

## Optimal Location of Automated External Defibrillator (AED) in the Presence of Gradual Coverage

황성은, 신동일<sup>†</sup>

명지대학교

(mudis.mju@gmail.com<sup>†</sup>)

The occurrence of cardiac arrest in public places calls significant attention to the public. Being aware of the importance of defibrillation in raising the survival rate of cardiac arrest victims, the government is investing in the placement of automated external defibrillator (AED). Studies on the optimal placement of AED were conducted based on the maximal coverage facility location problem (MCLP), which assumes that demand points are completely covered within time or distance radius but not outside the radius. This assumption in the traditional MCLP is unrealistic in that the survival rate of cardiac arrest victims is declining in time or distance from the AEDs. Nevertheless, few studies have been conducted on the facility location problem considering the gradual coverage. In this paper, we apply the gradual coverage model relaxing the "complete coverage" versus "zero coverage" assumption into locating AED to achieve maximal coverage. Based on this model, the objective function was defined as the weighted sum of cardiac arrest patients multiplied by the survival functions. We compared the gradual coverage model with the traditional coverage model using data.