Module 05 HW

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Word Document

**Exercises 3.8, 3.12, 3.16, 3.22**

**Exercise 3.8 Poverty and language.**

1. **No, they are not disjointed. An outcome can occur where an individual is below the poverty line and speaks a foreign language at home.**

4.2%

1. P(Poverty) – P(Poverty and Foreign Language

14.6% - 4.2% = 10.4%

10.4% of Americans live below the poverty line and only speak English at home.

1. P(Poverty or Foreign Language) =

P(Poverty) + P(Foreign Language) – P(Poverty and Foreign Language)

14.6% + 20.7% - 4.2%

31.1% of Americans live below the poverty line and speak a foreign language.

1. P(above Poverty and Only English) =

100% - 31.1% = 68.9%

68.9% of Americans live above the poverty line and only speak English.

1. No, because the poverty line provides useful information about the event the person speaks either English or a foreign language at home.

**Exercise 3.12 School absences.**

1. 25% + 15% + 28% = 68%

100% - 68% = 32%

32% probability that a student at random does not miss any days of school due to sickness.

1. 32% + 25% = 57%

57% probability that a student chosen at random misses no more than one day.

1. 25% + 15% + 28% = 68%

68% probability that a student chosen at random misses at least one day.

1. Assuming no kids miss more than three days of school and assuming that missing school and sickness are independent:

32% x 32% = 10.24%

10.24%

1. Once again, assuming they are independent.

68% x 68% = 46.24%

1. Hard to say if it was reasonable for a few reasons.Kids are missing school based on being sick and since sickness is contagious and can spread, these events are probably dependent. Also, there are probably kids were sick for more than three days, which is not present in the data.

**Exercise 3.16 Health coverage, relative frequencies.**

1. They are not mutually exclusive. For those in excellent health, some have healthy coverage and others do not.
2. P(Health = Excellent) = 0.023 + 0.2099 = 0.2329

23.29%

1. P(Health = Excellent | Health Coverage = Yes)

= P(Health = Excellent and Health Coverage = Yes)

P(Health Coverage = Yes)

= 0.2099 = 0.2402 = 24.02%

0.8738

24.02%

1. P(Health = Excellent | Health Coverage = No)

= P(Health = Excellent and Health Coverage = No)

P(Health Coverage = No)

= 0.0230 = 0.1823 = 18.23%

0.1262

18.23%

1. No, more people with excellent health have health coverage compared to those in excellent health who have no insurance. About 18.7% of people more.

**Exercise 3.22 Exit poll.**

P(Voted for Walker | College Degree = Yes)

= P(Voted for Walker | College Degree = Yes)

P(College Degree = Yes)

= 0.1961\_\_\_

0.1961 + 0.2068

= 0.1961 = 0.4867 = 48.67%

0.4029

48.67% probability that he voted in favor of Scott Walker.