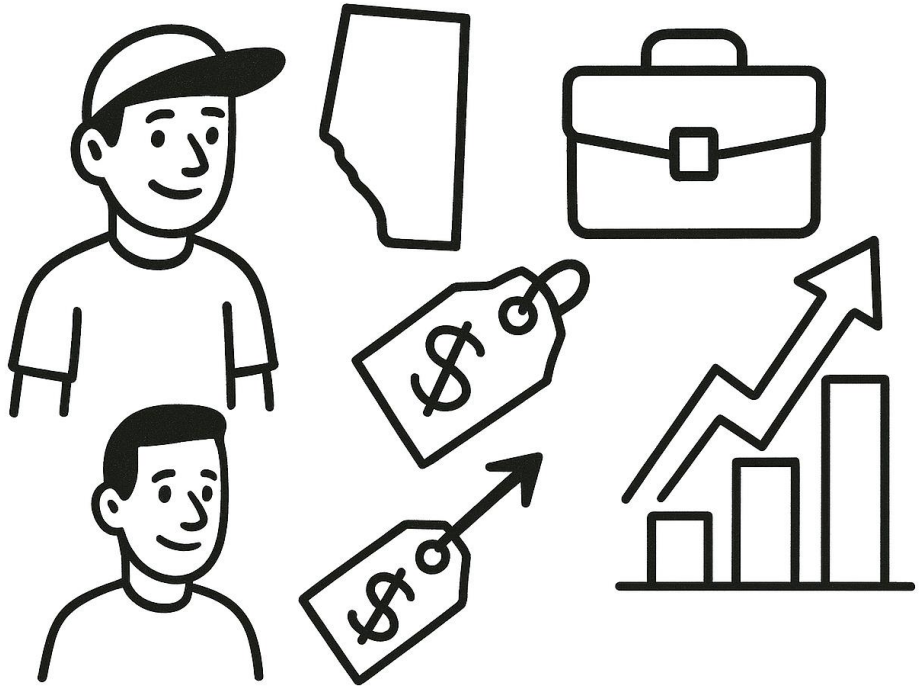
Effects Of Age-dependent Minimum Wages On Youth Employment:

Evidence from Alberta



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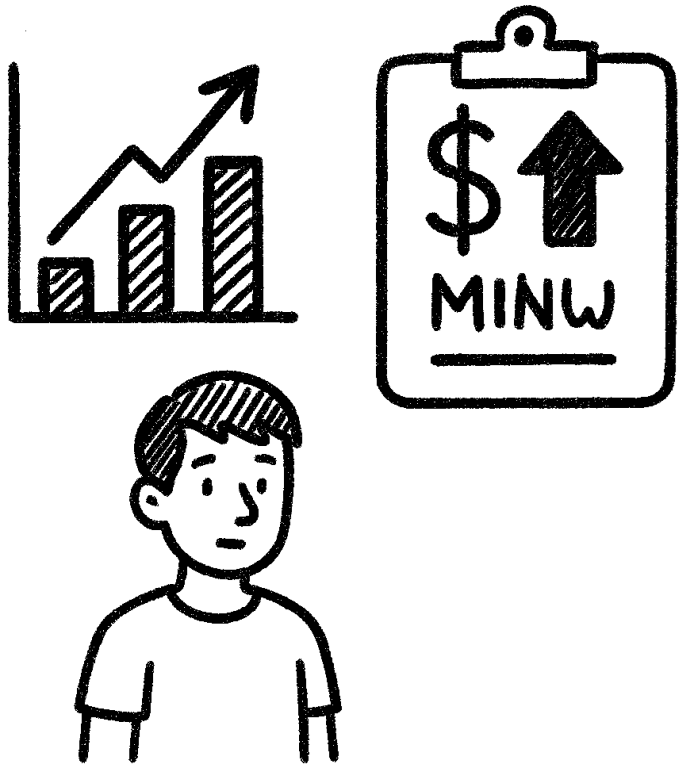
Background

- There is a growing trend towards higher min. wage in various jurisdictions.

Key questions:

- Does setting a lower min. wage for younger workers help offset youth employment losses of min. wage hikes?

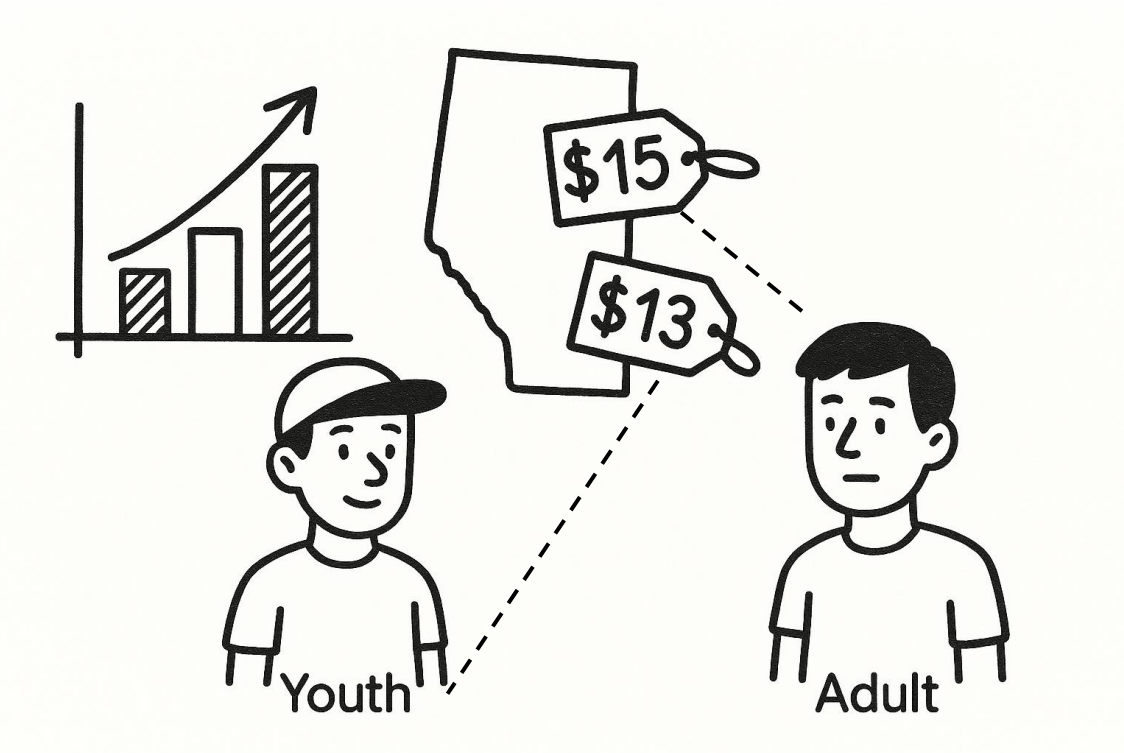


Institutional background

- **Large increase:** Alberta had 47% min. wage increase in 3 years (2015 to 2018).
  —see Fossati and Marchand (2024) for broader institutional overview.

- **Age-dependent policy:** "job-creation student wage" at $13/hour for workers below 18 years.
  - **Policy aim:** offset the potentially negative employment effects of a high minimum wage

- Labour market effects of Alberta's age-dependent minimum wage has not been studied comprehensively.



Does a lower minimum wage for younger workers boost their employment?

- Related literature (mostly European)
  - Krainer et al. (2020) minimum wage increases at age 18 in Denmark
  - Kab´atek (2021): multiple youth min. wage steps in the Netherlands
  - Bezooijen (2024): min. wage changes at age 20-22 in Netherlands
  - Dickenset et al. (2014): min. wage changes at age 22 in the UK.

- Limited literature on age-dependent minimum wage policies, for North American labour markets.

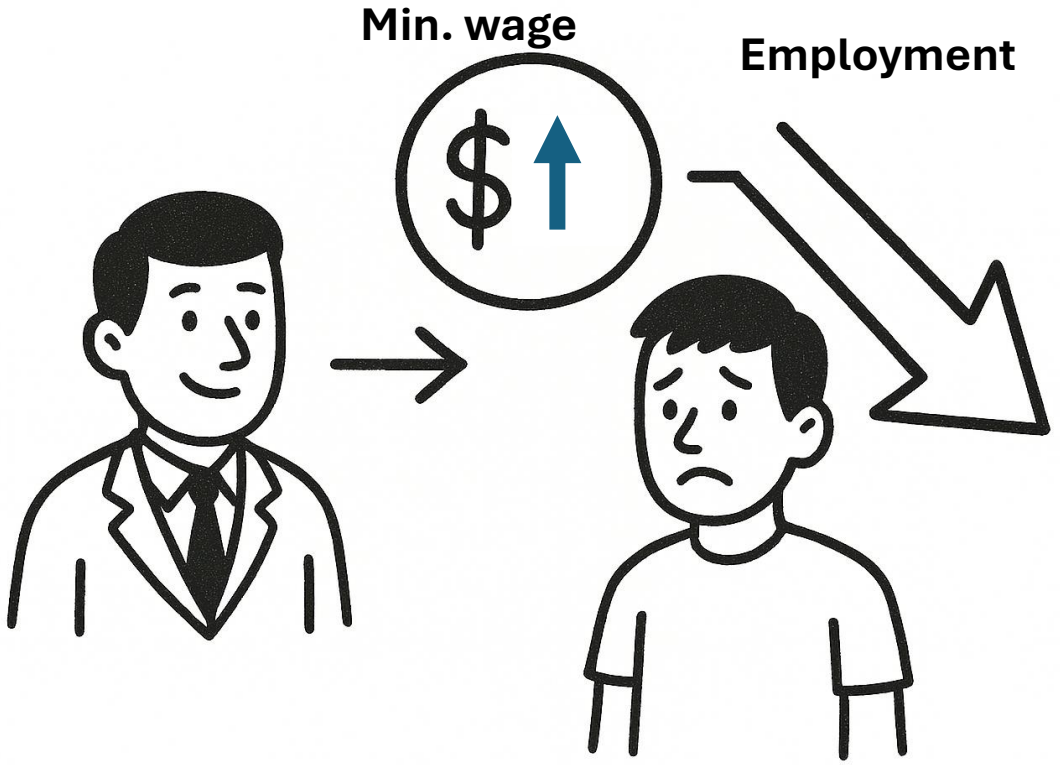
Theoretical framework

- Labor market model under perfect competition (profit max firms)

  ⇒ decrease in employment probability if min. wage> marginal productivity of labour

  —E.g. See Kreiner et al., 2020; Clemens and Strain, 2017.

- Assumptions
  - Age-dependent worker productivity
  - binding minimum wage in low wage sectors, among young workers



Empirical approach

1. **Regression Discontinuity (RD)** ⇒EXPLOITS DISCONTINUITY IN POLICY ELIGIBILITY AGE. Discrete jumps in the conditional expectation of employment outcome ⇒ treatment effect at the age eligibility threshold

$$Y_i = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 (X_i - \hat{a}) + \beta_3 \text{Treatment}_i \times (X_i - \hat{a}) + \epsilon_i$$

2. **Difference in Differences (DID)** ⇒ EXPLOITS PROVINCE VARIATION.

$$Y_i = \beta_0 + \beta_1 \text{Treated}_i + \beta_2 \text{Policy}_i + \beta_3 \text{Treated}_i \times \text{Policy}_i + \epsilon_i$$

- Consider quadratic polynomial for RD
- Also consider other covariates for youth labour market characteristics

Data

- Data access via Statistics Canada's Research Data Center at the University of Alberta, and Virtual Data Lab
- Financial support for data access via GoA
- Monthly Labor Force Survey.
- Workers 15 -21 years of age in low wage sectors
- Time frame: 2018 to 2021.

Sample descriptives

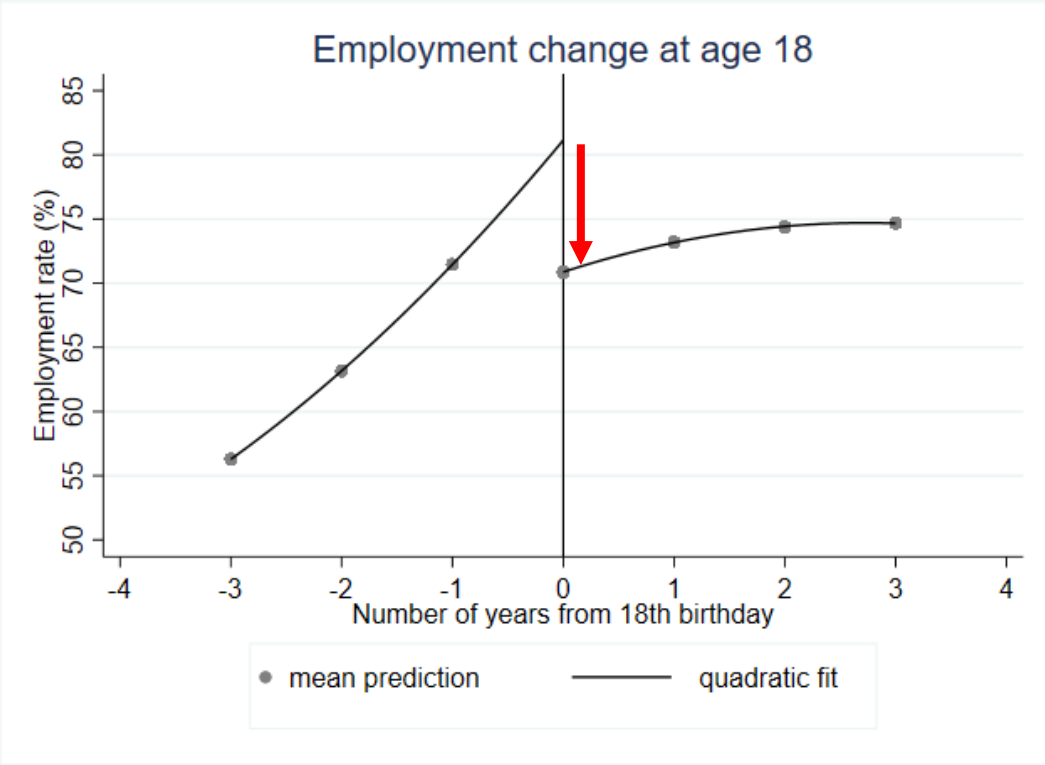
	15-21 year olds		16-20 year olds	
	Mean	Std. Dev.	Mean	Std. Dev.
Main variables				
Employed (1=yes, 0=otherwise)	73.19	44.30	73.30	44.24
Age in years	18.69	1.75	18.27	1.33
Treatment sharp (1=18 years and above, 0=less than 18)	0.73	0.44	0.70	0.46
Treatment fuzzy (1=18 years and above or exempt, 0=otherwise)	0.82	0.39	0.79	0.41
Student status (1=yes, 0=otherwise)	0.47	0.50	0.49	0.50
Hourly wages	16.31	3.60	15.97	2.79
Other outcome variables				
Labour force participation (1=Yes, 0=otherwise)	82.34	38.13	82.79	37.75
Unemployed (1=yes, 0=otherwise)	11.11	31.42	11.47	31.86
Weekly hours worked	21.90	14.16	20.96	13.61
Weekly earnings	393.78	252.03	367.81	224.46
Covariate balance variables				
Female (1=yes, 0=otherwise)	0.56	0.50	0.56	0.50
Immigrant (1=yes, 0=otherwise)	0.05	0.22	0.05	0.23
Parent's education (1=has degree, 0=otherwise)	0.30	0.46	0.31	0.46
Large city (1=large urban area, 0=otherwise)	0.64	0.48	0.64	0.48
N	9,927		7,772	

Analytical sample:

- **Samples:** 15 to 21 AND 16-20
- **Industry:** low wage sectors
- **Period:** Monthly Labour Force Survey, 2018 to 2021 period.

RD Plots based on model estimates

Changes in Wages and Employment at Age 18



- The discrete jump in wages coincides with a discrete drop in employment rates
- The employment rate decreases at the point where youth become subject to a higher minimum wage

Pre-policy Changes in Wages and Employment at Age 18

- No discrete jumps in employment outcomes at the 18-year mark, during the pre-policy period.

Result 1: Youth employment decreases when minimum wage increases

Policy age threshold and placebos:	**Age 18**	**Age 17**	**Age 19**	**Age 18, BC**
	(1)	(2)	(3)	(4)
Dep. var: Employment dummy indicator x 100				
Sharp RD	**-7.677****	-5.400	4.306	-2.149
	(2.417)	(10.361)	(7.711)	(2.401)
Fuzzy RD	**-10.900*****	-5.068	0.935	-4.519
	(3.106)	(8.389)	(3.072)	(3.598)
Month and year fixed effects	✓	✓	✓	✓
N	7,772	6,748	8,317	8,462

- **10.9 pp** decrease in employment
- employment elasticity of **-0.97** (-0.6 to -1.0 range).

- **Main :** employment rate decreases at the point where youth receive a higher minimum wage.
- **Placebo:** no statistically significant employment discontinuities at non-policy categories.

RD Results 2: Youth unemployment rates increase, but no change in participation rate and hours.

Dependent variables:	Participation rate	Unemployment rate	Hours worked
	(1)	(2)	(3)
15-21 year olds	-5.284	7.625***	2.509
	(4.718)	(2.116)	(1.568)
N	9,927	8,021	9,927
16-20 year olds	-4.178	9.225**	1.745
	(3.423)	(4.188)	(1.688)
N	7,772	6,331	7,772
Month fixed effects Year	✓	✓	✓
fixed effects	✓	✓	✓

- unemployment rate increases at the point where youth receive a higher minimum wage.
- But no statistically significant changes in participation rates and hours worked.

RD Results 3: comparability of individuals on either side of the policy threshold.

Dependent variables:	Female	Recent immigrant	Degreed parents	Large city
	(1)	(2)	(3)	(4)
Sharp RD	-0.014	-0.038	0.065	-0.050
	(0.061)	(0.057)	(0.123)	(0.081)
Fuzzy RD	-0.025	-0.054	0.083	-0.078
	(0.083)	(0.073)	(0.140)	(0.107)
Month fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
N	7,772	7,772	7,772	7,772

- no statistically significant employment discontinuities when workers turn 18.
- individuals on either side of the 18-year threshold have comparable characteristics

DID Results: employment boost for workers receiving a lower minimum wage

Sample group:	**Treatment: AB youth aged 15-17, Control: BC youth aged 15-17**		
	1(a)	1(b)	1(c)
Explanatory variables:			
Treated (=1 if below 18, 0 otherwise)	-6.252***	-6.172***	-6.062***
	(1.784)	(1.783)	(1.811)
Policy (=1 if policy period, 0 if pre-policy)	-5.083***	-20.280***	-20.206***
	(1.482)	(2.554)	(2.528)
Treated x Policy (DID estimate)	**5.433****	**5.914*****	**5.102****
	(2.287)	(2.261)	(2.262)
Constant	74.303***	57.852***	61.207***
	(1.137)	(2.859)	(3.539)
Month fixed effects		✓	✓
Year fixed effects		✓	✓
Individual characteristics			✓
Observations	11,713	11,713	11,713
R-squared	0.003	0.037	0.05

DID results

- Consistent with RD analysis, indicating employment boost for workers receiving a lower minimum wage

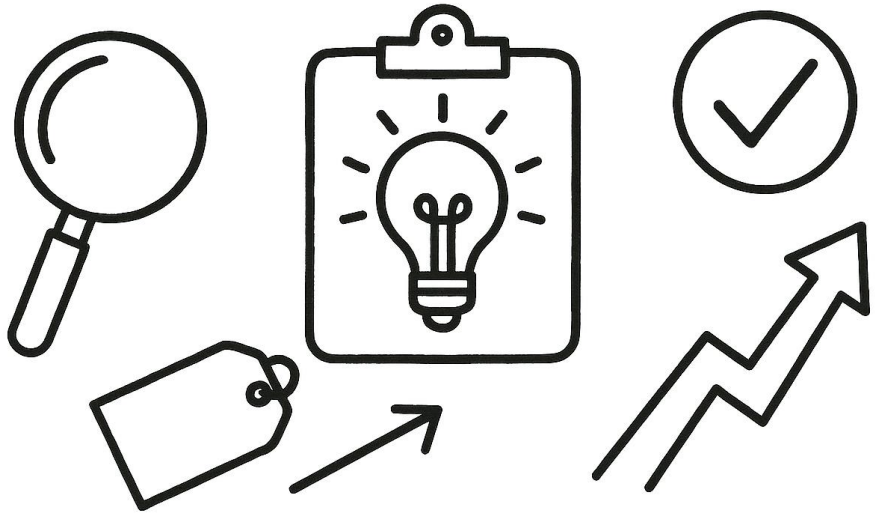
Summary

- Findings are inline with predictions of employment losses due to minimum wage increases
  - Results suggests that a lower age-dependent min. wage could offset youth employment losses.
  - The estimated employment elasticity ranges from -0.6 to -1.0.
  - To our knowledge ⇒ first North American study on employment effects of age-dependent min. wage.
- Further considerations: need to assess worker substitution issues and optimal design of age-dependent policies.

Policy Insights

- Given the ongoing policy interest in minimum wages, our study provides policy insights on labour market responses to age-dependent minimum wages.

- Our findings suggests that age-dependent minimum wages can be an effective policy strategy for offsetting negative employment effects under high minimum wage settings.



THANK YOU