Research Agenda

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My applied research focuses on the relationship between socioeconomic background and educational outcomes, particularly in secondary education and the transition to higher education in Chile. Over the past decade, I have examined how individual and family socioeconomic attributes shape student performance on national standardized tests. This work has provided insights into educational segmentation—the extent to which structural factors influence access to quality education and selective higher education. My methodological research focuses on the application and refinement of multilevel analysis in educational research. My goal is to contribute to the use and development of statistical methods to study educational inequalities, ensuring that they accurately capture the complex relationships between educational outcomes and individual and contextual socioeconomic attributes.

Chilean research on educational outcomes consistently shows that students from higher socioeconomic backgrounds perform better on standardized tests. However, existing studies often overlook the nested nature of educational data—students within schools—leading to potential misinterpretations of individual and contextual effects. My applied and methodological research has contributed to this discussion by demonstrating the importance of considering both individual- and school-level factors when analyzing educational inequalities. For instance, my studies on standardized tests such as SIMCE (used in secondary education) and university admission exams have revealed persistent score gaps linked to family income, parental education, and school dependency (private or public). These findings underscore the need for methodological approaches that can disentangle individual and contextual influences on student achievement.

To address this challenge, I apply and refine multilevel models, which allow for a more accurate estimation of educational inequalities with clustered data. Despite their widespread use in social science research, multilevel models are challenging, particularly the specification of fixed and random effects. Recent studies suggest that these misspecifications can lead to biased estimates, affecting how we interpret the role of student, family, and school characteristics in shaping educational outcomes. In this sense, my master's thesis in Educational Measurement and Statistics at the University of Iowa directly addresses this issue by examining how random slopes in multilevel models may conflate different sources of variance, leading to misleading conclusions about inter-cluster differences.

Looking ahead, my research will focus on two key objectives:

1. **Improving the methodological foundations of multilevel analysis**—I aim to clarify the consequences of incorrectly specifying fixed and random effects and develop guidelines for best practices in analyzing clustered educational data.
2. **Bridging methodological advancements with applied research**—I plan to collaborate with interdisciplinary teams to analyze the relationship between educational segmentation and educational inequalities and individual and school attributes.

While much of my past work has centered on Chile, my broader interest lies in developing rigorous methodologies that can be applied across diverse educational systems. By refining statistical techniques and providing empirical evidence on the factors influencing student achievement, I aim to contribute to research that informs educational policy and promotes equity in learning opportunities.

As my career progresses, I remain open to different institutional contexts, whether in research-intensive universities or institutions that balance teaching and scholarship. My long-term goal is to engage in research that not only advances methodological rigor but also has practical implications for education policy and practice.