



School Mobility and Academic Achievement

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The Problem

- Non-promotional movement of students between schools (**school mobility**) is **an issue in Texas** (Kinder Institute for Urban Research 2022).
- **COVID-19 exacerbated mobility challenges** everywhere, but Texas saw a sharper increase (Kinder Institute for Urban Research 2022).
- **Districts with high student mobility face challenges** in student achievement, maintaining quality and providing support (Institute for Medicine 2010).
- **Understanding the effects of school mobility** on student achievement is **essential** for Texas educators, policymakers, and community leaders to **develop effective interventions**.

The Literature

- School mobility **often leads to lower academic achievement** due to disruptions in learning continuity and social integration (Mehana & Reynolds 2004).
- **Within-year moves cause greater academic setbacks** than between-year moves (Min 2021).
- But **some studies provide mixed results** (Vendall et al. 2021; Rumberger 2016) indicating that mobility is complex, nuanced approach is needed.
- Negative effects are **more severe for low-income and minority students**, who frequently experience reactive moves due to economic hardship (Welsh 2016; Rumberger 2016).
- Much of the impact of school mobility is **mediated by pre-existing academic challenges and socio-economic conditions** (Alexander, Entwisle, and Dauber 1996).

The Question

Research Question: How does student mobility within a school district, along with economic disadvantage, impact student success as measured by high school graduation rates?

Hypothesis: Students in school districts with higher rates of mobility are less likely to graduate from high school, with negative impact on graduation rates further exacerbated by economic disadvantage.

Texas Education Agency's Texas Academic Performance Report (TAPR)

Covering the academic years 2020-2021, 2021-2022, and 2022-2023, TAPR provides comprehensive data on student performance and demographics in Texas public schools. This dataset includes:

- Standardized test results
- Mobility rates
- Economic disadvantage indicators
- Graduation rates

The Analysis

Multivariate Linear Regression:

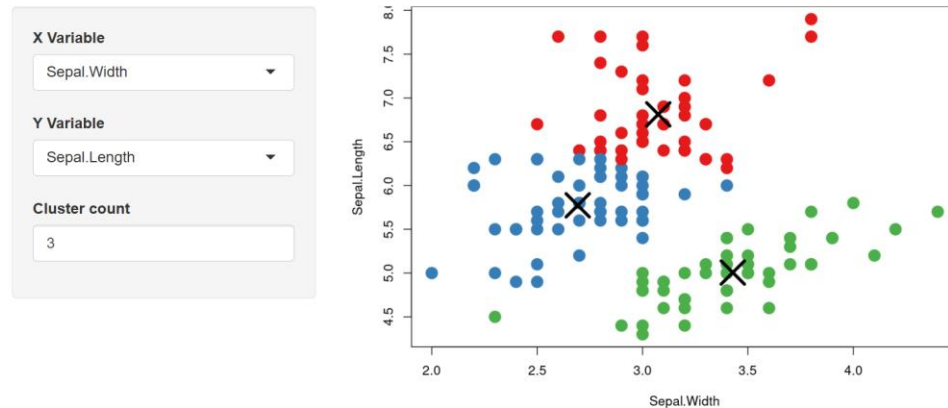
- **DV:** Graduation Rate
- **IV (Primary):** Mobility Rate
- **IV (Secondary):** Economic Disadvantage Rate
- **CV:** Race (Categorical variable)
Year (Categorical variable)

Regression Equation:

$$Y_{(Graduation\ Rate\ i,t)} = B_1(Mobility\ Rate\ i,t) + B_2(Economic\ Disadvantage\ Rate\ i,t) + B_3(Race\ i,t) + B_4(Year\ t)$$

The Visualization

Iris k-means clustering



- R Shiny allows the creation of an interface allowing users to interact directly with the data.
- Similarly to the featured example, users will select values for our categorical parameters by interacting with a dropdown menu.
- Following the input, the app will generate a custom visualization based upon our regression model.

Source: [Shiny - Kmeans example \(posit.co\)](https://posit.co)