Two Undergraduate Research Projects

**Design of a Discrete Event Simulation for High Priority 911 Service Calls**

Tracy Bibelnieks (Faculty), Matthew Beaulieu, Laura Crites, Cassidy Hallaway, Dani Huse, Richard Ragan, Dylan Smith, Bjorn Stolhammer and Marcus Walker (students)

Police departments across the United States are working with data scientists to develop models that allow more efficient response to high priority crime events without increasing police budgets or work force. Simulations to achieve efficiency rely heavily on an underlying assumption of approximate probability distributions for response time to events, time between crime events, and proportions of events by priority and geographic location. This research analyzed historical data for an urban area in the United States to approximate probability distributions for these factors. The distributions were then used to develop a queuing model that simulate daily 911 calls that can then be used to test a variety of scenarios to optimize police force response in relation to specific goals.

**Obesity and Injuries in the Emergency Room: Is There a “Cushion Effect?”**

Sarah Anderson

Emergency room doctors have a hypothesis called “the cushion effect,” which is that overweight and obese patients have less severe injuries because of the extra body fat cushioning. We will reveal whether that is true of patients at Saint Luke’s Hospital, discuss the importance of asking the right questions about the data, and consider what we would expect to happen statistically if I doubled my body weight.

**Tuesday, May 5, 2015**

**2:50-3:00 Refreshments**

**3:00-4:00 PM**

**CHEM 150**

**EVERYONE IS WELCOME**

**University of Minnesota Duluth**

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