

Intro To Statistics

Exam

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DON'T JUST CITE THE CONTENT OF MY PRESENTATION WHEN EXPLAINING. ALWAYS APPLY YOUR ANALYSIS TO THE EXPERIMENT AT HAND.

We've conducted a small experimental comparison of the minimal required level of education and average annual salary between multiple jobs (in different fields). The results are as follows:

Job	Required Education	Annual Salary
Janitor	Elementary School (at least 7 years)	\$40,517
Police Officer	High School Diploma + Training (at least 13.5 years)	\$61,986
Registered Nurse	BSN or ADN degree (at least 15 years)	\$101,841
Software Developer	Bachelor's Degree + Internship (at least 18 years)	\$117,509
Theoretical Mathematician	Ph.D. + postdoctorate (at least 25 years)	\$101,080

Experiment Data

1. We provide three ways to quantify education:
 - (a) the fewest number of years to achieve it.
 - (b) earning a degree (or some sort of training) means +1. That is, for instance, a *high school diploma* is 2 because it requires finishing two levels of education (elementary + high). In the same vein, *Ph.D. + postdoc* would be the number 6 (elementary + high + bachelor + master + Ph.D. + postdoc).

- (c) relative length – meaning, say, elementary school equals 1 and high school + training equals 13.5/7 because it is that many times longer than elementary school.

Choose one and fill it into the table. **Explain why you think it is the best statistical predictor.**

2. Calculate the mean required education and the mean annual salary. **Explain what type of mean you use for each output and why.**
3. Determine **the median** of the annual salary. Is it very different (relatively speaking) from the mean? Why is it so?
4. Calculate the standard deviation for both outputs. What information does it give us? **Explain in the context of this experiment.**
5. Calculate the correlation of required education and average salary. How strongly do they correlate and what can you deduce from it?