

Activity: Examining the Effect of Videogames on Grades

In the questions below, we investigate answers to the questions: How much of an effect does your roommate have on your grades? In particular, does it matter whether your roommate brings a videogame to college? The study included $n = 210$ first-year students who were randomly assigned a roommate. The table below gives summary statistics on grade point average (GPA) for the first semester depending on whether the student and/or the roommate brought a videogame to campus.

Student brought videogame	Roommate brought videogame	Sample size	Mean GPA	Std. Dev.
No	No	88	3.128	0.590
Yes	No	44	3.039	0.689
No	Yes	38	2.932	0.699
Yes	Yes	40	2.754	0.639

1. Considering only students who do *not* bring a videogame to campus, find and interpret a 95% confidence interval for the difference in mean GPA between students whose roommate does not bring a videogame and those whose roommate does bring a videogame. Comment on the effect on these students of having a roommate bring a videogame.
2. Considering only students who *do* bring a videogame to campus, find and interpret a 95% confidence interval for the difference in mean GPA between students whose roommate does not bring a videogame and those whose roommate does bring a videogame. Comment on the effect on these students of having a roommate bring a videogame. Compare your answer to that in Question 1: Is the roommate videogame effect stronger on students who themselves bring videogames or those who do not themselves bring videogames. Is this what you would expect?
3. Considering only students whose roommate does *not* bring a videogame to campus, find and interpret a 95% confidence interval for the difference in mean GPA between students who bring a videogame and those who do not bring a videogame. Comment on the effect on these students of bringing a videogame.
4. Considering only students whose roommate *does* bring a videogame to campus, find and interpret a 95% confidence interval for the difference in mean GPA between students who bring a videogame and those who do not bring a videogame. Comment on the effect on these students of bringing a videogame.
5. We consider the effect of neither student bringing videogames compared to both students bringing them. Find and interpret a 95% confidence interval for the difference in means between students in rooms in which neither the student nor the roommate brings a videogame and students in rooms in which both the student and the roommate bring a videogame. Comment on the effect of videogames on GPA.
6. Can we conclude that bringing videogames to campus reduces GPA? Why or why not?