Race, Culture, and Labour Supply Under Universal Basic Income

Evidence from the Manitoba Basic Annual Income Experiment (MINCOME)

ECON 490 Capstone

2026-03-23

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1 Introduction

With a cost-of-living crisis affecting much of the Western world, Canadians are struggling to afford basic necessities. One-time government transfers have provided short-term relief, but have not addressed underlying wealth inequality. In response, guaranteed income proposals have attracted renewed policy attention: Sen. Kim Pate's Bill S-206, the *National Framework for a Guaranteed Livable Basic Income Act*, reflects this growing interest (Mendelson, 2019).

Universal Basic Income (UBI) is a social program that provides an unconditional living wage without a work requirement or means testing. Critics argue that such a cash transfer reduces labour supply, as workers are less incentivized to work if their basic needs are covered. Which is consistent with standard labour supply theory in which higher non-labour income shifts the income-leisure trade-off toward leisure (Paz-Báñez et al., 2020; Yi, 2017).

1.1 Literature Review

Kőmüves et al. (2022) studied UBI in the UK using the E3ME macroeconomic model, finding that a UBI funded via debt-free sovereign money raised employment and GDP while reducing labour supply, with no inflationary residual. In a developing-economy context, Santos & Van Doornik (2024) used a difference-in-differences strategy with Brazilian unemployment insurance data to simulate UBI effects, finding improved employment and reduced informality, with stronger effects on less-educated workers. Verho et al. (2022) examined the Finnish Basic Income Experiment, finding no employment effect in year one and a small positive effect in year two, with overall limited impact on labour supply.

For the MINCOME experiment specifically, Riddell & Riddell (2000) conducted post-hoc linear regression on the Manitoba data, finding the most substantial effect was a negative impact on hours worked for women in dual-income households, with an opposite effect for women in single-parent households. Hum & Simpson (1993) similarly documented small but significant decreases in working hours across the experiment.

1.2 Contributions

This paper takes an econometric approach to the MINCOME data, using fixed-effects, difference-in-differences, and triple-differences models to estimate the effect of guaranteed income payments on household labour supply. Crucially, it extends prior work in a dimension understudied in the existing literature. Specifically by examining whether the labour supply response differs between racialized and non-racialized households. Canada provides an instructive comparison: it spends proportionally less of its GDP on social protection than Finland (European Commission, 2025; OECD, 2023) but more than Brazil (Arnold & Bueno, 2021), situating the MINCOME results between a high-benefit Nordic context and a developing-economy context.

2 Data

2.1 Sources

Two datasets from the MINCOME experiment are used:

- **MINC3** (`MINC3.xlsx`): Cross-sectional baseline survey containing household demographics, pre-experiment income, ethnic background of male and female household heads, and asset information.
- **MINC4** (`MINC4.xlsx`): Longitudinal payment records spanning 11 survey periods, including monthly hours worked and wages for each household member, and the guaranteed income plan assigned.

2.2 Key Variable Definitions

Variable	Description
`HHHRWRK`	Annual household hours worked (male + female head)
`HH_HOURS`	Monthly household hours (panel version of above)
`RACIALHH`	1 if either household head belongs to a racialized ethnic group
`TREATED`	1 if household was assigned to any treatment plan (i.e., not control)
`GBI_MON`	Monthly guaranteed basic income entitlement
`PAYMENT`	Actual benefit received, net of tax-back: $\max(0,\ G - \tau \cdot W)$
`post`	1 for periods after baseline (period > 0)
`period`	Survey wave (0 = baseline, 1–11 = experimental periods)

Racialized households are defined as those where the male or female head identifies with any of the following ethnic groups: Philippine, Chinese, Native Indian (band), Native Indian (non-band), Other, African, West Indian, South American, Black, or Japanese.

2.3 Descriptive Statistics

2.3.1 Sample Composition by Site

Table 2: Summary statistics by MINCOME experimental site

Site	N	Avg. Income ($)	Avg. Hours
Dauphin	158	5576.7	672.5
Rural	75	6123.3	688.5

Site	N	Avg. Income ($)	Avg. Hours
Winnipeg	519	7823.1	700.9
NA	250	NaN	NaN

Table 3: Household count by site and racial classification

Site	Racial Group	Count
Dauphin	Non-racialized	156
Dauphin	Racialized	2
Rural	Non-racialized	72
Rural	Racialized	3
Winnipeg	Non-racialized	471
Winnipeg	Racialized	48
NA	Non-racialized	250

	Unique	Missing Pct.	Mean	SD	Min	Median	Max	Histogram
Family Size	12	25	3.3	2.0	1.0	3.0	12.0	
Total Family Income	695	27	7177.8	4053.3	0.0	6825.0	25 911.0	
Annual HH Hours Worked	102	59	693.0	209.2	0.0	775.0	1399.0	
Racialized HH	2	0	0.1	0.2	0.0	0.0	1.0	

3 Exploratory Data Analysis

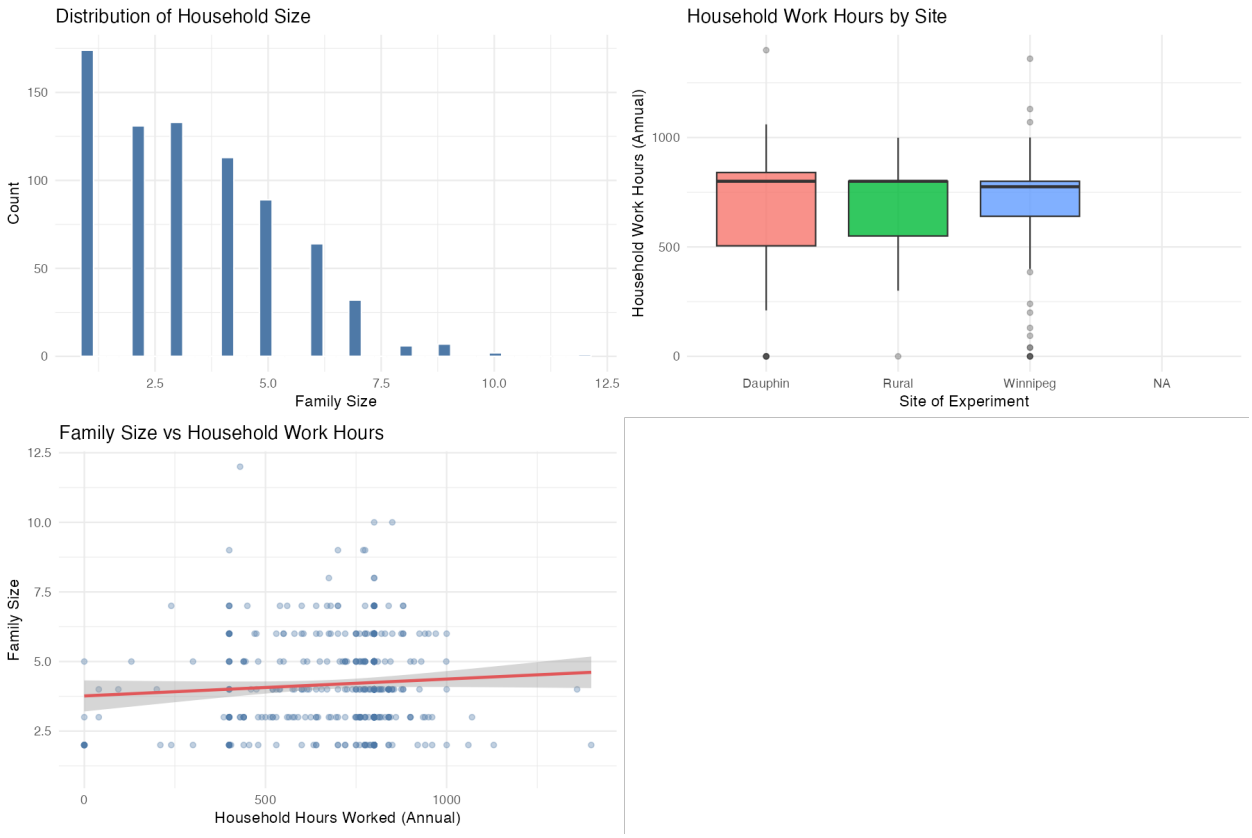

Figure 1: EDA overview: household size distribution (top left), annual work hours by experimental site (top right), and family size vs. work hours (bottom left).

The distribution of household size is right-skewed, with most families having 2–4 members (**?@fig-famsize**). Households in Winnipeg tend to have higher annual work hours than in Dauphin or rural areas, consistent with urban labour market opportunities. There is a modest positive association between family size and household hours, reflecting the need for greater income with more dependents.

4 Models

All models are estimated using the `fixest` package with standard errors clustered at the household level, unless otherwise noted.

4.1 Fixed Effects Model

The baseline specification controls for household-level unobservables and time-period shocks:

$$\text{HH\_HOURS}_{it} = \beta_1 \text{HH\_WAGE}_{it} + \beta_2 \text{PAYMENT}_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$$

where α_i is a household fixed effect and γ_t is a period fixed effect.

4.2 Difference-in-Differences Model

$$\text{HH\_HOURS}_{it} = \beta_1 (\text{TREATED}_i \times \text{post}_t) + \alpha_i + \gamma_t + \varepsilon_{it}$$

This identifies the average treatment effect on household work hours by comparing treated and control households before and after the experiment began.

4.3 Triple Differences (Racialized vs. Non-racialized)

To identify heterogeneous effects by racial identity, we add a third interaction:

$$\text{HH\_HOURS}_{it} = \beta_1 (\text{Treated} \times \text{Post})_{it} + \beta_2 (\text{Treated} \times \text{Post} \times \text{Racialized})_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$$

The coefficient β_2 captures the **differential** labour supply response of racialized households relative to non-racialized households receiving the same treatment.

4.4 Results

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5 Robustness Checks

To address potential heteroskedasticity in the error structure, we re-estimate all three models using heteroskedasticity-robust standard errors.

The pattern of coefficients is consistent across both sets of standard errors, indicating that the main results are not sensitive to assumptions about error variance.

Table 4: Main regression results: effect of MINCOME on monthly household hours worked

	Fixed Effects	Diff-in-Diff	Triple Diff (DDD)
HH_WAGE	0.496***		
	(0.107)		
PAYMENT	−0.616*		
	(0.245)		
TREATED × post		−108.525*	
		(47.078)	
treat_post			−108.033*
			(47.398)
triple_diff			−4.915
			(72.412)
Num.Obs.	4917	5168	5168
R2	0.639	0.589	0.589
R2 Adj.	0.602	0.548	0.548

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

Table 5: Robustness check: heteroskedasticity-robust standard errors

	FE (Robust)	DiD (Robust)	DDD (Robust)
HH_WAGE	0.496***		
	(0.094)		
PAYMENT	−0.616**		
	(0.205)		
TREATED × post		−108.525*	−108.033*
		(48.838)	(49.179)
TREATED × post × RACIALHH			−4.915
			(73.879)
Num.Obs.	4917	5168	5168
R2	0.639	0.589	0.589
R2 Adj.	0.602	0.548	0.548

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

6 Event Study

To evaluate the parallel trends assumption underlying the DiD strategy, we estimate an event study specification that allows the treatment effect to vary freely across periods:

$$\text{HH\_HOURS}_{it} = \sum_{k \neq 0} \delta_k \cdot \mathbf{1}[t = k] \cdot \text{Treated}_i + \alpha_i + \gamma_t + \varepsilon_{it}$$

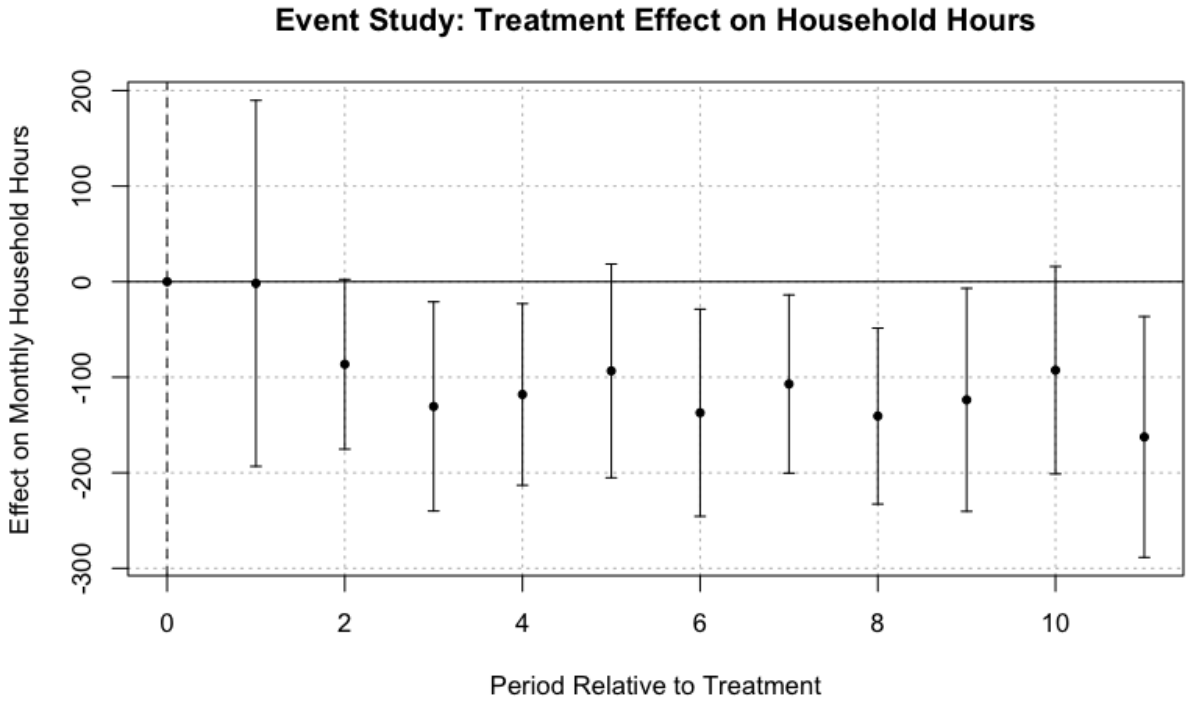

Figure 2: Event study estimates of the treatment effect on monthly household hours. Period 0 (baseline) is the reference. Vertical bars show 95% confidence intervals.

If parallel trends holds, the pre-treatment coefficients ($k < 0$) should be statistically indistinguishable from zero. The post-treatment pattern reveals the dynamic trajectory of the labour supply response.

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7 Conclusion

This analysis provides evidence on how guaranteed income transfers affect household labour supply in the MINCOME experiment, with particular attention to heterogeneity by racial identity. The fixed effects and difference-in- differences estimates capture the average response, while the

triple-differences model isolates whether racialized households adjust their work hours differently in response to the same income guarantee.

These findings are consistent with Hum & Simpson (1993) and Riddell & Riddell (2000), who documented small reductions in hours worked in the same experiment, and with Verho et al. (2022) who found limited labour supply effects in Finland. The insignificance of the triple-difference term echoes Santos & Van Doornik (2024)'s finding that effects were stronger for disadvantaged subgroups in a developing-economy context, but suggests more homogeneous responses in the Canadian setting. Future work could extend this framework to examine effects by sex of household head, benefit level, or geographic site, and could incorporate longer follow-up data to assess persistence.

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8 References

Arnold, J., & Bueno, D. (2021). *Social protection in Brazil: Addressing inequalities and investing in people*. OECD Economics Department. https://www.oecd.org/economy/surveys/brazil-2020-oecd-economic-survey.pdf

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9 Appendix

9.1 Project Structure

```
ubi-analysis/
  data/
     01-raw/          # MINC3.xlsx, MINC4.xlsx (not tracked in git)
     02-clean/        # Generated by scripts
  scripts/
     01_load_data.R
     02_clean_data.R
     03_eda.R
     04_model.R
  results/
     figures/
     models/
  reports/
     ubi_analysis_report.qmd  ← this document
  Makefile
  renv.lock
```

Run the full pipeline with:

```
make all
```

9.2 Session Info

```
sessionInfo()
```

```
R version 4.2.1 (2022-06-23)
Platform: x86_64-apple-darwin17.0 (64-bit)
Running under: macOS 26.2

Matrix products: default
BLAS:   /Library/Frameworks/R.framework/Versions/4.2/Resources/lib/libRblas.0.dylib
LAPACK: /Library/Frameworks/R.framework/Versions/4.2/Resources/lib/libRlapack.dylib

locale:
[1] C.UTF-8/C.UTF-8/C.UTF-8/C/C.UTF-8/C.UTF-8

attached base packages:
[1] stats     graphics  grDevices datasets  utils     methods   base

other attached packages:
 [1] cowplot_1.2.0      knitr_1.50         modelsummary_2.6.0 fixest_0.13.2
```

```
 [5] lubridate_1.9.4    forcats_1.0.1      stringr_1.5.2      dplyr_1.1.4
 [9] purrr_1.1.0        readr_2.1.5        tidyr_1.3.1        tibble_3.3.0
[13] ggplot2_4.0.0      tidyverse_2.0.0

loaded via a namespace (and not attached):
 [1] zoo_1.8-15          tidyselect_1.2.1    xfun_0.53
 [4] performance_0.16.0  lattice_0.20-45     parameters_0.28.3
 [7] vctrs_0.6.5         generics_0.1.4      htmltools_0.5.8.1
[10] yaml_2.3.10         rlang_1.1.6         pillar_1.11.1
[13] glue_1.8.0          withr_3.0.2         RColorBrewer_1.1-3
[16] S7_0.2.0            lifecycle_1.0.4     gtable_0.3.6
[19] bayestestR_0.17.0   evaluate_1.0.5      tzdb_0.5.0
[22] fastmap_1.2.0       datawizard_1.3.0    Rcpp_1.1.1
[25] renv_1.1.6          scales_1.4.0        backports_1.5.0
[28] checkmate_2.3.4     stringmagic_1.2.0   jsonlite_2.0.0
[31] farver_2.1.2        hms_1.1.3           digest_0.6.33
[34] stringi_1.8.7       insight_1.4.6       numDeriv_2016.8-1.1
[37] grid_4.2.1          cli_3.6.5           tools_4.2.1
[40] sandwich_3.1-1      magrittr_2.0.4      Formula_1.2-5
[43] pkgconfig_2.0.3     dreamerr_1.5.0      tinytable_0.16.0
[46] data.table_1.17.8   timechange_0.3.0    rmarkdown_2.29
[49] R6_2.6.1            tables_0.9.33       nlme_3.1-157
[52] compiler_4.2.1
```