,825 + 0,85 \times 0,08 + 0,85 \times 0,386) = -1.51 \end{aligned}$$

Total change in labor participation:

$$2.263 - 1.513 = 0.75 \text{ hours per week.}$$

E.3. Change in labor participation and support regression tables for the sub groups

Table E.1: Regression table women

	Coef.	Labor Participation CI	Support Coef.	Support CI
Constant	2.3550	[1.344, 3.366]	2.9356	[2.729, 3.142]
No tax deduction	0.9274	[0.466, 1.388]	-0.2141	[-0.308, -0.120]
Make UBI Taxable	-0.3327	[-0.731, 0.066]	0.0892	[0.008, 0.170]
Health allowance	-0.3634	[-0.767, 0.040]	0.0979	[0.016, 0.180]
No allowances	0.8184	[0.420, 1.217]	-0.1421	[-0.223, -0.061]
UBI 1200	-1.2238	[-1.856, -0.591]	0.2418	[0.113, 0.371]
UBI 630	-0.0111	[-0.412, 0.390]	0.0524	[-0.029, 0.134]
UBI child 300	-0.2567	[-0.658, 0.144]	0.1095	[0.028, 0.191]
UBI child 185	0.2507	[-0.154, 0.656]	-0.0547	[-0.137, 0.028]
Welfare gap	-3.4308	[-4.371, -2.491]	0.1790	[-0.013, 0.371]
Mid income code	-2.6049	[-3.478, -1.732]	0.0239	[-0.154, 0.202]
High income code	-3.6374	[-4.643, -2.632]	0.1189	[-0.086, 0.324]
Social housing	0.7202	[-0.167, 1.608]	0.2199	[0.039, 0.401]
Home owners	0.7165	[0.008, 1.425]	-0.1143	[-0.259, 0.030]

Table E.2: Regression result parttime

	Coef.	Labor CI	Support Coef.	Support CI
Constant	2.6377	[1.218, 4.057]	3.7666	[3.469, 4.065]
No tax deduction	0.6683	[0.000, 1.336]	-0.1611	[-0.301, -0.021]
Make UBI Taxable	-0.2116	[-0.702, 0.278]	0.0573	[-0.046, 0.160]
Health allowance	-0.3965	[-0.894, 0.101]	0.0541	[-0.050, 0.158]
No allowances	1.1387	[0.650, 1.627]	-0.1940	[-0.297, -0.091]
UBI 1200	-1.2304	[-2.197, -0.264]	0.2211	[0.018, 0.424]
UBI 630	0.0382	[-0.456, 0.533]	0.1069	[0.003, 0.211]
UBI child 300	-0.2706	[-0.765, 0.224]	0.0753	[-0.029, 0.179]
UBI child 185	-0.0649	[-0.566, 0.436]	-0.0535	[-0.159, 0.052]
Welfare gap	-2.1403	[-3.148, -1.133]	-0.3215	[-0.533, -0.110]
Mid income code	-2.7788	[-3.915, -1.643]	-0.2674	[-0.506, -0.029]
High income code	-2.6910	[-4.394, -0.988]	-0.3352	[-0.693, 0.022]
Social housing	-0.1580	[-1.252, 0.936]	0.0450	[-0.185, 0.275]
Home owners	-0.0831	[-1.062, 0.896]	-0.3604	[-0.566, -0.155]

Table E.3: Regression table single parents

Variable	Labor Participation	Support	Labor Participation CI	Support CI
const	2.5496	0.6395	[-3.785, 8.884]	[-0.549, 1.828]
No_tax_deduction	0.8241	-0.3403	[-0.212, 1.860]	[-0.535, -0.146]
Make_UBI_taxable	0.3295	0.1438	[-0.674, 1.333]	[-0.045, 0.332]
Health_allowance	-0.6512	-0.0634	[-1.658, 0.356]	[-0.252, 0.126]
No_allowances	2.4733	0.0127	[1.470, 3.477]	[-0.176, 0.201]
UBI_1200	-2.2219	0.7491	[-3.400, -1.044]	[0.528, 0.970]
UBI_630	0.4765	0.0930	[-0.530, 1.483]	[-0.096, 0.282]
UBI_child_300	-0.6683	0.2381	[-1.698, 0.362]	[0.045, 0.431]
UBI_child_185	0.4367	0.0776	[-0.572, 1.445]	[-0.112, 0.267]
welfare_gap	-0.7740	0.2109	[-3.823, 2.275]	[-0.361, 0.783]
Mid_inkomen_code	-8.4095	1.6151	[-13.803, -3.016]	[0.603, 2.627]
Hoog_inkomen_code	-8.2569	1.1354	[-12.372, -4.142]	[0.363, 1.908]
Sociaal_huur_code	4.5946	1.0377	[0.003, 9.187]	[0.176, 1.900]
Koop_code	6.2160	0.9133	[0.961, 11.471]	[-0.073, 1.900]

Table E.4: Regression results parent with children younger than 12

	Coef.	Labor CI	Support Coef.	Support CI
Constant	4.4655	[-0.393, 9.324]	2.2097	[1.296, 3.124]
No tax deduction	1.9296	[0.850, 3.009]	-0.3794	[-0.582, -0.176]
Make UBI Taxable	-0.6279	[-1.599, 0.343]	0.0886	[-0.094, 0.271]
Health allowance	-0.6025	[-1.563, 0.358]	0.0469	[-0.134, 0.228]
No allowances	3.2370	[2.277, 4.197]	-0.2266	[-0.407, -0.046]
UBI 1200	-1.8089	[-3.123, -0.495]	0.9517	[0.705, 1.199]
UBI 630	-0.6138	[-1.575, 0.348]	0.1023	[-0.079, 0.283]
UBI child 300	-0.9023	[-1.879, 0.075]	0.3843	[0.201, 0.568]
UBI child 185	1.1124	[0.149, 2.076]	-0.1112	[-0.293, 0.070]
Welfare gap	-9.9385	[-13.242, -6.635]	1.3456	[0.724, 1.967]
Mid income code	6.185e-17	[-1.09e-16, 2.33e-16]	-3.245e-17	[-6.46e-17, -2.97e-19]
High income code	1.076e-16	[-1.54e-16, 3.69e-16]	1.504e-17	[-3.41e-17, 6.42e-17]
Social housing code	-1.3889	[-5.705, 2.928]	0.7222	[-0.090, 1.534]
Ownership code	2.559e-16	[1.46e-16, 3.66e-16]	-1.231e-17	[-3.3e-17, 8.39e-18]

Table E.5: Inhabitants receiving welfare payements

	Coef.	Labor Participation CI	Support Coef.	Support CI
Constant	2.5576	[0.062, 5.053]	3.8389	[3.142, 4.536]
No tax deduction	0.5189	[-0.101, 1.139]	-0.1816	[-0.355, -0.008]
Make UBI Taxable	0.1265	[-0.463, 0.716]	0.1175	[-0.047, 0.282]
Health allowance	0.0670	[-0.526, 0.660]	-0.0717	[-0.237, 0.094]
No allowances	1.1794	[0.590, 1.769]	-0.0323	[-0.197, 0.132]
UBI 1200	-1.2650	[-1.972, -0.559]	0.4848	[0.287, 0.682]
UBI 630	-0.1663	[-0.758, 0.425]	0.0992	[-0.066, 0.264]
UBI child 300	-0.5302	[-1.138, 0.077]	0.1369	[-0.033, 0.307]
UBI child 185	0.1609	[-0.433, 0.755]	-0.0601	[-0.226, 0.106]
Welfare gap	-2.3192	[-3.994, -0.645]	-0.8831	[-1.351, -0.415]
Mid income code	-6.0639	[-8.576, -3.552]	0.6151	[-0.087, 1.317]
High income code	-3.6186	[-5.831, -1.406]	-0.4862	[-1.104, 0.132]
Social housing code	3.4680	[1.641, 5.295]	-1.2794	[-1.790, -0.769]
Home owners	0.5025	[-0.791, 1.796]	-0.5195	[-0.881, -0.158]

Table E.6: Age group 18 to 27

	Coef.	Labor CI	Support Coef.	Support CI
Constant	-0.4766	[-2.464, 1.511]	2.9943	[2.662, 3.327]
No tax deduction	1.0177	[0.048, 1.988]	-0.1313	[-0.293, 0.031]
Make UBI Taxable	-0.3128	[-0.799, 0.173]	0.0860	[0.005, 0.167]
Health allowance	-0.5594	[-1.062, -0.057]	0.0813	[-0.003, 0.165]
No allowances	0.6054	[0.127, 1.084]	-0.1731	[-0.253, -0.093]
UBI 1200	-2.6380	[-4.396, -0.880]	0.0300	[-0.264, 0.324]
UBI 630	0.2600	[-0.238, 0.758]	0.0515	[-0.032, 0.135]
UBI child 300	-0.1334	[-0.612, 0.345]	0.0770	[-0.003, 0.157]
UBI child 185	0.2665	[-0.249, 0.782]	-0.0431	[-0.129, 0.043]
Welfare gap	0.3573	[-1.259, 1.974]	0.0080	[-0.262, 0.278]
Mid income code	-0.5641	[-1.810, 0.682]	0.0501	[-0.158, 0.258]
High income code	-0.6475	[-2.630, 1.336]	0.3693	[0.038, 0.701]
Social housing	0.8154	[-0.218, 1.849]	0.1397	[-0.033, 0.313]
Home owners	-0.1836	[-1.285, 0.917]	-0.1377	[-0.322, 0.046]

Table E.7: Age group 51 to 67

	Coef.	Labor CI	Support Coef.	Support CI
Constant	2.9500	[1.338, 4.562]	2.9769	[2.556, 3.397]
No tax deduction	0.4674	[-0.060, 0.995]	-0.2644	[-0.402, -0.127]
Make UBI Taxable	-0.0422	[-0.563, 0.479]	0.1145	[-0.021, 0.250]
Health allowance	-0.0197	[-0.543, 0.504]	0.0796	[-0.057, 0.216]
No allowances	0.5890	[0.069, 1.109]	-0.0672	[-0.203, 0.068]
UBI 1200	-0.9296	[-1.570, -0.289]	0.3629	[0.196, 0.530]
UBI 630	0.2695	[-0.251, 0.790]	0.0846	[-0.051, 0.220]
UBI child 300	0.0120	[-0.508, 0.533]	0.0975	[-0.038, 0.233]
UBI child 185	0.1909	[-0.333, 0.715]	-0.0399	[-0.177, 0.097]
Welfare gap	-3.6993	[-5.048, -2.350]	0.3212	[-0.031, 0.673]
Mid income code	-3.5034	[-5.087, -1.920]	-0.0271	[-0.440, 0.386]
High income code	-3.3399	[-4.817, -1.863]	-0.1146	[-0.500, 0.271]
Social housing code	-0.4752	[-1.737, 0.787]	0.6467	[0.317, 0.976]
Home owners	0.3814	[-0.563, 1.326]	0.1114	[-0.135, 0.358]

E.4. What will inhabitants do with UBI?

E.4.1. Resign for their jobs

Total sum of square (X)	Degrees of Freedom	Significance p>t
12,99	6	0.043

Table E.8: Chi-square test to verify if the difference in observation on resigning jobs between High- and Mid-UBI policies is statistically significant

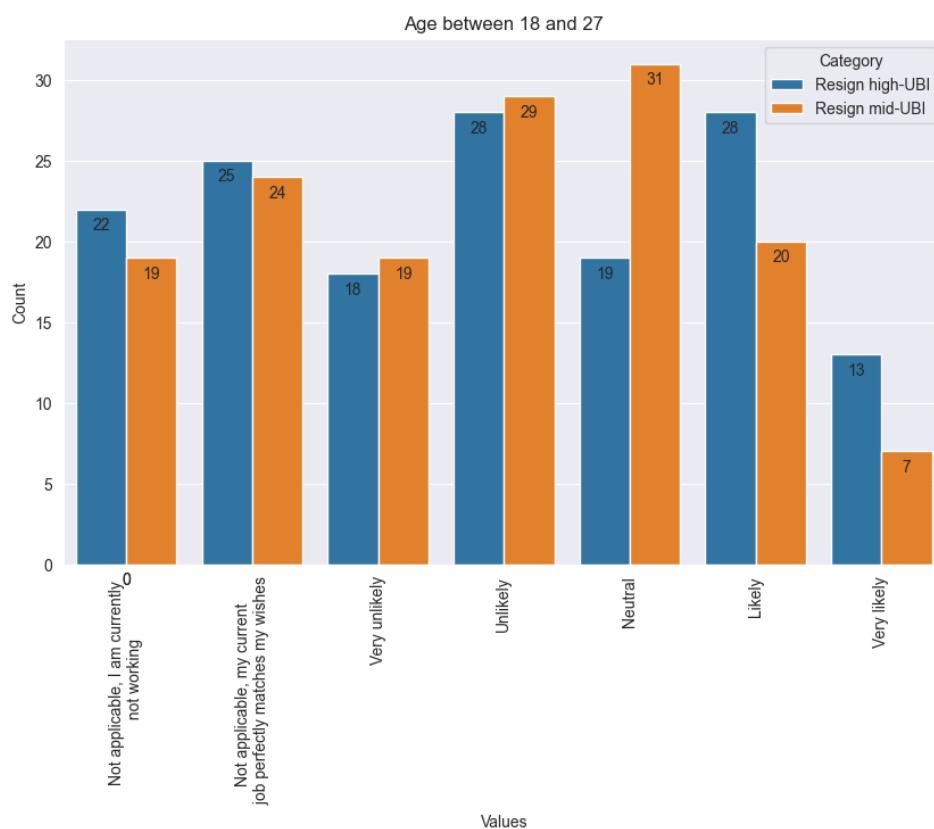


Figure E.2: Distribution of young that would resign their job under a high-UBI policy

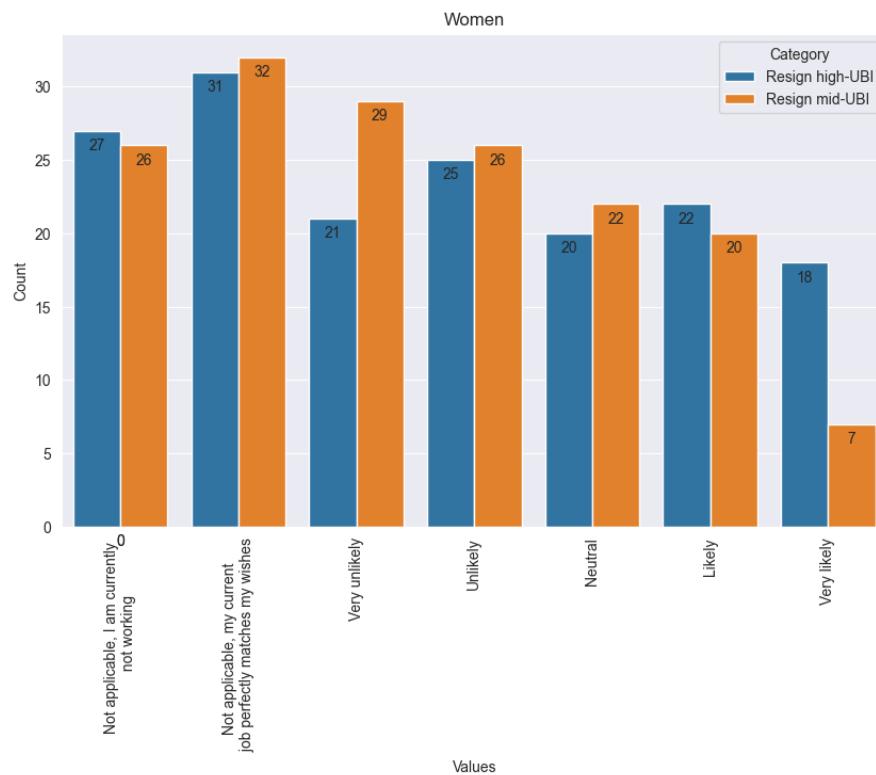


Figure E.3: Distribution of women that would resign their job under a high-UBI policy

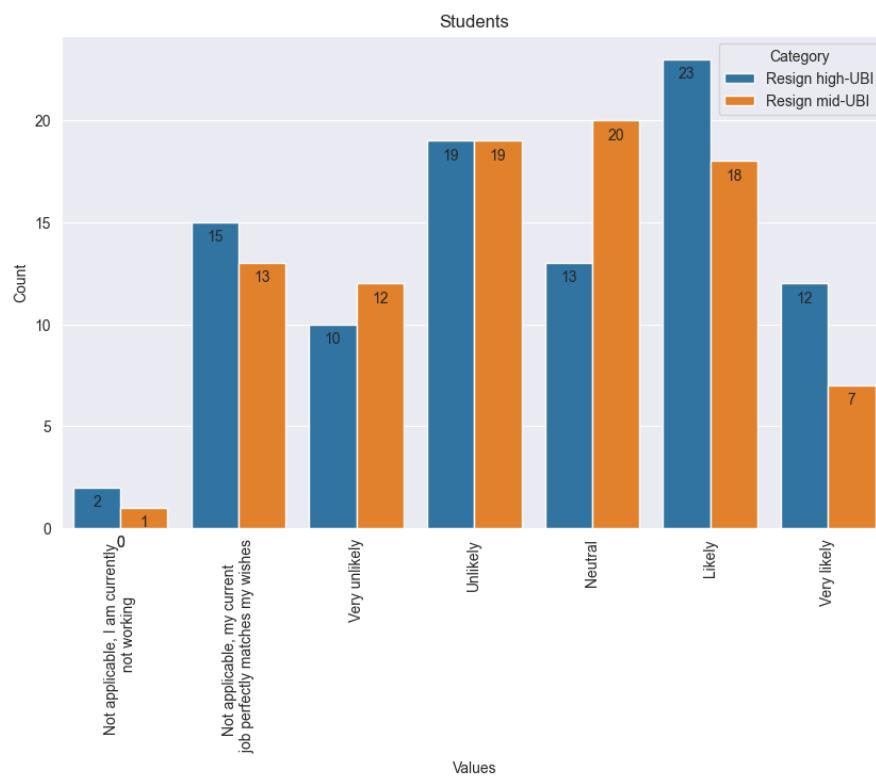


Figure E.4: Distribution of students that would resign their job under a high-UBI policy

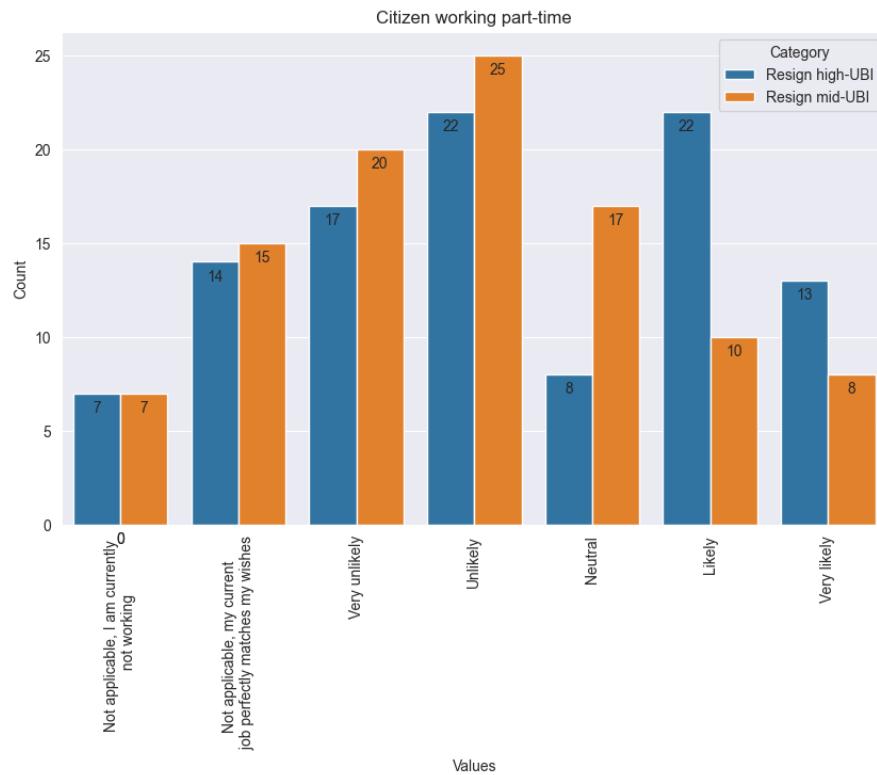


Figure E.5: Distribution of part-time workers that would resign their job under a high-UBI policy

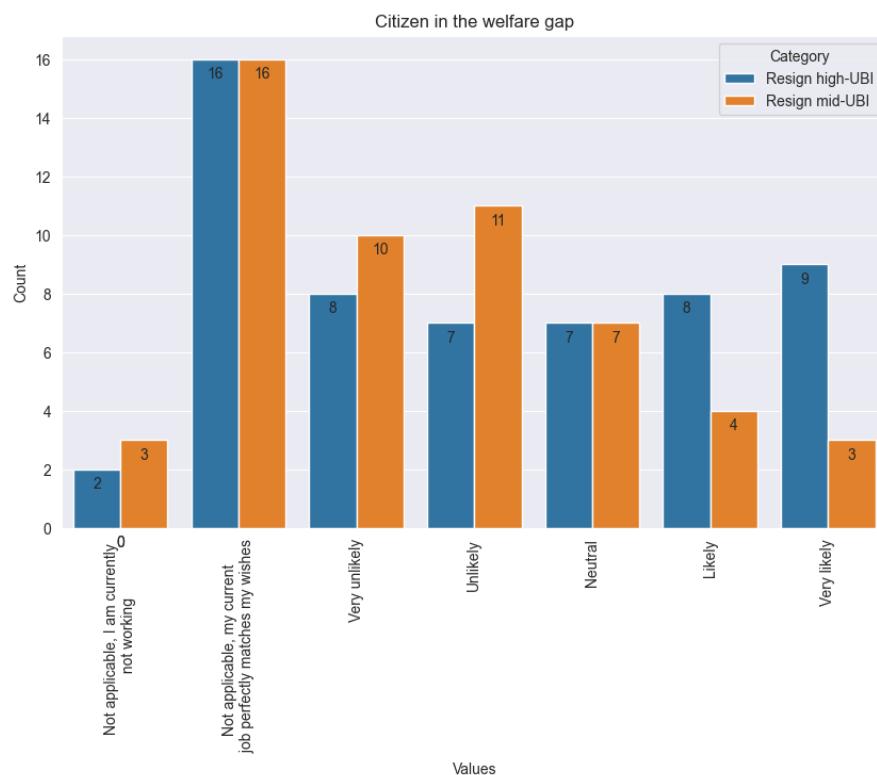


Figure E.6: Distribution of citizen in the welfare gap that would resign their job under a high-UBI policy

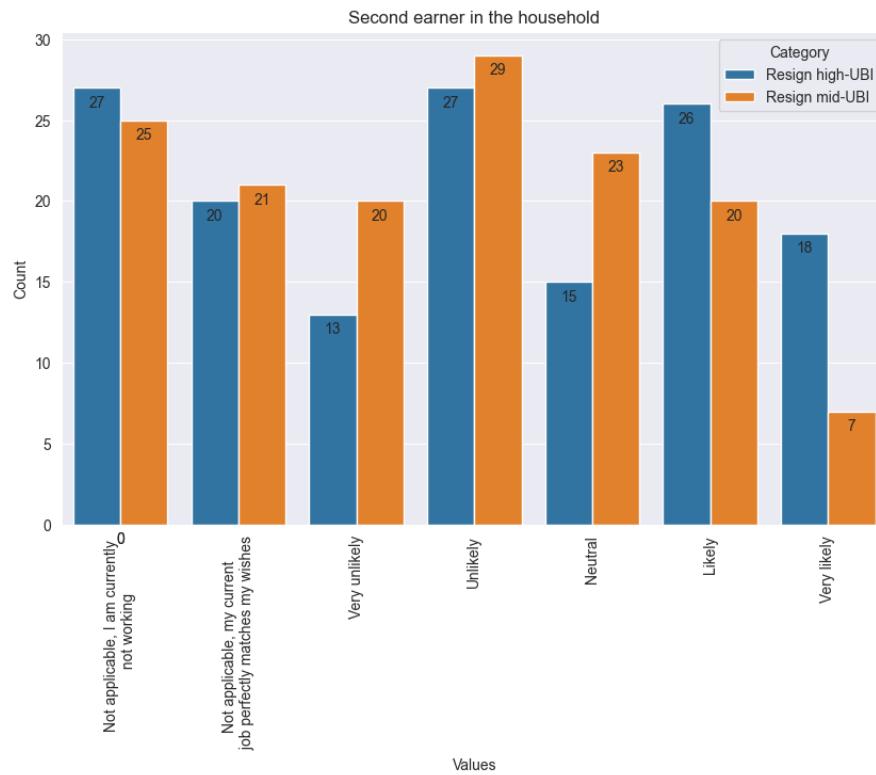


Figure E.7: Distribution of second earners that would resign their job under a high-UBI policy

E.4.2. Overview of the response

Total sum of square (X)	Degrees of freedom	P-value P>t
6.287	12	0.901

Table E.9: Chi-square test to verify if the difference in observation on what people will do with High- and Mid-UBI policies is statistically significant



Figure E.8: Percentage of what will people do per category

E.5. Political support

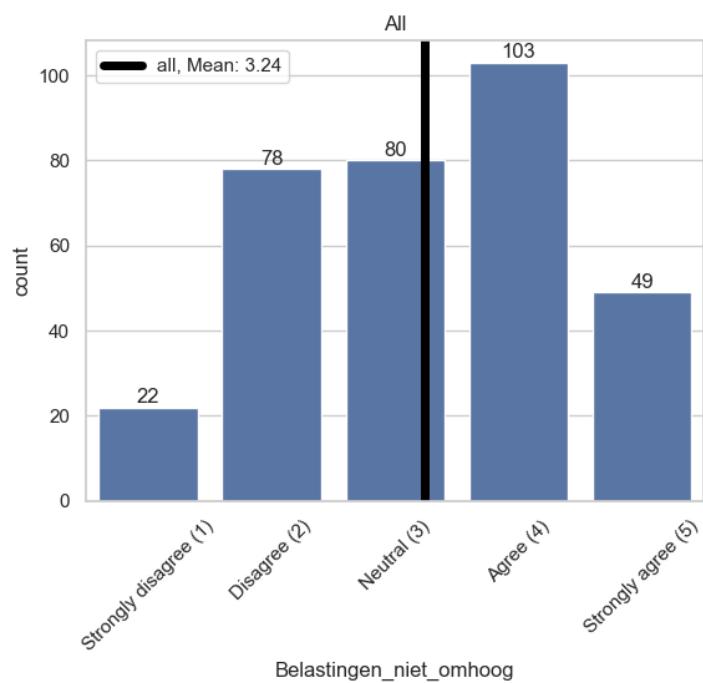


Figure E.9: The government should not increase tax to finance UBI

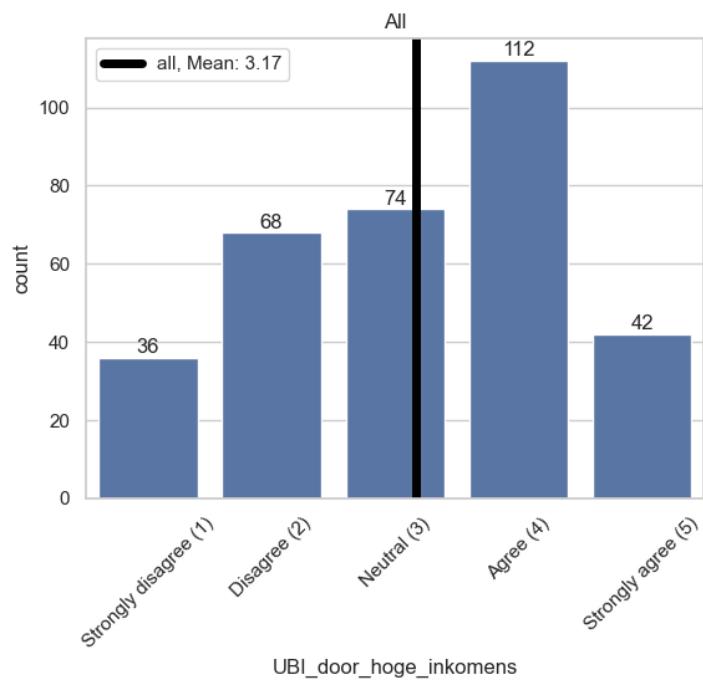


Figure E.10: UBI should be paid by the highest earners

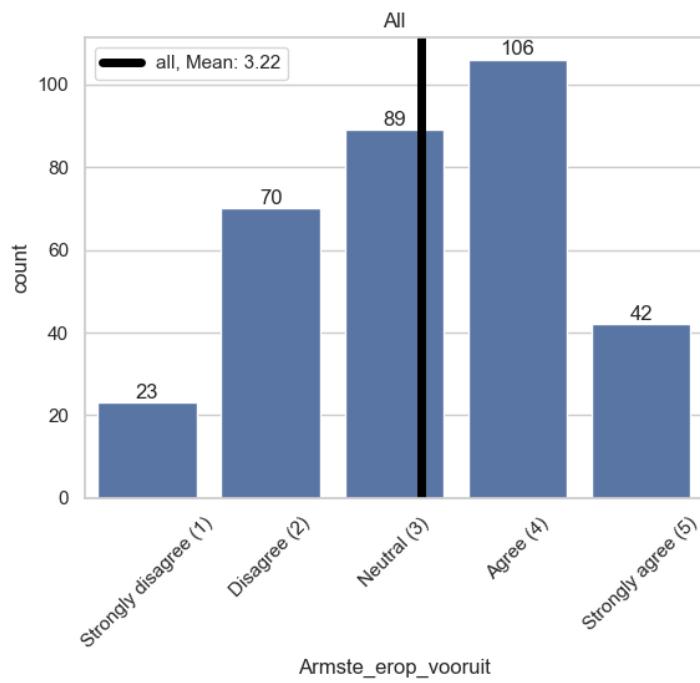


Figure E.11: The poorest members in society should benefit from UBI

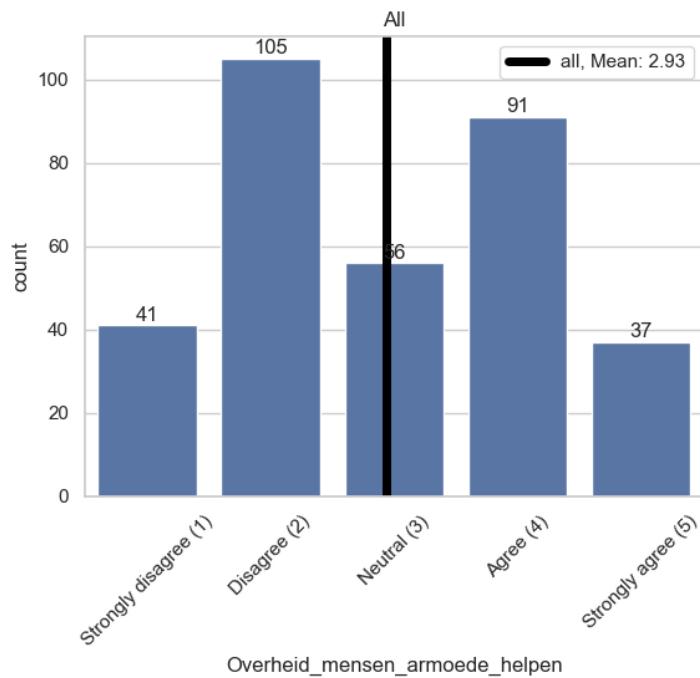


Figure E.12: The government should help the poorest members in society

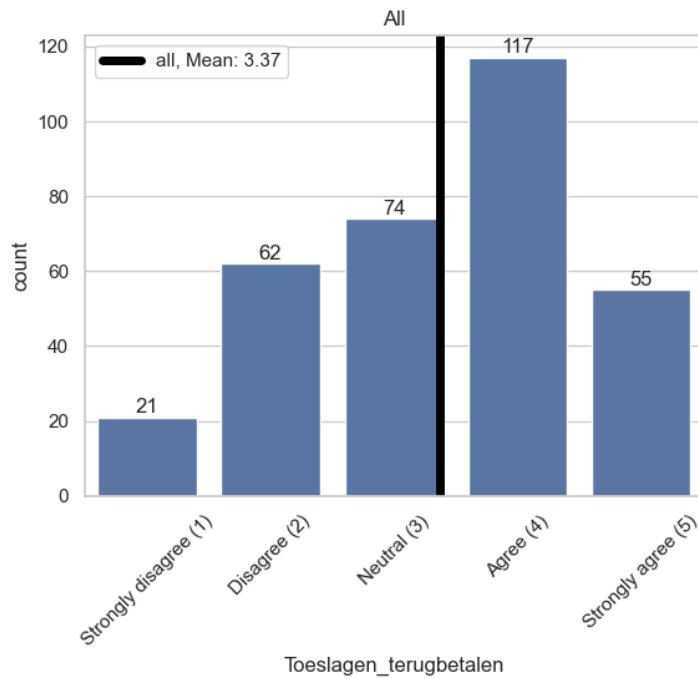


Figure E.13: You should not have to pay your allowance back if you have earned over the limit

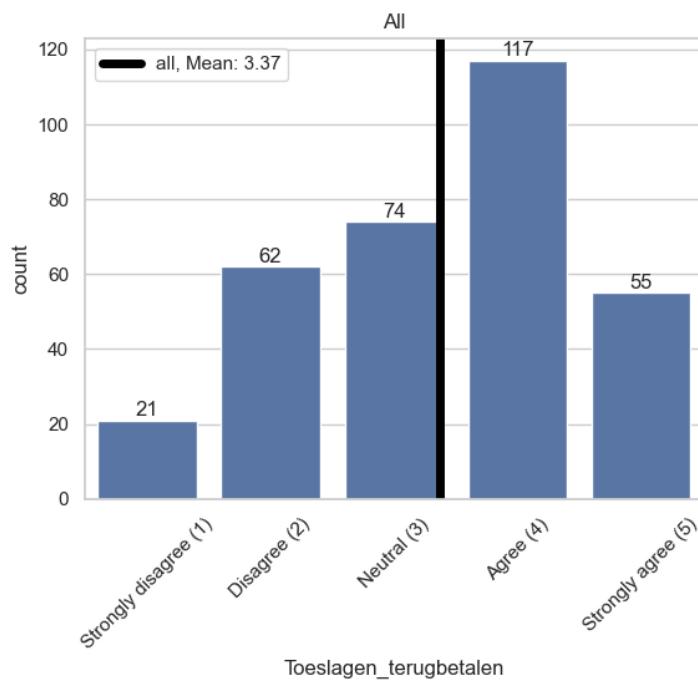


Figure E.14: You should not have to pay your welfare payments back if you have earned over the limit

A positive t-value indicates that the mean in the population is higher than in the group of interest. Conversely, if the t-value is negative, it indicates that the mean value of all respondents is lower than the sample mean of the group of interest, suggesting that the group values the question more than the population does.

Table E.10: Results of t-tests

Survey question	t-statistic	p-value	Study group
Taxes not increased	1.98498	0.0479247	Single parent
Taxes not increased	2.90208	0.00393707	Receiving welfare payments
Taxes not increased	2.18557	0.029429	Social housing tenant
Taxes not increased	-2.34352	0.019565	Students
UBI has to be financed by the highest incomes	-2.17365	0.0303992	Single parent
UBI has to be financed by the highest incomes	-2.36377	0.0186375	Children between 6 and 12 years old
UBI has to be financed by the highest incomes	-4.25549	2.66884e-05	Citizen receiving welfare payments
UBI has to be financed by the highest incomes	-2.24763	0.0251014	Age between 28 and 50
UBI has to be financed by the highest incomes	2.89431	0.00400384	High income
UBI has to be financed by the highest incomes	-3.74566	0.000206491	Social housing tenant
UBI has to be financed by the highest incomes	2.20435	0.0280373	Students
UBI has to be financed by the highest incomes	-2.75792	0.00607218	Low educated
UBI should replace the allowances	2.94293	0.00346747	Single parent
UBI should replace the allowances	4.47469	1.0062e-05	Household with children
UBI should replace the allowances	-3.36473	0.000851119	Children younger than 6
UBI should replace the allowances	-2.33069	0.020339	Children between 6 and 12 years old
UBI should replace the allowances	-2.33437	0.0201416	Children older than 12 years old
UBI should replace the allowances	-4.04166	6.5037e-05	Receiving welfare payments
UBI should replace the allowances	3.32698	0.000944871	Age between 18 and 27
UBI should replace the allowances	-3.08511	0.00217435	Age between 51 and 68
UBI should replace the allowances	2.976	0.00308785	Students
UBI should replace the welfare payments	2.33461	0.0201288	Single parent
UBI should replace the welfare payments	-4.49907	9.25387e-06	Receiving welfare payments
UBI should replace the welfare payments	-2.50367	0.0126928	Social housing tenant
UBI should replace the welfare payments	2.23302	0.0260725	Students
UBI should not worsen my personal financial situation	-2.42123	0.0159704	Receiving welfare payments
The poorest members in society should be favored	2.18743	0.0292486	Working part-time
The poorest members in society should be favored	-3.06866	0.00231556	Receiving welfare payments
The poorest members in society should be favored	2.11955	0.0345563	Age between 18 and 27
The poorest members in society should be favored	3.25158	0.0012402	Students
UBI should be high enough to live from	-2.65793	0.00818644	Jobless
UBI should be high enough to live from	-2.99561	0.00293478	Single parent
UBI should be high enough to live from	-4.97636	1.01203e-06	Receiving welfare payments
UBI should be high enough to live from	-3.21778	0.00139821	Social housing tenant
UBI should be high enough to live from	2.19985	0.0283614	Students
The government should help the poorest	-2.28325	0.0229546	Jobless
The government should help the poorest	-2.79273	0.00551461	Single parent
The government should help the poorest	-4.09733	5.18218e-05	Receiving welfare payments
The government should help the poorest	-2.02876	0.0431393	Age between 51 and 68
The government should help the poorest	-3.04437	0.0024874	Social housing tenant
The government should help the poorest	2.48796	0.0132347	Students
The government should help the poorest	-2.04125	0.0418565	Low educated
No payback of allowances	-2.23596	0.0259552	Citizens with a side job
No payback of allowances	-3.70105	0.000249512	Single parent
No payback of allowances	-2.11925	0.0347088	Household with children
No payback of allowances	-2.54999	0.0112017	Children younger than 6
No payback of allowances	-6.44827	3.71132e-10	Receiving welfare payments
No payback of allowances	-2.14962	0.0321058	Low income
No payback of allowances	2.82164	0.00501427	High income
No payback of allowances	-3.40813	0.000721365	Social housing tenant
No payback of welfare payments	-2.6216	0.00911498	Citizens with a side job
No payback of welfare payments	-3.24237	0.0012997	Single parent
No payback of welfare payments	-7.52662	4.33177e-13	Receiving welfare payments
No payback of welfare payments	-2.93443	0.0035084	Low income
No payback of welfare payments	2.25769	0.0245275	Inhabitants in the welfare cliff
No payback of welfare payments	2.51268	0.0123695	High income
No payback of welfare payments	-3.05979	0.00236563	Social housing tenant