

**MICHIGAN STATE UNIVERSITY**  
Department of Statistics and Probability

## **COLLOQUIUM**

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### **Quantile Foliation with Application to Modeling Performance Across the Life Span in Weightlifting**

**Tuesday, November 5, 2019**

**10:20 AM - 11:10 AM**

**Refreshments 10:00 AM**

**C405 Wells Hall**

#### **Abstract**

We developed an extension of quantile regression models and quantile sheets, called "quantile foliation" that is used to predict outcomes for one explanatory variable based on two covariates and varying quantiles.

We study performances, as measured by the total weight lifted, from World Championships in Olympic weightlifting for athletes aged 13 to 90. With quantile foliation it is possible to examine age-associated patterns of performance increase for youth, and to study the decline after reaching the peak performance. This can be done for athletes with different body mass and performance levels as measured by quantiles.

Novel contributions include a comparison of youth athletes' performances for different body mass, and age-associated performance decline for female Master athletes. Results of this work have led to a change in scoring rules in international weightlifting competitions.

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