

**Due Thursday Feb 3 by 5:30pm:**

At my office (221 Parrington), in my box in 208 Parrington  
or via email ([marieka@u.washington.edu](mailto:marieka@u.washington.edu))

**Ground Rules:**

- *PUT YOUR NAME ON A SEPARATE TITLE PAGE ONLY.  
[If you are worried that I will lose it, then use your student number on each page.]*
- *Clearly label each question with the number, and number your pages.*
- *You can use your notes or books, but you may not communicate with ANY other people about this exam or the material covered by it.*
- *Please show your work, otherwise you can't get credit for the steps you do correctly. You are welcome to use excel or another program for your calculations, but I will not check spreadsheets to assess your work.*
- *More credit will be given for understanding the questions and setting up the solution correctly than for getting the right number.*
- *Please be neat--you can't get credit if I can't read your answers.*
- *Good luck!*

## Question I.

A Washington State Taskforce has asked for your help in assessing research on potential influences on teen smoking. They are charged with making recommendations to the state on how to design state policies or public relations campaigns to reduce smoking.

A 1996 study asked U.S. high school students (14 to 18 years old) about smoking habits, personal demographics, and family interactions. Researchers matched these data to information on school smoking policies and state cigarette prices and policies for each student. The taskforce has asked you to provide your assessment of the implications of the study. [The results are in Table 1.]

The researchers found that 28 percent of the teens had smoked in the past month and reported their results separately for those who had smoked and those who had not smoked.

*Do cigarette prices affect teen smoking?*

- A. Use the information in the table to describe the cigarette prices and state access to cigarettes faced by smoking and non-smoking teens.
- B. What were the overall average cigarette prices and access levels faced by the full group of teens studied?

*Do school policies affect teen smoking?*

- C. Of students facing a school ban on smoking, what percent were smokers?
- D. Among students NOT facing a school ban on smoking, what percent were smokers.

*How do family rules and interactions affect smoking?*

- E. In a typical group of teens, what proportion would you expect to be smokers with no rules on their free time? How many are likely to be non-smokers with no rules? What proportion of all teens had no rules?
- F. What proportion of smokers discussed issues with their parents at least once per week? What about non-smokers?
- G. Write a short statement (1/2 page or so) that describes your results and the other information in the table to provide assistance to the taskforce. Be sure to address the policy implications and any caveats you might have about the study.

## Question II.

**The SAT is an exam used for undergraduate admission by many US colleges and universities. Scores on the SAT are normally distributed with a mean of 500 and a standard deviation of 100.**

A) Any student who scores 800 or higher on the SAT receives a reported score of 800. What percentage of students gets a reported score of 800?

B) If a college wants to limit applications to students in the 75<sup>th</sup> percentile or above on the SAT, what cut-off score should they use?

C) Suppose a college did not expect to receive applications from students in the upper 10 percent of SAT takers or the lower 20 percent of SAT takers, what range of SAT scores would their applicants have?

D) If the college in part B received applications from a random sample of students with SAT scores above the 75<sup>th</sup> percentile, what would the median score be?

What would you expect the mean SAT score to be for their applicants? [I don't expect for you to calculate this, just give me a sense of your logical thinking on the issue.]

**Table 1**

	<u>Smokers</u>	<u>Non-smokers</u>
Cigarette price (state avg)	\$ 1.87	\$ 1.89
(standard deviation)	(.23)	(.21)
State access limits index*	13.3	14.3
(standard deviation)	(5.9)	(5.9)
School ban on smoking	95%	96%
Discussion with parents on daily issues:		
less then weekly	18%	15%
once a week	8%	8%
a few times a week	26%	25%
almost everyday	48%	52%
Has family rules on teen's free time	62%	70%
Parent smokes	46%	34%
Male	48%	45%
Race		
Black	9%	21%
White	65%	48%
Hispanic	18%	22%
Other race	8%	9%

\* The state access index incorporates information on state policies that affect teen access to cigarettes (such as minimum age of purchase, packaging, vending machine availability). The measure ranges from 2 to 24 across the states--higher values mean less access for teens.