

Math 263
Quiz 8

Name _____

Cervical cancer in women is most often caused by the HPV (human papillomavirus). In a randomized controlled trial on the vaccine Gardasil, one case of HPV was diagnosed among the 7897 women given the vaccine, compared to 91 cases among the 7899 given the placebo.¹ Is the vaccine effective? Use the following steps to decide:

(a) State the null hypothesis.

(b) State the alternate hypothesis.

(c) Find the z -value.

(d) What is the p -value?

(e) What is your conclusion about the vaccine? Give a reason for your answer.

(f) With justification, explain what you can conclude about causality in this context.

¹ “Quadrivalent Human Papillomavirus Vaccine: Recommendations of the Advisory Committee on Immunization (ACIP)”, National Committee on HIV/AIDS, etc. May 2007. Reported in *Stats: Data and Models*, De Veaux et al, 3rd edn Addison Wesley 2012.