HOMEWORK 1: Models
33 possible points (see Syllabus for due date)

Instructions

Locate a news article less than 9 months old describing some phenomenon that pertains to the scientific method (on any topic, not necessarily biology or the "natural" sciences). From the description contained in this article, identify TWO models of different kinds (physical, abstract, sampling) and fill in our model template for each of these models, as given below.

Detailed instructions for the "ideal" homework assignment follow, which should be adhered to as closely as possible when filling in the writeable PDF assignment form. For each feature of the model template, the type of answer that is expected is indicated. Also see the homework guidelines, but especially note that

1. Your work needs to be typed responses in the Homework1 writeable PDF form.
2. The article must be less than 9 months old.
3. Upload the article along with your filled PDF form on your Blackboard account for this class (virtual class v00103, NOT the 4799X number))

Objective

You are going to identify two models of different types, the goal for which they are used, and the limitations of those models for that goal. You will also need to identify the kinds of models they are and the status (whether they are considered to be accepted, rejected, or the status is uncertain). This assignment is fairly easy, but one potential difficulty is in making the proper connection between the goal, models, and limitations – your work needs to indicate how all 3 are related to each other.

HW 1: Models PDF Template Instructions

Name: Type your name in the field.

Article: Type the title, source, and date of the article on the PDF. Upload the article (as a scan, if need be). We want to be sure we have access to the article, so a little redundancy does not hurt.

Goal

Describe the goal of the work for which the model is being used. In testing condoms, for example, the goal is to evaluate condom integrity for sex. If the model was a pilot advertisement, the goal might be to discover ways of improving product sales. And so on. If both of your models are used for the same goal, you only need to list the goal once. However, you need to fill in the template for two models (of different types), as follows. In general, the goal should not refer to the

model.

First MODEL
You will answer the same questions for the second model

In one sentence or less, state the model you are identifying. For example, if the model is a hypothesis, then simply state the hypothesis. Or, if you have chosen a physical model, then just write what it is (e.g., mice, map, DNA, ...).

USE -- A model of what?
What does the model represent?

Explain what the model is used as, or is used to predict or to explain. In the step above, you identified what the model IS; here you should explain what it is a model OF. For example, rats may be a model of humans (or, more specifically, cancers in rats fed saccharine may be used as a model of the cancer in humans fed saccharine). A computer simulation of global warming is a model of the process of global warming. The hypothesis, "Latex condoms prevent the spread of HIV", is a statement that explains how to avoid infection by HIV. The equation $E = mc2$ may be used as an abstract model of the physical relationship between energy and matter. The application or use of a model does not mean that the model is particularly good or bad at this purpose, only that it is intended to have this purpose. The use of the model should fit closely with the goal.

Model	of What?
"Latex condoms prevent the spread of HIV" (a statement or hypothesis)	Ways to avoid contracting HIV; or ways to advise people to avoid contracting HIV (depending on the goal)
A laboratory rat	Humans
10,000 cancer patients in the U.S.	All U.S. citizens with cancer
A computer simulation of global warming	The process of global warming
$E = mc^2$	The relationship between energy and matter
A correlation between teen pregnancy rates and high school sex education course content in Texas in 2004	A model of factors possibly influencing teen pregnancy rates (sex education), also a model of teen pregnancy rates and sex education in previous years and in future years
The car you test drive at the car lot Newspaper headline	Model of the car you would buy Model of content of the article

LIMITATION
Using complete sentences, identify one major limitation of the model (a way in which the model is false). This limitation should either be given in the article or be your suggestion, but you should identify an important limitation as opposed to a trivial one. Note that we are asking for limitations of the model you identified as that model is used for the goal you identified. Limitations of a model are usually not limitations of the study described in your article. Here are some examples:

"The article indicates that a substantial subset of the scientific community feels that the 10,000 cancer patients used in the smoking study were not very representative of all humans because they were all male. Women may respond differently than men to cigarette smoke."

"According to the article, the computer simulation used to predict future global warming patterns ignores the effects of future volcano eruptions. Therefore, as Dr. Seuss states in the third paragraph of the article, the simulation may exaggerate increases in temperature over the next 100 years."

To reiterate what was noted above: the goal, use, and limitation should be integrated closely with each other. Since the goal determines model usefulness, the use of the model as well as the limitations should all be focused around the intended use or purpose of the model. Thus, if condoms are tested to predict how they will hold up during sex, the airburst test becomes a model of sex and the limitations are that the airburst test does not closely represent sex.

KIND
A one-word answer: simply write, "abstract", "physical", or "sampling". If we have not covered sampling models to your satisfaction, you may want to restrict yourself to abstract and physical models.

STATUS
Accepted, rejected, or uncertain

Based on what your article says, explain whether the model is currently accepted, rejected, or is of uncertain status. In one sentence or less, indicate why the article supports this status. A model may have uncertain status either because an article fails to indicate whether a model is widely accepted or because there is strong disagreement among camps as to whether the model is acceptable. For example, did the study in the article indicate that latex condoms truly prevent transmission of HIV? Were the laboratory rats used in the medical study regarded as acceptable models of humans? Were the 10,000 cancer patients used in the study regarded as good representations of society as a whole (or whoever they were supposed to be representing)? Was the computer simulation used to explain global warming generally accepted by the scientific community, was its merit still uncertain?

2nd Model
Now fill in the same template for a second model from the same article. This model should be a different type than the first. Thus, if the first was an abstract model, the second should be physical or sampling.