1. Comparison of OLS, Fuzzy RD Manual Estimation, Fuzzy RD 2SLS Estimation

VARIABLES	(1) OLS mathematics score - kovec2	(2) RD_Manual_Left mathematics score - kovec2	(3) RD_Manual_Right mathematics score - kovec2	(4) RD_2SLS mathematics score - kovec2
classize	0.0363			
	(0.038)			
% disadvantaged students	-0.3335***	-0.4360***	-0.2921***	-0.3385***
	(0.016)	(0.108)	(0.042)	(0.019)
enrollment	-0.0088	53.5140	-26.7078	-0.5829**
	(0.018)	(71.507)	(38.482)	(0.232)
esquare	0.0001	-0.7313	0.3144	0.0057**
	(0.000)	(0.967)	(0.448)	(0.003)
largeclass = o,		-		
largeclass			-3.5541	-4.3695***
			(4.300)	(1.439)
Constant	70.6253***	-908.3408	636.5785	86.6337***
	(1.068)	(1,319.992)	(825.025)	(5.400)
Observations	2,018	49	122	699
R-squared	0.252	0.280	0.338	0.318

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

2. Based on fuzzy RD automatic estimation

Figure 1. Jumping Graph for Enrollment before and after Class Size 40

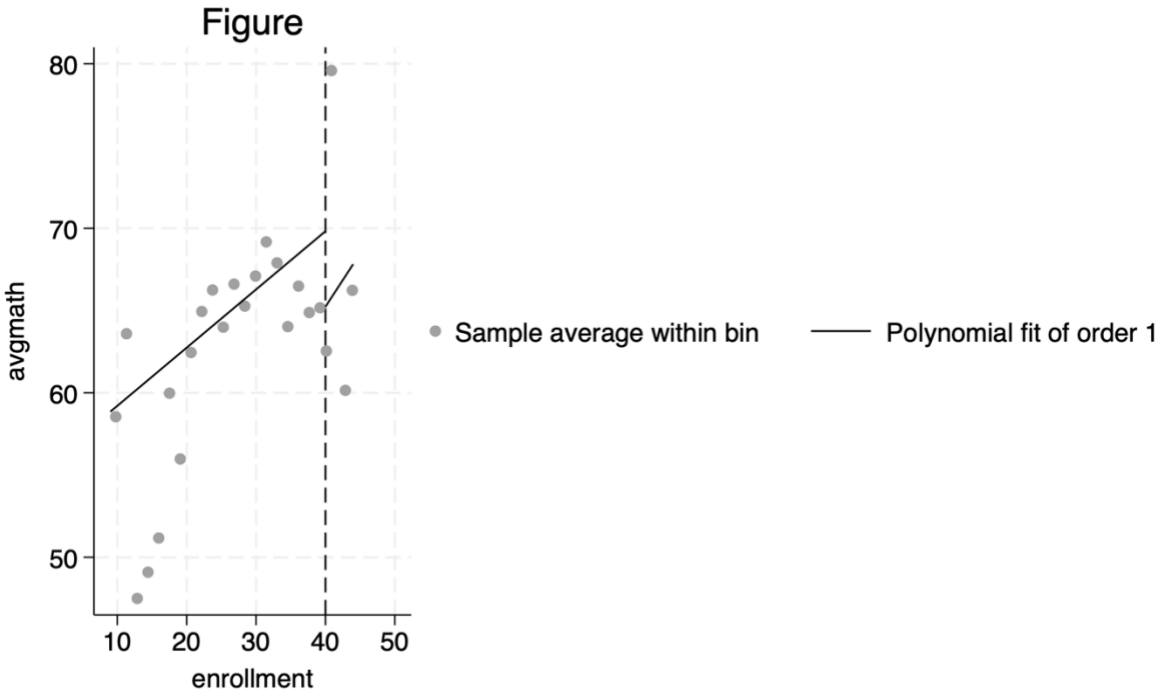
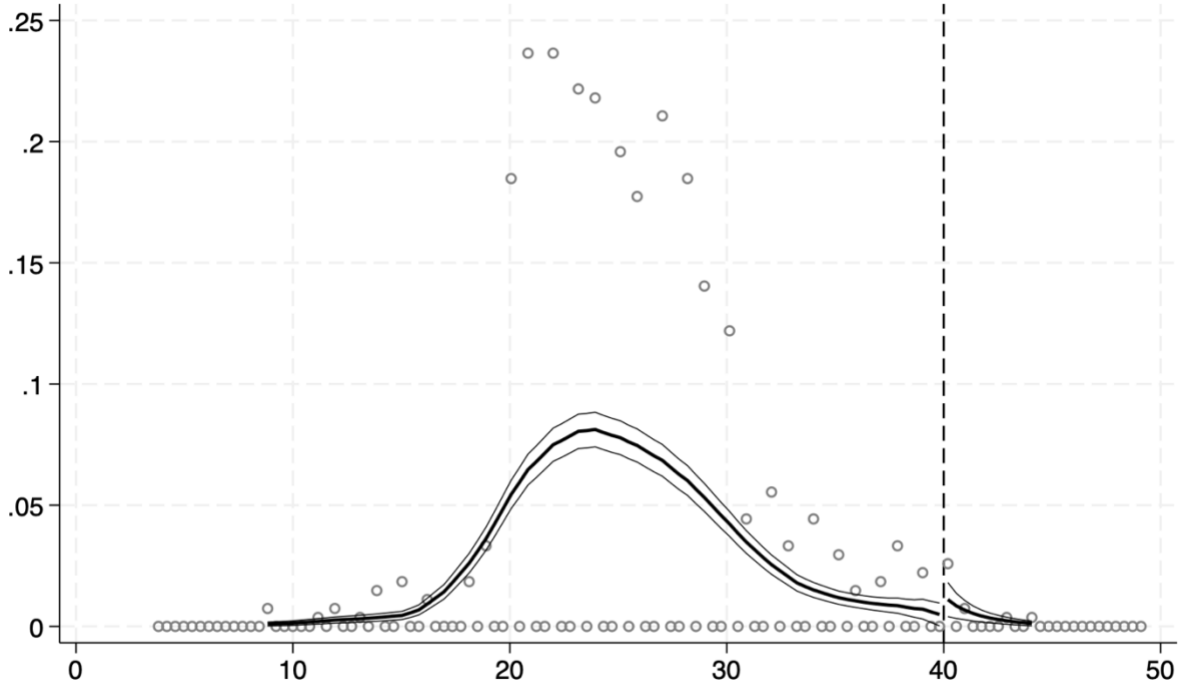


Figure 2. Density Graph of Running Variable *classize* Using DCdensity



```
*** Housekeeping ***

        set more off
        clear all



*** Read in the raw data ***

        use "/Users/qilinzhou/Desktop/StataDemo9/lec4_grade.dta", clear



*** question 1: OLS regression ***

//add additional control variables step by step
        reg avgmath classize,r

        reg avgmath classize disadv ,r

        gen esquare=enrollment^2
        reg avgmath classize disadv enrollment esquare,r
   est store OLS
//Limit the sample to schools with enrollment between 20 and 60 students
        drop if enrollment>60
        drop if enrollment<20
        reg avgmath classize disadv enrollment esquare,r



*** question 2: fuzzy RD-Manual estimation ***

        gen largeclass=.
        replace largeclass=1 if enrollment<=40
        replace largeclass=0 if enrollment>40

        //left side regression
        reg avgmath largeclass disadv enrollment esquare if enrollment<40&enrollment>=35
        est store RD_Manual_Left
        matrix coef_left=e(b)
        local intercept_left=coef_left[1,5]


        //right side regression
        reg avgmath largeclass disadv enrollment esquare if enrollment<=45&enrollment>=40
```

```
 est store RD_Manual_Right
matrix coef_right=e(b)
local intercept_right=coef_right[1,5]

//get intercept difference
local difference =`intercept_right'-`intercept_left'
        display coef_left[1,5] - coef_right[1,5]
macro list



*** question 3: fuzzy RD-2SLS estimation ***

gen func= enrollment/(int((enrollment-1)/40)+1)  //IV
ivregress 2sls avgmath disadv enrollment esquare (largeclass=func), vce(robust) first
est store RD_2SLS


outreg2 [ OLS RD_Manual_Left  RD_Manual_Right RD_2SLS ]  ///
        using choice.xls, stat(coef se) bdec(4) sdec(3) replace label

*** question 4: fuzzy RD-Automatic estimation ***

//ssc install rdrobust first
rdrobust avgmath classize,c(40) p(1) q(2) covs(disadv) kernel(triangular) level(95) h(5)
all

//graph
rdplot avgmath classize,c(40) p(1) graph_options(title(Figure) xtitle(enrollment)
ytitle(avgmath))

//Manipulate tests
// net install github, from("https://haghish.github.io/github/")
// github install iphone7725/DCdensity

DCdensity classize, breakpoint(40) generate(Xj Yj r0 fhat se_fhat)

// or
ssc install rddensity
ssc install lpdensity
help rddensity



*** Housekeeping ***
```

```
clear all
```