

Facility Location Example Problems



Location of Preventive Healthcare Facilities (I)



- What is preventive health?
 - Reduces likelihood of life-threatening diseases
 - Aims at diagnosis of serious medical conditions
 - Includes immunizations, blood tests, and cancer screenings
 - Recovery is often more likely if an illness is diagnosed at an early stage
 - Can improve overall efficiency and effectiveness of a healthcare system
 - An increasingly integral part of many health care reform programs

Location of Preventive Healthcare Facilities (2)



- Participation in preventive services
 - Accessibility of facilities is very important, since healthy people are willing to travel much less than sick people for medical care
 - Unless services offered at conventional locations, participation not likely

Location of Preventive Healthcare Facilities (3)



- The problem:
 - Given a set of population centers and potential facility sites
 - Want to identify the optimal number and location of facilities that maximize participation
 - Uses maximal covering location problem to maximize total coverage
 - Total coverage defined as the number of people within the threshold distance from a facility

Location of Preventive Healthcare Facilities (4)



- Assumptions
 - Each participating individual seeks services at the closest preventive healthcare facility
 - Probability of participation decreases with distance
 - Each open facility needs to have a minimum number of clients



- Formulation on notes