Does Hiring Credit Increase Jobs for Vulnerable Workers?
Evaluating the First Job Act in Colombia

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Motivation

- Demand-side tax reductions have been found to increase employment and worker salaries heterogeneously (i.e. across changing firm size, relative labor cost, credit constraints, and existing worker demographics) (Saez, Schoefer, and Seim 2019)
- In general, hiring credits are known to be less effective in excess supply situations (i.e. during recessions). Though can be effective, targeting sub-population (i.e. the unemployed) can create stigma in normal times (Cahuc, Carcillo, and Le Barbanchon 2019)
- Do hiring credits work in developing economies with high informality (Bonnet, Vanek, and Chen 2019) and labor market segmentation (Campbell and Ahmed 2012) ?

Colombian Labor Market

Population, Worker, and Firm Density by State
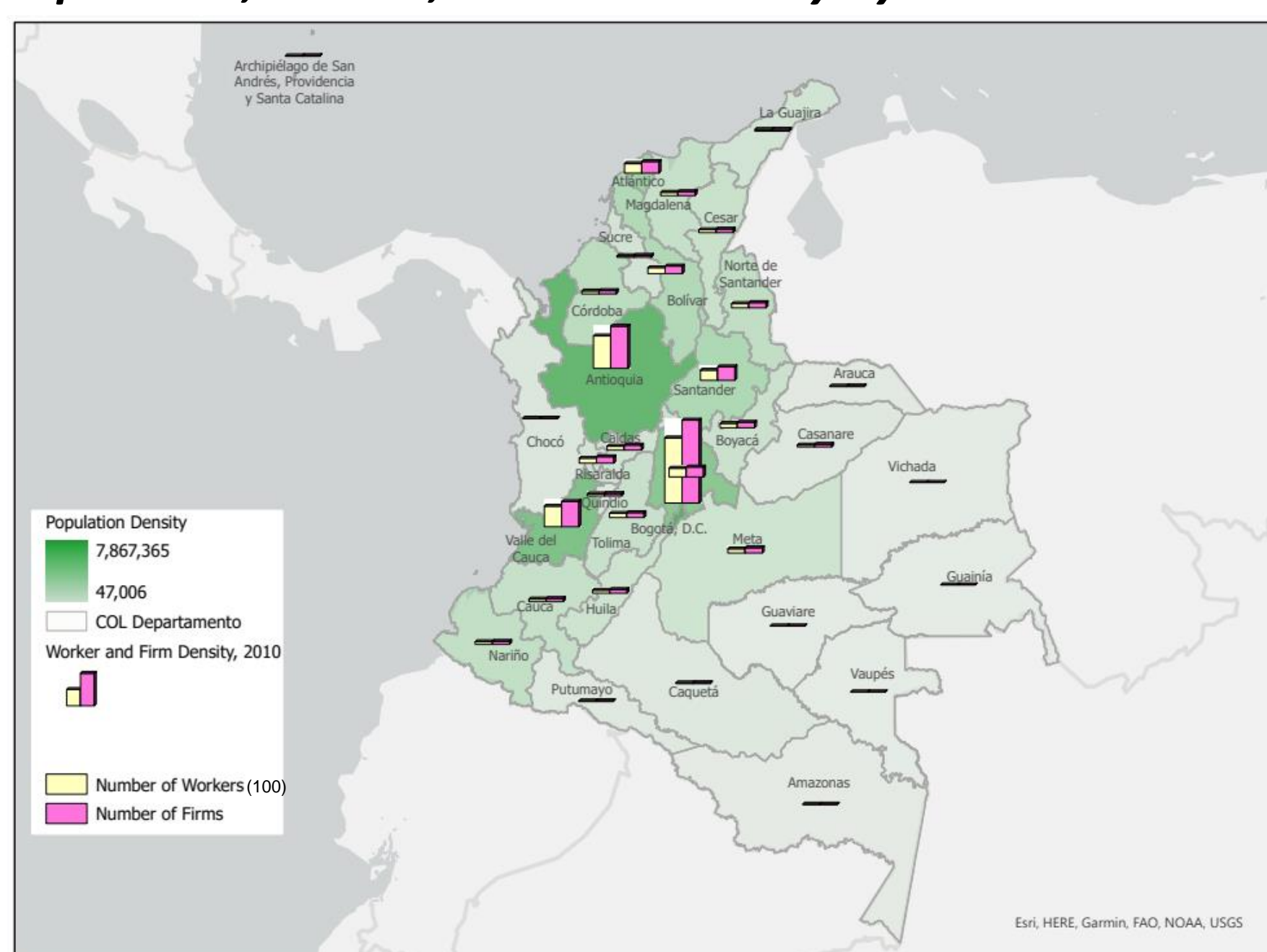
- The urban and rural labor markets are segmented and informal employment is high
- The firm-size and pension-defined informal employment are between 47 to 56%
- Factors including high payroll tax and minimum wage keeps Colombian structural unemployment (NAIRU) between 6.1 to 12.5%
- Gender and youth gaps in both unemployment and labor market participation are high

Research Questions

- Did a hiring credit for vulnerable workers create formal jobs in Colombia?
- Do the Southeastern rural states with combined formal firm creation incentives and hiring credits experience a larger job-creation impact?

Policy: First Job Act of 2010

First Job Act (Ley de Primer Empleo) of 2010 is a demand-side labor market intervention for formal job creation in Colombia enacted at the end of 2010.

- **Worker hiring subsidy**: The government rebates corporate tax by the amount of payroll tax accruing for new workers in 'vulnerable' categories for 2 to 3 years. We analyzed the three categories below. (The three cover 70% of total formal sector workers in Colombia.)

Category	Youth	Career-disrupted Female	Low-income
Criteria	Age under 28	Age over 40, Did not work last 12 months	Earn less than 1.5 times minimum wage

- **Small firm creation subsidy**: Registration fee waiver, corporate tax reduction, all worker payroll tax reduction to new small formal firms less than 50 employees for 3 to 5 years.
- **Rain forest initiatives**: Amazonas, Guainia, and Vaupes states covered with Amazon rain forest enjoy longer and larger benefits to new small firms.

Data and Sample

Data: The Integrated Contribution Settlement Form (PILA)
- The payroll tax contribution records of the Colombian Ministry of Health and Social Protection (MinSalud)
  - Matched employer-employee data for all formal workers in Colombia
  - Analysis year: 2008-2018 / Total observations: 1.1 billion tax entries
  - The source administrative records for the beneficiary selection permit gauging policy consequences (Δemp, Δwage)

Sample Restriction: Private sector domestic worker-firms abiding Colombian regulation
- Using rich information in the social security tax records, we removed firms and workers outside of the policy domain and merged them into unique worker-firm pair
- Age 16 to 70, extended 5 years reflecting descriptive statistics results

Final Sample: 88 million balanced (Δemp) panel, 36 million unbalanced (Δwage) panels, 8 million pooled observations (new worker analysis) of unique worker-firm pairs

Methodologies

Difference-in-Differences (DID) for the Work Status and Wage

$$Y_{ijkst} = \alpha + \beta_t P_t + \gamma_k B_k + \lambda_{kt} P_t B_k + \delta_i + \delta_j + \delta_s + \delta_t + \epsilon_{ijkst}$$

Triple Difference (DDD) for the Rural Impact Analysis

$$Y_{ijkst} = \alpha + \beta_t P_t + \gamma_k B_k + \theta R_s + \lambda_{kt} P_t B_k + \zeta_{ts} P_t R_s + \xi_{ks} B_k R_s + \phi_{tsk} P_t R_s B_k + \delta_i$$
$$+ \delta_j + \delta_s + \delta_t + \epsilon_{ijkst}$$

**Propensity Score Matching (PSM) with Nearest Neighbor (1NN)**
Matching covariates: industry, state, year, and firm ID
(Worker demographics are part of the policy criteria naturally creating matching imbalances)
Estimates from Replacement (R) and No Replacement (NR) matching samples were compared

Preliminary Tests

PSM Balance Check

|	PSM R			PSM NR		
Year	Treated	Control	%Bias	Treated	Control	%Bias
Year	2013.8	2013.8	-2.0	2013.8	2013.8	-1.7
State	28.839	28.677	0.6	28.839	28.781	0.2
Industry	5069.8	5107.9	-1.2	5069.8	5077.3	-0.2
Firm ID	0.0000	0.0000	3.1	0.0000	0.0000	1.8

DID Parallel Trends
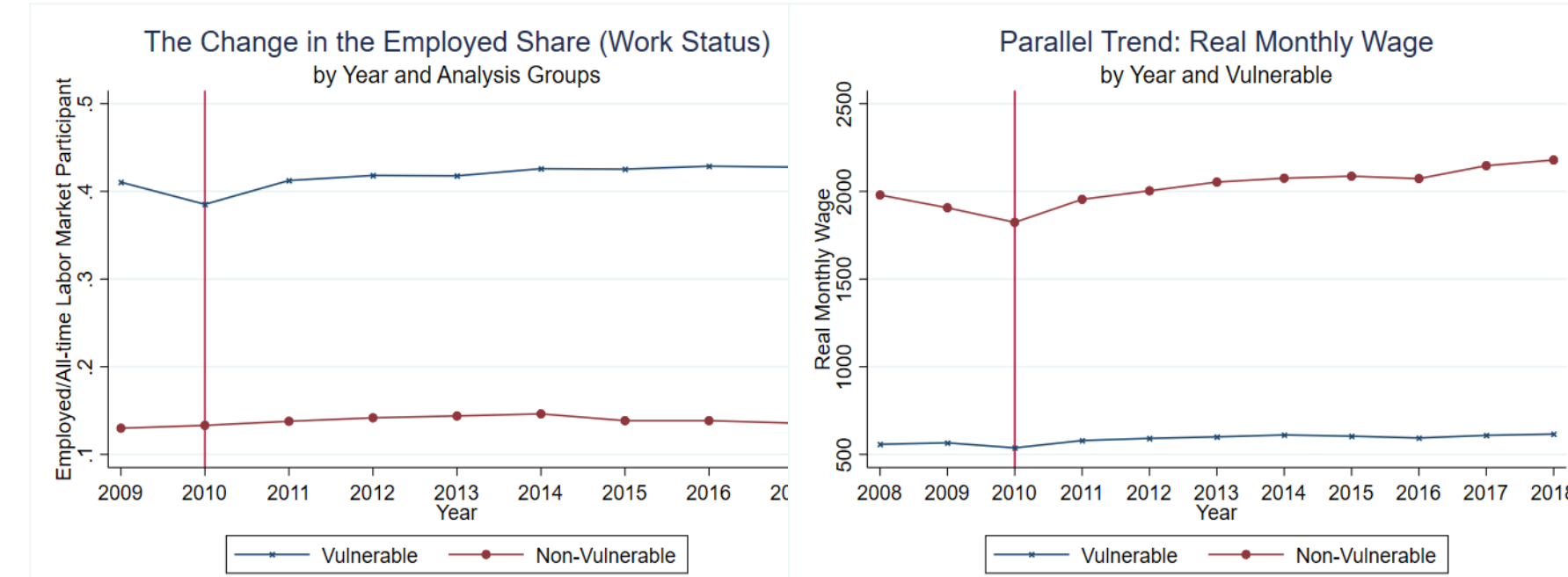
Summary of Findings

- The First Job Act increased the hiring of vulnerable workers, both youth and the career-disrupted females. The job creation was accompanied by slight wage increases except for the career-disrupted female.
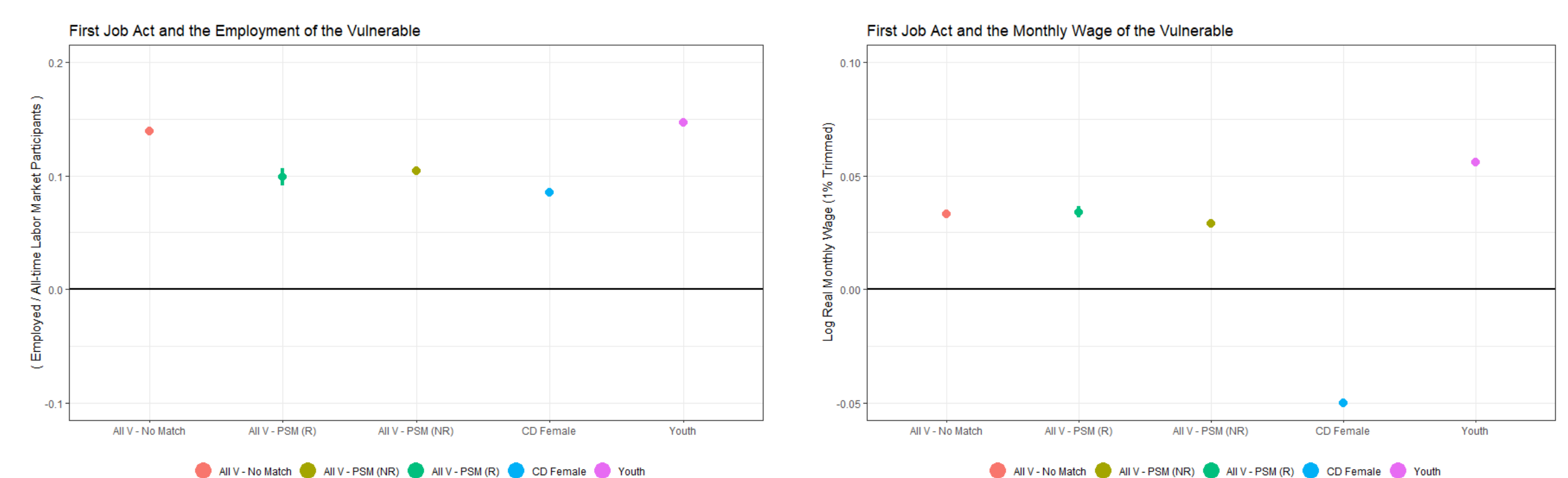
- The employment of the vulnerable in rural states declined. Rather, there was a hiring increase for non-vulnerable workers with several evidences of the structural transformation and economic boost. The wage for both vulnerable and non-vulnerable workers declined except for the career-disrupted female mostly working in basic service sectors.
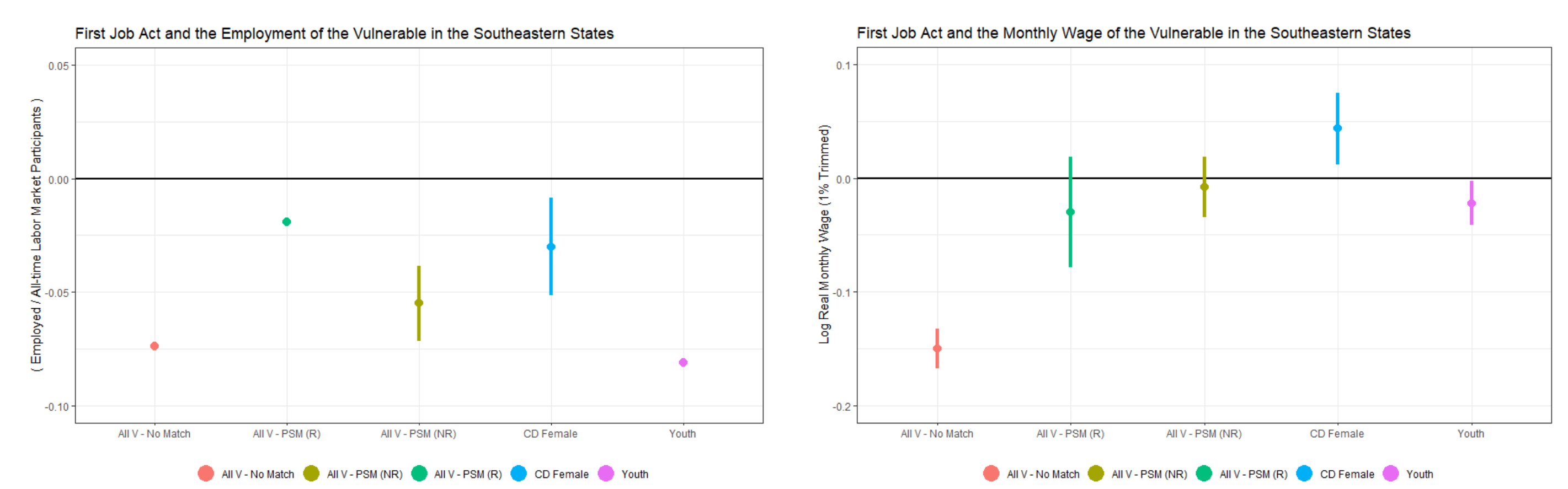
- The new worker analysis suggests that the entrants started their jobs with rather lower salaries. The cash windfall to firms likely benefited incumbent workers increasing their wage.
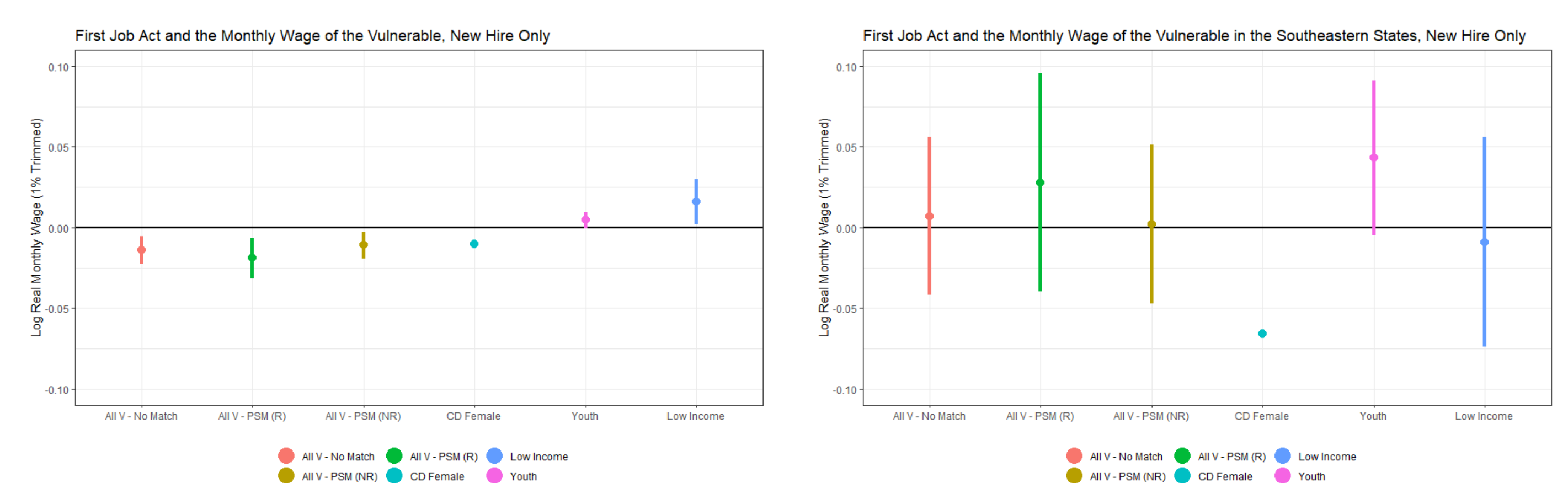
More Findings
- The 5-year job tenure for the post-policy hired youth declined on average 1.3 years after the policy enactment suggesting that the employment effect may not be long-lasting.
- There is evidence of no substitution between existing and new workers likely because of the policy's eligibility mandate of no wage-bill or headcount reduction.

Potential Contribution & Future Direction

Our main findings are:
- We performed the first long-term causal evaluation of the First Job Act
- The long-run evaluation with the tax administrative records will achieve high internal validity and contribute evidence for policy impacts in similar contexts
- We contribute causal effect estimates of hiring credits targeted to vulnerable populations and rural development in developing economies

Our next steps:
- We will investigate the policy impacts for infra-marginal subpopulations
- We will analyze small formal firm entries to disentangle the composite impacts in rural states

References

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4. Saez, Emmanuel, Benjamin Schoefer, and David Seim, 2019. Payroll Taxes, Firm Behavior, and Rent Sharing: Evidence From a Young Workers' Tax Cut in Sweden, *American Economic Review* 109(5): 1717-1763.