

# Data Studio

1:30–3:00pm, Wednesday, 3 June 2020

Videoconference: <https://stanford.zoom.us/j/99374040337>

**Investigator:** Michael B. Sklar Statistics

**Investigator:** Philip W. Lavori Biomedical Data Science

**Title:** A Contextual Multi-Arm Bandit for Surgical Treatment of Lumbar Stenosis

## Summary:

The VA SOLID study will test the utility of a Contextual Multi-Arm Bandit (CMAB) design for improving patient outcomes in the surgical treatment of spinal stenosis across multiple VA systems. Surgical treatment of spinal stenosis is broadly described as decompression of trapped neural components) alone or in conjunction with spinal fusion (to stabilize the spine). While decompression alone is associated with lower morbidity and cost, both failure to relieve symptoms and the possibility of post-operative spinal instability encourage the addition of spinal fusion. The Stanford statistical advisory group is responsible for proposing a specific method for outcome-dependent, contextual adaptation of randomized assignment of treatment in order to (1) improve within-sample average patient outcome and (2) generate reliable decision rules (based on patient context) for future treatment decisions. As a first step, Michael Sklar has completed a review of technical publications that might inform design of a CMAB for medical/surgical decision-making, and begun work on simulations of the performance of the leading contenders.

## Questions:

1. What general advice can be offered on the competing designs, particularly contrasting the Bayesian and frequentist approaches?
2. What advice can be offered on the use of simulation to estimate the performance of different approaches?
3. How best to resolve the tradeoff of within-sample and out-of-sample performance?
4. Are there ways to use multivariate outcomes in a CMAB?

## Zoom Meeting Information

Topic: Workshop: Data Studio

Time: Jun 3, 2020 13:30 Pacific Time (US and Canada)

Meeting ID: 993 7404 0337

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**For more information about Data Studio:**

<https://med.stanford.edu/dbds/programs/data-studio.html>