

Quiz 7 (Group) for Statistics 113
Statistics and Society–Fall 2001
Material Covered: Chapter 27 of Workbook and text
Friday, 30th November

Name 1 (please print): _____
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1. [5 points] A comparison of the number of male musicians in rock music and pop music was undertaken, with the following results, based on large random samples.

	rock music (1)	pop music (2)
male musicians	452	321
total musicians	705	555

Does the data support the claim the proportion of male rock musicians is different from the proportion of male pop musicians? Calculate P and use it to decide this.

Since $1 < P = 2.44 < 5$, the difference in proportions is significant; in other words, the proportion of male rock musicians is different from the proportion of male pop musicians.

 null average difference 0

alternative difference in proportions *different* than 0

sample difference: $452/705 - 321/555 = 0.0626$

sample SD rock $\sqrt{(452/705)(253/705)} = 0.4797$ (rock: 452 male, 253 female)

sample SE rock $\sqrt{705} \times 0.4797 = 12.736$

sample SE rock $12.736/705 = 0.018065$

sample SD pop $\sqrt{(321/555)(234/555)} = 0.493819$ (pop: 321 male, 234 female)

sample SE pop $\sqrt{555} \times 0.4938 = 11.63359$

sample SE pop $11.63/555 = 0.02096$

sample SE of proportion *difference* $\sqrt{0.018065^2 + 0.02096^2} = 0.0277$

$z = \frac{0.0626 - 0}{0.0277} = 2.26$

using the normal tables, $P = 2.44\%$