Causal Inference for Advanced Models

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Factors that Affect Causal Inference

- *Imbalance* and *lack of complete overlap* can make causal inference difficult for comparing between two treatments.
- Here, *imbalance* is not a difference in sample size, but rather is a difference between groups in important covariates.
- *Lack of complete overlap* is when there are no observations at some combinations of covariates.

Imbalance

- For imbalanced samples, simple comparisons of sample means between groups are not good estimates of treatment effects.
- A model adjustment is one way to better estimate a treatment effect.
- Using matching is another strategy to overcome imbalance.

Lack of Complete Overlap

- For lack of complete overlap, there is no data available for some comparisons.
- This requires extrapolation using a model to make comparisons.
- This is a more serious problem than imbalance.