

MS-E2191 - Graduate Seminar on Operations Research  
Homework 9 model answer  
Petri Määttä

*Read pages 18-25 of the paper by Hynninen et al. that deal with the case study on coronary heart disease events. Summarize your thoughts briefly on the following: in this case study, what are the main concrete differences and similarities between the utilitarian and egalitarian approaches in terms of their resource allocation?*

### **Similarities**

- In this case for the minimum and maximum budget levels both strategies are the same
  - At maximum budget level everyone would be tested
  - At minimum budget level roughly 90% of the population would receive no resources

### **Differences**

- **Utilitarian strategy**
  - Generally does not test patients with low or high initial probability of disease; instead immediate treatment for high probability patients and no treatment for low probability patients
  - Tests are focused on intermediate probability patients
  - More people are tested than in the egalitarian strategy
  - Additional resources are allocated to the patient segments in which they yield the highest increase in overall expected health outcome
  - Always gives a higher (or equal) overall expected health outcome than the egalitarian strategy; this is by definition
- **Egalitarian strategy**
  - Generally a smaller share of the population consumes more of the resources than in the utilitarian strategy
  - The decision of no tests and no treatment is used on a larger share of the population than in the utilitarian strategy

- Tests are focused on high and intermediate risk levels
- Focuses on finding patients with high initial disease probability who are not in fact in risk of a CHD event in the next 10 years; this is done to avoid unnecessary treatment
- For all budget levels except the lowest, people are always tested before treatment