

# How Many Missouri Graduates are Expected to Get a Job Out-of-State?

## Team 1

### RESEARCH QUESTION

What are the characteristics of Missouri's bachelor's degree graduates that seek employment outside of the state?

#### Cohort:

Due to the nature of the problem requiring training and testing sets, this group defined their cohort as 2011 and 2013 graduates for their training and testing sets, respectively.

#### Outcome of Interest

Post-secondary education graduates from Indiana with bachelor's degrees that left Indiana for full-time employment within one year of graduation.

#### Metrics:

- The group started measuring employment five quarters after the individual's graduation term.
- Full-time employment:* Full-quarter employment, the presence of wages with the same employer for three consecutive quarters.

### Data Providers/Sources

Missouri Department of Higher Education

- Post-Secondary Education Completion data

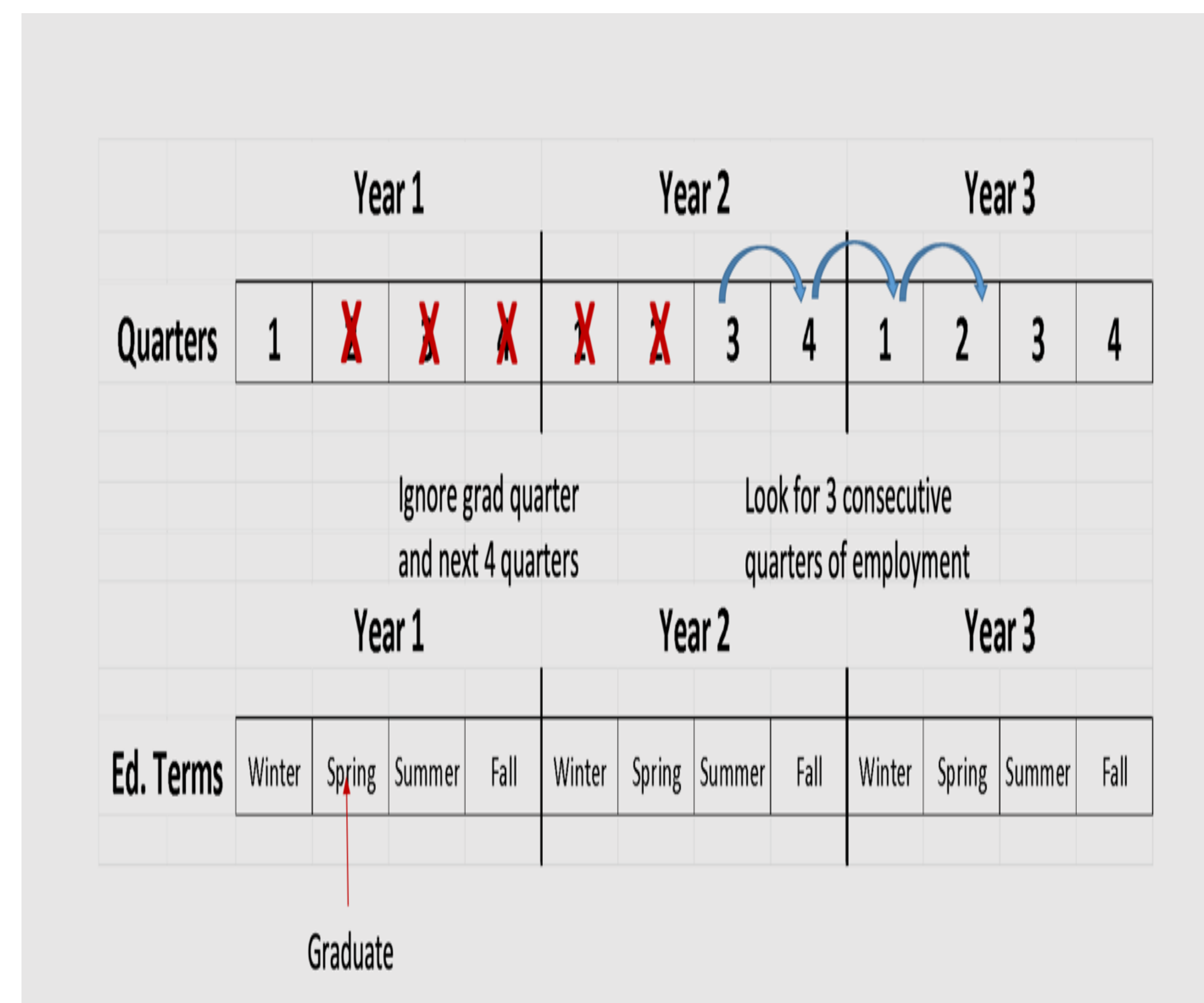
Missouri Division of Employment Security

- Unemployment Insurance wage records

#### Open-source Datasets

- American Community Survey
- QWI Explorer
- Cross Domestic Product by State
- Industry Wages
- Median and Annual Average Income by state
- Public University Research & Development funding by state

### Example: Employment Location Determination



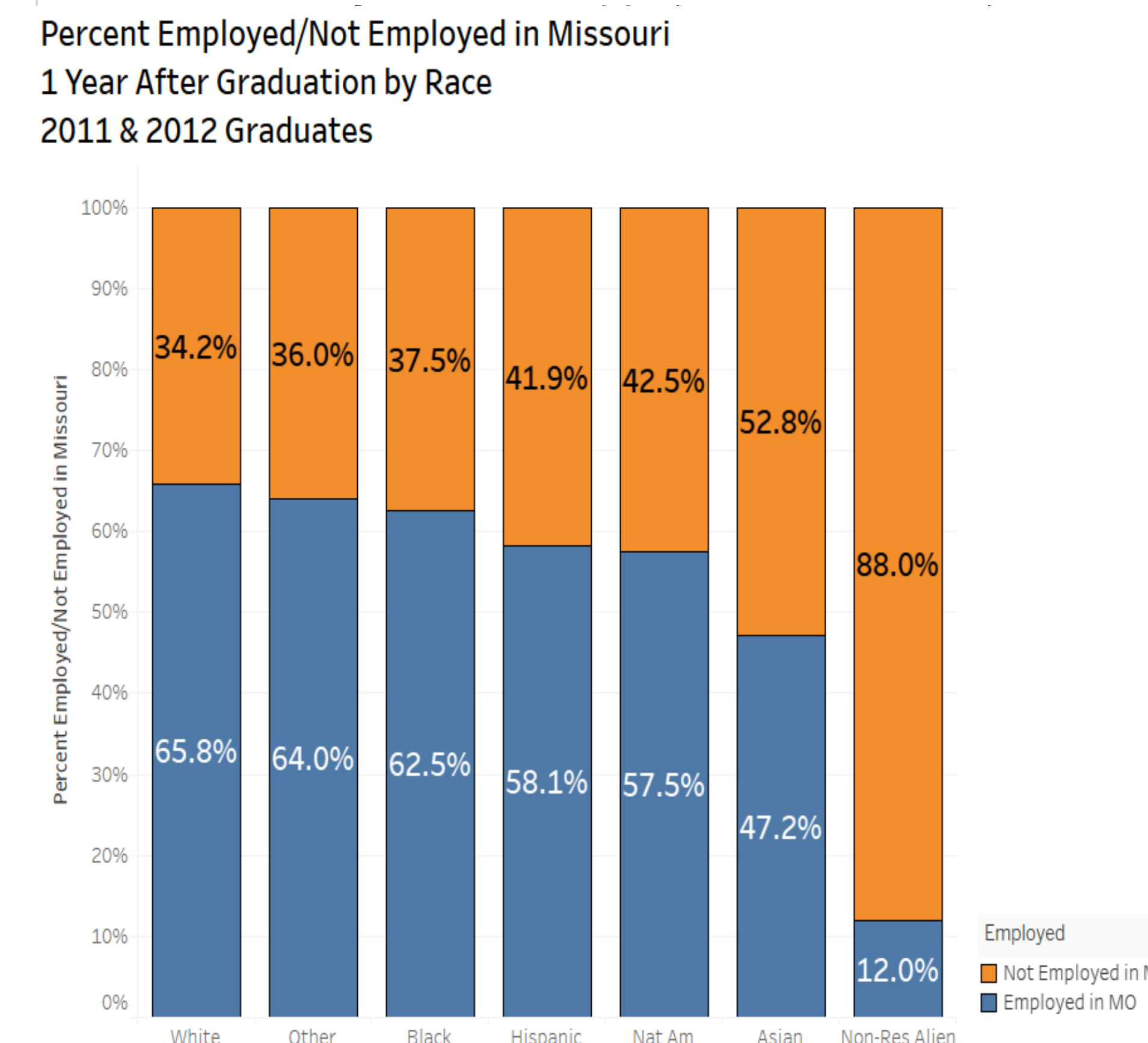
As demonstrated in the example above, a member of this cohort must have at least three quarters of any employment to be designated as employed. Within those 3+ quarters, it is possible for one to be designated as working in multiple states if they received wages from an employer in another state at a point within the quarters in question.

### Key Findings

Of this cohort:

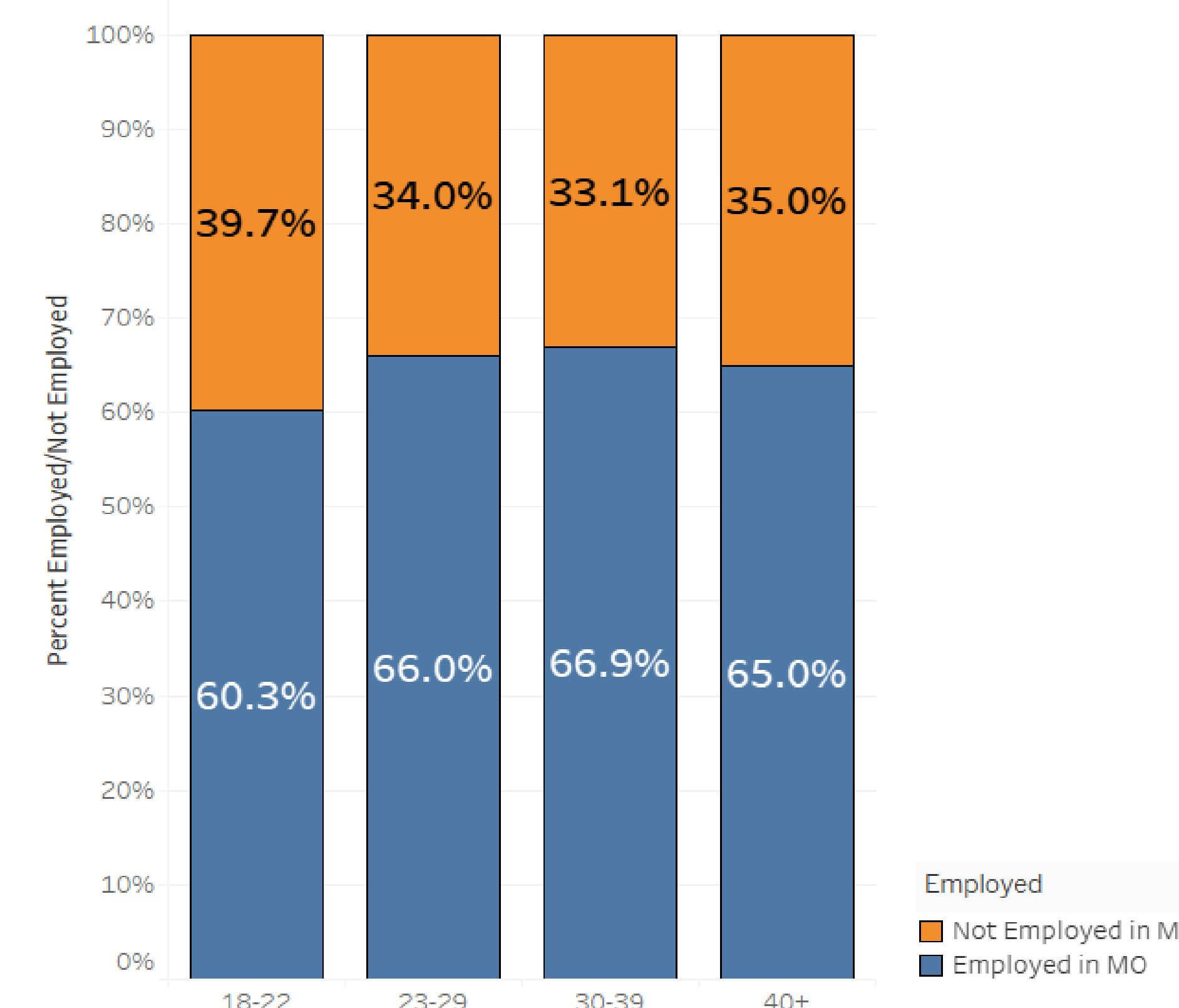
- Missouri bachelor's degree graduates who were minorities, internationals, out-of-state students, and those with STEM degrees were likely to be employed out-of-state.
- In-state graduates and those aged 23-39 were most likely to be employed in Missouri.

### Percent Employed/Not Employed in Missouri 1 Year After Graduation by Race

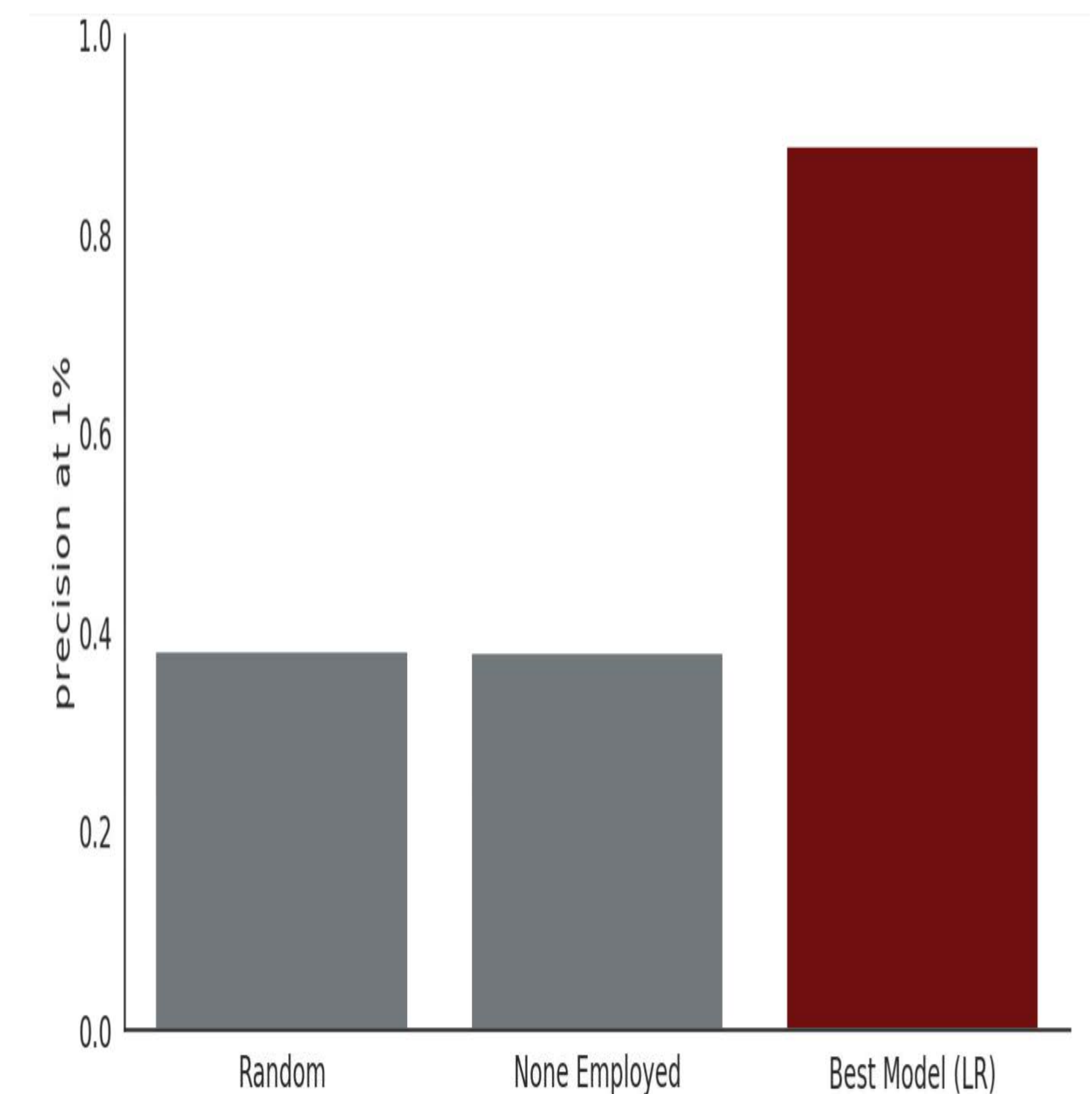


### Percent Employed/Not Employed in Missouri 1 Year After Graduation by Age Group

Percent Employed/Not Employed in Missouri 1 Year After Graduation by Age Group 2011 & 2012 Graduates



### Machine Learning Model Comparison: Precision at 1 percent



### Caveats

The group made a key assumption that individuals not found in the Missouri wage data were employed out of state.

### Possible Extensions

Conduct a similar analysis using Unemployment Insurance wage records from other states, particularly bordering states, which would nullify the caveat of this project by accurately identifying out-of-state workers.

### SPONSORS

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