

Master-thesis proposal:

Estimating the economic burden of food-associated diseases in Denmark

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Challenge: Exposure to contaminated foods can lead to a wide range of diseases. These diseases can be relatively mild (e.g. gastroenteritis) or severe and with high mortality, such as cancer. In order to prioritize limited resources to food safety strategies with the greatest effect, tools to rank-order the diseases or their causative agents (hazards) by which impact they have on society are needed. However, the impact that food-associated diseases have on society can be measured in different ways and depending on which method is applied, the ranking might be different. One approach to rank hazards is by their public health impact. The public health impact can be expressed in many ways (by number of deaths, number of registered cases, by how many years of healthy life are lost due to the disease that follows exposure to a hazard, etc.). In example, the loss of healthy life years includes information on the severity and duration of disease as well as mortality. Another approach is to rank hazards by the economic burden that the diseases they cause have on society. The economic burden relates to health care costs, loss of labor time or food-industry losses. Both approaches rely on the same estimates for disease-incidence, but may result in very different rankings and both provide important evidence for decision making in food safety.

Solution: In collaboration between the National Food Institute at DTU (DTU Food) and the Department of Food Resource Economics at KU (IFRO), we are currently running a large inter-disciplinary research project to estimate the disease and economic burden of several diseases associated with consumption of contaminated foods and unhealthy diets. The disease burden for a range of foodborne hazards in Denmark has already been estimated, as wells as the economic burden has been estimated for a range of foodborne pathogens. However, the methodology applied must be expanded to chemical hazards and nutritional risk factors in order to provide a comprehensive ranking of impact to society of the foodborne diseases.

Your task: You will in this project answer the question: **Is the ranking of selected food-associated diseases according to their economic impact in society different than the ranking of the health burden?** For this purpose you will develop and apply methods to estimate the economic burden of selected foodborne diseases in Denmark. The specific objectives are to:

1. Identify major factors of economic loss associated with a specific foodborne hazard
2. Develop models to estimate the economic burden of these diseases at population and individual level.
3. Explore how economic burden estimates may affect the ranking of foodborne diseases based on disease burden.

You will share your time between DTU Food, Risk Benefit Group and IFRO, Section for Consumption, Bioethics and Governance.

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