

Minimum Dominating Set Approximations

Identifying and Containing the Spread of Foot and Mouth Disease in Sheboygan County, WI

Goals

Research methods to find dominating set approximations and evaluate the outcomes based on Foot and Mouth Disease (FMD) to place testing sites at the most optimal farms

Tools

FMD research, graph theory, computer science

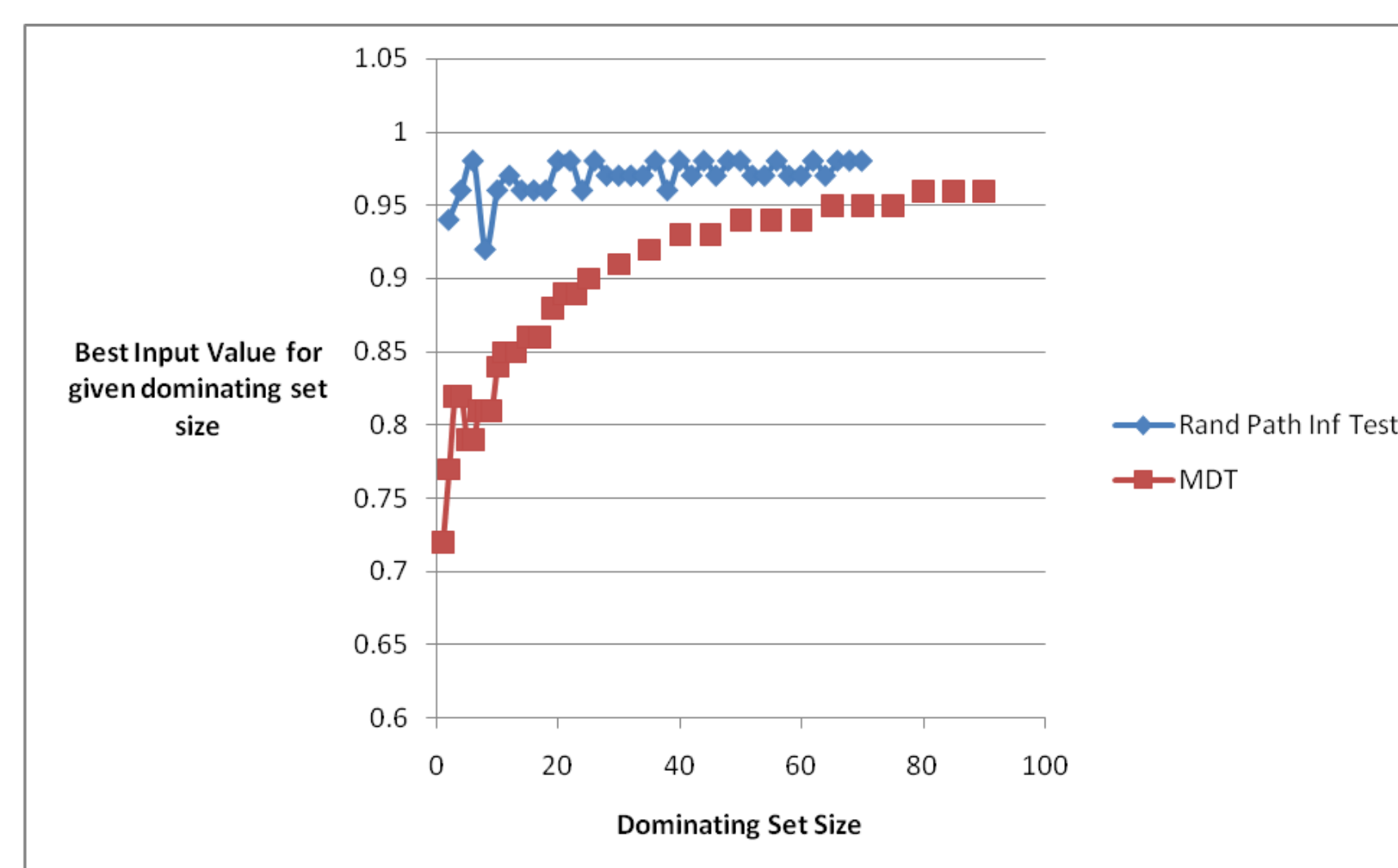
Process

1. Research FMD to determine important factors of transmission
EUCLIDIAN DISTANCE - 60km range
2. Create a graph to represent farms in Sheboygan County
CLOSENESS (scaled 0-1):
0 = 60 km disconnected
1 = 0km completely connected
3. Design and program algorithms based on graph and research
OWN, Jump, CVVM, PROBS, PLT
4. Analyze and compare methods
MDT, RPIT

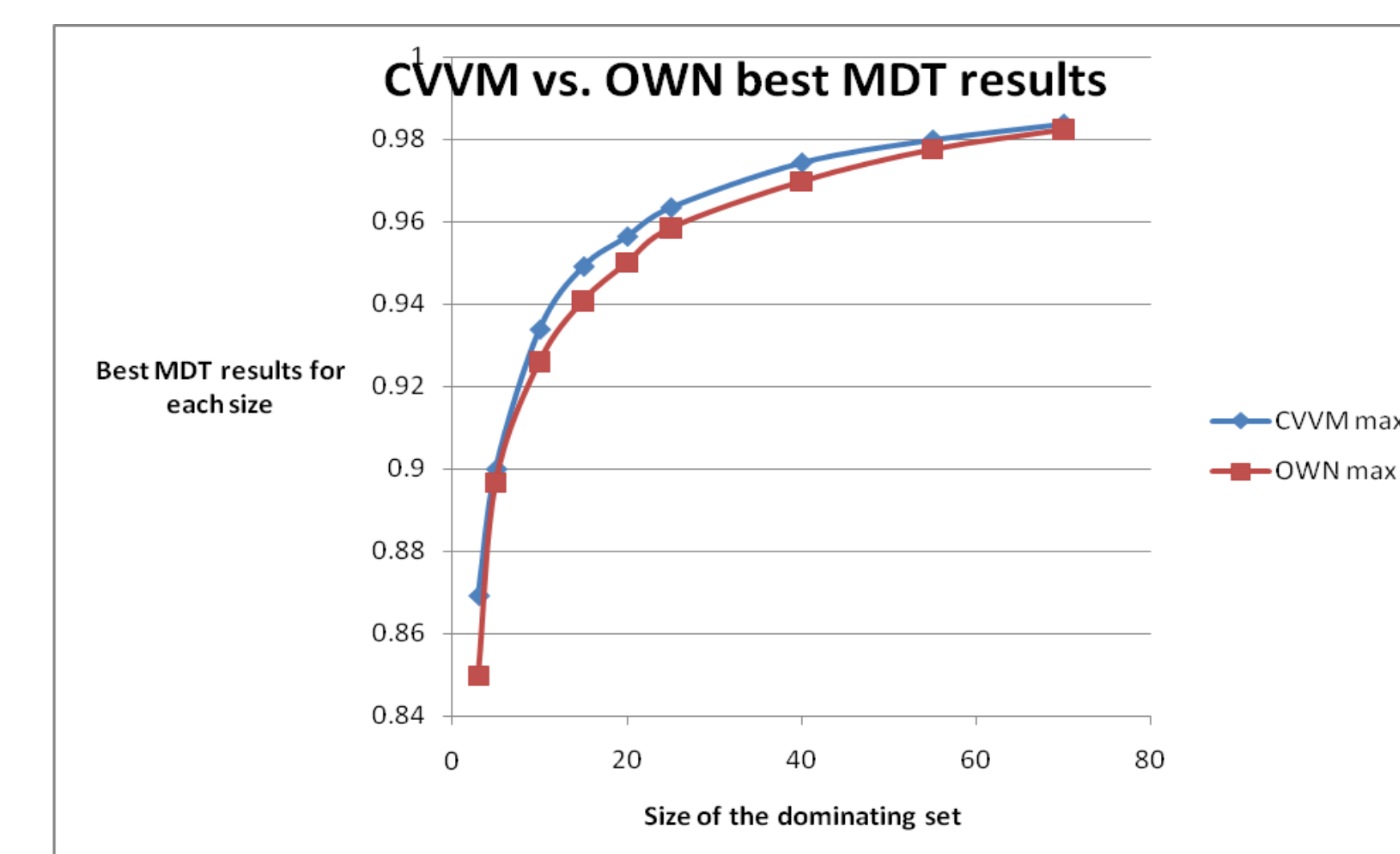
Results

Each individual method and test has its specific advantages and disadvantages. Thus, the choice of which to utilize is contingent upon the focus of the application.

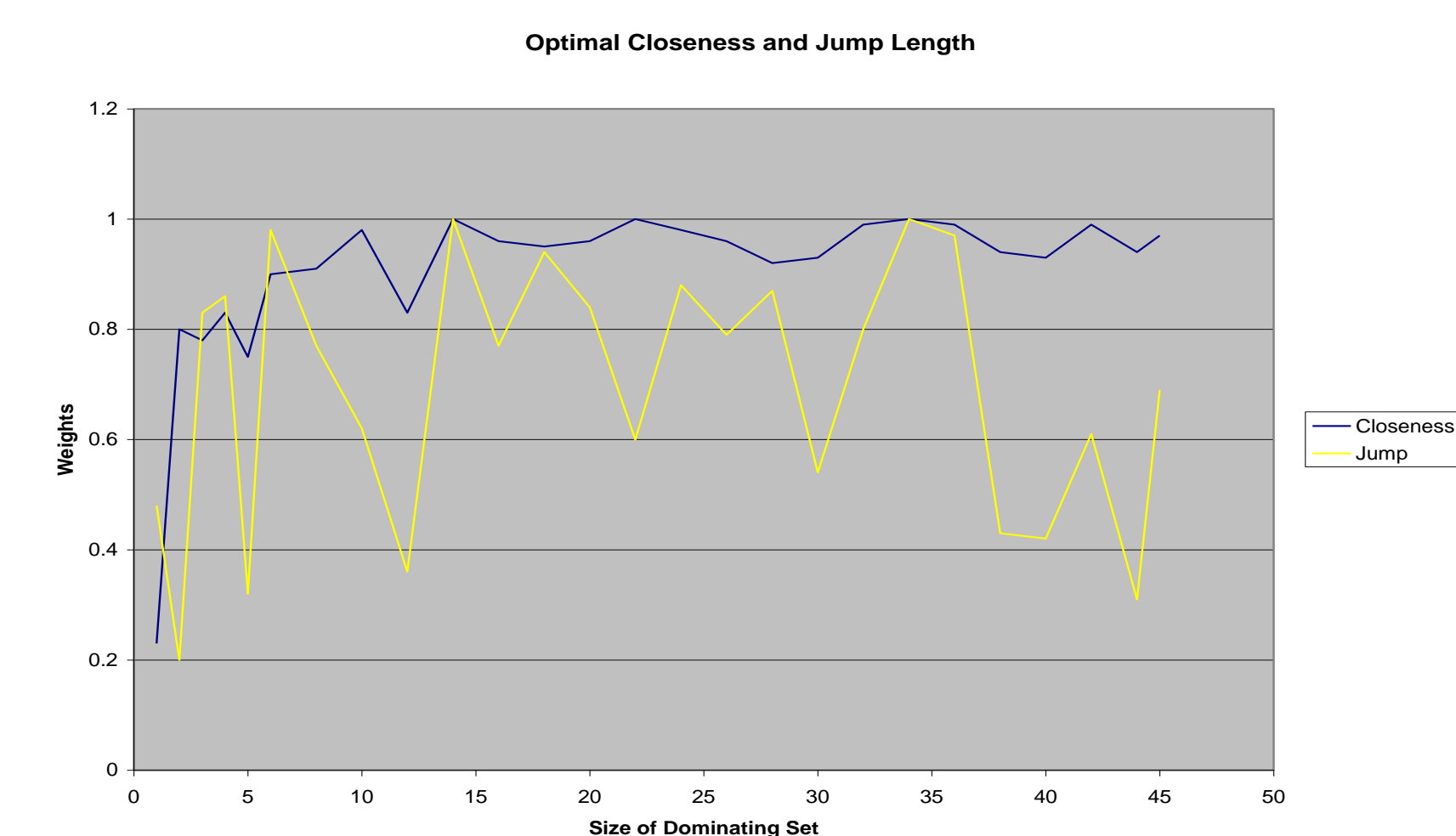
OWN



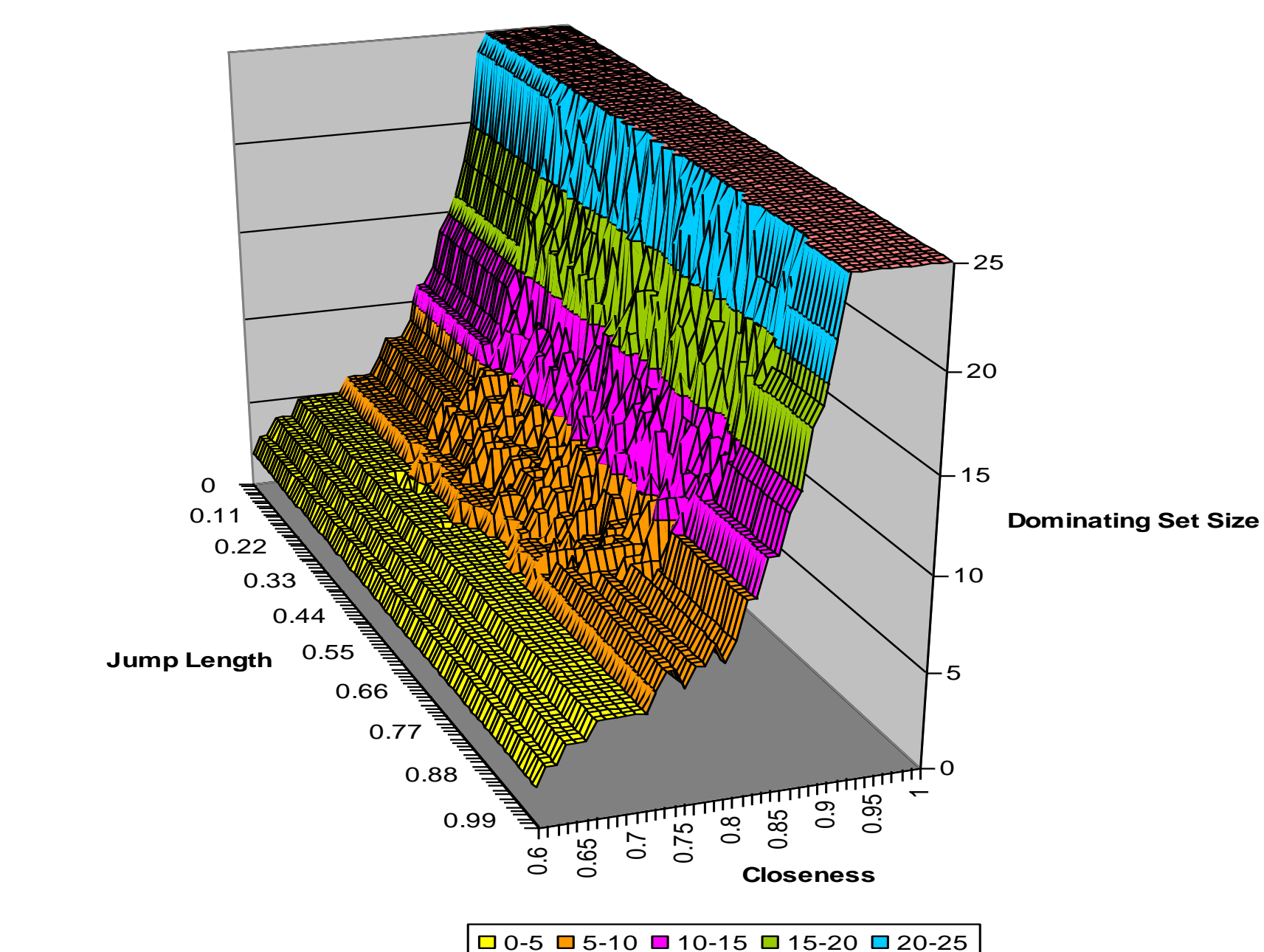
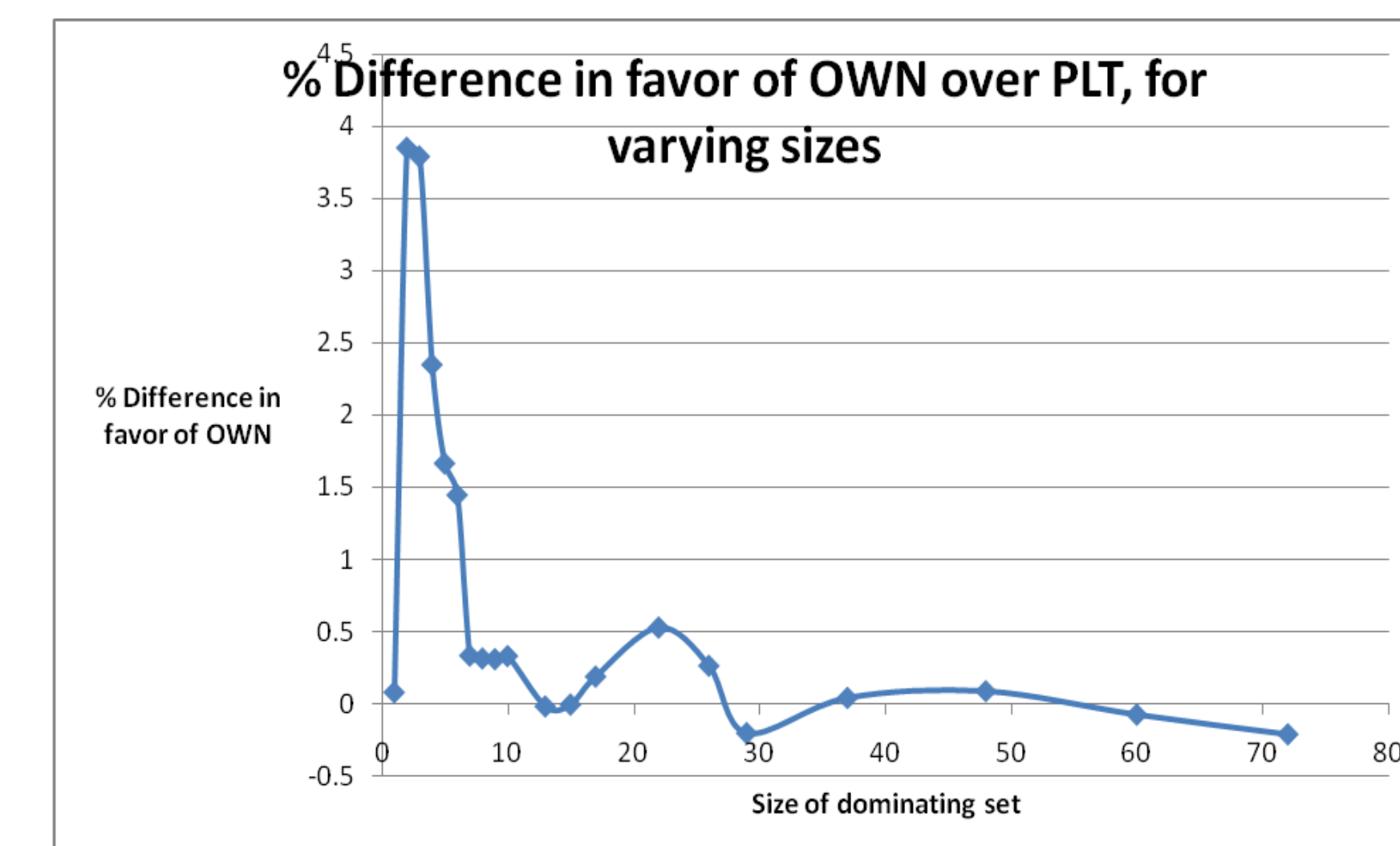
CVVM



Jump



PLT



PROBS

