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Generosity's double-edged sword: Unmasking the impact of raised social assistance rates in Norway

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Abstract

As long as welfare arrangements have been in existence, there has been a strong belief that high-benefit generosity leads to welfare reliance. In this study, we investigate whether an increase in welfare generosity in Norway resulted in higher social assistance (SA) uptake and decreased engagement in paid work. By utilizing high-quality administrative data and employing a difference-in-difference design, we find no overall effects on SA or work activity. However, we do observe a significant reduction in work activity and an increase in SA for specific predefined high-risk groups, which are believed to be particularly responsive to financial incentives. Thus, we discover evidence of unfavorable effects for child families, non-Western immigrants, and the combined group of non-Western immigrant child families. These latter findings are interpreted in light of the particular socioeconomic circumstances of these groups.

KEYWORDS

administrative data, causal identification, difference-in-difference, natural experiment, Social assistance reliance, Welfare generosity

INTRODUCTION

As long as welfare arrangements have been in existence, there has been a strong belief that high-benefit generosity leads to welfare reliance, that is, that more poor people choose welfare, stay longer on welfare, and reduce their work activity (Murray, 1984). A considerable body of evidence is waged in support of this view, but there is also counterevidence and alternative interpretations, as discussed below, indicating that the issue is not settled once and for all.

The aim of this study is to uncover whether the increase in benefit rates in the city of Bergen, Western Norway, had such consequences for social assistance (SA) receipt. Utilizing a difference-in-difference (DID) approach, we compare Bergen with nine large or medium-sized cities in Norway to scrutinize whether the reform led to increased SA uptake, SA duration, and reduced engagement in paid work. Treatment effects are estimated for the general population of Bergen, as well as for selected, specific high-risk subpopulations identified as particularly responsive to financial incentives through the literature review. For the analyses, we use longitudinal administrative population data containing detailed

Abbreviations: ATET, Average treatment effect on the treated; CEM, Coarsened exact matching; DID, Difference-in-difference; LITSQED, Longitudinal Interrupted Time Series Quasi-Experimental Design; NAV, Norwegian Labour and Welfare Administration; NOK, Norwegian Kroner; RMI, Revenu Minimum d'Insertion; SA, Social assistance; SIFO, Consumption Research Norway.

information on a wide range of socioeconomic characteristics, as well as labor market and welfare state transitions.

BACKGROUND AND CONTEXT

Bergen, Norway's second-largest city, is the case of interest for this study. Bergen boasts a population of around 280,000. Situated on the west coast, the city's economy traditionally revolved around maritime activities, with a bustling port and a significant fishing industry. More recently, Bergen has diversified into technology, startups, and renewable energy. Bergen is also a regional hub for higher education, with several academic institutions attracting students and scholars from around the world.

On March 1, 2020, Bergen abandoned the state-recommended SA benefit rates and introduced independent and higher benefit rates. These new rates were inspired by the "Reference Budget for Consumer Expenditures" developed by Consumption Research Norway (SIFO). Thus, while the state-recommended monthly rates increased from 6150 Norwegian Kroner (NOK) (≈ $700) in 2019 to 6250 NOK (≈ $710) in 2020 and 6450 NOK (≈ $733) in 2021, the Bergen rates increased to 7150 NOK (≈ $813) in 2020 and 7580 NOK (≈ $861) in 2021.

In 2020, the Bergen municipality's Department for Social Services prepared an evaluation report on the potential consequences of the benefit hike. The report assessed the arguments for and against higher benefit generosity and issued several warnings. The key message is conveyed in the following quote:

> ..., it may mean that some residents of Bergen will choose to remain outside the workforce as the new level of SA may be comparable to the income they can expect from paid employment. SA may become more attractive and reduce motivation for self-support. This can particularly apply to those who face significant barriers to entering regular employment (Bergen kommune, 2020, pp. 20–21).

The report cautioned that increasing rates would lead to a doubling in the number of SA recipients in Bergen. Specifically, the Department warned that more people might claim SA as additional recipients of social security and other benefits become eligible for supplemental SA benefits, leading to increased duration of SA receipt and potentially increased immigration from neighboring municipalities due to higher benefit levels in Bergen compared to elsewhere (Bergen kommune, 2020). Particularly, households with multiple children were identified as a subgroup for whom the new rates would provide strong financial incentives to opt for SA and longer durations of SA receipt. It is noteworthy that combating child poverty was a major motivation for the city council in developing new and higher SA benefit rates.

In this article, utilizing a causal identification strategy, we address issues related to the uptake and duration of SA receipt, engagement in paid work, and how selected sensitive subgroups respond to the increase in SA benefits in the city of Bergen.

THEORETICAL CONSIDERATIONS

Concerns about SA reliance were a significant factor in the resistance against the benefit reform in Bergen municipality. These concerns are not unfounded, as there is a general consensus among labor economists regarding the impact of financial incentives on people's decisions (Immervoll, 2012). Most labor economists agree that generous social insurance weakens the economic incentives for job search and work participation (Bratsberg et al., 2020). Numerous studies have shown that more generous benefits often lead to longer periods of unemployment for individuals. This holds true for changes in benefit levels (replacement rates) as well as benefit durations. Countries with more generous unemployment compensation, such as the Nordic countries, frequently find stronger incentive effects of changes in benefit generosity (Bargain et al., 2012).

The discourse surrounding social policy often revolves around the concept of SA (or welfare) reliance, suggesting that generous benefits attract more vulnerable individuals to rely on SA for extended periods. But extended duration can be attributed to two very different sets of mechanisms (Immervoll et al., 2015). The first is "spurious" in the sense that it stems from unobserved characteristics (selection bias) among the SA population. For example, a Swedish study on duration dependence in SA by Mood (2013) found that the risk of remaining on SA is higher for longer durations, but approximately half of this risk difference is attributable to selection bias.

The second set is related to genuine processes generating state dependence. This conceptualization denotes processes like deteriorating skills, declining health, or changes in attitudes. Attitudinal changes can manifest as a dysfunctional "benefits culture" that fosters reliance and irresponsibility. Alternatively, generous benefits can create a moral hazard, making it rational for individuals to choose SA overwork due to the attractiveness of welfare benefits compared to expected wages (Murray, 1984).

An extensive international literature review by Immervoll et al. (2015) supports the existence of both genuine and spurious state dependence within means-tested SA. The "dependency thesis" has led to significant changes in the welfare architecture of several Western countries, including the introduction of time limits, stricter behavioral requirements, conditionalities, and sanctions (Clasen et al., 2007; Dwyer, 2016; Mead, 1997).

As indicated, several mechanisms may explain high take-up and genuine long-duration welfare benefits. The job search model is of particular interest here as it enables us to formulate hypotheses on how particular sensitive, vulnerable, or "high-risk" groups might change their behavior. The job search model is based on rational choice theory that focuses on the reservation wage (Bane & Ellwood, 1994; Schels & Bethmann, 2018). Under this model, benefit recipients are expected to take a job only if they are expecting a net income at or above the level of benefits. International research has demonstrated an impact of reservation wage on labor market outcomes such as return to work (see, e.g., Fuchs et al., 2022 for a review). Different disadvantaged groups will have different reservation wages due to different distances between expected earnings, which often come from the low-income sector, and benefit levels. In 2020, SA recipients in Bergen with children were entitled to 2900–4500 NOK (≈ $308–$477) per child per month, depending on their age, on top of the basic SA benefit. Thus, in Bergen, people with children are likely to have a shorter distance between benefit levels and expected earnings and, hence, be less motivated to accept a low-paid job. Since women on average earn less than men (Penner et al., 2023), and immigrants on average earn less than the majority population (Bratsberg et al., 2020), one may further reason that women and non-Western immigrants will be less motivated to take a job than men and persons belonging to the majority population, respectively (Immervoll, 2012). It is also reasonable to expect gender-specific intersectional effects, for example, that being a non-Western woman will increase time on SA, or being a woman with children will have strong negative effects on the likelihood to return to work (Schels & Bethmann, 2018).

PREVIOUS RESEARCH

Several recent international studies have employed quasi-experimental causal identification strategies to investigate the impact of benefit levels on recipients' behavior in terms of SA use and labor market activity.

A study by Aedin et al. (2017) analyzed administrative data from Ireland to examine the effect of a 50% benefit cut for young unemployed workers during the Great Recession. They found no impact on unemployment duration for individuals aged 20–21, but the benefit cut significantly reduced duration among 18-year olds, indicating that younger age groups are more sensitive to these incentives.

Riphahn and Wunder (2016) investigated state dependence on welfare receipt in Germany after a welfare reform that introduced changes to unemployment insurance and minimum income protection schemes. The reform aimed to strengthen work incentives and activate job search requirements. Their findings revealed changes in welfare transitions, with an increased likelihood of transitioning from welfare to employment and decreased persistence in welfare and inactivity. Immigrants also exhibited greater responsiveness to the labor market situation after the reform.

Lemieux and Milligan (2008) focused on single childless men in Canada and compared their behavior before and after a change in benefit levels in Quebec. Higher SA benefits were found to reduce the employment rate among single men by at least three percentage points.

Fortin et al. (2004) conducted a study in Canada examining the impact of benefit levels on welfare duration for various groups of single claimants. They utilized information on a reform of the SA program in Quebec and found that the benefit increase significantly lengthened the average spell duration for both men and women in the 22–29 age group, indicating a significant incentive effect.

Bargain and Doorley (2011) studied the minimum income benefit (Revenu Minimum d'Insertion [RMI]) in France, which was accused of creating strong disincentives to work. Using a regression discontinuity analysis, they found that the RMI reduced the participation of uneducated single men by 7%–10% at age 25.

Palviainen (2023) explored the impact of an earnings disregard experiment introduced by the Finnish government in 2002 to improve the incentives for low-income individuals receiving SA. The study found no overall employment effects but identified some positive employment effects among women.

While comparable studies on the generosity of SA in Norway are limited, there have been relevant studies conducted on other social welfare benefits. For instance, a study on immigrant response to a Norwegian temporary disability insurance program indicated that immigrants, particularly from low-income countries, exhibited greater sensitivity to social insurance generosity compared to natives (Bratsberg et al., 2020). The benefit level was found to have a negative influence on the transition rate to regular employment for both natives and immigrants, with larger behavioral responses observed among immigrants.

Drange and Jakobsson (2019) examined the impact of a Norwegian policy that provides higher benefits to active labor market participants when they reach 19 years of age. The study found no significant effect on program take-up or employment rates.

It is important to note that the target groups and treatments varied among these studies. Recipients of disability benefits differ from those receiving unemployment benefits or SA. Subgroups within eligible claimants may also respond differently to treatment based on factors such as gender, age, parental status, and skill levels. Contextual factors, such as business cycles, labor market structure and regulations, income distribution, the presence of alternative benefits, and the enforcement of behavioral requirements and sanctions, also influence the results. In addition, the choice of labor market outcomes varies across studies, with most focusing on indicators of labor supply, such as employment rates or earnings. Finally, while most research interprets findings in terms of individual behavior responsive to economic incentives, some studies argue that differences in social and economic circumstances contribute to the observed variations in benefit sensitivity among certain groups (Bratsberg et al., 2020).

HYPOTHESES

Dependency theory, job search theory, established research findings, and arguments put forward by the Social administration in Bergen give rise to the formulation of three sets of hypotheses:

Hypothesis 1. As a result of the benefit hike in Bergen, we will observe a general increase in the number of social assistance recipients, longer duration of social assistance, higher monthly benefit payments, and a general decrease in employment, fewer work months, and lower earnings.

Hypothesis 2. These effects will be more pronounced among specific subgroups such as women, people with small children, non-Western immigrants, and non-Western immigrants with children.

Hypothesis 3. We hypothesize that the effects will be particularly strong where gender intersects with subgroup status, that is, among females with children, non-Western females, and non-Western females with children.

DATA AND METHODOLOGICAL DESIGN

Data

We utilize administrative longitudinal data collected by Statistics Norway, covering the period from 2015 to 2021. These data contain detailed information for the entire Norwegian population across various important aspects of life. In this study, we utilize data on SA, work, income, education, family status, and a range of individual and socioeconomic characteristics. We follow our study population for 5 years before the intervention, while the post-intervention follow-up period is 1 or 2 years, depending on the outcome. Further details are provided below. The data is organized in annual panels and includes individuals aged 18–67 in all years present in the treatment and control municipalities. The age of 18 represents the youngest age at which individuals qualify for SA, while 67 is the formal retirement age in Norway.

Study population

Our primary treatment group consists of inhabitants of Bergen aged 18–67 in 2020. The comparison group comprises nine of the largest cities in Norway. Trondheim, the third largest city in Norway, experienced a similar increase in rates the year after Bergen and is therefore not included in the comparison group. Figure 1 illustrates the hike in the replacement rate, comparing the benefit rate for Bergen with each of its control cities.

Figure 1 illustrates that none of the cities in the comparison group experienced a similar increase in benefit rates as observed in Bergen. Oslo had the most generous benefit rate overall until Bergen caught up and surpassed it in 2021. The historically high benefit rate in Oslo reflects the cost of living in the capital city. According to the National Organization for House Owners, the cost of living in Oslo was more than 60% higher than the national average in 2021 (https://www.huseierne.no/huseiernes-bokostnadsindeks/). Bergen comes in second, approximately 20% above the national average, while the remaining control cities are concentrated between Bergen and the national average.

All involved cities experienced more or less the same development in unemployment over time (Figure 2). Perhaps the only deviation here is Stavanger, whose oil-fueled economy experienced increasing unemployment following the drop in oil prices in 2016. Even so, we chose to follow professional conventions by not "cherry-picking" comparison groups post hoc.

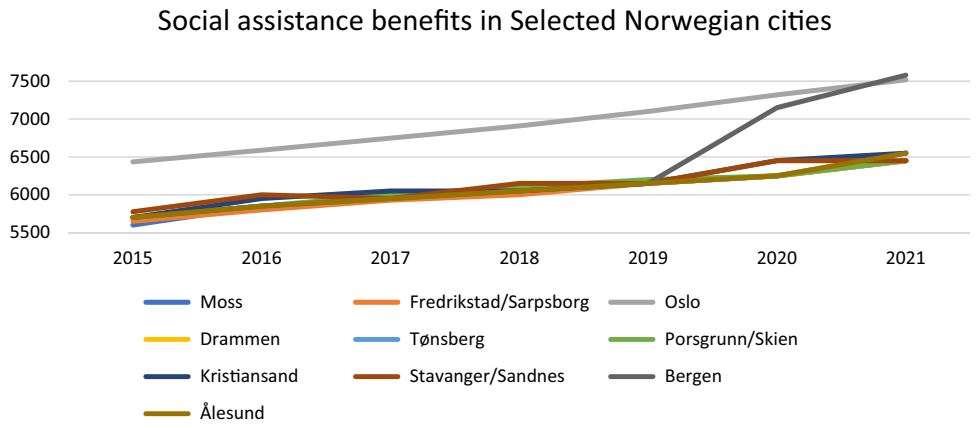

FIGURE 1 Changes in benefit rates (NOK) in Bergen and in control cities. Rates per month for a single childless person. In 2021, $1 corresponded to 8.6 NOK. *Source*: Statistics Norway.

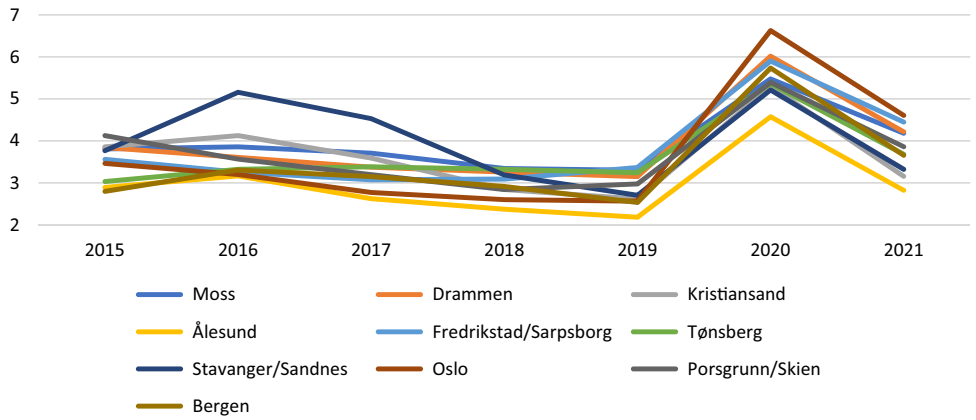

FIGURE 2 Unemployment level in Bergen and control cities. Unemployment levels in %. *Source*: Statistics Norway.

In accordance with the theoretical expectations, we have identified three additional "high-risk" populations for analysis. The objective is to examine whether certain groups are more susceptible to the potential effects of the reform. To facilitate this analysis, we employ a triple-difference approach, as described in the methodology section.

According to the city council of Bergen, child families were given priority when implementing the resolution to increase benefit rates. Consequently, child families benefit from a relatively more generous SA rate compared to other groups. Therefore, we consider individuals with two or more children in the household as one of the high-risk populations for analysis.

Furthermore, based on the literature review, non-Western immigrants were found to be particularly responsive to increases in benefit rates for a Norwegian temporary disability benefit (Bratsberg et al., 2020), albeit not directly comparable to SA. We assume that the same mechanism applies to SA, and thus, we define non-Western immigrants as the second high-risk population.

The final high-risk group consists of the combined category of non-Western immigrants with two or more children.

Methodological design

The overriding problem in the literature on the effects of benefit rates on SA uptake is a lack of independent variation in benefit payments or replacement ratios, allowing causal identification. Thus, in the Norwegian context, there is very little empirical knowledge on the importance of economic incentives in SA since there has been little within-municipality variation in replacement rates over time.

This study capitalizes on a significant change in the replacement rate of SA in Bergen, the second-largest city in Norway. To identify the causal effects, we employ a

Longitudinal Interrupted Time Series Quasi-Experimental Design (LITSQED), which is a form of DID estimation. The LITSQED approach is considered one of the strongest non-experimental designs available (Leatherdale, 2019). This approach is very data demanding and requires pre-intervention observations, as well as post-intervention observations for the intervention group as well as comparable observations in the comparison group. The pre-intervention measures are used to determine whether intervention and control groups experienced differences in their pre-intervention trajectories, while the post-intervention measures are used to compare the outcome in the intervention group relative to the control group. The case of Bergen is ideal for such a study design since there is a natural variation in the replacement rate over time as well as between the cities.

We used DID and triple-difference designs to estimate the effects of the hike in SA rates. DID estimates the average treatment effect on the treated group (ATET). In this case, we estimate the average effect of being exposed to increased SA rates in Bergen in 2020. Exposure is estimated for the broad group of citizens in Bergen as well as for several groups that have been defined as particularly sensitive to financial incentives in the literature review and by Bergen municipality. These latter effects are investigated by using triple-difference estimators.

The DID framework is based on two differences. For the first step, one computes the difference in outcome before and after treatment for both the controls and the treatment groups. The next step calculates the difference in mean outcome for the treatment and control groups. This second difference, given some restrictions (presented in more detail below), provides unbiased estimates of the effect of interest. The triple-difference estimator is computed as the difference between two DID estimators. In our case, the differences between the broad group of inhabitants in Bergen and controls as well as the difference between the particularly sensitive groups in Bergen and their respective controls.

Given the longitudinal format and repeated observations on each individual, we specify a fixed effects panel data model for the DID analyses. The fixed effects DID model is given by

$$Y_{ict} = \alpha_i + \Upsilon_t + D_{ct}\delta + \varepsilon_{ict}. \quad (1)$$

Here, Y_{ict} represents the dependent variable for individual i at time t. We have defined six dependent variables, three related to benefit receipt and three pertaining to ordinary paid employment. Thus, Y here represents annual SA specified as a binary variable, annual SA months, and average SA payment per month (ln transformed), work specified as a binary variable, annual work months, and annual earnings from work (ln transformed). t Ranges from the year 2015 to 2021 (2020 for work income), where 2020 is the year of intervention. Thus, we follow individuals for 5 years before the intervention and 1 or 2 years after the intervention. The group-level variable c denotes the city of residence. α_i are the individual fixed effects, Υ_t are time-fixed effects, and e is the error term. D_{ct} denotes exposure to intervention that varies over time and city level.

The fixed effects triple-difference model is given by

$$y_{icst} = \alpha_i + \Upsilon_t + \Upsilon_t\Upsilon_c + \Upsilon_t\Upsilon_s + D_{ct}\delta + \varepsilon_{icst}. \quad (2)$$

In addition to the elements in (1), the triple-difference model in (2) incorporates the interactions of the group-level variables and time. Thus, the city of residence c interacts with time t, as well as the high risk of SA group-variable s with time t.

To obtain unbiased estimates, two assumptions must hold. The first assumption is that there are parallel trends between the control and treatment groups before the intervention, ensuring that the effects are not driven by trends unrelated to the intervention. The second assumption is that the parallel development would have been the same even if the intervention had not occurred. While the first assumption can be tested, the second assumption cannot. The triple-difference estimator does not require two parallel trend assumptions for a causal interpretation (Olden & Møen, 2020).

Figures A1–A6 present pooled and gender-specific trend plots used to assess the parallel trends assumption for all six dependent variables. These plots incorporate interactions between time and a treatment indicator in the DID model and calculate predicted values for both groups. The vertical lines indicate the time period 1 year before the treatment. In addition, F-tests with corresponding p values of parallel trends are included below each plot. Based on these F-tests, the null hypotheses of parallel trends were rejected for several outcomes, indicating that the results may have been influenced by trends unrelated to the intervention. Consequently, caution should be shown when interpreting results where the null hypothesis of parallel trends cannot be rejected. Employing a coarsened exact matching (CEM) approach, which matches individuals based on sociodemographic characteristics, did not yield any improvements in the total number of valid analyses, but provided additional insights to the main analysis (see Figures A7–A12 for parallel trends plots).

Operationalization of variables

In accordance with much research in this field and in agreement with the hypotheses, we operationalized the outcome variable in terms of SA and labor market participation.

Receipt of SA is measured by three different indicators. First, a binary variable expressing receipt of SA in the current year has been constructed to shed light on whether the risk of SA receipt increased as a consequence of the reform. Second, a continuous variable counting the annual number of months with SA receipt was constructed to measure whether SA durations have increased as a result of the reform. Third, an SA measure indicating monthly SA payments in NOK has been defined to answer the question of whether the reform has led to higher SA payments. This latter variable has been logarithmically transformed, and zero SA has been recoded into the value one.

Labor market participation is measured by three similar indicators. First, a binary variable indicating any kind of work activity registered by an employer has been defined. This is a rather heterogeneous variable, including everything from occasional work to full-time work. Second, a variable counting annual months of work has been defined to measure whether the number of work months has declined as a consequence of the reform. Finally, we have defined a variable indicating annual earnings from work. This latter variable has been logarithmically transformed, and zero income has been coded into the value of 1 NOK. This latter variable was only available for the year of the reform, that is, 2020.

RESULTS

We first present descriptive statistics for the general population and its controls, followed by multivariate analyses. Finally, we comment on the sensitivity of our estimates and present a complimentary set of analyses based on matched trial and control groups.

Descriptive statistics

Table 1 provides a comparison between the SA population in Bergen and the control cities in terms of sociodemographic background characteristics, SA, and work. The data includes information for individuals who received SA in 2020 in the general population as well as in three specific "high-risk" groups (see Table A1 for descriptives on the full population).

Looking at the general SA population in Bergen and the controls, the data show that SA recipients are often single men of non-Western origin. They are frequently without children and have lower levels of education. On average, SA recipients in Bergen and the controls received SA for 6 out of the 12 months in 2020 and worked for 1.3 months. The annual income from work was generally lower than the annual SA benefits.

The three high-risk groups exhibit distinct characteristics compared to the general population. High-risk population 1, consisting of households with two or more children, is predominantly composed of women of non-Western origin. Unlike the general SA population, many of them are single parents. High-risk population 2, consisting of non-Western immigrants, is similar to the general SA population, but information on parental education is lacking for a majority of them due to their immigration status. The last high-risk group, consisting of non-Western immigrants with two or more children, is mainly comprised of women. A relatively high percentage of this group is married or in a cohabiting relationship, and similar to non-Western immigrants in high-risk group 2, information on parental education is unavailable.

In general, the SA population in Bergen shares similarities with the control cities in terms of background characteristics, work activity, and SA receipt. However, there are notable differences. Surprisingly, SA payments in 2020 were lower in Bergen compared to the controls for all populations, despite the presented increase in benefit rates in Figure 1. In addition, work income tends to be lower in Bergen than in the controls. The controls also appear to have a higher proportion of non-Western immigrants than Bergen. Finally, within the two risk groups of child households, it is more common to live with a partner or spouse in Bergen than in the controls. The potential effects of these compositional differences between Bergen and the controls are further scrutinized in the sensitivity analyses section.

Multivariate analyses

Regression analyses are presented in two tables. Table 2 contains pooled analyses of men and women, while Table 3 contains gender-specific analyses. In both tables, we present the effect estimates for the general population of Bergen as well as the three "high-risk" groups. Unfortunately, for the gender-pooled analyses, two of the outcomes did not satisfy the assumption of parallel trends before the intervention. Thus, the estimates for SA risk (binary) and monthly SA benefits (ln transformed)

TABLE 1 Social assistance recipients in 2020, Bergen versus controls in four study populations.

	General population		High risk 1: Child household		High risk 2: Non-Western		High risk 3: Non-Western w/ children	
	Bergen	**Contr.**	**Bergen**	**Contr.**	**Bergen**	**Contr.**	**Bergen**	**Contr.**
Social assistance months	6.2 (4.1)	6.3 (4.1)	6.8 (4.1)	6.9 (4.2)	6.7 (4.1)	6.8 (4.1)	7.1 (4.1)	7.2 (4.1)
Social assistance payment (NOK)	59,613 (66,593)	64,908 (66,377)	70,279 (74,631)	89,366 (87,055)	60,909 (61,292)	74,826 (71,886)	72,250 (75,452)	95,686 (89,283)
Work months	1.3 (3.2)	1.3 (3.3)	1.6 (3.7)	1.6 (3.6)	1.4 (3.3)	1.3 (3.3)	1.4 (3.5)	1.5 (3.6)
Work income (NOK)	48,676 (100,634)	52,955 (108,043)	53,955 (110,529)	62,127 (121,639)	46,782 (91,883)	49,863 (102,199)	45,322 (97,521)	56,128 (115,110)
Gender								
Male	57.2	55.4	38.1	39.9	53.8	53.8	37.8	41.4
Female	42.8	44.6	61.9	60.1	46.3	46.2	62.1	58.7
Age	36.7 (12.1)	38.7 (12.7)	37.3 (9.4)	38.6 (9.7)	36.6 (11.9)	38.8 (12.5)	37.9 (9.4)	39.2 (9.6)
World region								
Norway	44.1	32.4	20.0	11.9	NA	NA	NA	NA
Western	6.9	7.9	2.6	4.1	NA	NA	NA	NA
Non-Western	49.0	59.7	77.5	84.0	NA	NA	NA	NA
Parental education								
Unknown	37.46	45.1	67.5	71.1	73.2	72.0	85.7	83.0
Primary	17.4	17.7	12.2	12.1	10.13	12.2	7.0	9.2
High school	29.2	24.7	14.0	11.5	9.4	8.8	4.5	4.6
Short higher ed.	12.5	9.8	5.1	4.4	5.5	5.3	2.0	2.6
Long higher ed.	3.6	2.7	1.2	1.0	1.8	1.7	0.8	0.7
Family type								
Single	60.0	57.9	3.1	3.5	48.8	49.1	1.4	2.8
Couple w/o children	1.3	1.5	0.0	0.1	2.1	2.0	0.0	0.1
Couple w/ children	18.9	18.2	62.3	54.8	27.5	23.8	67.8	57.1
Single parent	19.8	22.4	34.6	41.5	21.5	25.1	30.9	40.0
Children in househ.								
No children	69.5	67.2	NA	NA	56.7	57.8	NA	NA
1 child	12.4	13.8	NA	NA	14.7	15.5	NA	NA
2 children	9.2	9.6	51.1	50.4	12.8	12.4	44.8	46.3
3 children	5.3	5.2	29.3	27.5	9.3	7.7	32.4	28.8

TABLE 1 (Continued)

	General population		High risk 1: Child household		High risk 2: Non-Western		High risk 3: Non-Western w/ children	
	Bergen	**Contr.**	**Bergen**	**Contr.**	**Bergen**	**Contr.**	**Bergen**	**Contr.**
4 or more children	3.5	4.2	19.6	22.1	6.5	6.7	22.8	24.9
Education								
Unknown	6.8	7.2	15.4	12.2	12.6	10.9	19.8	13.9
Primary	55.6	57.2	53.1	58.2	53.7	57.5	50.4	58.7
High school	21.9	21.4	15.8	17.0	17.4	17.7	13.9	15.1
Vocational school	1.8	1.6	1.7	1.2	1.1	1.0	1.1	0.8
Short higher ed.	10.5	9.9	9.4	8.9	11.4	9.8	10.0	8.8
Long higher ed.	3.4	2.7	4.6	2.4	3.9	3.2	4.8	2.6
Observations	6506	38,625	1176	7352	3187	23,067	911	6177

Note: Standard errors are reported in parentheses for metric variables.

should be interpreted with caution. It is unlikely that different trends before the intervention were driven by compositional differences, as sensitivity analyses with matched treatment and control groups did not improve the situation.

The results of the multivariate analyses show some unexpected findings regarding the overall effects of the benefit hike. Contrary to our expectations, it appears that the reform has led to a decrease in SA durations by 0.01 months, equivalent to approximately 0.3 annual days per person in Bergen. In parallel, however, the number of work months decreased by 0.03, corresponding to 1 day every year. These counterintuitive effects on the Bergen population are puzzling and will be further discussed.

However, for certain "high-risk" groups, we find less ambiguous evidence. In households with two or more children, there was an increase in SA duration of 0.02 months following the reform. This translates to approximately 0.7 days of increased SA for child families in Bergen. Non-Western immigrants showed a substantial decline in work months by 0.21. Finally, for non-Western immigrants with children, there was an annual decrease in work earnings of approximately 11%.

Given the vulnerability of women highlighted in the literature review regarding potential disincentive effects of benefit generosity, gender-specific effects for all outcomes and treatment groups were estimated and presented in Table 3.

The assumption of parallel trends before the intervention was not met for the estimates of monthly SA benefits and the effects on SA probability.

In the gender-specific analyses for the general population (Table 3, Columns 2 and 3), there is no evidence of negative effects from the increase in SA rates for men or women. Surprisingly, but consistent with the gender-pooled analyses in Table 2, men in Bergen seem to experience a slight decrease in SA months by 0.014 following the benefit hike. In addition, they experience increased work earnings after the reform.

Examining the gender-specific triple-difference estimates for the "high-risk" groups, both men and women in households with children experienced an increased SA duration following the reform. For men, the increased SA duration corresponded to 0.03 months, equivalent to approximately one additional day of SA per year. For women, it corresponded to an increased SA duration of 0.013 months. Thus, for child families, these findings support some of the concerns raised by the city council of Bergen.

For non-Western men in the "high-risk" group, substantial reductions are observed in overall work probability (1.9%) as well as a significant decrease in

TABLE 2 Estimated effects on full population and three high-risk groups.

Outcome variables	General population	Child household	Non-Western	Non-Western w/ children
Social assistance (binary)	−0.000 (0.005)	0.003 (0.001)	0.001 (0.001)	0.006* (0.002)
Social assistance months	−0.010** (0.002)	0.0224* (0.008)	−0.002 (0.004)	0.017 (0.017)
Monthly social assistance (ln NOK)	−0.001 (0.004)	0.029 (0.013)	0.016* (0.006)	0.062* (0.023)
Work (binary)	0.004 (0.009)	−0.002 (0.004)	−0.015 (0.007)	0.005 (0.007)
Work months	−0.032** (0.009)	0.013 (0.064)	−0.210* (0.073)	0.004 (0.093)
Annual work earnings (ln NOK)	0.022 (0.014)	−0.026 (0.016)	−0.116 (0.067)	−0.106* (0.034)
Total *N*	1,226,586	1,226,586	1,226,586	1,226,586
N trial/control	191,505/1,035,081	191,505/1,035,081	191,505/1,035,081	191,505/1,035,081
N high-risk population trial/control	NA	37,475/204,520	38,158/282,998	7861/66,447

Note: Robust standard errors are reported in parentheses. Analyses where the assumption of parallel trends was satisfied have been shaded. Monthly social assistance and annual work earnings have been ln transformed. *N* is reported for the year of the intervention (2020). We report separate *N*s for the risk groups in trial and controls to facilitate the interpretation of effect sizes. * and ** denote statistically significant at 5% and 1% levels.

work months by 0.28. For non-Western women, we see a reduction in annual work earnings of approximately 13%.

Regarding the gender-specific analyses of non-Western immigrants with children, only one significant effect is observed, indicating a substantial reduction in annual earnings for women by approximately 16%.

To summarize, the benefit hike did not have any noticeable negative effects on the general population in Bergen. On the contrary, the gender-specific analysis showed that men in Bergen tended to rely less on SA and also increased their earnings after the benefit hike. However, the analyses of the "high-risk" groups and the gender-specific analyses within those groups provide a more nuanced picture. It is evident that child households and non-Western immigrants experienced increased SA uptake and durations as a result of the reform, along with reduced earnings from work. Concerning gender/risk group intersectionality, Table 3 shows that there are no gender differences in SA outcomes in the disfavor of women. However, regarding labor market outcomes, the evidence is more mixed. On the one side, male non-Western immigrants experience significantly lower work probability and work months in the wake of the reform, while there are no significant effects for women in the same "high-risk" group. On the other hand, female non-Western immigrants and female non-Western immigrants with children experience significant negative effects on earnings, while men in the same "high-risk" experience no such significant effects. Thus, there is no conclusive evidence pointing in the direction of women in "high-risk" groups being more exposed to the negative effects of the benefit hike than men in the same categories.

Sensitivity analyses

Sensitivity analyses were conducted to check the robustness of the results and whether parallel trends could be achieved by considering additional pretreatment measures. A CEM procedure was performed on the Bergen population and corresponding comparison cities, matching individuals based on country background, parental education, gender, education, family type, number of children in the household, and age.

The matching quality using CEM was good (see Table A1). Of particular relevance, we achieved a better balance of country background between Bergen and controls. Table 4 presents the gender-pooled estimated effects from the matched population.

The matching did not improve the overall number of analyses satisfying the parallel trends assumption. Overall, the main analysis in Table 2 and the CEM-based analysis in Table 4 are comparable. Most coefficients point in the same direction, but there are some discrepancies with regard to statistical significance. Thus, there is a tendency that the CEM-based analyses of labor-market outcomes are more often significant than in the main analysis. In more detail, there was a strong and significant reduction in work probability, work months, and earnings among non-Western immigrants and child households in the matched results. Furthermore, the group of non-Western immigrants with children experienced a substantial reduction in work months. In summary, the CEM-matched analyses in Table 4 strengthened the impression of problematic work-related outcomes for the high-risk groups.

Likewise, the coefficients in the gender-specific CEM analysis in Table 5 point in the same direction as most of

TABLE 3 Estimated effects of increased social assistance rates on full population and three high-risk groups, by gender.

Outcome variables	General population		Child household		Non-Western		Non-Western w/ children	
	Male	Female	Male	Female	Male	Female	Male	Female
Social assistance (binary)	−0.000 (0.001)	−0.000 (0.000)	0.005** (0.001)	0.002 (0.002)	0.000 (0.002)	0.002 (0.001)	0.003 (0.003)	0.008* (0.003)
Social assistance months	−0.014** (0.004)	−0.007 (0.004)	0.031* (0.012)	0.013* (0.006)	−0.008 (0.011)	0.006 (0.010)	−0.011 (0.033)	0.036 (0.019)
Monthly social assistance (ln NOK)	−0.001 (0.007)	0.003 (0.003)	0.040* (0.014)	0.019 (0.014)	0.010 (0.017)	0.024 (0.012)	0.036 (0.032)	0.081* (0.031)
Work (binary)	0.001 (0.002)	0.002 (0.003)	−0.001 (0.003)	−0.005 (0.005)	−0.019* (0.008)	−0.009 (0.006)	0.002 (0.007)	0.006 (0.008)
Work months	−0.038 (0.025)	−0.025 (0.031)	0.046 (0.046)	−0.017 (0.086)	−0.278** (0.079)	−0.117 (0.070)	−0.082 (0.086)	0.062 (0.105)
Annual work earnings (ln NOK)	0.030** (0.009)	0.014 (0.036)	−0.002 (0.010)	−0.052 (0.025)	−0.090 (0.080)	−0.128* (0.055)	−0.046 (0.058)	−0.163* (0.053)
Total *N*	623,143	603,443	623,143	603,443	623,143	603,443	623,143	603,443
N trial/control	98,259/524,884	93,246/510,197	98,259/524,884	93,246/510,197	98,259/524,884	93,246/510,197	98,259/524,884	93,246/510,197
N high-risk population trial/control	NA	NA	18,047/79,740	19,428/106,780	20,284/145,465	17,874/137,833	3454/29,766	4407/36,681

Note: Robust standard errors are reported in parentheses. Analyses where the assumption of parallel trends was satisfied have been shaded. Monthly social assistance and annual work earnings have been ln transformed. *N* is reported for the year of the intervention (2020). We report separate *N*s for the risk groups in trial and controls to facilitate the interpretation of effect sizes. * and ** denote statistically significant at 5% and 1% levels.

the coefficients in the gender-specific main analysis presented in Table 3. Furthermore, and in parallel with the pooled analyses, the gender-specific CEM analysis indicated more pronounced negative labor market outcomes than the gender-specific main analysis in Table 3. Unfortunately, the lack of parallel trends prevents direct comparisons of women and men for several of the outcomes. For outcomes that are comparable, there is little evidence pointing in the direction of women being more exposed to the negative effects of the intervention than men.

In summary, the sensitivity analysis in Table 5 seems to confirm the findings in the comparable main analysis in Table 3, but with a stronger emphasis on the negative effects found for vulnerable groups on the labor market outcomes.

SUMMARY AND DISCUSSION

The study aimed to examine the effects of a benefit hike on SA recipients in Bergen. Three sets of hypotheses were formulated, one predicting increased SA use and decreased work activity among the general population, a second predicting stronger effects for specific high-risk subgroups, and a third predicting particularly strong effects where female gender intersects with subgroup status.

Regarding the effect on the general population, the results contradicted the first set of hypotheses. Thus, there is no general increase in SA after the benefit hike. We do, however, find some inconclusive evidence of lower work activity in the wake of the reform. However, after running the sensitivity analyses, we could no longer confirm this latter negative effect on work activity for the general population. So, in conclusion, there is no evidence pointing in the direction of the negative effects of the reform on the general population. This is s contrary to what was hypothesized and at odds with a previous Norwegian study (Bratsberg et al., 2020).

The second set of hypotheses received support for several of the outcomes in high-risk subgroups. Parents with small children experienced increased SA duration in the main analyses. However, after matching Bergen inhabitants and controls on observed characteristics, we could not confirm this finding in the sensitivity analysis. Thus, there is only inconclusive evidence pointing in the direction of negative effects on SA uptake for child households. However, for the same group, the CEM-based analyses indicated substantial negative effects on work outcomes for women. For the risk group consisting of non-Western immigrants, our results show little or no effects on SA-related outcomes, but rather strong and substantial negative effects related to work outcomes.

TABLE 4 Estimated effects on CEM population and three high-risk groups.

Outcome variables	General population	Child household	Non-Western	Non-Western w/ children
Social assistance (binary)	−0.000 (0.001)	0.002 (0.001)	0.002 (0.001)	0.005 (0.003)
Social assistance months	−0.010* (0.003)	0.017 (0.008)	0.003 (0.006)	0.016 (0.027)
Monthly social assistance (ln NOK)	0.001 (0.006)	0.017 (0.010)	0.021* (0.001)	0.051 (0.032)
Work (binary)	0.000 (0.002)	−0.008** (0.001)	−0.023** (0.005)	−0.009 (0.004)
Work months	−0.029 (0.021)	−0.071* (0.029)	−0.307** (0.054)	−0.170* (0.069)
Annual work earnings (ln NOK)	0.026** (0.007)	−0.053** (0.012)	−0.168* (0.059)	−0.081 (0.049)
Total *N*	873,807	873,807	873,807	873,807
N trial/control	186,942/686,865	186,942/686,865	186,942/686,865	186,942/686,865
N high-risk population trial/control	NA	36,088/137,611	37,881/143,261	7737/33,244

Note: Robust standard errors are reported in parentheses. Analyses where the assumption of parallel trends was satisfied have been shaded. Monthly social assistance and annual work earnings have been ln transformed. *N* is reported for the year of the intervention (2020). We report separate *N*s for the risk groups in trial and controls to facilitate the interpretation of effect sizes. * and ** denote statistically significant at 5% and 1% levels.

Neither the main analysis nor the sensitivity analysis confirmed the third hypothesis of particularly strong negative effects for female gender intersecting with subgroup status. Importantly, however, the failure to comply with the parallel trends assumption restricted the validity of the gender comparison in the sensitivity analysis.

Our targeted "risk groups" of non-Westerners, households with children and non-Westerners with children reduced their labor market activity and earnings consistent with hypotheses derived from reservation wage theory. These findings also aligned with the concerns raised by the city council of Bergen and the findings of Bratsberg et al. (2020) showing that similar sensitive groups decreased their labor force participation. However, as Bratsberg et al. (2020) argued, this consistency does not exclude alternative interpretations. Reservation wage theory is based on the assumption that the SA recipients have a choice, and there are several reasons why individuals in these risk groups experience limited choice opportunities and have few alternatives to SA (Schels & Bethmann, 2018). Individual characteristics like low skills, health challenges, little work experience, restricted mastery of the Norwegian language, and care responsibilities may effectively prevent labor market participation (Bratsberg et al., 2020; Dahl & Lorentzen, 2003; Saraceno, 2002; Walker, 1994). Scholars have further directed attention to contextual impediments like restricted employment opportunities, lack of appropriate jobs, skeptical employers, and discriminatory practices among employers that might all serve as powerful barriers to (re) enter work (Bane & Ellwood, 1994; Birkelund et al., 2017; Kostøl & Mogstad, 2014; Walker, 1994). It has also been pointed out that many immigrants have a high prevalence of mental disorders, and front-line workers in the local Labour and Welfare offices report that they lack the tools to handle such problems and help them work (Bråthen, 2021).

Also, the study's descriptive statistics indicated that many SA recipients faced multiple challenges, such as limited labor market attachment, lack of qualifications, language barriers, and health issues. These factors, accumulated within the high-risk groups, are likely to signal a low degree of attractivity to employers. In such circumstances, the choice between work and welfare may hardly exist, challenging the assumption of informed and deliberate choice embedded in the incentive hypothesis and the rational choice model.

A complicating factor in the Bergen case was the eligibility for supplemental SA benefits due to the rise in SA rates. This made it difficult to distinguish between (dis) incentive effects and rights-induced effects. The altered behavior of the risk groups might be driven by newly won rights to SA rather than (dis)incentives. The exact mechanisms behind their behavior remain unclear and could involve social circumstances.

The zero effect of the benefit raise for the general SA population was unexpected. One interpretation is that increased generosity led to stricter behavioral requirements or enforcement of sanctions by local NAV offices. Another possibility is that the higher benefit rates were not implemented as intended. It is also possible that the increase in SA rates was insufficient to engender a detectable behavioral change in the general SA population. However, as discussed above, the findings also prompt the question of whether economic (dis)incentives play such a pivotal role in behavior among the general SA population as believed. As discussed, the size of welfare benefits is only one among many factors that SA recipients need to consider when assessing their future course.

Overall, the study provides insights into the effects of a benefit hike on different groups of SA recipients, highlighting the complexities and potential limitations of the incentive theory. It underscores the importance of considering socioeconomic circumstances and contextual factors when analyzing welfare policies and their impacts.

TABLE 5 Estimated effects of increased social assistance rates on CEM population and three high-risk groups, by gender.

	General population		Child household		Non-Western		Non-Western w/ children	
Outcome variables	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Social assistance (binary)	0.000 (0.001)	−0.000 (0.000)	0.004* (0.001)	0.000 (0.001)	0.003 (0.002)	0.000 (0.001)	0.006 (0.006)	0.004 (0.002)
Social assistance months	−0.012* (0.004)	−0.009 (0.004)	0.026 (0.014)	0.009 (0.004)	0.005 (0.013)	−0.003 (0.009)	0.010 (0.050)	0.021 (0.018)
Monthly social assistance (ln NOK)	0.002 (0.008)	−0.001 (0.004)	0.029 (0.014)	0.006 (0.008)	0.033 (0.020)	0.011 (0.006)	0.057 (0.053)	0.047 (0.022)
Work (binary)	−0.002 (0.002)	0.002 (0.001)	−0.003* (0.001)	−0.013** (0.002)	−0.024** (0.007)	−0.021** (0.004)	−0.005 (0.006)	0.013** (0.004)
Work months	−0.067 (0.031)	0.009 (0.023)	−0.014 (0.019)	−0.130* (0.047)	−0.332** (0.071)	−0.262** (0.041)	−0.178 (0.086)	−0.175* (0.063)
Annual work earnings (ln NOK)	0.008 (0.009)	0.044* (0.015)	−0.020 (0.009)	−0.086** (0.018)	−0.118 (0.078)	−0.209** (0.042)	−0.036 (0.046)	−0.102 (0.048)
Total *N*	446,035	427,772	446,035	427,772	446,035	427,772	446,035	427,772
N trial/control	95,853/350,182	91,089/336,683	95,853/350,182	91,089/336,683	95,853/350,182	91,089/336,683	95,853/350,182	91,089/336,683
N high-risk population trial/control	NA	NA	17,291/65,740	18,797/71,871	20,143/74,432	17,738/68,829	3401/14,634	4336/18,610

Note: Robust standard errors are reported in parentheses. Analyses where the assumption of parallel trends was satisfied have been shaded. Monthly social assistance and annual work earnings have been ln transformed. *N* is reported for the year of the intervention (2020). We report separate *N*s for the risk groups in trial and controls to facilitate the interpretation of effect sizes. * and ** denote statistically significant at 5% and 1% levels.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from Statistics Norway. Restrictions apply to the availability of these data, which were used inder license for this study.

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APPENDIX A

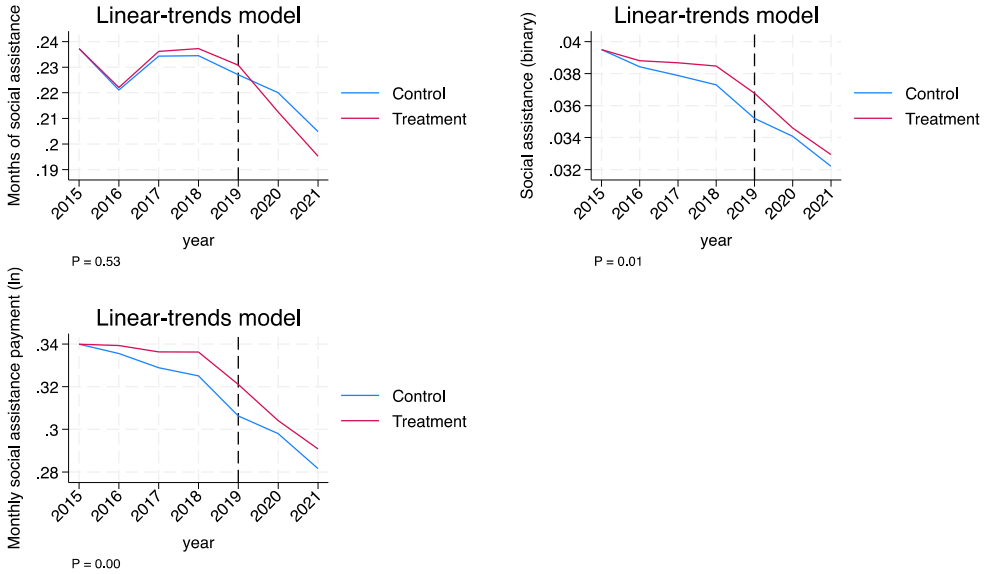

FIGURE A1 Graphical diagnostics for parallel trends, social assistance outcomes. *p* Values for parallel trends test below each figure.

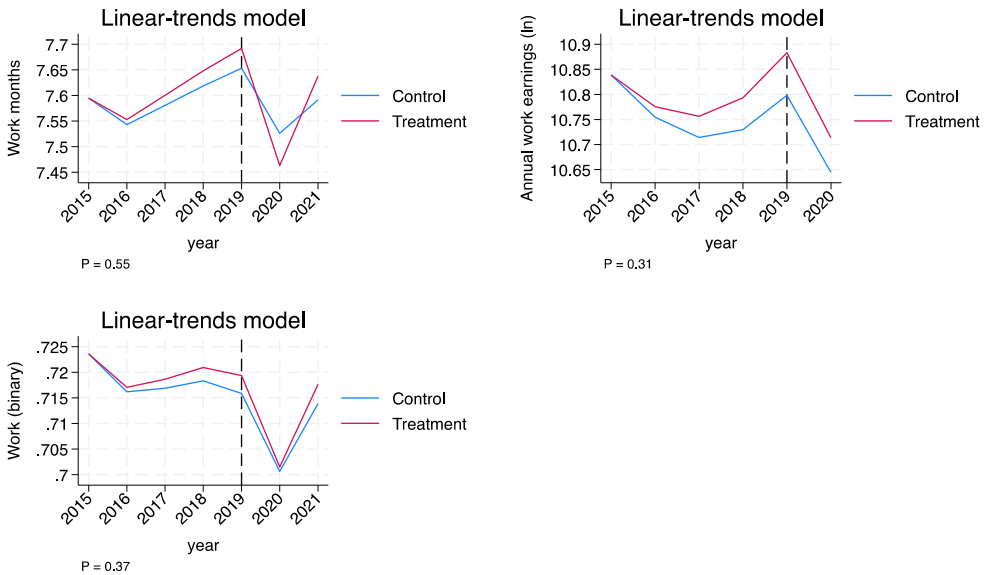

FIGURE A2 Graphical diagnostics for parallel trends, work-related outcomes. *p* Values for parallel trends test below each figure.

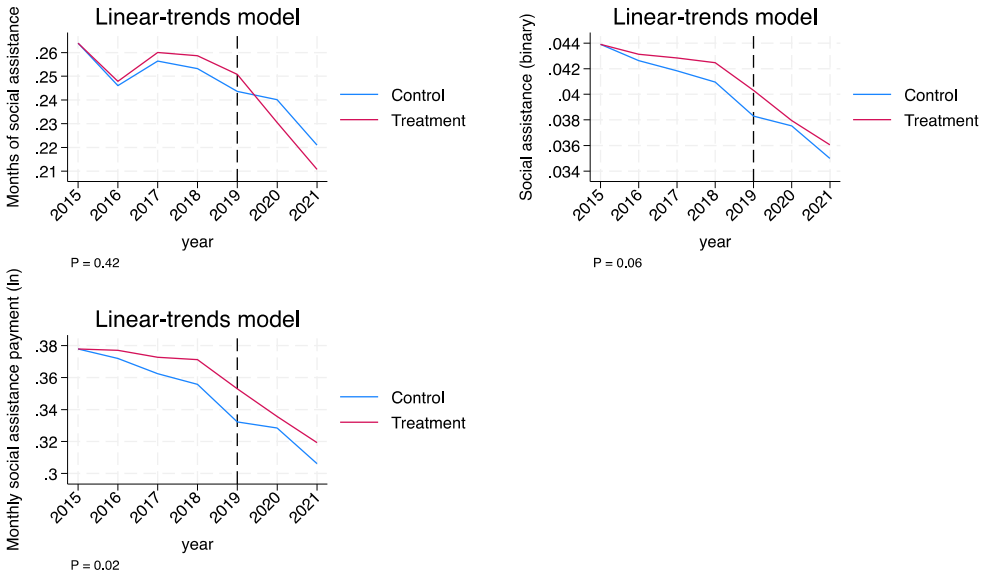

FIGURE A3 Graphical diagnostics for parallel trends, social assistance outcomes for men. *p* Values for parallel trends test below each figure.

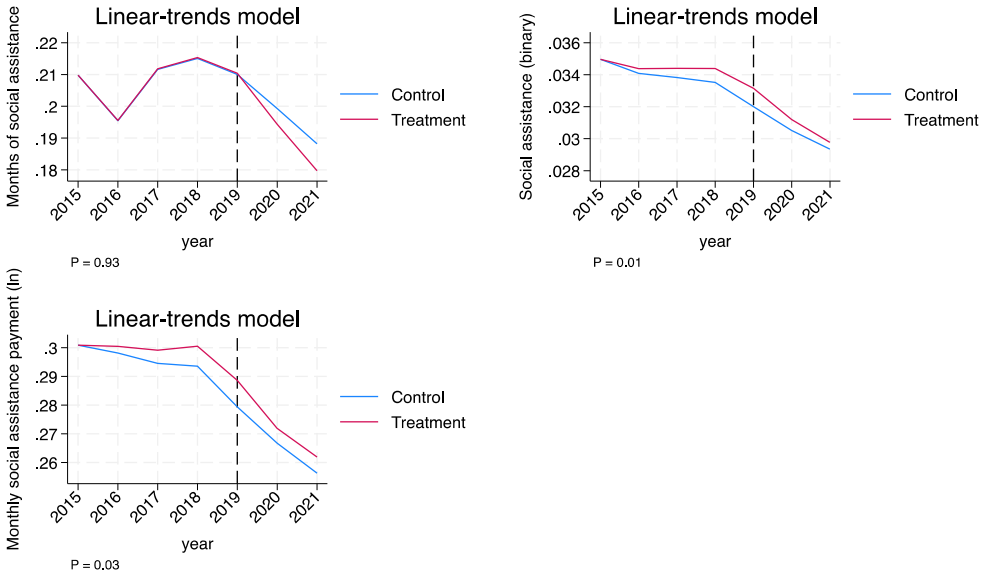

FIGURE A4 Graphical diagnostics for parallel trends, social assistance outcomes for women. *p* Values for parallel trends test below each figure.

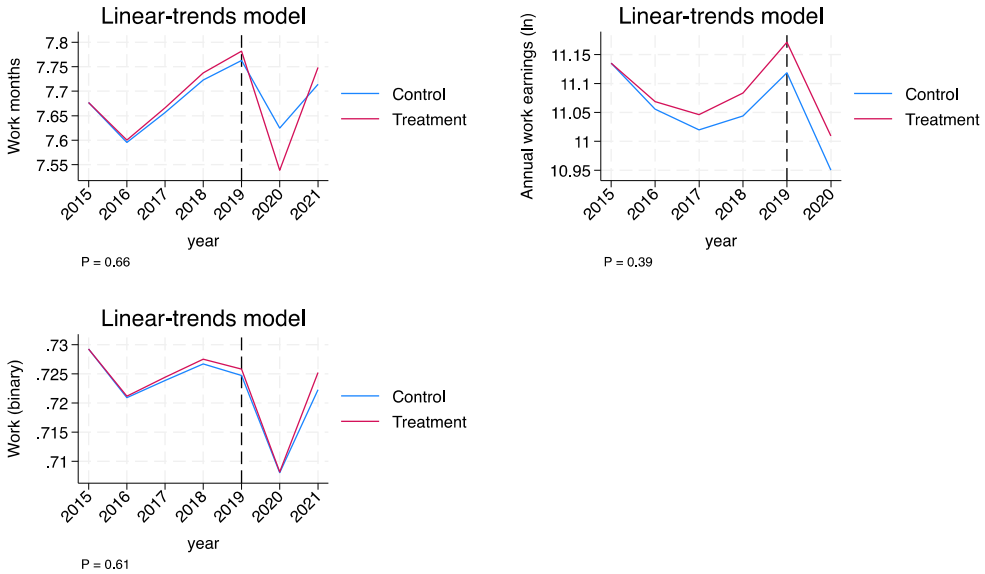

FIGURE A5 Graphical diagnostics for parallel trends, work-related outcomes for men. *p* Values for parallel trends test below each figure.

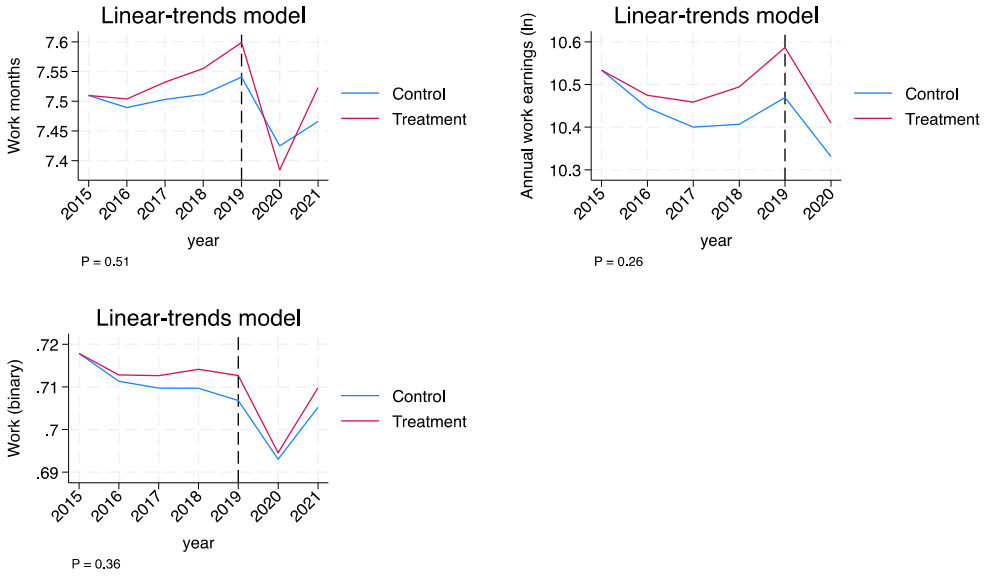

FIGURE A6 Graphical diagnostics for parallel trends, work-related outcomes for women. *p* Values for parallel trends test below each figure.

TABLE A1 Comparison of CEM population and general population, Bergen versus controls.

	CEM population		General population	
	Bergen	**Contr.**	**Bergen**	**Contr.**
Social assistance months	0.21 (1.36)	0.21 (1.35)	0.21 (1.36)	0.23 (0.43)
Social assistance payment	273.07 (1854.29)	303.45 (1977.42)	272.94 (1853.15)	337.65 (2102.80)
Work months	7.58 (5.42)	7.52 (5.45)	7.56 (5.42)	7.35 (5.49)
Work income	439,693.08 (443,652.88)	441,441.7 (526,205.24)	437,799.66 (442,094.20)	447,243.85 (566,072.56)
Gender				
Male	51.27	50.98	51.31	50.71
Female	48.73	49.02	48.69	49.29
Age	40.89 (13.81)	41.99 (13.95)	40.80 (13.84)	41.13 (13.60)
World region				
Norway	69.53	69.98	69.71	59.48
Western	10.21	9.17	10.36	13.18
Non-Western	20.26	20.86	19.93	27.34
Parental education				
Unknown	17.87	17.77	17.59	22.46
Primary	10.53	12.94	10.72	11.91
High school	38.31	41.51	38.42	34.57
Short higher ed.	22.37	20.15	22.39	20.82
Long higher ed.	10.91	7.63	10.87	10.24
Family type				
Single	41.35	37.03	40.60	40.87
Couple w/o children	11.09	12.94	10.97	11.52
Couple w/ children	38.72	40.66	39.17	38.02
Single parent	8.66	9.26	9.04	9.24
Children in household				
No children	65.31	63.74	64.83	64.18
1 child	15.39	16.22	15.60	16.06
2 children	14.23	14.95	14.31	14.44
3 children	4.34	4.33	4.46	4.29
4 or more children	0.73	0.75	0.80	1.03
Education				
Unknown	3.36	3.01	3.36	4.12
Primary	17.02	19.95	17.30	19.29
High school	29.36	33.53	29.50	28.89
Vocational school	2.99	2.99	3.14	2.84
Short higher ed.	30.74	28.31	30.40	28.77
Long higher ed.	16.53	12.21	16.29	16.09
Observations	186,942	686,865	191,505	1,035,081

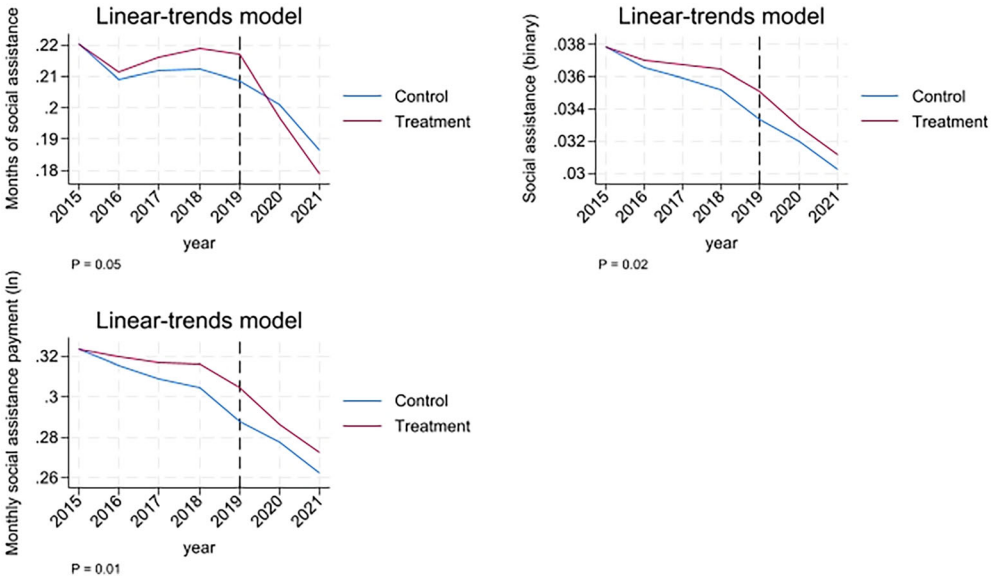

FIGURE A7 Graphical diagnostics for parallel trends CEM population, social assistance outcomes. *p* Values for parallel trends test below each figure.

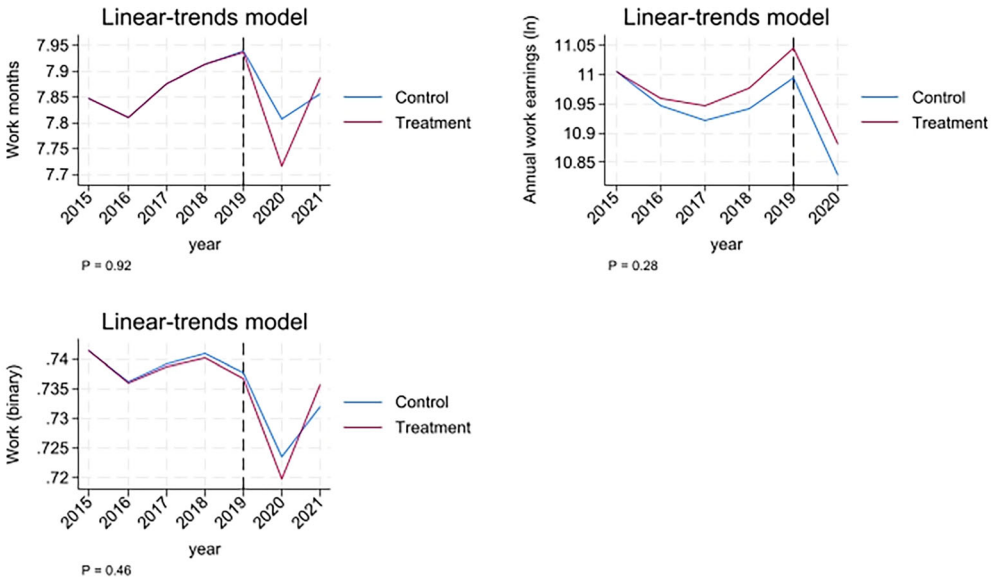

FIGURE A8 Graphical diagnostics for parallel trends CEM population, work-related outcomes. *p* Values for parallel trends test below each figure.

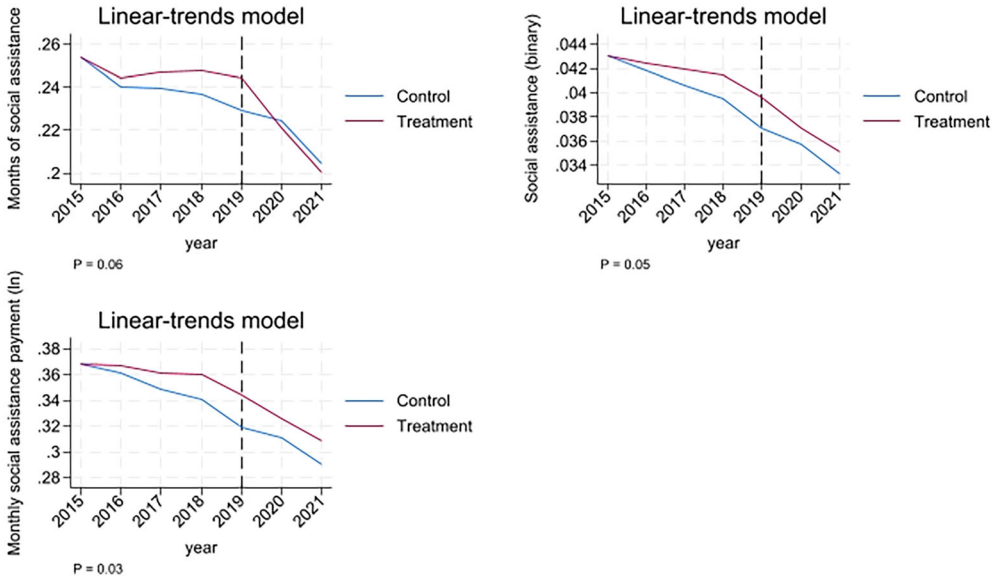

FIGURE A9 Graphical diagnostics for parallel trends CEM population, social assistance outcomes for men. *p* Values for parallel trends test below each figure.

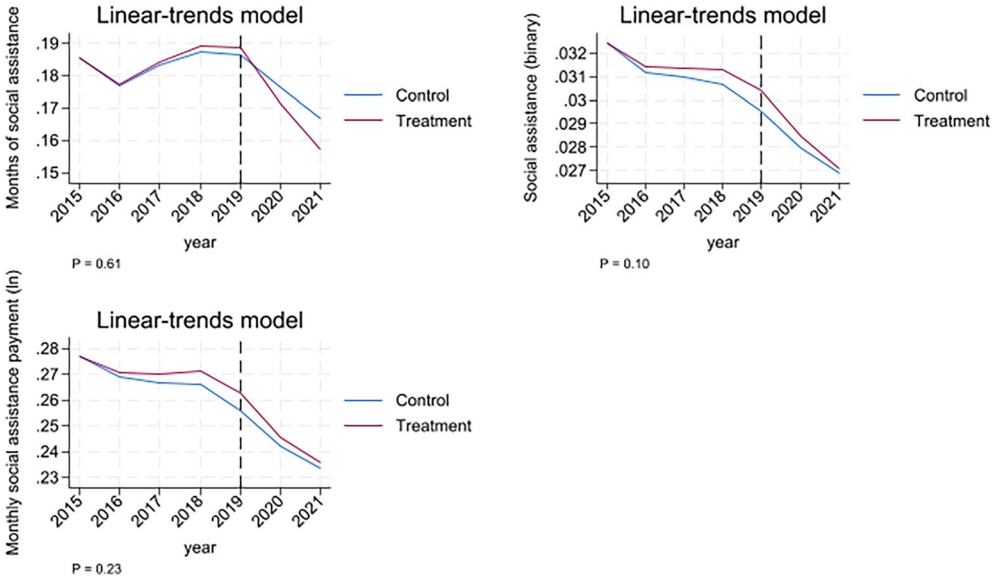

FIGURE A10 Graphical diagnostics for parallel trends CEM population, social assistance outcomes for women. *p* Values for parallel trends test below each figure.

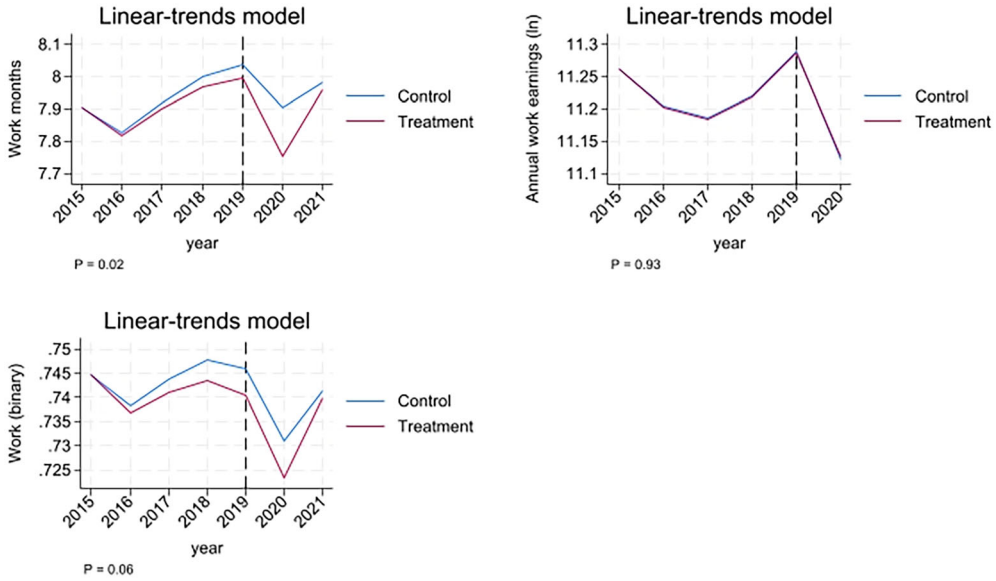

FIGURE A11 Graphical diagnostics for parallel trends CEM population, work-related outcomes for men. *p* Values for parallel trends test below each figure.

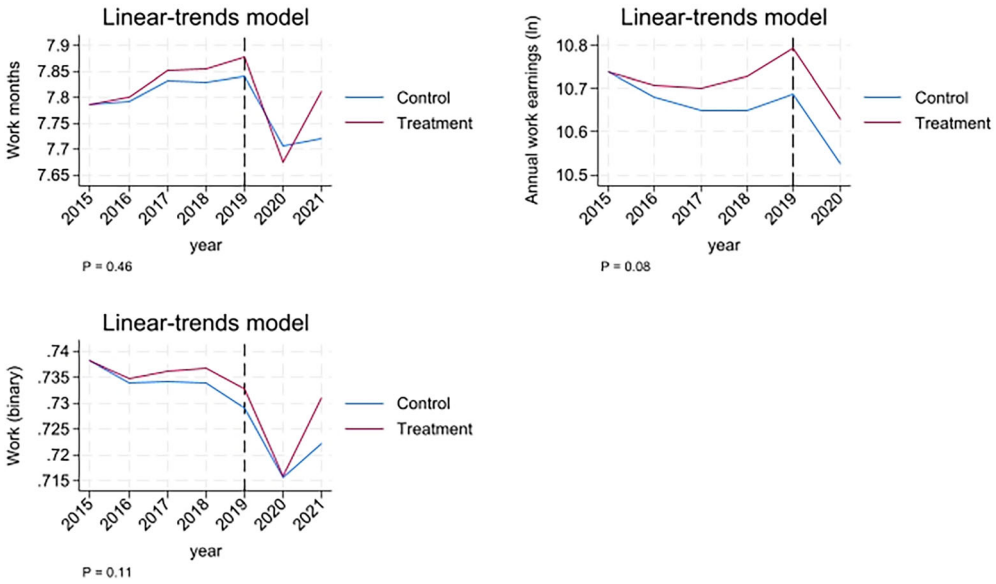

FIGURE A12 Graphical diagnostics for parallel trends CEM population, work-related outcomes for women. *p* Values for parallel trends test below each figure.