

**SOCIOLOGY 126: HEALTH OF THE PUBLIC
FINAL PROJECT 2015**

Please answer **two** of the following six questions, **one from each triplet (i.e., either 1A or 1B or 1C, plus either 2A or 2B or 2C)**. We expect each essay to be no more than 7 pages. Please do not write more than 8 pages since verbosity is not appreciated, and it might actually harm your grade.

A good essay will advance an argument, or make the case for a point of view, rather than merely summarize the readings. Your essay should be as organized and as clear as possible. Your exam will be evaluated with reference to three criteria: (1) **organization**, (2) **argument**, and (3) **evidence**. A good answer addresses all parts of the questions (that is, be sure not to overlook any of the sub-questions).

You are **not** expected to do any other readings or research other than those assigned in class or discussed during lecture or given as part of the question, though you are free to. **A good answer, however, will indeed refer to several readings in order to support your argument.**

The next page is a cover sheet for your essays. You must print out **that page only**, fill it out, sign at the bottom, and turn it in with your own hard copy print-outs of your exam answers.

CITATIONS AND PROPER USE OF SOURCES:

You **must** cite any readings or sources to which you refer and supply a list of references you cite or rely on at the end of **each** of your answers (the bibliography does not count towards the page limit). You may use either footnotes or parenthetical references (e.g., Southgate, 2014) and you may follow any one of the standard citation/reference styles, as long as you follow it consistently and correctly throughout your essays. Don't forget that if you are quoting specific text or citing particular facts from within a long piece, you need to include page numbers. **Plagiarism and misuse of sources are serious offenses. Cutting and pasting from a study guide, especially without citing it, is a form of plagiarism and will not be tolerated.** We will be using electronic techniques to check for plagiarism. If you panic, email us and don't do something foolish.

COLLABORATION:

This exam must be your own effort; you may not get assistance from any other person or discuss your answers with anyone else. You are permitted to visit the Yale Writing Center for help with expressing your ideas. Any questions during the exam should be emailed to socy126@gmail.com; we will prepare a digest of daily questions and post them to the Announcements section of Classes*v2; please review prior answers before sending new questions.

FORMATTING AND SUBMISSION:

- 12pt Times New Roman font, *double-spaced*, 1" margins. (Don't play around with margins or font size; we know those tricks.)
- Begin each essay on a new page; use page numbers, starting at 1 for each essay.
- **You must use the cover sheet on the next page. Fill in the information at the top and sign at the bottom. In each essay header, write ONLY your Yale Net ID and essay number in the top right hand corner, and the page number. We will deduct points if you fail to do this exactly.**
- To submit the hard copy, **paperclip** together three items: a) the cover page; b) first essay (**stapled by itself**); c) second essay (**stapled by itself**). Deliver the hard copy to the Human Nature Lab on the 3rd floor of **17 Hillhouse Ave. between 2:30 and 5:00pm on Thursday, April 30th** (go early – save yourself a wait in line!). **EXAMS WILL NOT BE ACCEPTED AFTER 5:00PM. You can also turn in your exam early, on April 29th, from 9:30-11:00 am**, in Room 312, 17 Hillhouse Ave.
- **Upload ONLY** your exam (no cover page needed) to the cv2 website by **5 pm Thursday, April 30th** (it locks automatically at 6 pm); you can upload your exam before or after you deliver the hardcopy. **Uploading your exam is NOT a replacement for also turning in a hard copy, which is required.**
- Extensions will be given only for serious, documented problems.

The teaching fellows, and Professor Christakis, thank you for a great semester, and wish you good luck with this exam and a happy summer. We apologize for the seriously formal tone of these instructions, too.

**SOCIOLOGY 126: HEALTH OF THE PUBLIC
COVER SHEET FOR FINAL PROJECT**

****This cover sheet must be included with the hard copy of your project****

Name: _____

Yale Net ID: _____

Teaching Fellow (circle): Catherine Edirin Luis Sam Sara Wei Young-Hee

Questions answered (circle): 1A 1B 1C 2A 2B 2C

Checklist for turning in the final exam*

- I have conducted a final check for typos, spelling/grammar mistakes, and incorrectly formatted references.
- My essays have the proper formatting (12pt Times New Roman font, double-spaced, 1" margins).
- Each of my essays begins on a separate page.
- Each of my essays has a list of references at the end (does not count in page limit).
- My essays have headers with my Yale Net ID, essay number, and page numbers only (not my name).
- Each essay is stapled separately.
- I have filled out this cover page, signed it, and attached it to my stapled essays with a paper clip.
- I am turning in the hard copies of my essays to the 3rd Floor of the Human Nature Lab, and waiting to be signed in, at 17 Hillhouse between **between 2:30 and 5:00pm on Thursday, April 30th**, or **between 9:30-11:00 am on Wednesday, April 29th**.
- I will remember to upload a copy of my essays (without the cover sheet) to the cv2 dropbox by 6 pm on Thursday, May 30th. I realize that uploading the essay is not a replacement for turning in a hardcopy.

*This is for your benefit only; you don't need to check off the boxes even though you do need to turn in this form (had enough fine print yet?). But keep in mind **we will deduct points if you don't follow the submission instructions exactly!**

You must sign the following before submitting your exam:

I acknowledge that I have carefully read the instructions for this exam. I certify that the attached essays are my own work, that I have not received help from anyone else on this assignment, and that I have adhered to Yale College's standards for using sources. I understand that any instances of plagiarism, misuse of sources, or inappropriate collaboration will result in my failing all or part of this exam as well as likely referral for possible additional sanctions.

Student Signature

Date

Questions 1A and 1B and 1C (choose one)

1A. Read this recently published article regarding a new genomic technology called Crispr, which allows precise editing of DNA in a way that could be inherited across generations.

<http://www.nytimes.com/2015/03/20/science/biologists-call-for-halt-to-gene-editing-technique-in-humans.html?>

The article suggests that the technology has substantial therapeutic potential for curing genetic diseases but that it could also be used to edit genetic information in individuals' germ cells (sperm and ova). Scientists and ethicists express concerns that editing of the human germline could lead to modifications aimed at improving other phenotypes such as IQ and physical appearance, or could change the genetics of our species.

How do you think John Harris, author of *Enhancing Evolution: The Ethical Case for Making Better People*, would feel about the potential of the technology? What would Ivan Illich, author of *Medical Nemesis*, make of these developments?

Write an essay summarizing and, importantly, *integrating* what these two scholars might say about this technology and the debate surrounding it. Assess the arguments you attribute to each. As part of your answer, consider how this technology does or does not differ *conceptually* from other examples we considered regarding how culture can change our genes, such as the domestication of cattle (note, we are not asking, here, for an explanation of biological details!).

Finally, what is your perspective on the concerns associated with this technology? What ethical constraints, if any, should be placed on its deployment, in your view?

1B. The chief executive of a Seattle-based credit-card processing firm recently proposed to radically change the pay structure of his business:

<http://www.nytimes.com/2015/04/14/business/owner-of-gravity-payments-a-credit-card-processor-is-setting-a-new-minimum-wage-70000-a-year.html?>

1) How could taking money from the CEO's nearly \$1 million pay packet and using it to raise the incomes of the lowest paid workers (who earn about \$35,000 per year) improve the average *happiness* in the company? Include in your answer a sketch of what a graph of income (X-axis) against happiness (Y-axis) might look like.

2) How might these changes affect the *health* of the 70 employees who will see an increase in their salaries? In your answer, use your understanding of how income affects health and be sure to outline some of the mechanisms for these effects. Be sure to refer to the readings when you do so.

3) How might the proposed changes affect employees who already earn between \$70,000 and \$90,000 a year, whose pay will not rise under this scheme? In your answer, use your understanding of how these employees' *relative standing* might affect their health.

1C. Some parents in California obstinately refuse vaccinations for their children. Read this recent article, and take a look at the “Interactive Map” and also explore the “Facts About the Measles Outbreak” graphics:

<http://www.nytimes.com/2015/04/16/us/california-parents-opposing-state-mandated-vaccinations-of-children-delay-vote.html>

1) What is the most basic justification for state intervention on personal choices in this case? How does this relate to the issue of structure versus agency?

2) Discuss the public health implications of these parents’ choices in terms of *neighborhood effects on health*. Toggle the button in the upper right of the map to show the geographical patterns in vaccination rate and personal belief exemptions. Visually, what do the data on the map show? Are personal belief exemptions a problem? If so, where and for whom?

3) How does where you live affect whether you are exposed to measles and also whether you are likely to choose not to vaccinate your child? Consider that there are two sorts of epidemics in California: a biological epidemic (of measles) and a social epidemic (of vaccine avoidance). Briefly describe how you think these biological and social contagions interact with each other.

Questions 2A and 2B and 2C (choose one)

2A. Alcohol is a major source of harm on college campuses. Roughly 1,825 students aged 18-24 die from alcohol-related injuries each year and around 599,000 suffer injuries. Alcohol use is implicated in harm arising from physical assaults, sexual assaults, dangerous driving, and addiction behaviors. As such, it is a significant public health concern for administrators in higher education.

Imagine that you have been hired by a firm of public health consultants to advise the incoming president of a major state university on developing policies to reduce binge drinking. You have been asked to outline effective interventions in a presentation for the board of governors.

Taking advantage of your knowledge of the various kinds of social factors that contribute to this unhealthy behavior, and the kinds of policies that might be used to respond to such factors, design two interventions to decrease binge drinking on campus. Be sure to discuss the impact on the students *and* on the broader college environment of the policy recommendations you make. Describe how the interventions might work. Be sure to support each of your arguments with evidence from the readings.

2B. Consider the network image on the next page. These are college students. Lines between nodes represent close friendships, and node colors represent body mass index (red= “obese,” orange= “overweight,” green= “normal weight”). [If you print these images with a black and white printer, be sure to pay attention to the color of the nodes on the screen; if you need help identifying the colors, please feel free to contact us.]

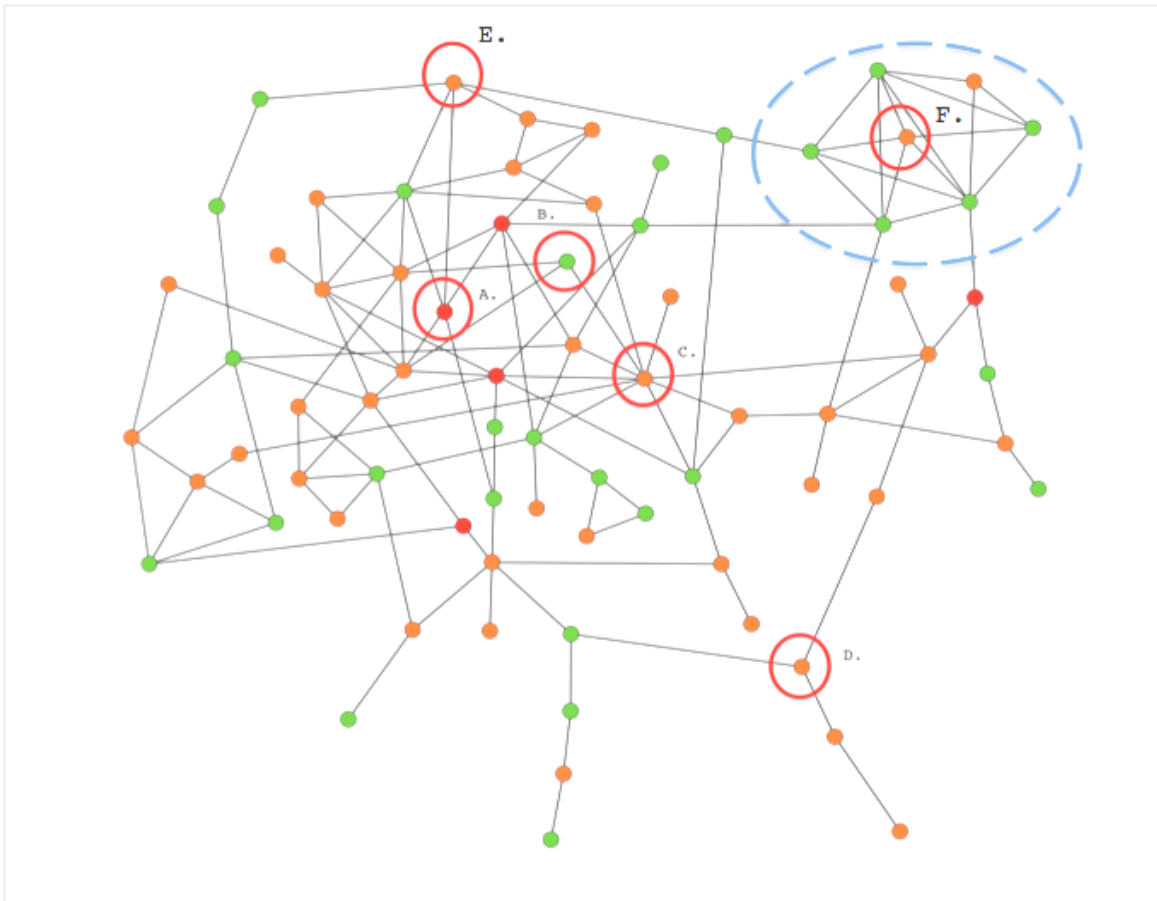
1) Which of the six circled nodes, A, B, C, D, E, or F, has the highest degree (number of connections), and what is the degree (hint: it is an integer greater than 1). Which of the six nodes has the highest transitivity and what is that transitivity (hint: it is a number between 0 and 1)? Here, transitivity is the fraction of existing ties among an ego’s alters (directly connected neighbors) divided by the total number of possible ties among those alters.

2) Consider the possibility of an intervention designed to improve the health of this population by “seeding” certain students with better exercise and eating habits. Consider two people, C and E. Which of these two individuals would offer the most advantages to their peers who are one degree away; that is, which one would generate the greatest spill-over effect to their friends, do you think, and why? Assume that the behavioral intervention you use to seed the network does work in the individual, and also assume that a change in this individual definitely affects others – like a contagion which spreads from person to person.

3) Consider two people, E and F. Who would be a better candidate for a behavioral intervention to improve exercise habits in terms of who will, himself or herself, be more responsive to the intervention? Why? In this case, we are not asking who will create more spillovers to others. Instead, we are asking which target individual will themselves be more responsive to the intervention. Feel free to use your knowledge of Yale students and the value of social support or network structure in order to ground your argument.

4) Note the cluster of mostly normal-weight individuals in the upper right of the network (which is enclosed by the dotted blue oval). What are three possible reasons (other than chance) that these individuals all share similar body sizes at baseline (i.e., prior to any intervention)? Explain how these reasons might have given rise to the observed cluster.

5) For your conclusion, integrate insights from the foregoing with lessons on social connectivity from the course (relevant themes might include, but are not limited to: social capital, structure and agency, etc.), and make an argument for a social-network-based intervention as a health policy tactic to reduce weight in this population. Would understanding social network ties be useful for a university-based public health intervention? How so? Are there any disadvantages to such a tactic?



2C. Over the course of the semester, we have read a number of papers describing social science experiments spanning a diverse set of topics and approaches, including the following:

Volpp KG, *et al.*. A Randomized Controlled Trial of Financial Incentives for Smoking Cessation. *New England Journal of Medicine* 2009; 360: 699-709.

Cohen S *et al.*. Social Ties and Susceptibility to the Common Cold. *JAMA* 1997; 277: 1940-1944.

Centola D. The Spread of Behavior in an Online Social Network Experiment. *Science* 2010; 329: 1194-1197.

Valente TW, Ritt-Olson A, Stacy A, Unger JB, Okamoto J, and Sussman S. Peer Acceleration: Effects of a Social Network Tailored Substance Abuse Prevention Program Among High-Risk Adolescents. *Addiction* 2007; 102: 1804-1815.

Keizer K, Linderberg S, and Steg L. The Spreading of Disorder. *Science* 2008; 322: 1681-1685

Leventhal T and Brooks-Gunn J. Moving to Opportunity: An Experimental Study of Neighborhood Effects on Mental Health. *American Journal of Public Health* 2003; 93: 1576-1582.

Andersen RE, Franckowiak SC, Snyder J, Bartlett SJ, and Fontaine KR. Can Inexpensive Signs Encourage the Use of Stairs? Results from a Community Intervention. *Annals of Internal Medicine* 1998; 129: 363-369.

Baicker K, *et al.* The Oregon Experiment—Effects of Medicaid on Clinical Outcomes. *New England Journal of Medicine* 2013; 368: 1713–1722

As these examples demonstrate, an experiment tests the relationship between an exposure and an outcome, while controlling for confounding factors. Remember, an experiment must involve the *random* assignment of some group of people to something; it must have some sort of “control

group.” These experiments have sometimes cost a lot of money to conduct (such as the Volpp and Baicker studies), but sometimes they have cost only a small amount. The studies by Keizer et al and by Andersen et al are especially instructive with respect to small-scale, inexpensive, but important experiments that can be done.

Design an experiment that could be conducted on a college campus (e.g. Yale’s) to evaluate *a social intervention designed to address the problem of **sleep deprivation** among college students*. The experiment must be *inexpensive*, like the Keizer and Andersen experiments, and hence must cost less than \$10,000 (not including the labor of the scientists doing the experiment) – that is, the \$10,000 can be used for supplies, hardware and software, technical consulting, subject payments, etc. (This amount is not a hard number; it’s just here to emphasize that your experiment should be cheap, like the Keizer and Andersen experiments.)

Your answer should have the following components:

- 1) **Research Question:** What is the hypothesized relationship between the social factor (exposure) and the particular outcome you choose? Specify/define the social factor/exposure clearly. Also, state the health outcome clearly. You can be very liberal in what counts as both an exposure and an outcome here (related to sleep deprivation). Be creative.
- 2) **Hypothesis:** Articulate the key hypothesis you are testing very clearly as a falsifiable statement. For example: “Exposing people to a sign encouraging the use of stairs increases subjects’ use of stairs, compared to people not exposed to such a sign.” Your study should focus on a single hypothesis.
- 3) **Motivation and Background:** Use the readings and lectures from the course to briefly set the stage for your experiment, outlining why the hypothesis is important and what your study might add. [perhaps 1 page]
- 4) **Methods:** In this section, describe your methods: What will you do? How many subjects do you think you will need, who are they, how they will be recruited, how they will be given/exposed to the intervention, how will both the exposure and outcome be observed or measured, and so on. If (by chance) you plan to write any apps or software to do such an experiment, briefly describe what you might do (obviously, most experiments would not require de novo software, nor do we actually expect you to write any software for this exam question!). [perhaps 2 pages]
- 5) **Results:** Briefly describe your expected results and how you might analyze them. For example, you might do a chi-squared test comparing the proportion of people exposed to the sign who take the stairs compared to the proportion of those who are not exposed to the sign who take the stairs. Note that we are NOT looking for a sophisticated statistical outline here! You could also provide a graph or table of hypothetical results as part of this section (although this is not required). [perhaps 1 page]
- 6) **Conclusion:** Provide a short conclusion. [perhaps 1 page]