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Live Session Assignment4

1) Is at least one of the five population distributions (by education level) different from the others (in income)?
2) Survey data were collected by the Nat'l Longitudinal Survey of Youth in 1979; education and income information were collected from same individuals in 2005. Sample is random, with no controls in place. As such, educational level as independent variable is a post hoc characterization, not an experimental condition. Sample size (2,584) is adequate.
3) Descriptives:

Education

	N	Mean	Std. Deviation	Std. Error
<12	136	28301.45	21021.897	1802.613
12	1020	36864.90	29369.730	919.602
13-15	648	44875.96	33913.536	1332.250
16	406	69996.97	64256.802	3189.012
>16	374	76855.46	65428.293	3383.216
Total	2584	49417.00	46727.925	919.243

4) Results of ANOVA:

Income

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	688235137 515.904	4	172058784 378.976	89.613	.000
Within Groups	495174272 1103.092	2579	192002431 9.931		
Total	563997785 8618.996	2583			

Effect size was large ($\eta^2 = 5.6^{12}$), as was $F(df = 4)$, $p < .0001$.

5) Tukey's HSD revealed insignificance in income differences between the >12 and and 12 groups ($p = .203$), and between 16 and >16 ($p = .168$). All other pair-wise

comparisons of means were significant.

6) Residuals diagnostic was conducted examining standardized and unstandardized residuals.
7) It seems clear from this analysis that educational level is strongly correlated with income. The largest difference in income is between the 13-15 and the 16 years levels: >16 exceeds 16 by $6,858 ($\mu 5 - \mu 4$); 16 exceeds 13-15 by $25,121($\mu 4 - \mu 3$); 13-15 exceeds 12 by $8,011 ($\mu 3 - \mu 2$); and 12 exceeds <12 by $8,563 ($\mu 2 - \mu 1$). This indicates that obtaining a Bachelor's degree (as opposed to "some college completed") is correlated strongly with a substantial increase in income.