BAX 442 HW#5
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1. **What is mediation?**
   Mediation represents the consideration of how a third variable (known as the mediator/mediating variable), affects the relation between two other variables. The mediating variable serves as both the DV and IV, it is positioned in the causal pathway between the IV and the DV, effectively acting as a link or bridge that transmits the effect from the IV to the DV. In mediation analysis, the mediator itself is influenced by the IV and, in turn, exerts an effect on the DV.

2. **How did your team estimate the mediation models?**
   Path a1 estimates the independent variable (OOH, social media), on the mediator (awareness).
   Path a2 estimates the independent variable(Social Media), on the mediator(awareness).
   Path b estimates how changes in awareness affect sales.
   Path ab1 estimates the indirect effect of OOH on Sales through awareness.
   Path ab2 estimates the indirect effect of Social Media through awareness.
   Path c1 estimates the direct effect of OOH on sales, not mediated by awareness.
   Path c2 estimates the direct effect of Social Media on sales, not mediated by awareness.

3. **How were the 95% CIs computed?**
   To calculate the 95% CIs, we used Monte Carlo bootstrap. We first repeatedly resample out the dataset with replacement to create bootstrap. Then we estimated the mediation model for each bootstrapping sample. With these mediation models, we can obtain the distribution of the mediation effect. Then we use the distribution of the mediation effect to calculate the 95% confidence interval which is the 2.5th and 97.5th percentile of the distribution.

4. **Table for parameter estimates with 95% CIs**

	Estimate	Lower Bound	Upper Bound
Effect of OOH on Awareness(a1)	0.0016	-0.01231	0.0171
Effect of Social Media on Awareness (a2)	0.0074	-0.08565	0.1013
Effect of Awareness on Volume Sales(b)	15.0186	8.8479	20.6290
Mediated Effect of OOH through Awareness (ab1)	0.0011	-0.00200	0.0044
Mediated Effect of Social Media through Awareness(ab2)	0.0193	0.00455	0.0353
Direct Effect of OOH on Volume Sales(c1)	0.0237	-0.1980	0.2497

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Direct Effect of Social Media on Volume Sales(c2)	0.1042	-1.2097	1.5098
Total Effect including OOH(tot1)	0.0250	-0.19871	0.2510
Total Effect including Social Media(tot2)	0.1245	-1.20138	1.5310