Review Session 6

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Rose McSell has taken a new job as salesperson for Voice-Recording manufacturer Yada-Phone. Her new boss offers her three different plans of compensation. All plans include a different commission rate for sales to old customers, who have purchased a machine before and just need an upgrade, and new customers, who will purchase the full equipment for the first time. Rose believes that the number of sales she can make each year can be modeled as two different binomial random variables. For the sales to old customers she is using the parameters $n = 1000$ and $p = 0.1$ and for the new sales $n = 100$ and $p = 0.05$. The details of the different plans are as follows:

- Plan A
  Rose would get an annual fixed salary of $40,000$ and 300 per sale to an old customers, but not more than 100 commissions of this type per year. A sale to a new customers would be compensated with $2,500$.

- Plan B
  This plan includes an annual fixed salary of $25,000$ and 400 per sale to an old customers, but again not more than 100 commissions of this type per year. A sale to a new customers would be compensated with $5,000$.

- Plan C
  This plan has no fixed salary. 600 are paid per sale to an old customers with no limit. A sale to a new customers would be compensated with $6,000$. Additionally, Rose would get a $10,000$ bonus should she make 7 or more sales to new customers per year.

1. Create an Excel spreadsheet and simulate Rose's annual salary for each of the proposed plans.

2. In her decision, Rose also wants the risk of a low income to be reflected. She has to pay of her mortgage and believes that she would not be able to make all her payments if she earns less than $60,000$ a year. Therefore she would not accept a plan with more than 1% likelihood of earning less than $60,000$. Make a recommendation which plan Rose should choose based on your simulation results.