

Propositions belonging to the thesis

Heterogeneity in Prediction Research: Methods and applications

1. Heterogeneity of model performance across clusters of patients is more informative than overall model performance in pooled patient data. *(this thesis)*
2. Understanding heterogeneity of discriminative ability across clusters of patients requires understanding heterogeneity of both patient case-mix and overall regression coefficient validity. *(this thesis)*
3. Heterogeneity of absolute treatment effect across patients is underestimated if heterogeneity of baseline risk or heterogeneity of relative treatment effect is ignored. *(this thesis)*
4. Heterogeneity of cost-effectiveness across patients is overestimated when individualized cost-effectiveness estimates are based on long-term survival models that are less granular than short-term treatment benefit models. *(this thesis)*
5. Guiding clinical and public health decisions by valid prediction models has the potential to: save life years; reduce treatment harm; and avert costs. *(this thesis)*
6. After the data are used to determine the model, they will no longer be needed to estimate the predictive power.
Edward Korn, Richard Simon (Statistics in Medicine 1990)
7. Certain deliberately induced biases can dramatically improve estimation.
Bradley Efron (Advances in Mathematics 1975)
8. The modest benefit ascribed to many treatments in clinical trials can be misleading because modest average effects may reflect a mixture of substantial benefits for some, little benefit for many, and harm for a few.
Richard Kravitz, Naihua Duan, Joel Braslow (The Milbank Quarterly 2004)
9. It is a mistake to conclude from the Fundamental Problem of Causal Inference that causal inference is impossible.
Paul Holland (Journal of the American Statistical Association 1986)
10. Claimed research findings may often be simply accurate measures of the prevailing bias.
John Ioannidis (PLOS Medicine 2005)
11. Scientists are people who know more and more about less and less, until they know everything about nothing.
Konrad Lorenz

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