ECON675 – Assignment 6

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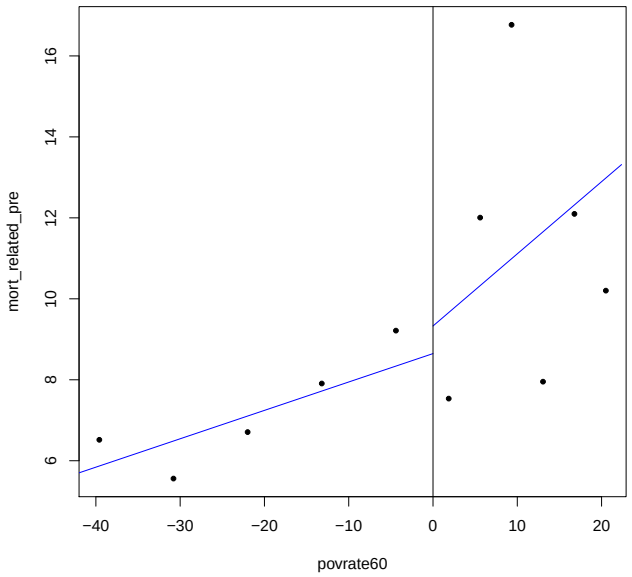
Contents

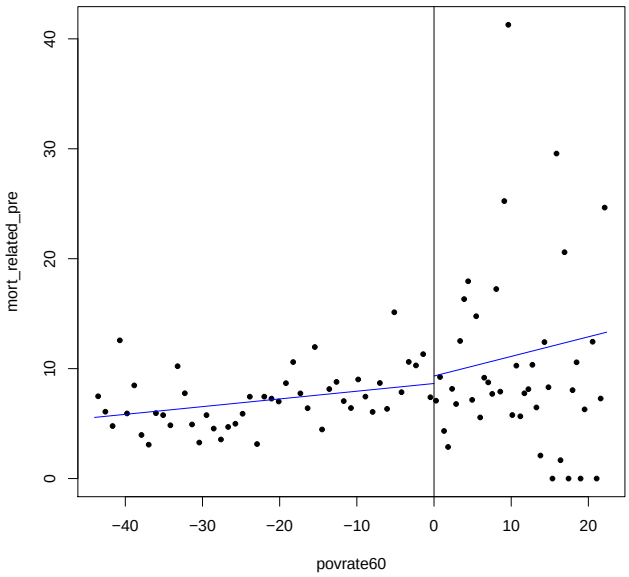
1 The effect of Head Start on child mortality

1.1 RD plots and falsification tests

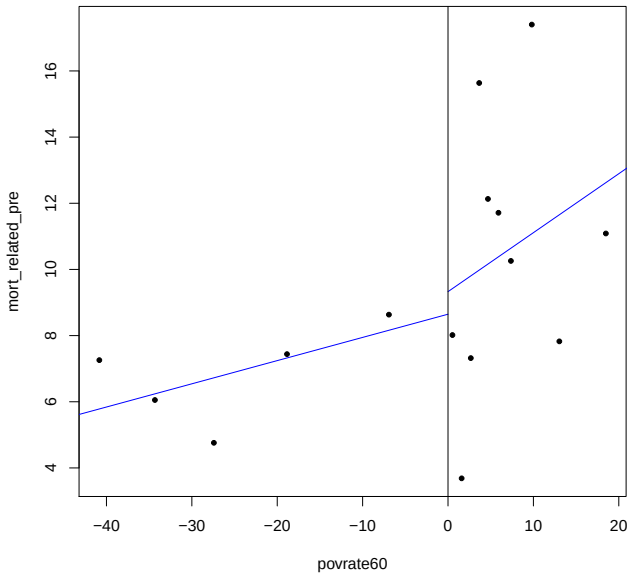
Figure 1: RD Plots of Pre-intervention Mortality Rates Using Different Binning Procedures



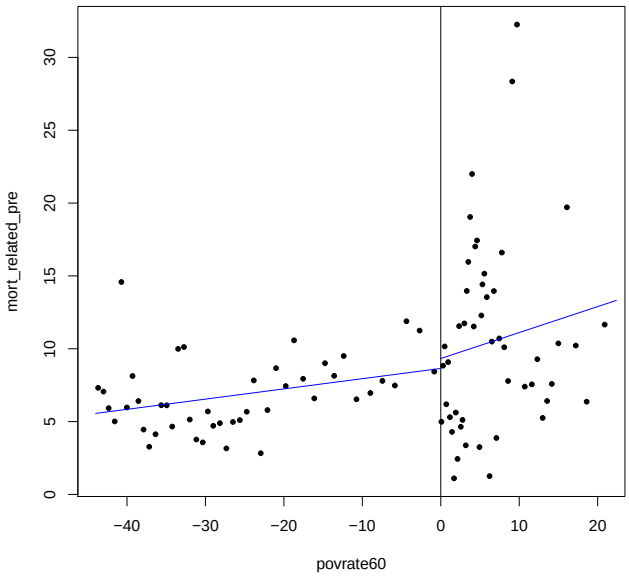
(a) Evenly-spaced, IMSE optimal



(b) Evenly-spaced, variance mimicking



(c) Quantile-spaced, IMSE optimal



(d) Quantile-spaced, variance mimicking

Figure 1 shows the RD plots of `mort_related_pre` using different binning procedures, as required. For each binning method, there is clearly no evidence of a negative discontinuity at the cutoff poverty rate. (In fact, there seems to be a small positive jump in pre-inverventionmortality rates at the cutoff.) If there was a negative jump in pre-intervention mortality rates at the cutoff this would potentially falsify the proposed RD design because it would provide strong evidence that the counties assigned to Head Start treatment had systematically lower mortality rates prior to the intervention.

We can also conduct formal falsification tests. First, I conduct exact binomial tests for small windows around the cutoff. The basic idea is that if there is no systematic sorting, then the number of observations just above or below the cutoff should be pretty close to random, and thus should follow a binomial distribution. Table 1 shows the results for the exact binomial test (with probability of success set to 0.5) for a few small windows near the cutoff (replicating Table 1 in Cattaneo, *et al.* (2017)). Clearly, we cannot reject the null that the number of observations just above and below the cutoff are random.

Table 1: Binomial tests

	h	N_W^-	N_W^+	p-value
1	0.3	9	10	1.000
2	0.5	18	16	0.864
3	0.7	24	22	0.883
4	0.9	32	27	0.603
5	1.1	43	33	0.302
6	1.3	51	38	0.203