

The Effects of Loan Forgiveness on Teacher Retention: Florida's Critical Teacher Shortage Program

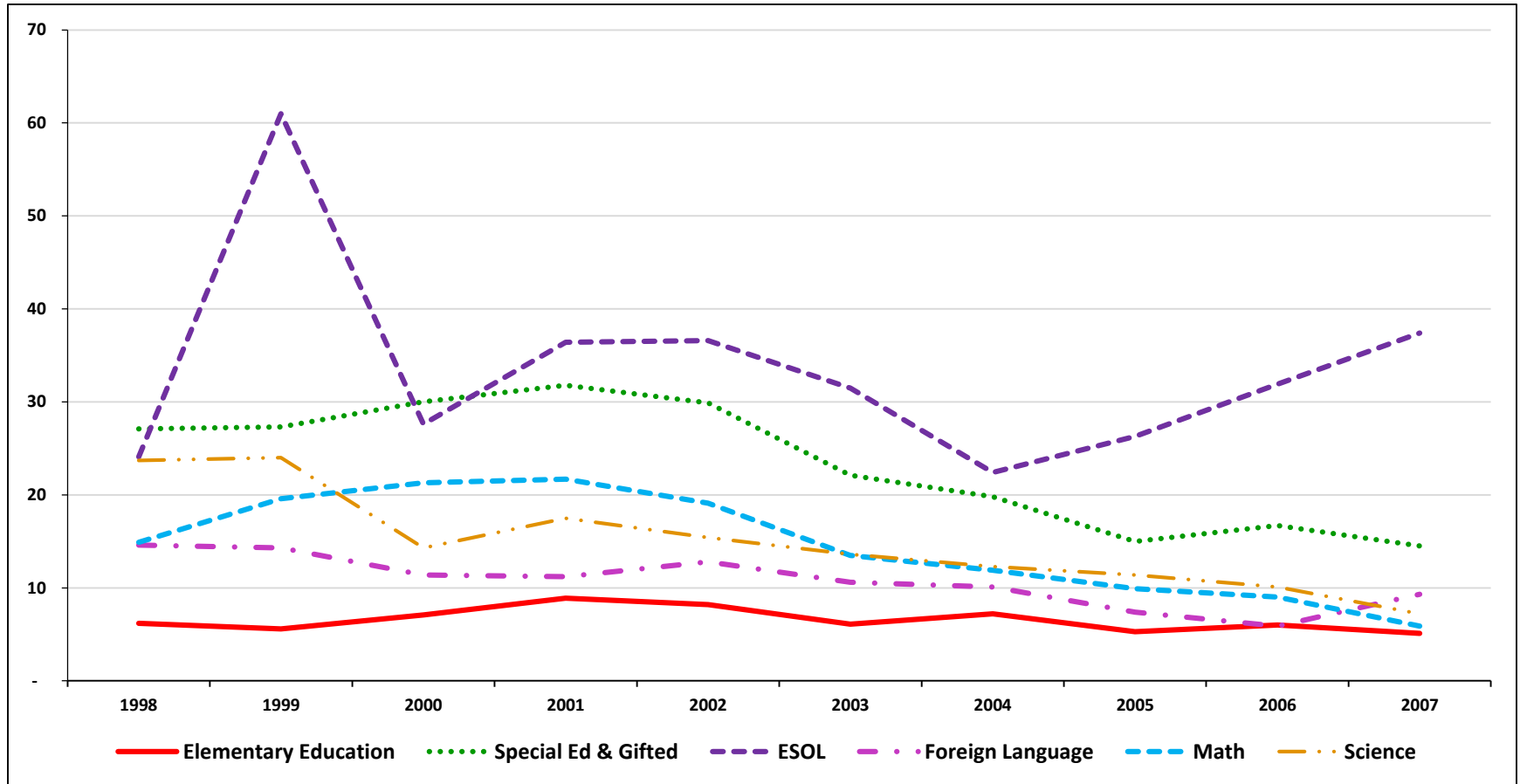
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The “Teacher Shortage” Problem

- Fixed wages
 - Most school districts still primarily adhere to fixed salary schedules
 - Pay determined by educational attainment and years of experience
 - Little/no variation across grade levels or subject areas
 - Little/no variation across schools within a district
- Varying Supply
 - Across subject areas
 - Lower supply the more difficult to obtain requisite skills/credentials and the better the demand for skills in other occupations
 - Math, science, special education, foreign languages
 - Across schools
 - The worse the perceived working conditions, the lower the supply
 - teachers tend to flee schools with high proportions of students with behavior problems, students from low-income families, students of color, low-achieving students
- Shortages will vary by subject area and by school type

Percentage of New Hires Who are Not Certified in a Given Subject by Year in Florida, 1998/99 – 2007/08



Source: Florida Dept. of Education, "New Hires in Florida Public Schools – Fall 1998 – Fall 2007"

Policy Responses to Teacher Shortages

- Increase Supply
 - Loosen Hiring Requirements
 - “Emergency” teaching certificates
 - Alternative certification
- Reduce Demand
 - Increase class sizes
 - Restrict course offerings
 - Promote use of online education
- Allow Variable Compensation
 - Loan Forgiveness
 - Bonuses
 - Differential Pay

Florida's Critical Teacher Shortage Program

- Loan Forgiveness
 - Must teach and be certified in a designated shortage area to qualify
 - Maximum of \$2500 per year for undergraduate loans and \$5000 per year for graduate loans
 - Could receive payments for two years if graduate loan and four years if undergraduate loan with a \$10,000 maximum total disbursement
 - Annual renewal contingent on continuing to teach and be certified in a critical-shortage area

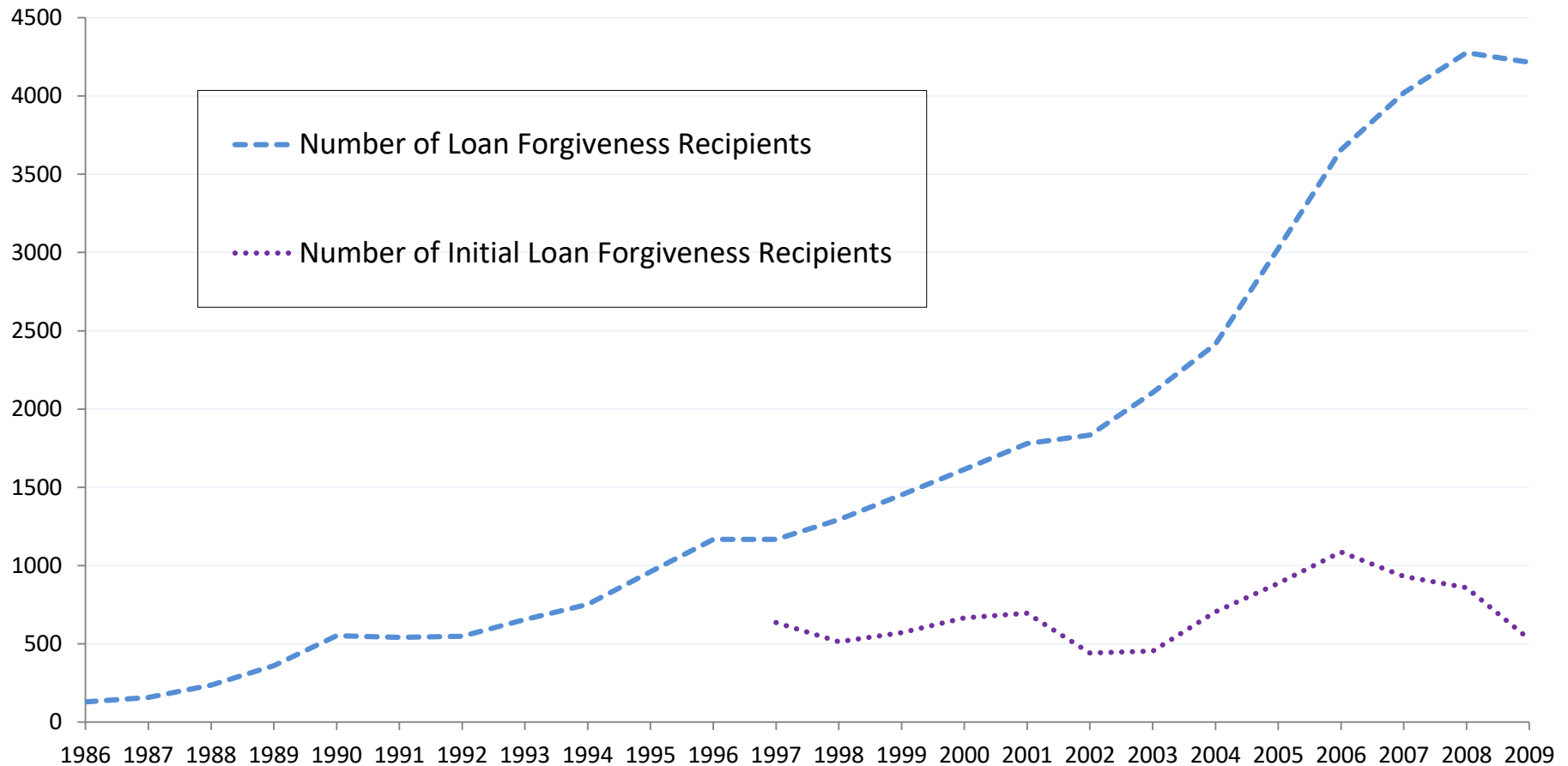
Florida's Critical Teacher Shortage Program

- Bonuses
 - Occurred in a single year (1999/00)
 - Criteria
 - Taught and been certified in foreign languages, science, math or special ed./gifted
 - Full or part-time middle or high school teacher
 - Received a favorable performance evaluation
 - Agree to continue teaching in one of the designated subjects the following year (2000/01)
 - Bonus capped at \$1,200 per teacher

Florida's Critical Teacher Shortage Program

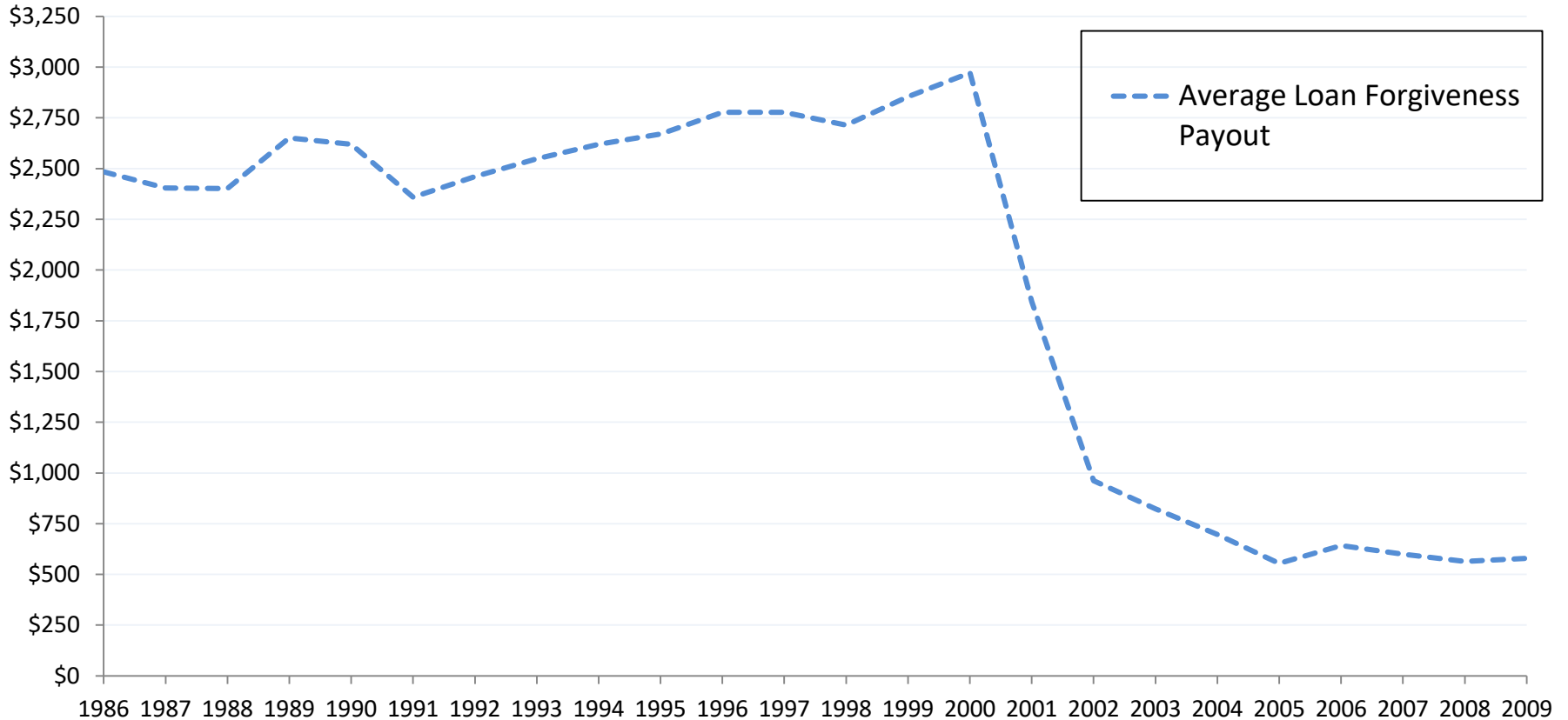
- Program Details
 - Established in 1984; payments began in 1986/87
 - Terminated in Spring 2011
 - Last disbursements in 2009/10
 - Designated shortage areas changed over time
 - Annual disbursements varied with legislative appropriation and number of applicants

Number of Teachers Receiving Tuition Reimbursement and Loan Forgiveness Payments by Year



Average Payment per Recipient in Loan Forgiveness Program by Year

Average Loan Forgiveness Payout



Designated Critical Teacher Shortage Areas, 1984/85-2009/10

	Math	Science	Middle & High Science	Middle & High Math	Speech Therapy	Emotionally Handicapped	ESE ("Handicapped")	ESE (Special Ed. & Gifted)	Foreign Languages	English	Middle & High English	Reading	ESOL	Tech. Ed./ Ind. Arts
1984-1985	x	x			x	x			x					x
1985-1986	x	x				x			x	x				
1986-1987	x	x				x			x	x				
1987-1988	x	x				x			x					
1988-1989	x	x				x			x	x				
1989-1990			x	x			x		x		x			
1990-1991			x	x			x		x		x			
1991-1992			x	x			x		x		x			
1992-1993			x	x				x					x	
1993-1994								x					x	
1994-1995								x					x	
1995-1996								x					x	
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1999-2000								x					x	x
2000-2001			x	x				x					x	x
2001-2002			x	x				x	x				x	x
2002-2003			x	x				x	x			x	x	x
2003-2004			x	x				x	x			x	x	x
2004-2005			x	x				x	x			x	x	x
2005-2006			x	x				x	x			x	x	x
2006-2007			x	x				x	x			x	x	x
2007-2008			x	x				x	x			x	x	x
2008-2009			x	x				x	x		x	x	x	x
2009-2010			x	x				x	x		x	x	x	x

Mean Values of Subjects Taught and Value-Added by Program Eligibility and Participation

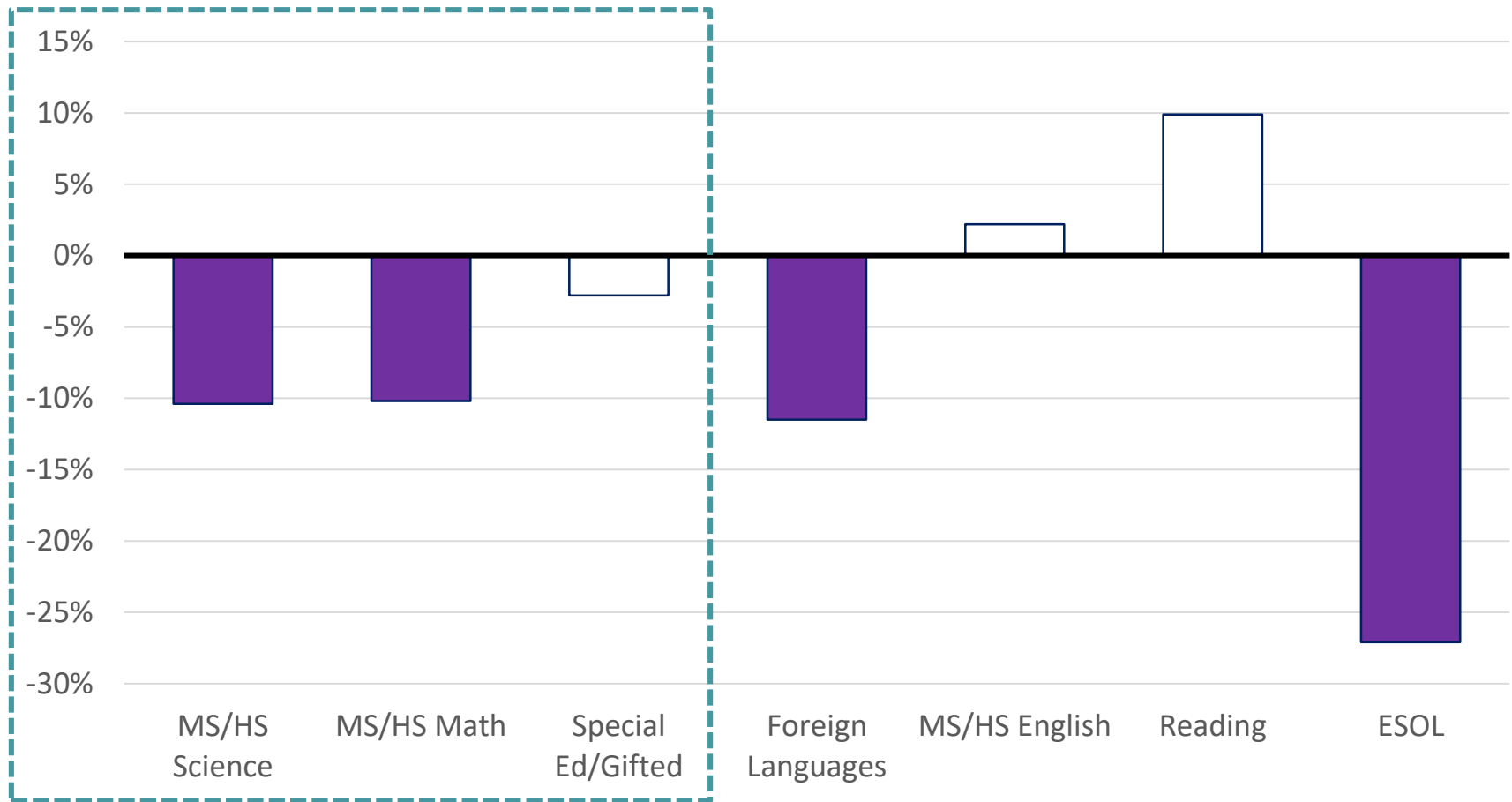
Subject	Non-Recipients	Eligible for Loan Forgiveness	Loan Forgiveness Recipients	Bonus Recipients
Taught MS/HS Science	0.09	0.25	0.21	0.26
Taught MS/HS Math	0.09	0.30	0.23	0.28
Taught Special Ed	0.11	0.34	0.53	0.36
Taught Foreign Languages	0.02	0.07	0.01	0.06
Taught MS/HS English	0.11	0.09	0.15	0.09
Taught Reading	0.04	0.04	0.06	0.03
Taught ESOL	0.08	0.03	0.05	0.01
Value-Added in Math	-0.02	-0.10	-0.17	-0.11
Value-Added in Reading	-0.01	-0.11	-0.13	-0.12

Note: Eligible teachers are those who were certified and taught in a critical need area in the same year. Means of time varying variables are computed across all years in which a teacher is observed teaching.

Methods

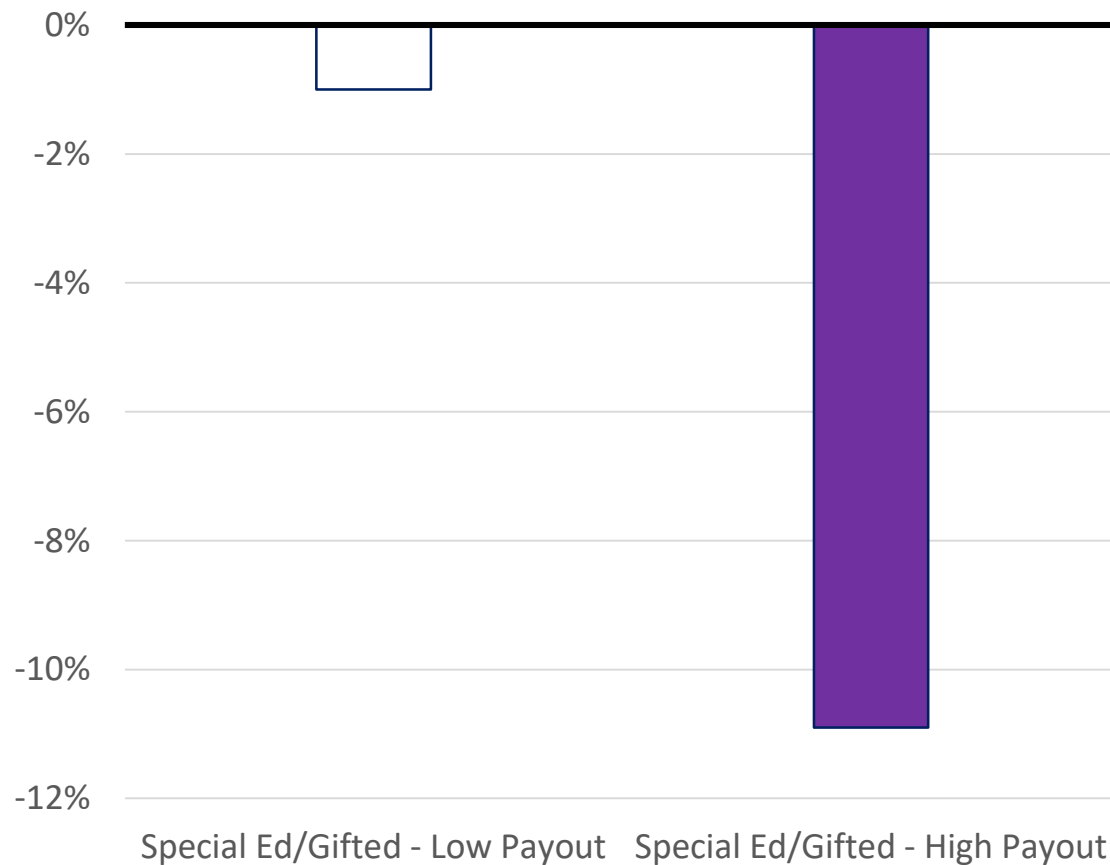
- Effects of Policies on Teacher Retention
 - Compare difference in covered and non-covered periods between eligible and ineligible teachers (“Difference in Differences”)
 - Compare difference in bonus year and other years between teachers in covered and non-covered subjects and between middle/high school and elementary school teachers (“Triple Difference”)
- Effects of Policies on Teacher Quality
 - Compare distribution of value-added in math for recipients/non-recipients and movers/stayers

Percentage Change in Probability of Leaving Public School Teaching as a Result of Loan Forgiveness Program



Note: Shaded boxes indicate significance at 95 percent confidence level

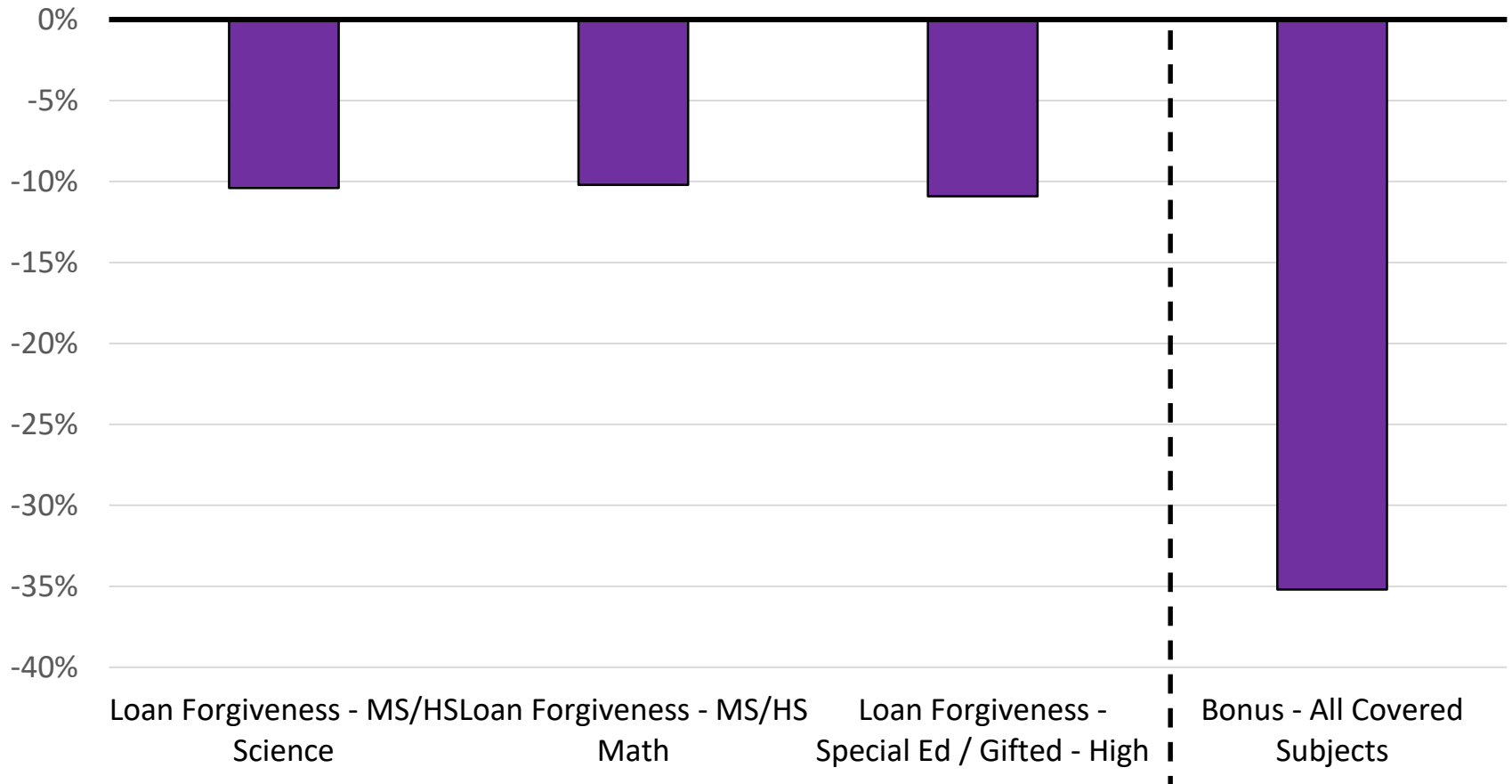
Percentage Change in Probability of Leaving Public School Teaching as a Result of Loan Forgiveness Program – High and Low Payouts



Note: Shaded boxes indicate significance at 95 percent confidence level.

Results – Loan Forgiveness vs. Bonuses

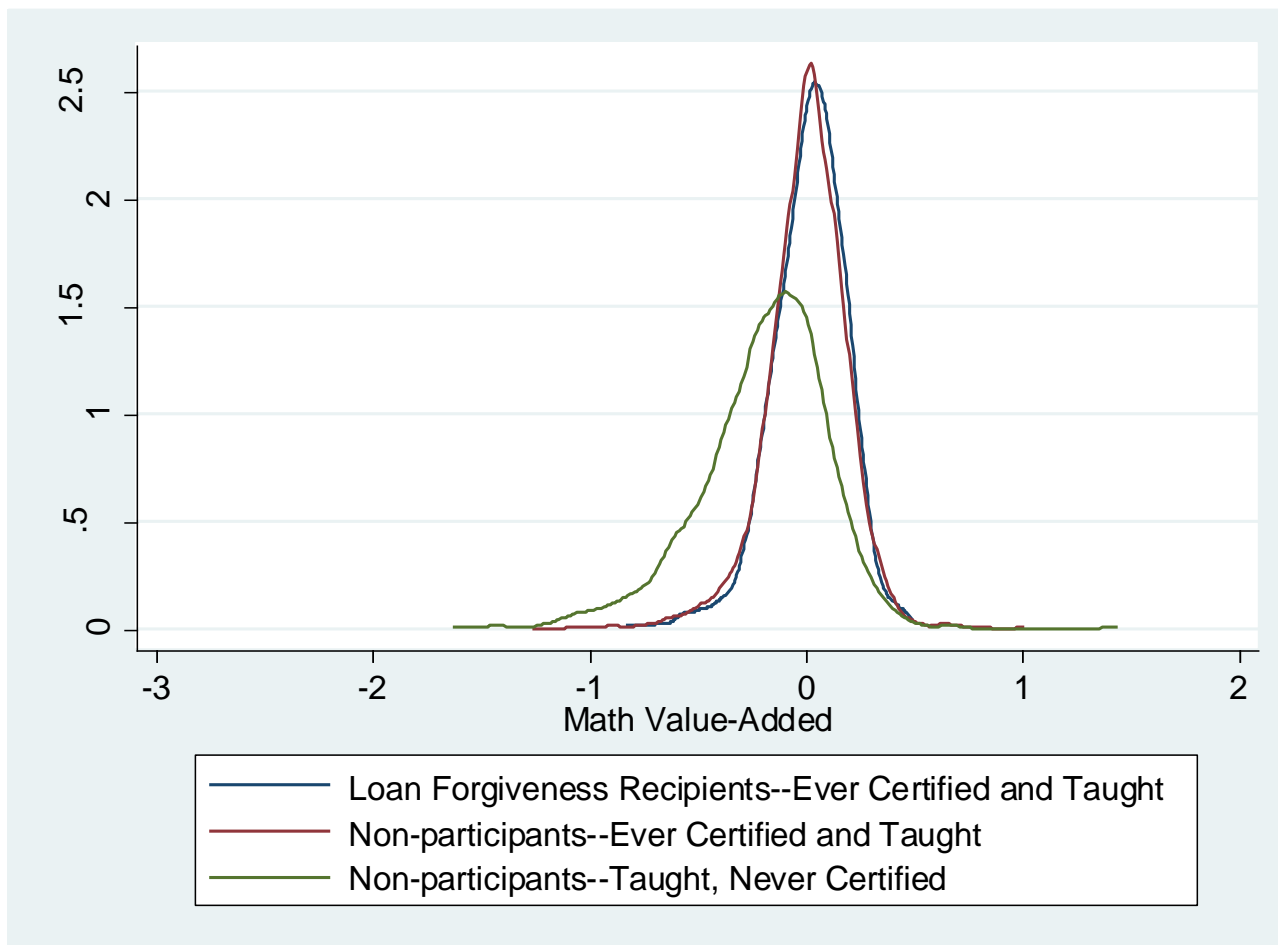
Percentage Change in Exit Rates



Note: Shaded boxes indicate significance at 95 percent confidence level.

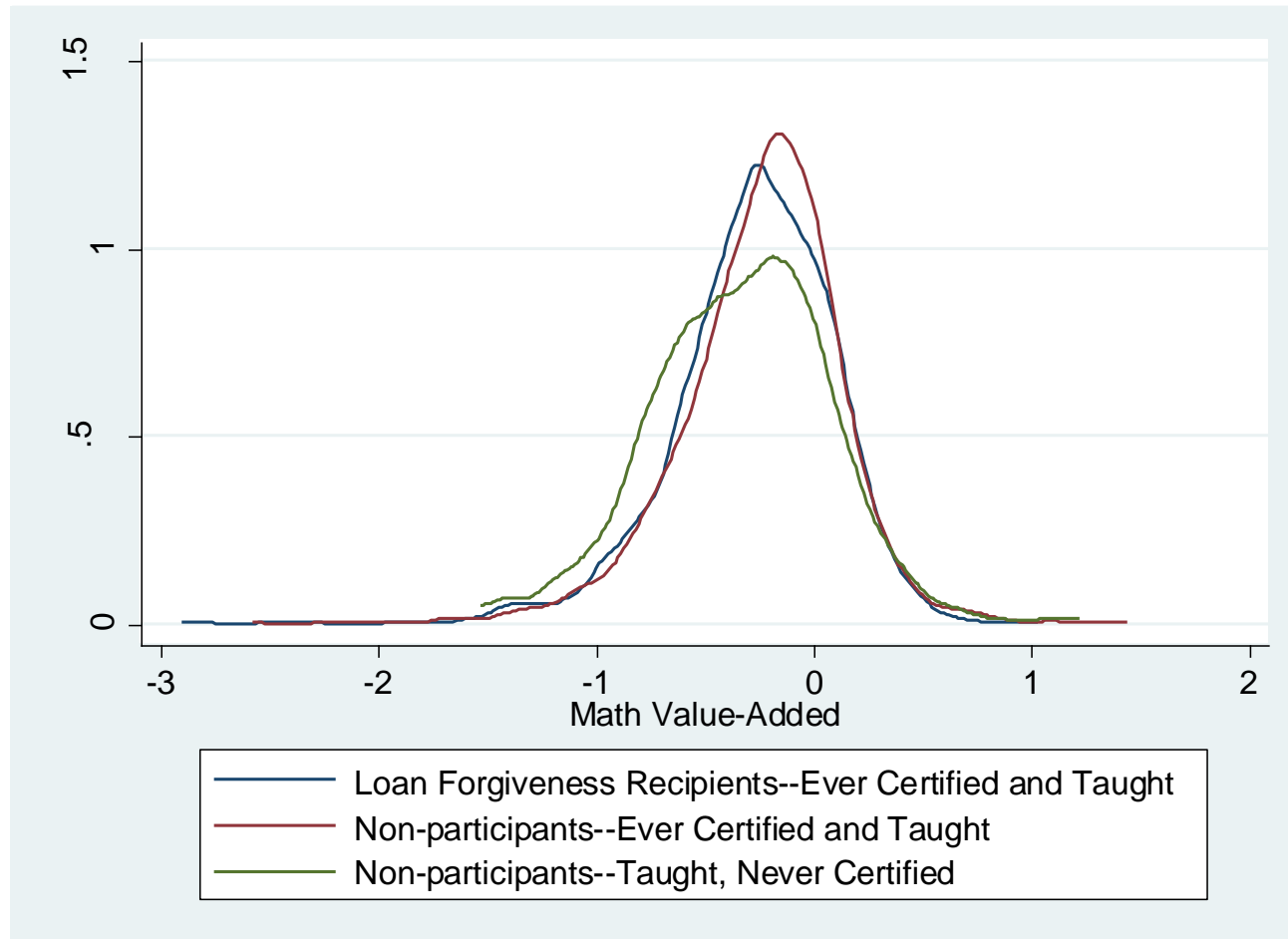
Results – Effects on Teacher Quality

Kernel Density Plot of Math Value-Added Distribution by Loan Forgiveness Receipt – Middle and High School Math Teachers



Results – Effects on Teacher Quality

Kernel Density Plot of Math Value-Added Distribution by Loan Forgiveness Receipt – Special Education Teachers



Cost Effectiveness

- Loan forgiveness reduces teacher attrition which in turn increases experience and enhances teacher productivity
 - Weighted average reduction in attrition from loan forgiveness is 6.3 percent
- Can translate change in teacher experience into impact on student test scores and ultimately present value of higher earnings in long run for students
 - Gain per student per grade is \$21 to \$49 for teacher loan forgiveness
 - Single-year per-teacher benefit for loan forgiveness is \$2100-\$4900 per teacher
 - Benefits exceed average payouts of \$3000 per teacher (during the high-payout period) for loan forgiveness

Conclusions

- Impacts on Teacher Attrition
 - Loan Forgiveness Program Did Reduce Attrition of Teachers in High-Need Areas
 - Stronger effects when payouts are higher
 - (Short term) Reduction in Attrition from Bonuses Even Higher

Conclusions

- Quality Effects
 - Loan forgiveness recipients of equal quality to other certified teachers, but higher quality than non-recipients who never become certified
- Policy Implications
 - Educational subsidies, particularly loan forgiveness can be effective at promoting retention, though requisite payments higher for special education
 - Direct payments (bonuses) more effective than loan forgiveness payments of equal magnitude (at least in the short run)