

Breaking Ties: Regression Discontinuity Design Meets Market Design*

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Abstract: Centralized school assignment algorithms must distinguish between applicants with the same preferences and priorities. This is done with randomly assigned lottery numbers, non-lottery tie-breakers like test scores, or both. The New York City public high school match illustrates the latter, using test scores, grades, and interviews to rank applicants to screened schools, combined with lottery tie-breaking at unscreened schools. We show how to identify causal effects of school attendance in such settings. Our approach generalizes regression discontinuity designs to allow for multiple treatments and multiple running variables, some of which are randomly assigned. Lotteries generate assignment risk at screened as well as unscreened schools. Centralized assignment also identifies screened school effects away from screened school cutoffs. These features of centralized assignment are used to assess the predictive value of New York City's school report cards. Grade A schools improve SAT math scores and increase the likelihood of graduating, though by less than OLS estimates suggest. Grade A attendance also boosts measures of college and career readiness. Estimation strategies that exploit the combination of lottery and non-lottery risk increase precision markedly. Grade A effects are similar whether identified by screened or lottery tie-breakers and for screened and unscreened schools. Selection bias in OLS estimates is egregious for Grade A screened schools.