



Regional Geography of Vaccination Uptake and the Impacts of Policy Change in Pennsylvania

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Background

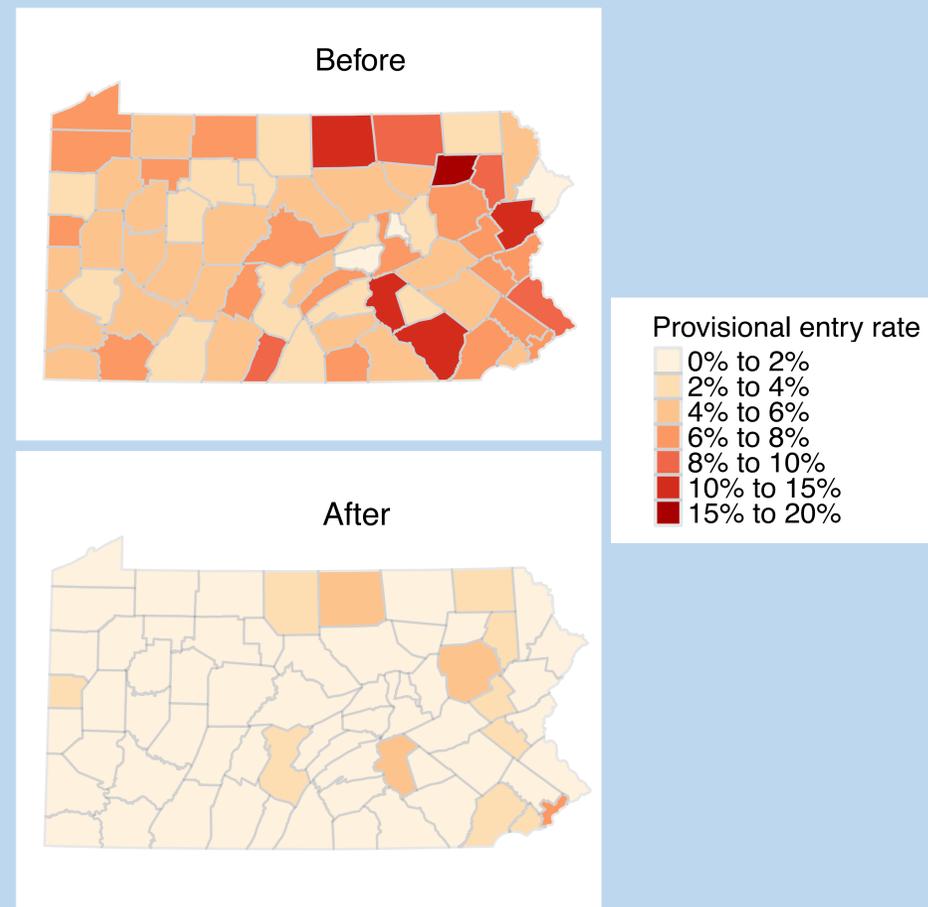
Widespread vaccination is important to protect the population from infectious diseases. In the U.S., children must be up-to-date on their vaccines to attend school. Those who are not up-to-date may enroll provisionally, where they have a grace period to become up-to-date or present a vaccination schedule.

In 2016, Pennsylvania was the state with the highest reported kindergarten provisional entry rate at 8.1%, and enacted a new policy prior to the 2017-18 school year reducing the grace period for provisional entrants from 8 months to 5 days. This policy change resulted in a large albeit geographically variable decrease in kindergarten provisional entry rates throughout the state.¹ This project looks at the policy's effectiveness in reducing kindergarten provisional entry rate by analyzing 1) the spatial clustering of provisional entrance before and after the policy, and 2) community-level attributes associated with provisional entry rates before and after the policy.

Data and Methods

- Kindergarten vaccination data from the 2015-16 through 2018-19 school years was obtained from the Pennsylvania Department of Health.²
- Sociodemographic data was gathered from the 2014-18 American Community Survey.³
- The first half of analysis utilizes two clustering analysis methods: Moran's I and Local Indicators of Spatial Association.
- To explore which community-level attributes were associated with provisional entry rate, regression models at the statewide and Philadelphia extents were constructed. These models predict provisional entrance rate using: % White population, % adults without a high school diploma, and % insurance coverage.

Results



Clustering analysis

- ❖ No dramatic level of clustering of county-level provisional entry rate was observed throughout the four school years analyzed.
- ❖ However, there was a slight increase in clustering of county-level provisional entry rate following the implementation of the new policy.

Community-level attribute analysis

- ❖ Percent White population was consistently a negative predictor of provisional entry rate. This was observed both at the statewide level and within Philadelphia.
- ❖ At the statewide level, percent adults without a high school diploma became a significant positive predictor of provisional entry rate following the policy change. This was not observed in the Philadelphia models.

Discussion

Pennsylvania's 2017 policy change, which reduced the grace period for provisional entrants from 8 months to 5 days, was very effective in reducing statewide kindergarten provisional entrance rate.

The policy change appears to have resulted in more structured patterns of provisional entrance among kindergarteners, specifically in terms of spatial distribution and which communities generally had higher provisional entry rates. This structure provides guidance for future campaigns encouraging parents to get their children up-to-date before the start of the school year. Future campaigns may benefit from focusing on communities with higher percent Black populations and/or communities with more adults without a high school diploma.

Future research could explore Philadelphia County more, since the trends in community-level attributes associated with provisional entrance differ from those at the state level. The findings from this project provide insight on the policy's impact, a foundation for further investigation into why it was more effective in some counties than others, and potential guidance for future policies and campaigns.

References

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2. Pennsylvania Department of Health. (n.d.). School Immunization Rates. Department of Health. Retrieved April 28, 2021, from <https://www.health.pa.gov:443/topics/programs/immunization/s/Pages/Rates.aspx>
3. IPUMS. (n.d.). IPUMS NHGIS. IPUMS National Historical GIS. Retrieved August 3, 2020, from <https://www.nhgis.org/>