

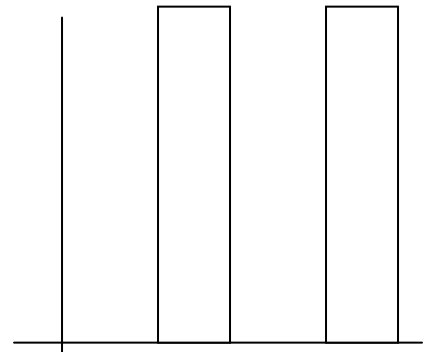
**Smoking and Education**

200 adults shopping at a supermarket were asked about the highest level of education they had completed and whether or not they smoke cigarettes. Results are summarized in the table.

	Smoker	Non-smoker	Total
High school	32	61	93
2 yr college	5	17	22
4+ yr college	13	72	85
<b>Total</b>	50	150	200

1. Discuss the W's.
  
2. Identify the variables.
  
3. a) What percent of the shoppers were smokers with only high school educations? \_\_\_\_\_  
 b) What percent of the shoppers with only high school educations were smokers? \_\_\_\_\_  
 c) What percent of the smokers had only high school educations? \_\_\_\_\_

4. Create a segmented bar graph comparing education level among smokers and non-smokers. Label your graph clearly

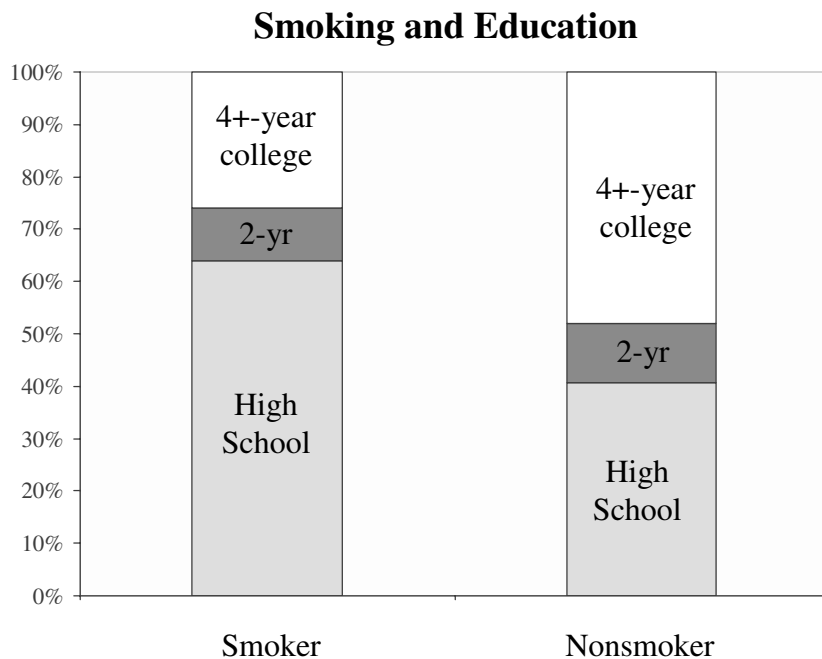


5. Do these data suggest there is an association between smoking and education level? Give statistical evidence to support your conclusion.
  
6. Follow-up question: Does this indicate that students who start smoking while in high school tend to give up the habit if they complete college? Explain.

**AP Statistics Classwork – Smoking and Education Key**

1. Who: 200 adults  
 What: education level and smoking habits  
 When: not specified  
 Where: shopping mall  
 How: not specified. Was this a random sample, or were some people simply asked?  
 Why: to examine possible links between smoking and education level
2. Categorical variables: Education level, and whether or not the person was a smoker.
3. a)  $\frac{32}{200} = 16\%$   
 b)  $\frac{32}{93} \approx 34.4\%$   
 c)  $\frac{32}{50} = 64\%$

4. The segmented bar graph comparing education level among smokers and non-smokers is at the right.



5. These data provide evidence of an association between smoking and education level. 64% of smokers had only a high school diploma, while only 40.7% of non-smoker had only high school diplomas. Only 26% of smokers had four or more years of college, compared to 48% of smokers.
6. These data do not indicate that students who start smoking in high school tend to give up the habit if they complete college. These data were gathered at one time, about two different groups, smokers and non-smokers. We have no idea if smoking behavior changes over time.