Modelling human knowledge

Part I

Who do I work with?	This lab will be conducted in several parts. Today and next Monday, you will work alone. Then, you will work in pairs assigned by the instructor.
How do I get a grade?	The grade for this multi-part lab will be issued once all parts are completed.
What do I submit?	Through the course website, you will submit a ZIP file containing: - a word document for questions 1 and 2 - a CSV file listing the edges of your map for question 3
When do I submit?	At your earliest convenience upon completion of this lab.

The Case

The Mayor of Pleasantville has decided to organize his advisors together to discuss the prospects of putting in a bid for a new online retailer. The retailer is one of the fastest growing businesses in the country and the company estimates it would bring approximately 15,000 new jobs.

Initially, this is wonderful for the Mayor of Pleasantville. The town has recently undergone a significant transformation due to some economic changes. Approximately 30 years ago, the town was diversified around two different manufacturers. As the country shifted away from blue collar workers, the manufacturing jobs in Pleasantville dried up, along with the related services jobs such as restaurants and hospitals that were dependent on a strong economy. This created a slew of problems, including lower tax revenues now that less people live in the state. There is a concern that the school board will have to cut 10% of their teachers due to the lower population that is contributing to taxes.

The company is hoping to make its home in one of the old, abandoned warehouses. However, this will only host about half of the employees that will be relocating. As a result, they have asked the Mayor if they can purchase one of the adjacent local parks to construct a second building, which would be an additional source of revenue for the city that is in dire need of it. Since the retailer seeks cost efficiency, it has asked Pleasantville for significant tax incentives including property tax abatements and breaks from the local wage tax.

The city is next to one of the largest rivers in the state. Environmentalists and community organizations are frustrated because the park including the river has been a staple of the community for over 50 years and there are growing concerns about urbanization given the new jobs that the retailer would bring.

Your task will be to develop a model to examine whether to support the implementation of the retailer or not, and the consequences of this choice.

Your three specific questions are on the next page.

QUESTION 1

Modelers should avoid the temptation to plunge in and start the conceptual model right away. Instead, they need to take a little time to think through the **AIMS** of their model. AIMS is a mnemonic that stands for **A**udience, **I**ssue, **M**essage, and **S**toryline. Its purpose is to prompt the modeler to consider up front who the model is being made for, what key question or questions it should address, what is the key message the user should take away, and how best to present the analysis in a compelling way.

Based on the hypothetical scenario, answer these four questions (A, I,M, S) in a crisp and direct way. You'll have to make assumptions/choices.

QUESTION 2

Many modeling projects start with a problem statement: What is the problem, why is it a problem, and how will it be addressed by the model? This is important, because seemingly small differences in how a problem is defined can have significant effects on the direction of the research. Problems are poorly presented when they are:

- solution driven (Where are the weapons of mass destruction in Iraq?)
- assumption driven (When China launches rockets into Taiwan, will Taiwan's government collapse?)
- too broad or ambiguous (What is the status of the political opposition in Syria?)
- too narrow or misdirected

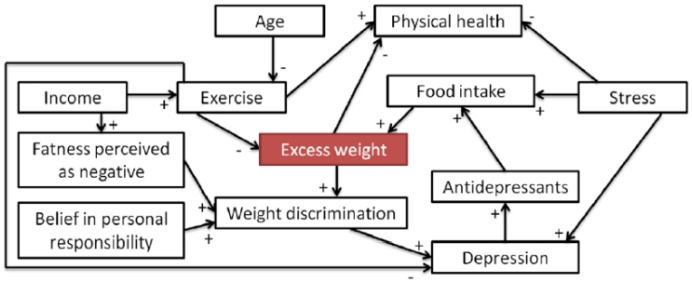
Write a problem statement for your model. Only one sentence is enough.

Submit it electronically in one Word document together with your answer to Question 1.

QUESTION 3

You'll be drawing your conceptual model as a network: the concepts of your model will be shown as nodes, and their relationships as directed edges. When an edge shows "+", it means that an increase in the source concept leads to an increase in the target concept. When an edge shows "-", it means that an increase in the source concept leads to a decrease in the target concept.

The sample map here gives you an example. It is not indicative of how large or small your own map has to be. Strive for a map that is comprehensive, not a rushed job.



In making your map, please note that:

• names need to have a clear directionality. That is, having "more of" or "less of" X should be clear given how you call X. For instance, labelling a node as 'weather' makes no sense: what does it mean to have more of 'weather'? Labelling the node "precipitation" would have a clear directionality.

• you are not strictly limited to what you saw in the text of the previous page. You also have the right to think, use your own experiences, and come up with assumptions.

Code your map as a CSV file, where each line lists a directed edge formatted as:

start of edge,end of edge,+

For instance, in the map above, we would have:

age,exercise,-

weight discrimination,depression,+