Biostat 578A: Evaluating Vaccine Efficacy

Questions for Readings 6

Due Thursday February 16

Assignment: Answer one of the following questions.

1. WHO-UNAIDS Report (2001): Based on the discussion in this article, what are some reasons why it is difficult to make an efficacious HIV-1 vaccine? What kinds of immune responses induced by vaccination may be required in order for the vaccine to confer protection?

2. Gilbert, McKeague, Sun (2006): Based on the simulation study presented in this article, critique the performance of the two test statistics $\hat{U}_1^{np}$ and $\hat{U}_1^{sp}$ for evaluating $H_0 : VE(t,v) = VE(t)$. Do the tests control the type I error rate appropriately? Which test statistic (or statistics) should be recommended in practice? In addition, based on the analyses presented in the Example, what do you conclude about vaccine efficacy and its relationship to the three HIV genetic distances that were studied?