ABOUT THE ORIGINAL STUDY

STEM teacher characteristics and mobility: Longitudinal evidence from the American Midwest

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Why It Matters

STEM staffing challenges differ across school communities, even in neighboring states. Evidence from Kansas (KS) and Missouri (MO) shows why recruitment, retention, and compensation policies should account for local conditions to improve access to diverse, qualified STEM teachers.

Data and Sample

The study includes all secondary STEM teachers in Kansas and Missouri public schools from 2010–2011 through 2022–2023. Its descriptive sample includes 227,380 teacher-year observations.

Key Findings

- STEM teachers were predominantly White in KS and MO: about 6% were teachers of color across the study period, while the share of students of color in their schools rose from about 25% to 31%.
- The shares of young, early-career, and STEM-certified teachers declined, while inflation-adjusted salaries fell, particularly in the later years of the study.
- Annual turnover was about 13%–15% through 2020–2021 and rose to almost 20% in 2021–2022. Urban schools consistently had the highest descriptive turnover rates.
- Urban schools and schools serving the highest shares of marginalized students employed the least experienced and credentialed STEM workforces; rural schools had the least diverse STEM teachers.
- After statistical adjustments, higher student-of-color shares predicted greater turnover within urban areas, while higher poverty predicted greater turnover within rural/town areas.

Policy Implications

- Recruit and retain a more diverse, qualified STEM workforce, with attention to declining shares of novice and STEM-certified teachers.
- Tailor policies and resources to local conditions. Different patterns across states, school locales, and student populations suggest that uniform approaches may overlook schools with the greatest staffing challenges.
- Evaluate compensation reforms against local labor-market conditions, including competing STEM careers. Higher pay was associated with lower turnover, but whether salary increases or differentiated pay improve retention requires causal evaluation.

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