

**Ground rules:**

- Breathe!
- **DO NOT WRITE YOUR NAME ON THE EXAM**—write your student number. If you're worried about losing the first page, write your student number on each page.
- You can use your notes or books, a calculator or a spreadsheet, but you may not communicate with other people about this midterm nor the material covered by it.
- In order to receive as much credit as possible, please show all of your work. Showing that you understand the question and know how to set up the solution correctly is more important than arriving at the exact answer.
- Read each question carefully and answer all parts of each question.
- Good luck!
- When you are done, please put it under my door (209C Parrington) or email it to me. If you put it under my door, please email me to let me know you have done so.
- Please note I have changed the time the final is due to noon on Monday, March 14 (from 9am as I said in my original email).

---

Which is more important, parental involvement or the cost of cigarettes in reducing teen smoking? Given the established evidence of the detrimental impact of smoking on health, policy makers trying to reduce youth smoking through a variety of ad campaigns, clean indoor air laws, taxes, youth access restrictions, and advertising restrictions. Recent efforts have focused on soliciting parental aid in reducing smoking among youth. How successful is such a policy likely to be?

A 1996 survey of high school students in the United States interviewed a representative sample of 11,237 high school students, including 3,111 smokers and 8,125 nonsmokers. The students were asked whether they currently smoked and about their interactions with their parents. 28% of students smoked at the time of the study. Among smokers, the percent who spoke with their parents about daily issues was 49%, while among non-smokers 52% spoke with their parents that frequently about daily issues.

The researchers also figured out the average cost of cigarettes for both smokers and non-smokers, based upon their state of residence. For non-smokers, the average cost was \$1.89 (with a standard deviation of \$0.23) and for smokers it was 1.87 (with a standard deviation of \$0.21).

As you answer the following questions, make sure to state any assumptions you must make. Use  $\alpha=0.01$ .



3. Do smokers and nonsmokers interact with their parents at different levels? Formally set up, perform, and interpret a hypothesis test. (10 points)

4. Do smokers and nonsmokers live in states with different prices for cigarettes? Formally set up, perform, and interpret a hypothesis test. (10 points)

5. How strong is your evidence in number 3? (5 points)

6. How strong is your evidence in number 4? (5 points)

7. Create a range estimate for the difference in the price of cigarettes for smokers and non-smokers. (10 points)

8. Write an essay, summarizing and interpreting ALL your findings for a non-technical policy audience. In your response, make sure to answer the question of which is more effective in reducing teen smoking, parental involvement or the cost of cigarettes. (15 points)