**ABSTRACT**

This CAREER project addresses the professional development of middle and secondary mathematics teachers by investigating teachers’ statistical reasoning and targeting characteristics of professional development that support teachers’ development of increasingly sophisticated ways to reason about variation. Statistical variation plays a critical role throughout statistical investigation.

The project integrates educational and research activities in its design and implementation of a professional development program and research on the professional development. The research addresses three interrelated questions: In a professional development program that encourages reasoning about variation from multiple perspectives and that encourages dilemma, critical reflection, and rational discourse:

1. How do middle and secondary mathematics teachers reason about variation from design, data-centric, and modeling perspectives?