# The effect of record linkage algorithms on research results

Flash — Open Science in Demography and Population Studies

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# Record linkage

- Identify same person across datasets in absence of a unique identifier (e.g., SSN)
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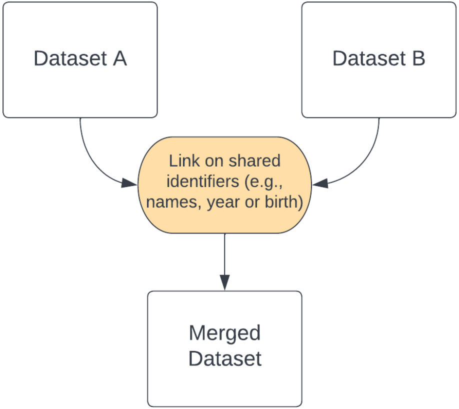

# Background

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- **Roadmap** — what are key considerations of working with linked data?

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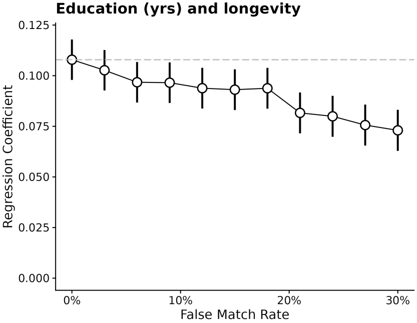
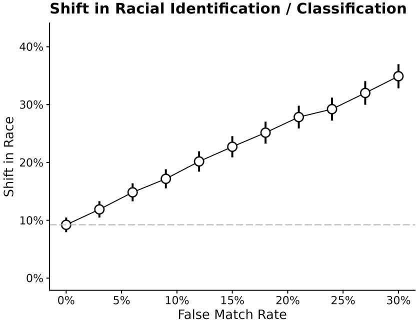

**Education (yrs) and longevity**

Attenuated regression coef.


**Shift in Racial Identification / Classification**

Upwardly biased estimates of transitions

# Case study: complete count census linkages

- Data infrastructure projects providing links between complete count census data (Ruggles et al., 2020; Abramitzky et al., 2020)

- Linkages between complete count 1930 Census and 1940 Census

- Create different samples using different linkage algorithms, varying levels of "conservative"

# Regression example – comparable coefficients

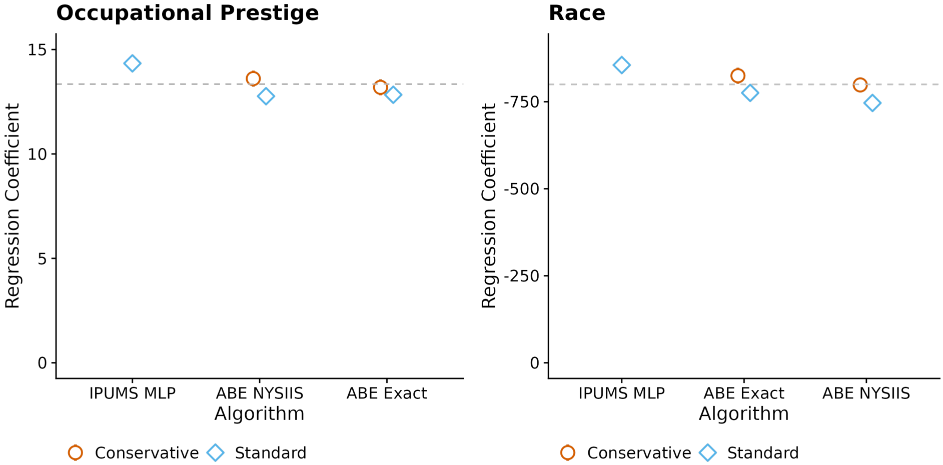


Figure: Association between covariates (1930) and wage and salary income (1940)

# Transition example – larger differences in estimates

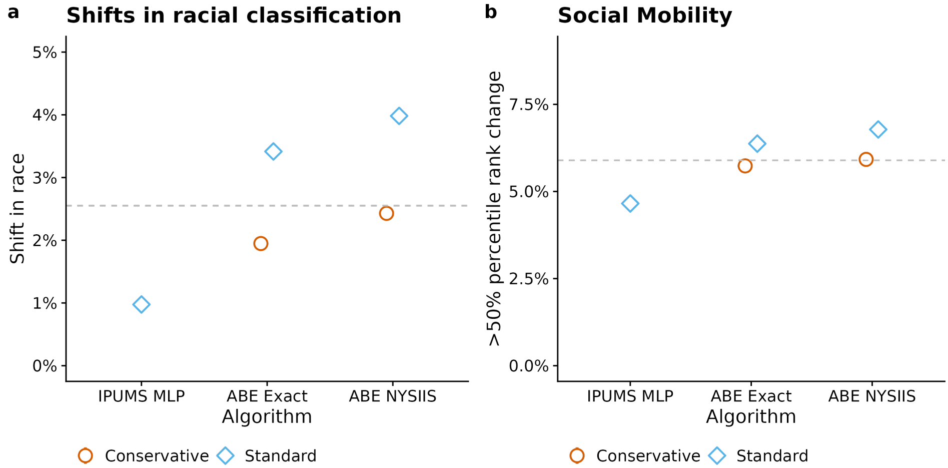


Figure: Transitions, racial classification and occupational prestige percentile rank

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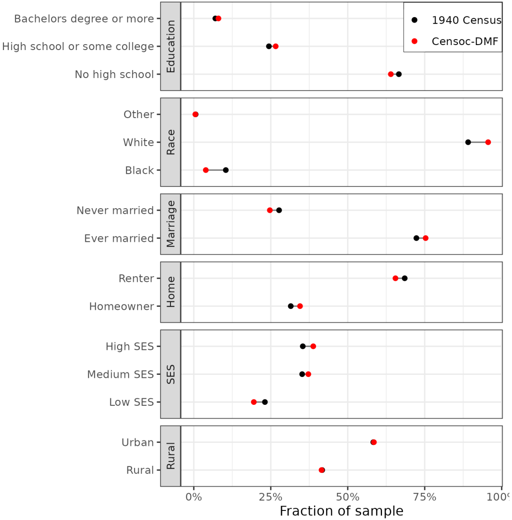
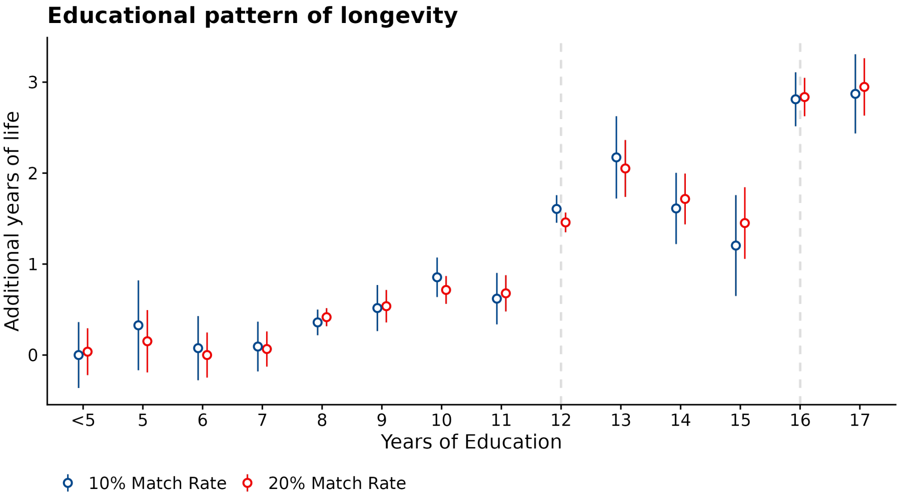
- Compare composition of matched sample to population of interest



# Same general result when match rate is cut in half ...



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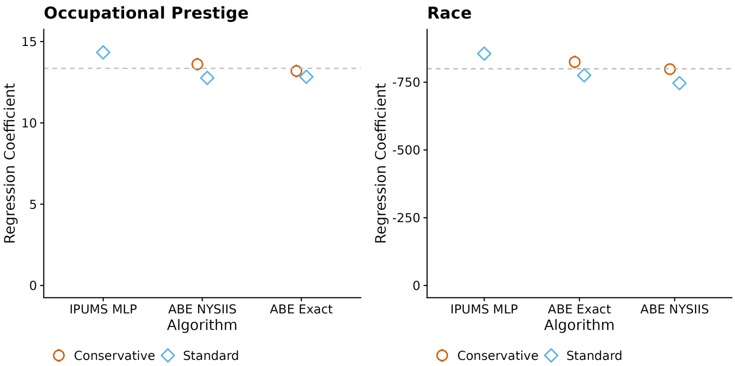
   - Direction/Magnitude of the bias?
2. **External Validity:** Is our matched sample representative of the population we want to learn about? If not:
   - How different is the composition of our sample from our population of interest?
   - Can we address this with reweighting?

# Thank You



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# References

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