Author's response to reviews

Title: The impact of population heterogeneity on risk estimation in genetic counseling

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Response to Dr. Fischer's comment: We think Begg and Lagakos's paper discussed a similar but slightly different problem. We think Begg and Lagakos's focus is the asymptotic relative efficiency of using the misspecified model to test association between exposure and response variables, while our focus is the amount of bias in predicted disease risks generated by using models with missing covariate (The individual contamination status is the missing covariate). Although Begg and Lagakos mentioned a missing covariate could lead to biased estimate of treatment effect, they didn't view it in the context of genetic counseling, where estimating disease risk is the primary goal. We quantified the bias of the estimated disease risks under different levels of population contamination by a simulation study. We also demonstrated that contamination in one or more categories could cause the biased predicted risks in all categories. We have added some discussions about this paper in the discussion section.