

# DBDS Workshop in Biostatistics

MSOB X303\* (in person)

<https://stanford.zoom.us/j/98254419706?pwd=SlpzcDExV0t0b1Nnbi9FazRycXlFQT09> (Zoom option)

DATE:	November 18, 2021
TIME:	1:30-3:00pm
TITLE:	<i>Polygenic Risk Scores: Methods and Models</i>
SPEAKER:	<b>John Witte</b> Vice Chair and Professor in the Department of Epidemiology & Population Health, and Professor of Biomedical Data Science and, by courtesy, of Genetics Stanford

## Abstract:

Polygenic risk scores (PRS) provide a promising avenue for incorporating germline genetic information into prediction models for traits and diseases. However, most PRS have been developed in European ancestry populations and can have poor predictive performance in other populations, which may in turn exacerbate health disparities. To try and address such limitations, several different PRS methods and models have been developed, ranging from including tens to hundreds of genome-wide significant variants using 'Pruning and Thresholding' approaches to including millions of variants from across the genome using Bayesian shrinkage. In this talk, Dr. Witte will first show how PRS can provide valuable evidence for predicting cancer risk beyond known non-genetic risk factors (e.g., age, smoking) by application to the UK Biobank. Second, he will present simulation results highlighting the limited transferability of PRS across admixed populations. Third, he will contrast the performance of different PRS methods and models, including efforts to improve accuracy across diverse populations. Finally, Dr. Witte will discuss PRS approaches being considered by large-scale consortia, and by Stanford Health in a pilot study of PRS in cardiovascular disease, breast cancer, and prostate cancer.

## Suggested Reading:

- [Inclusion of variants discovered from diverse populations improves polygenic risk score transferability](#)
- [Pan-cancer analysis demonstrates that integrating polygenic risk scores with modifiable risk factors improves risk prediction](#)

*\*Because the Biostats Workshop doubles as a class, the current university response to the pandemic requires us to **restrict in-person attendance to Stanford students, faculty, & staff**. We hope to be able to revise these restrictions soon & welcome back all our workshop community.*



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