



THE UNIVERSITY OF  
CHICAGO

DEPARTMENT OF STATISTICS

## MASTER'S THESIS PRESENTATION

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Informative Dorfman's Two-Stage Group Testing: An Analysis of Efficiency and Accuracy

TUESDAY, February 7, 2022, at 2:00 PM  
Jones 111, 5747 S. Ellis Avenue

### ABSTRACT

Group testing is a statistical method for identifying individuals in a population who have a certain condition or characteristics, such as a disease or infection, by testing pooled individuals as a first step to improve testing efficiency. In this study, we investigated the use of informative Dorfman's two-stage group testing method used in large-scale tests such as the ones for SARS-CoV-2 pandemics. Instead of assigning a uniform risk probability to each individual, we considered incorporating individual-specific risk information to improve group testing.

We define efficiency as the minimization of the expected number of tests per individual and evaluate the efficiency improvements by various heterogeneous risk distributions. Additionally, we analyzed the performance of the group testing method in terms of sensitivity, specificity, positive predictive value, and negative predictive value. Overall, this study investigates the efficiency and accuracy of group testing and highlights the benefits of incorporating individual-specific risk information in large-scale group tests such as the ones used for the SARS-CoV-2 pandemic.