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# EVALUATING INSTITUTIONAL EFFORTS TO STREAMLINE POSTSECONDARY REMEDIATION: THE CAUSAL EFFECTS OF THE TENNESSEE DEVELOPMENTAL COURSE REDESIGN INITIATIVE

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# REMEDICATION IN TENNESSEE

- 19 public TN Board of Regents institutions (13 two-year) serving 215,000 students
- Among first-time students, 62% taking at least one remedial courses
  - 77% in two-year colleges
  - 43% in four-year colleges
- Remediation offered in Math, Reading, and Writing
- Colleges were reporting high levels of course failure (over 50%) and drop-out for remedial students, particularly in developmental math

# STREAMLINING DEVELOPMENTAL MATH



## TN

**“Mainstreaming”**: Eliminated developmental math & placed students into college-level courses with a special outside workshop

Austin Peay  
State University

Nashville

Knoxville

Jackson State  
Community College

Cleveland State  
Community College

Memphis

**“Modules”**: Combined 3 developmental math courses into one course divided into 12 modules

**“Modules + Acceleration”**: Course divided into modules. Students who completed a developmental math course before the end of the term were allowed to begin the next developmental course in the sequence immediately



# RESEARCH QUESTIONS

1. Is participation in redesigned remedial courses more effective than participation in traditional remedial courses offered at similar institutions during the same time period?
2. Is participation in redesigned remedial courses more effective than participation in the traditional model of remediation at the same institution prior to the implementation of these new courses?



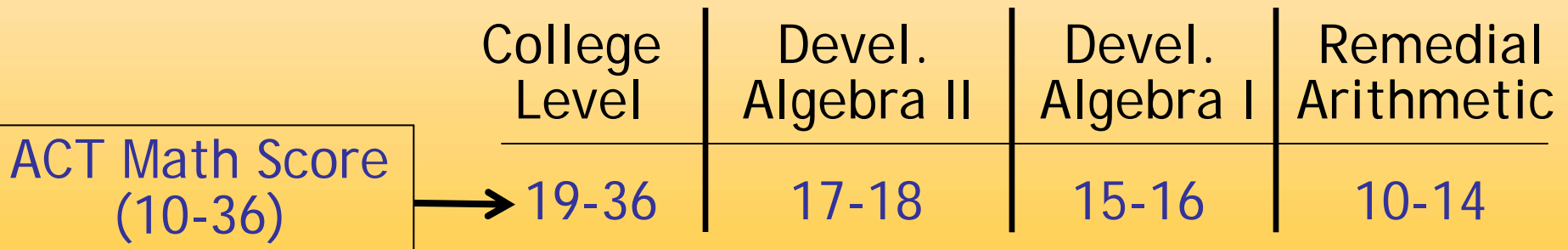
# DATA

- Student-level data from Tennessee Higher Education Commission (THEC) & Tennessee Board of Regents (TBR)
  - Includes demographic information, high school GPA/honors, ACT scores, developmental course placement information, course enrollment, credit accumulation
  - 4 cohorts: 2006-07, 2007-08, & 2008-09, 2009-10
- *Sample*: First-time, fulltime students under age 21 with a reported ACT Math Score (N=80,129 across 4 cohorts)
  - Attending Austin Peay State University, Cleveland State CC, and Jackson State CC (N=8,948 across 4 cohorts)



# PLACEMENT POLICY

- Over 80% of all incoming students report an ACT score at entry
  - Students without ACT scores are older (avg. age = 28)
  - 98.5% of first-time, fulltime students under age 21 report an ACT score
- Investigate effects of remediation using a Regression Discontinuity (RD) design





# RQ #1: REDESIGNED REMEDIATION COURSES VS. TRADITIONAL COURSES, FALL 2008-09 AND 2009-10

1<sup>st</sup> to 2<sup>nd</sup>  
Semester  
Persistence

College-level  
credits  
completed in  
2<sup>nd</sup> semester

Still  
Enrolled  
in Year 2

College-level  
Credits  
Completed  
after 2 years

**ALL FOUR YEAR COLLEGES**

# RQ #1: REDESIGNED REMEDIATION COURSES VS. TRADITIONAL COURSES, FALL 2008-09 AND 2009-10



	1 <sup>st</sup> to 2 <sup>nd</sup> Semester Persistence	College-level credits completed in 2 <sup>nd</sup> semester	Still Enrolled in Year 2	College-level Credits Completed after 2 years
<b>ALL FOUR YEAR COLLEGES</b>				
Assigned to Develop. Alg. II				
Austin Peay				
Assigned * Austin Peay				
Fitted value at cutoff				
Bandwidth				
Observations				





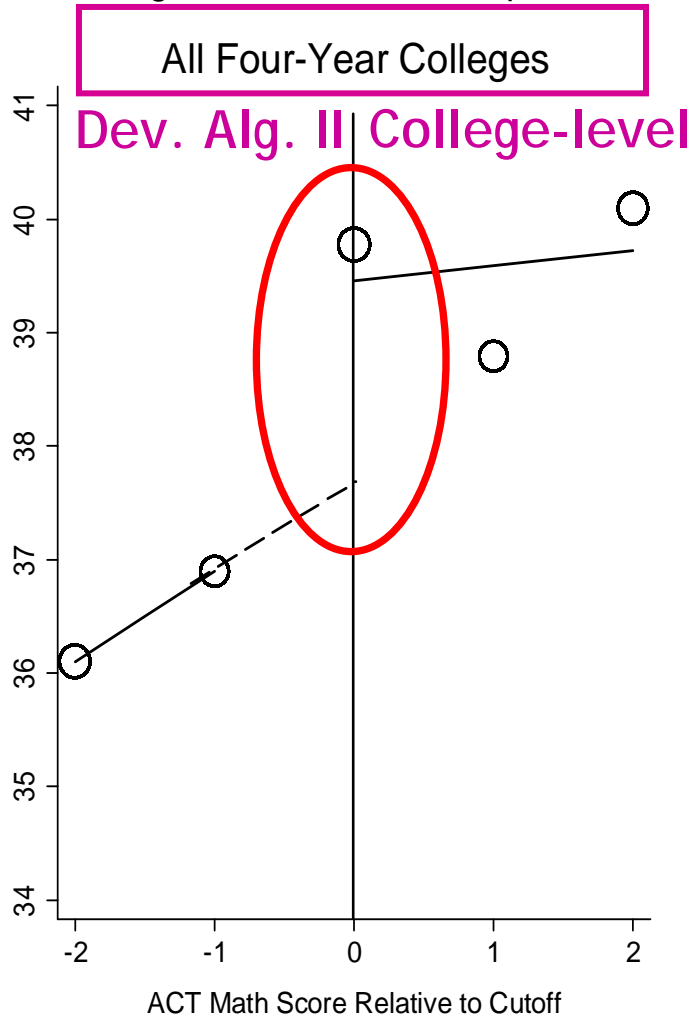
# RQ #1: REDESIGNED REMEDIATION COURSES VS. TRADITIONAL COURSES, FALL 2008-09 AND 2009-10

	1 <sup>st</sup> to 2 <sup>nd</sup> Semester Persistence	College-level credits completed in 2 <sup>nd</sup> semester	Still Enrolled in Year 2	College-level Credits Completed after 2 years
<b>ALL FOUR YEAR COLLEGES</b>				
Assigned to Develop. Alg. II	0.025 (0.021)	-0.492* (0.185)	0.019 (0.036)	-1.972* (2.317)
Austin Peay	-0.007 (0.012)	0.026 (0.179)	0.007 (0.017)	-0.739 (0.856)
Assigned * Austin Peay	-0.013 (0.027)	-0.698* (0.331)	-0.006 (0.038)	2.694* (1.539)
Fitted value at cutoff	0.904	12.90	0.707	39.77
Bandwidth	$-2 \leq x \leq 2$	$-2 \leq x \leq 3$	$-2 \leq x \leq 1$	$-2 \leq x \leq 3$
Observations	9,595	10,996	7,845	10,996



# WITH OTHER FOUR-YEAR PUBLIC COLLEGES

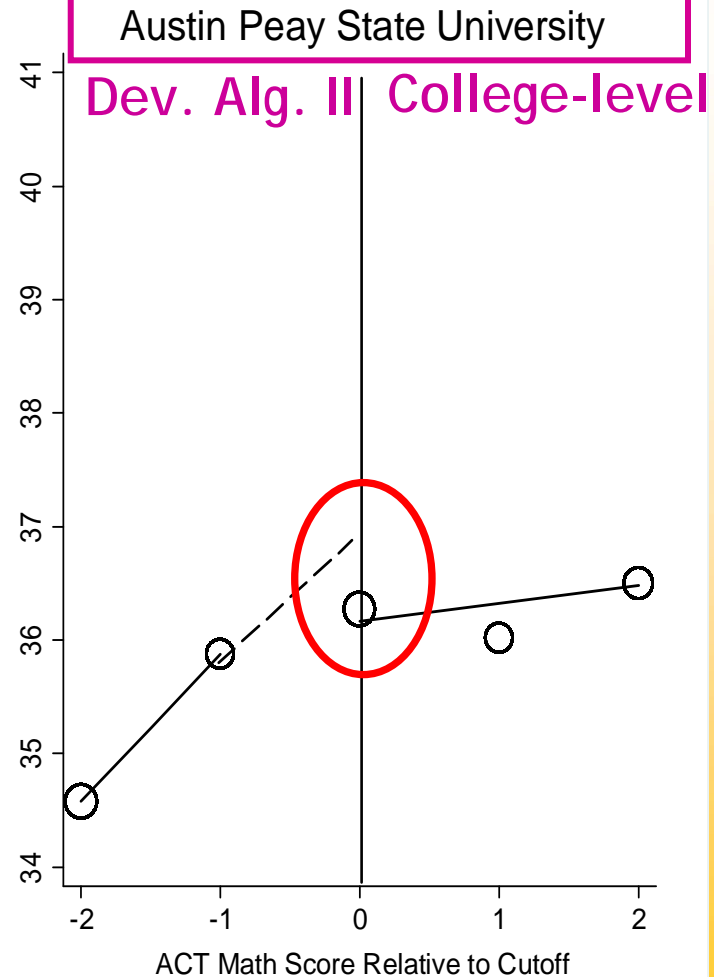
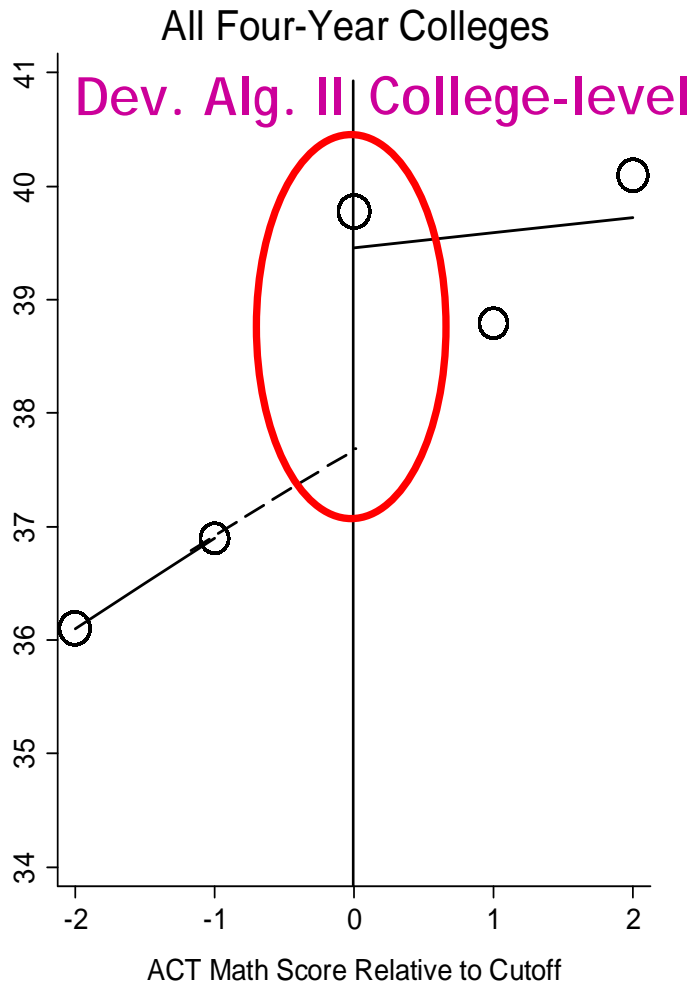
College-Level Credits Completed After Two Years (2008-09 & 2009-10 Cohorts)





# WITH OTHER FOUR-YEAR PUBLIC COLLEGES

College-Level Credits Completed After Two Years (2008-09 & 2009-10 Cohorts)





# COURSES VS. TRADITIONAL COURSES, PRE VS. POST REDESIGN

	1 <sup>st</sup> to 2 <sup>nd</sup> Semester Persistence	Still Enrolled in Year 2	College-level Credits Completed in Year 2	College-level Credits Completed after 2 Years
<b>AUSTIN PEAY STATE UNIVERSITY</b>				
Assigned to Develop. Alg. II				
Post				
Assigned * Post				
Observations				



# COURSES VS. TRADITIONAL COURSES, PRE VS. POST REDESIGN

	1 <sup>st</sup> to 2 <sup>nd</sup> Semester Persistence	Still Enrolled in Year 2	College-level Credits Completed in Year 2	College-level Credits Completed after 2 Years
<b>AUSTIN PEAY STATE UNIVERSITY</b>				
Assigned to Develop. Alg. II	-0.043* (0.021)	-0.165* (0.087)	-6.211* (3.339)	-6.189** (2.960)
Post	0.037** (0.018)	-0.001 (0.034)	-1.371 (1.165)	-1.768 (1.941)
Assigned * Post	0.076+ (0.044)	0.147* (0.076)	6.063 (4.995)	2.475* (1.318)
Observations	2,500	1,762	1,762	1,762



# COURSES VS. TRADITIONAL COURSES, PRE VS. POST REDESIGN

	1 <sup>st</sup> to 2 <sup>nd</sup> Semester Persistence	Still Enrolled in Year 2	College-level Credits Completed in Year 2	College-level Credits Completed after 2 Years
<b>CLEVELAND STATE COMMUNITY COLLEGE</b>				
Assigned to Develop. Alg. II	0.154* (0.084)	0.058 (0.118)	-3.909* (2.197)	-1.431 (2.460)
Post	0.030 (0.036)	-0.025 (0.048)	-3.826* (1.995)	-4.104 (3.003)
Assigned * Post	-0.357** (0.167)	0.031 (0.141)	6.213+ (3.850)	1.979 (2.597)
Observations	808	886	886	808



# RESULTS SUMMARY

- Students exposed to redesigned developmental math courses had **more positive outcomes** than their peers in non-redesign institutions during the same period and compared to the previous version of traditional remediation within their institution in prior years
  - Students appeared to benefit the most from redesigned courses at Austin Peay and Cleveland State
- Results only apply to students at the margin, and cannot be extrapolated to students far down the ability distribution



# IMPLICATIONS

- Caution against fully endorsing a “mainstream” model (Austin Peay)
- Results provide a strong endorsement of the notion that far too many students are placed in developmental courses → Evidence to support lowering the cutoff to avoid over-placement in remedial courses
- Adoption of new learning technologies did not appear to have a negative effect on student outcomes





# FUTURE RESEARCH

- Do redesigned courses work better for some students than others?
- What are the potential impacts of prohibiting four-year colleges from offering remedial courses? (Complete College Tennessee Act, 2010)
- How can institutions move toward identifying the specific areas in which students most need improvement?
  - Redefine developmental education more as an academic support than as a curricular burden



# CONTACT INFORMATION

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