

Research Question: How does the presence and funding of technology institutions correlate with incomes, living standards, development rates, and educational outcomes in different communities?

Data Sources:

1. National Center for Education Statistics (NCES) - Data on technology-focused institutions, funding, enrollment
2. U.S. Census Bureau - American Community Survey data on income levels, educational attainment, poverty rates
3. Bureau of Economic Analysis - GDP and economic growth data by county/metro area
4. National Science Foundation - Research funding data for institutions
5. Department of Education - College Scorecard data on student outcomes

Data Collection and Variables:

- Identify technology-focused institutions (e.g. technical colleges, research universities with strong STEM focus) using NCES data
- Collect data on institution funding, enrollment, research output over time
- Gather community-level data on:
 - Median household income
 - Educational attainment rates
 - Poverty rates
 - GDP growth
 - Employment in tech sectors
 - Patent applications
- Use geographic identifiers to match institution and community data

Analysis Plan:

1. Exploratory Data Analysis:
 - Visualize trends in tech institution presence/funding and community outcomes over time
 - Examine correlations between variables
2. Regression Analysis:
 - Use panel data models to estimate the impact of tech institutions on community outcomes, controlling for other factors
 - Model specification example:
$$\log(\text{Income}_{it}) = \beta_0 + \beta_1(\text{TechInstitutionFunding}_{it}) + \beta_2(\text{Controls}_{it}) + \alpha_i + \gamma_t + \epsilon_{it}$$
Where i represents communities, t represents time periods
3. Geospatial Analysis:
 - Create maps showing the distribution of tech institutions and economic outcomes
 - Analyze spillover effects to nearby communities
4. Causal Inference:
 - Exploit policy changes or openings/closures of institutions as natural experiments

- Use difference-in-differences or instrumental variable approaches to estimate causal effects

5. Heterogeneity Analysis:

- Examine differential impacts across urban/rural areas, regions, types of institutions since urban may witness positive correlations but rural may not.

This project would provide insights into how technology-focused educational institutions contribute to local economic development and human capital formation. It combines elements of education policy, economic development, and labor economics while utilizing diverse data sources and analytical techniques.