WYOMING
DEPARTMENT OF EDUCATION

Creating Opportunities for Students to Keep Wyoming Strong

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To: Senator Hank Coe and Representative David Northrup,
Joint Education Committee, Co-chairs

RE: 2015 Bridges Summer School and Extended Day Report

Authority: 2008, chapter 95. § 101, W.S. § 21-13-334

WDE is pleased to provide the 2015 Bridges Summer School and Extended Day Report

Please feel free to contact Brent Young at 777-2059 if you have any questions regarding this report. brent.young@wyo.gov

Wyoming Department of Education
SUMMER SCHOOL AND EXTENDED-DAY (BRIDGES)

Joint Education Interim Committee Report
November 29, 2015

Authority

2008, chapter 95. § 101
W.S. § 21-13-334

History

A need for funds targeted specifically to summer school and Extended-Day interventions was identified in two studies done in 2002 and 2003.[1] [2] The two studies looked at equitable distribution of funds to provide educational supports to students along with research identifying the impact of summer loss. As a result of these studies, a non-competitive grant program was created as a pilot to support remedial programs in summer school. In the next year the pilot program added extended-day services.

In the 2006 legislative session, the Wyoming Legislature established House Bill 139, a school funding bill that increased the grant amount available to districts, maintaining the pilot program outside the school foundation block grant. This bill was based on extensive research, including a study from Picus and Odden (2005). The pilot was continued with no changes in 2007.

The grant program was enacted into legislation in 2008; its funding formula and programmatic function are now described under W.S. 21-13-334, and actual funding for the program is requested through the biennial budget process by the Wyoming Department of Education. Funds are directed to districts separately from the cost-based block grant education funding model, and for FY15, $14.2 million was set aside for summer and Extended-Day programs running through the 2015-16 school year. Bridges grant funds are generated based on district at-risk student counts, the largest component of which is the number of students participating in free or reduced lunch programs. Free/reduced lunch participation has grown from 30.0% of student enrollment in the 2006-07 school year to 37.6% of student enrollment reported for the 2013-14 school year, an increase of more than 24%%. The free/reduced lunch participation for 2014-15 was reported as the same at 37.6%.

New legislation enacted by the 2015 legislature changed the Bridges statute to provide additional flexibility for school districts. Effective with the June 2015 grant, districts are no longer required

[1] Ruth Sommers, Review of the At-risk Adjustment to the Wyoming Cost-based Block Grant Education Funding Model, Cheyenne, WY, November 2002.
[2] Ruth Sommers, Summer Semester: A Grant Proposal to Fund summer School Programs for the State of Wyoming, Cheyenne, WY, October 2003.

to provide a summer program in order to use Bridges funds for Extended-Day services. School districts can apply to use Bridges funds for Summer School alone, Extended-Day alone, or both. All districts applying for the funding (48 districts) opted to provide Summer School services. Forty-one districts also chose to provide Extended-Day.

Actions

Extended-Day Intervention Programs

Forty-one districts utilized Bridges funds for Extended-Day programs in SY14-15; generally, districts with funds remaining in the grant from the prior summer school year (2014) used these funds to provide additional learning programs outside the school day. A decrease in enrollment was seen in SY2014-15 with a total enrollment of 10,099 compared to 11,868 during SY2013-14. Some districts report challenges with sports and activities along with other community after school activities competing for the same students during the same time.

Districts vary in their offerings, with some targeting students in grades K-12, while others provide programs only for students in specific grade groups, i.e., only elementary, only middle, or only high school grades. Additionally, districts sometimes concentrate supplemental instruction in only a single subject in keeping with their district goals. Three districts reported they did not provide Extended-Day programs due to shortage of funds. They chose to use their budgets for summer school. Two districts provided Extended-Day services using only funds from other sources. A total of 336 students were served in these programs.

Although the added instructional time offered through the Bridges grant during the school year is referred to as "Extended-Day", in reality, this time is offered in a variety of ways. Before- and after-school programs are the most common settings, but many districts also offer extra learning time on Saturdays; additionally, many districts which operate four-day schedules make instruction available for students who need it on Fridays. Some programs are collaborating with 21st Century Community Learning Centers or other after-school programs by sharing space and offering academic tutoring alongside the after school program.

All participating districts make available supplemental instruction in math and language arts. Many report providing additional instructional opportunities for social studies, science, foreign language, and health, particularly in the secondary grades. Some districts have used Extended-Day to specifically supplement instruction for English language learners. Many districts report adding 21st Century Skills, study skills, and ACT prep opportunities to Extended-Day offerings. Some districts provide opportunities for students to recover credit for units within a course in addition to the standard full course and half credit recovery. Drop-in tutoring centers also provide assistance for secondary students on an "as needed" basis.

The majority of districts report that certified teachers are delivering their supplemental Extended-Day instruction. Some employ paraprofessionals under the direct supervision of a certified teacher, and others utilize tutors, student teachers, instructional facilitators, and even principals in Extended-Day instructional settings. One district reported hiring certified substitutes part time to help with tutoring. Another hires community college instructors as tutors, as well as high school students to help under teacher supervision after school.

Summer School Programs

In the summer of 2015, all of the state's 48 school districts participated in the Bridges Summer School Grant Program. Most districts made summer intervention and remediation programs available to students in all grades K-12. Exceptions in 2015 included Fremont County School District #21, Park County School District #6, Washakie County School District #2, and Weston County School District #7, all of which held summer programs only for students in grades K-6 or K-8.

From 2007 through 2011, an effectiveness study of the Bridges Summer School program focused on learning loss for grades K-8 was conducted. The study used data from the Measures of Academic Progress (MAP) assessment from the North West Education Association (NWEA). This year, WDE staff assisted by contractor Michael Flicek completed an additional study for school years 2012 through 2014. Results from that study are provided in a separate synopsis and report and are attached as Appendices A and B.

Financial

Extended-Day Intervention Programs

In Table 1, expenditure information is displayed for each district utilizing the Wyoming Bridges grant to provide Extended-Day services. Per pupil expenditure varied from a low of $33/student in Niobrara County School District #1 to a high of $2,223/student in Sheridan County School District #3. The average per pupil expenditure was $420 in school year 2014-15, a decrease of $169 compared to the prior year. Districts participating in Bridges Extended-Day programs expended a total of $3,886,594 in SY14-15 versus $9,338,756 the prior year. $3,455,255 of the total were Bridges grant funds. Grant funds were supplemented with $411,339 from other sources which was 8% as much as in the prior year. The largest portion of this amount came from Title VI-B funds. Bridges grant funds supported approximately 91% of the costs reported by districts for these Extended-Day programs in SY13-14 compared to 48% the prior school year (see Table 2).

Summer School Programs

Districts reported expending $19,263,459 on summer school programs during the summer of 2015, of which $8,652,857 were Wyoming Bridges funds, approximately 45% of total expenditures. The difference between these two amounts was made up from other revenue sources locally including Title VI-B, other miscellaneous funds, district general funds, and Title I dollars (see Table 3). Total 2015 expenditures decreased by $1,466,649 from 2014. Bridges Grant Funds expenditures decreased by $1,052,196 between 2013-14 and 2014-15. This amount was nearly equal to the increase experienced in 2014.

Sixteen districts did not support summer programs with funds other than the Bridges grant. As usual, per pupil expenditures among the districts vary widely and ranged from a high of $3,023 in Fremont #2 to a low of $98 in Platte #1, with an average of $1,606. This average was $73 less than the average in summer 2014 which was $1,679/pupil (see Table 4).

During the 2014-15 school year, districts were again encouraged to increase the use of technology for learning. As districts implement 21st Century Skills in their programs, it becomes increasingly important that students have access to and learn to use technology for research, learning, and completing work. These skills will be needed for students to succeed in their future careers. According to a Pew Report, only 62% of people in households making less than $30,000 per year used the internet, while in those making $50,000 – 74,999 that percentage jumped to 90.[3] This "digital gap" is significant for the at-risk population served by Bridges programs as the majority of the proxy used for funding comes from the free and reduced lunch count. In response to this initiative, six districts submitted special requests to purchase technology for use in Bridges programs. These purchases were approved and provided mainly iPads or Chromebooks for student use.

Each year, the Department partners with GEAR UP to sponsor statewide learning targeted to teachers in secondary grades. This year, teachers and administrators received training during a Bridges Summit held in May 2015. Key topics for training include project-based instruction and application of Ruby Payne's strategies for under-resourced students. Additional training about Bridges Grant requirements was also provided.

[3] Pew Internet & American Life Project, "Digital Differences" Report, 2012

Table 1: Wyoming Department of Education
2014 Bridges Extended Day Expenditures Per Pupil

District	Grades Offered	Bridges Grant Funds	ED Student Enrollment	Total ED Expenditures		Per Student Expenditure
Albany #1	K-12	$240,302.00	587	$281,493.00		$479.00
Big Horn #1	K-12	$11,077.00	259	$11,077.00		$42.00
Big Horn #2	2-12	$16,310.00	90	$16,310.00		$181.00
Big Horn #3	1-5	$24,469.00	56	$27,343.00		$488.00
Big Horn #4	1-4	$21,712.00	47	$21,712.00		$461.00
Campbell #1	K-12	$86,000.00	1897	$293,689.00		$154.00
Carbon #1	K-5	$25,799.00	37	$25,799.00		$697.00
Carbon #2	K-12	$39,582.00	155	$39,582.00		$255.00
Converse #1	K-8	$56,610.00	140	$147,891.00		$1,056.00
Converse #2	K-8	$23,143.00	55	$23,143.00		$420.00
Crook #1	K-12	$77,995.00	209	$77,995.00		$373.00
Fremont #1	K-12	$106,981.00	104	$106,981.00		$1,028.00
Fremont #2	K-6	$4,169.00	8	$11,372.00		$1,421.00
Fremont #6	K-6	$37,635.00	13	$83,692.00		$6,437.00
Fremont #14	K-12	$0.00	175	$19,147.00		$109.00
Fremont #21	No Program					$0.00
Fremont #24	K-6	$3,441.00	29	$3,441.00		$118.00
Fremont #25	K-12	$155,175.00	218	$163,678.00		$750.00
Fremont #38	K-8	$18,457.00	47	$18,457.00		$392.00
Goshen #1	7-12	$16,810.00	189	$16,810.00		$88.00
Hot Springs #1	K-8	$38,063.00	130	$38,063.00		$292.00
Johnson #1	K-12	$73,863.00	127	$73,863.00		$581.00
Laramie #1	K-12	$831,568.00	2258	$831,568.00		$368.00
Laramie #2	K-12	$79,649.00	339	$84,555.00		$249.00
Lincoln #1	K-12	$11,864.00	61	$11,864.00		$194.00
Lincoln #2	K-12	$59,610.00	125	$102,440.00		$819.00
Natrona #1	K-12	$834,792.00	1477	$834,792.00		$565.00
Niobrara #1	6-8	$3,296.00	62	$3,296.00		$53.00
Park #1	K-6	$44,950.00	246	$81,348.00		$330.00
Park #6	K-12	$81,410.00	84	$81,410.00		$969.00
Park #16	K-6	$16,974.00	14	$16,974.00		$1,212.00
Platte #1	K-8	$50,912.00	83	$50,912.00		$613.00
Platte #2	K-6	$9,571.00	57	$10,640.00		$186.00
Sheridan #1	No Program		0			$0.00
Sheridan #2	K-12	$236,944.00	251	$429,050.00		$1,709.00
Sheridan #3	No Program		0			$0.00
Sublette #1	K-12	$9,370.00	13	$9,370.00		$720.00
Sublette #9	K-6	$12,732.00	61	$20,884.00		$342.00
Sweetwater #1	K-12	$346,055.00	356	$351,625.00		$987.00
Sweetwater #2	K-6	$127,243.00	228	$135,096.00		$592.00
Teton #1	K-12	$107,552.00	156	$107,552.00		$689.00
Uinta #1	K-12	$154,710.00	899	$290,340.00		$322.00
Uinta #4	K-12	$14,840.00	87	$14,840.00		$170.00
Uinta #6	K-12	$19,213.00	117	$19,376.00		$165.00
Washakie #1	K-12	$61,847.00	196	$61,847.00		$315.00
Washakie #2	No Program		0			$0.00
Weston #1	K-8	$33,003.00	58	$33,003.00		$569.00
Weston #7	K-8	$8,531.00	68	$21,146.00		$310.00
State Total (44)		**$4,234,229.00**	**11868**	**$9,338,756.00**	**Avg.**	**$588.96**

Table 2: Wyoming Department of Education
2014 Bridges Extended Day Expenditures

District	Bridges Grant Funds	Title I	Title VI-B	General Fund	Other	Total Expenditures
Albany #1	$240,302.00	$0.00	$1,305.00	$0.00	$39,886.00	$281,493.00
Big Horn #1	$11,077.00	$0.00	$0.00	$0.00	$0.00	$11,077.00
Big Horn #2	$16,310.00	$0.00	$0.00	$0.00	$0.00	$16,310.00
Big Horn #3	$24,469.00	$0.00	$0.00	$0.00	$2,873.00	$27,342.00
Big Horn #4	$21,712.00	$0.00	$0.00	$0.00	$0.00	$21,712.00
Campbell #1	$86,000.00	$0.00	$0.00	$207,689.00	$0.00	$293,689.00
Carbon #1	$25,799.00	$0.00	$0.00	$0.00	$0.00	$25,799.00
Carbon #2	$39,582.00	$0.00	$0.00	$0.00	$0.00	$39,582.00
Converse #1	$56,610.00	$0.00	$0.00	$0.00	$91,281.00	$147,891.00
Converse #2	$23,143.00	$0.00	$0.00	$0.00	$0.00	$23,143.00
Crook #1	$77,995.00	$0.00	$0.00	$0.00	$0.00	$77,995.00
Fremont #1	$106,981.00	$0.00	$0.00	$0.00	$0.00	$106,981.00
Fremont #2	$4,169.00	$4,132.00	$3,071.00	$0.00	$0.00	$11,372.00
Fremont #6	$37,635.00	$0.00	$0.00	$0.00	$46,057.00	$83,692.00
Fremont #14	$0.00	$0.00	$0.00	$0.00	$19,147.00	$19,147.00
Fremont #24	$3,441.00	$0.00	$0.00	$0.00	$0.00	$3,441.00
Fremont #25	$155,175.00	$0.00	$0.00	$8,503.00	$0.00	$163,678.00
Fremont #38	$18,457.00	$0.00	$0.00	$0.00	$0.00	$18,457.00
Goshen #1	$16,810.00	$0.00	$0.00	$0.00	$0.00	$16,810.00
Hot Springs #1	$38,063.00	$0.00	$0.00	$0.00	$0.00	$38,063.00
Johnson #1	$73,863.00	$0.00	$0.00	$0.00	$0.00	$73,863.00
Laramie #1	$831,568.00	$0.00	$0.00	$0.00	$0.00	$831,568.00
Laramie #2	$79,649.00	$0.00	$0.00	$4,906.00	$0.00	$84,555.00
Lincoln #1	$11,864.00	$0.00	$0.00	$0.00	$0.00	$11,864.00
Lincoln #2	$59,610.00	$0.00	$641.00	$37,222.00	$4,967.00	$102,440.00
Natrona #1	$834,792.00	$0.00	$0.00	$0.00	$0.00	$834,792.00
Niobrara #1	$3,296.00	$0.00	$0.00	$0.00	$0.00	$3,296.00
Park #1	$44,950.00	$0.00	$0.00	$0.00	$36,398.00	$81,348.00
Park #6	$81,410.00	$0.00	$0.00	$0.00	$0.00	$81,410.00
Park #16	$16,974.00	$0.00	$0.00	$0.00	$0.00	$16,974.00
Platte #1	$50,912.00	$0.00	$0.00	$0.00	$0.00	$50,912.00
Platte #2	$9,571.00	$1,069.00	$0.00	$0.00	$0.00	$10,640.00
Sheridan #2	$236,944.00	$0.00	$292.00	$191,814.00	$0.00	$429,050.00
Sublette #1	$9,370.00	$0.00	$0.00	$0.00	$0.00	$9,370.00
Sublette #9	$12,732.00	$0.00	$0.00	$8,152.00	$0.00	$20,884.00
Sweetwater #1	$346,055.00	$0.00	$5,570.00	$0.00	$0.00	$351,625.00
Sweetwater #2	$127,243.00	$4,740.00	$0.00	$3,113.00	$0.00	$135,096.00
Teton #1	$107,552.00	$0.00	$0.00	$0.00	$0.00	$107,552.00
Uinta #1	$154,710.00	$0.00	$0.00	$135,630.00	$0.00	$290,340.00
Uinta #4	$14,840.00	$0.00	$0.00	$0.00	$0.00	$14,840.00
Uinta #6	$19,213.00	$0.00	$0.00	$163.00	$0.00	$19,376.00
Washakie #1	$61,847.00	$0.00	$0.00	$0.00	$0.00	$61,847.00
Weston #1	$33,003.00	$0.00	$0.00	$0.00	$0.00	$33,003.00
Weston #7	$8,531.00	$0.00	$0.00	$12,615.00	$0.00	$21,146.00
State Total (44)	**$4,234,229.00**	**$9,941.00**	**$4,244,170.00**	**$609,807.00**	**$240,609.00**	**$9,338,756.00**
% of Total Exp.	**45.34%**	**0.011%**	**45.45%**	**6.53%**	**2.58%**	

Table 3: Wyoming Department of Education
2015 Bridges Summer School Expenditures Per Pupil

District	Grades Offered	SS Student Enrollment	Total SS Expenditures	Per Student Expenditure
Albany #1	K-12	444	$536,783.00	$1,208.00
Big Horn #1	K-12	122	$172,443.00	$1,413.00
Big Horn #2	K-12	76	$79,208.00	$1,042.00
Big Horn #3	K-12	106	$83,444.00	$787.00
Big Horn #4	K-12	34	$62,016.00	$1,824.00
Campbell #1	K-12	609	$1,190,393.00	$1,954.00
Carbon #1	K-12	168	$157,081.00	$935.00
Carbon #2	K-12	86	$67,263.00	$782.00
Converse #1	K-12	269	$377,255.00	$1,402.00
Converse #2	K-12	79	$54,512.00	$690.00
Crook #1	K-12	152	$142,235.00	$935.00
Fremont #1	K-12	161	$102,476.00	$636.00
Fremont #2	K-12	20	$60,470.00	$3,023.00
Fremont #6	K-12	62	$27,376.00	$441.00
Fremont #14	K-12	206	$167,636.00	$813.00
Fremont #21	K-8	166	$163,527.00	$985.00
Fremont #24	K-12	33	$25,228.00	$764.00
Fremont #25	K-12	322	$392,140.00	$1,217.00
Fremont #38	K-12	138	$51,633.00	$374.00
Goshen #1	K-12	136	$243,349.00	$1,789.00
Hot Springs #1	K-12	122	$66,341.00	$543.00
Johnson #1	K-12	161	$99,602.00	$618.00
Laramie #1	K-12	1969	$1,906,889.00	$968.00
Laramie #2	K-12	152	$109,202.00	$718.00
Lincoln #1	K-12	54	$66,641.00	$1,234.00
Lincoln #2	K-12	328	$329,175.00	$1,003.00
Natrona #1	K-12	2142	$1,142,615.00	$533.00
Niobrara #1	K-12	45	$94,143.00	$2,092.00
Park #1	K-12	236	$248,318.00	$1,052.00
Park #6	K-12	209	$232,639.00	$1,113.00
Park #16	K-5	19	$14,232.00	$749.00
Platte #1	K-12	175	$17,209.00	$98.00
Platte #2	K-12	37	$48,221.00	$1,303.00
Sheridan #1	K-12	213	$98,617.00	$462.00
Sheridan #2	K-12	369	$478,786.00	$1,297.00
Sheridan #3	K-12	19	$30,374.00	$1,598.00
Sublette #1	K-12	54	$50,003.00	$925.00
Sublette #9	K-8	115	$74,305.00	$646.00
Sweetwater #1	K-12	631	$697,707.00	$1,105.00
Sweetwater #2	K-12	269	$318,486.00	$1,183.00
Teton #1	K-12	278	$245,884.00	$884.00
Uinta #1	K-12	343	$263,018.00	$766.00
Uinta #4	K-12	155	$79,095.00	$510.00
Uinta #6	K-12	97	$91,355.00	$941.00
Washakie #1	K-12	157	$124,828.00	$795.00
Washakie #2	K-8	20	$25,028.00	$1,251.00
Weston #1	K-12	97	$130,425.00	$1,344.00
Weston #7	K-8	29	$21,666.00	$747.00
State Total (48)		**11884**	**$19,091,214.00**	**$1,606.00 Avg.**

Student counts include Pre-K (a total of 887 students)

Table 4: Wyoming Department of Education
2015 Bridges Summer School Expenditures

District	Bridges Grant Funds	Title I	Title VI-B	General Fund	21 CCLC	Other	Total Expenditures
Albany #1	$166,149.00	$80,951.00	$228,900.00	$60,783.00	$0.00	$0.00	$536,783.00
Big Horn #1	$172,443.00	$0.00	$0.00	$0.00	$0.00	$0.00	$172,443.00
Big Horn #2	$79,208.00	$0.00	$0.00	$0.00	$0.00	$0.00	$79,208.00
Big Horn #3	$83,444.00	$0.00	$0.00	$0.00	$0.00	$0.00	$83,444.00
Big Horn #4	$45,130.00	$0.00	$0.00	$0.00	$0.00	$16,886.00	$62,016.00
Campbell #1	$926,415.00	$2,002.00	$260,435.00	$0.00	$0.00	$1,541.00	$1,190,393.00
Carbon #1	$157,081.00	$0.00	$0.00	$0.00	$0.00	$0.00	$157,081.00
Carbon #2	$67,263.00	$0.00	$0.00	$0.00	$0.00	$0.00	$67,263.00
Converse #1	$116,891.00	$0.00	$0.00	$177,837.00	$82,527.00	$0.00	$377,255.00
Converse #2	$54,512.00	$0.00	$0.00	$0.00	$0.00	$0.00	$54,512.00
Crook #1	$103,298.00	$0.00	$38,937.00	$0.00	$0.00	$0.00	$142,235.00
Fremont #1	$102,476.00	$0.00	$0.00	$0.00	$0.00	$0.00	$102,476.00
Fremont #2	$32,088.00	$0.00	$2,978.00	$0.00	$17,460.00	$7,944.00	$60,470.00
Fremont #6	$21,338.00	$0.00	$6,038.00	$0.00	$0.00	$0.00	$27,376.00
Fremont #14	$105,938.00	$0.00	$0.00	$35,257.00	$0.00	$26,441.00	$167,636.00
Fremont #21	$103,003.00	$5,824.00	$23,589.00	$20,212.00	$0.00	$10,899.00	$163,527.00
Fremont #24	$23,156.00	$1,708.00	$364.00	$0.00	$0.00	$0.00	$25,228.00
Fremont #25	$292,130.00	$0.00	$59,968.00	$40,042.00	$0.00	$0.00	$392,140.00
Fremont #38	$51,633.00	$0.00	$0.00	$0.00	$0.00	$0.00	$51,633.00
Goshen #1	$208,901.00	$0.00	$0.00	$34,448.00	$0.00	$0.00	$243,349.00
Hot Springs #1	$66,341.00	$0.00	$0.00	$0.00	$0.00	$0.00	$66,341.00
Johnson #1	$99,602.00	$0.00	$0.00	$0.00	$0.00	$0.00	$99,602.00
Laramie #1	$1,441,907.00	$6,177.00	$0.00	$456,708.00	$0.00	$2,097.00	$1,906,889.00
Laramie #2	$81,953.00	$0.00	$7,634.00	$19,615.00	$0.00	$0.00	$109,202.00
Lincoln #1	$66,641.00	$0.00	$0.00	$0.00	$0.00	$0.00	$66,641.00
Lincoln #2	$277,352.00	$0.00	$0.00	$0.00	$51,823.00	$0.00	$329,175.00
Natrona #1	$1,083,445.00	$0.00	$0.00	$59,170.00	$0.00	$0.00	$1,142,615.00
Niobrara #1	$94,143.00	$0.00	$0.00	$0.00	$0.00	$0.00	$94,143.00
Park #1	$223,537.00	$779.00	$24,002.00	$0.00	$0.00	$0.00	$248,318.00
Park #6	$110,133.00	$0.00	$0.00	$36,362.00	$0.00	$86,144.00	$232,639.00
Park #16	$13,870.00	$0.00	$0.00	$0.00	$0.00	$362.00	$14,232.00
Platte #1	$17,209.00	$0.00	$0.00	$0.00	$0.00	$0.00	$17,209.00
Platte #2	$28,289.00	$11,660.00	$8,162.00	$110.00	$0.00	$0.00	$48,221.00
Sheridan #1	$98,617.00	$0.00	$0.00	$0.00	$0.00	$0.00	$98,617.00
Sheridan #2	$301,007.00	$0.00	$60,210.00	$94,227.00	$0.00	$23,342.00	$478,786.00
Sheridan #3	$0.00	$0.00	$0.00	$19,659.00	$0.00	$10,715.00	$30,374.00
Sublette #1	$31,102.00	$0.00	$0.00	$0.00	$0.00	$18,901.00	$50,003.00
Sublette #9	$54,084.00	$0.00	$3,502.00	$14,920.00	$0.00	$1,799.00	$74,305.00
Sweetwater #1	$640,488.00	$36,656.00	$1,673.00	$18,890.00	$0.00	$0.00	$697,707.00
Sweetwater #2	$216,604.00	$0.00	$0.00	$81,447.00	$20,435.00	$0.00	$318,486.00
Teton #1	$238,084.00	$0.00	$0.00	$0.00	$0.00	$7,800.00	$245,884.00
Uinta #1	$187,783.00	$0.00	$0.00	$75,235.00	$0.00	$0.00	$263,018.00
Uinta #4	$55,244.00	$3,454.00	$20,397.00	$0.00	$0.00	$0.00	$79,095.00
Uinta #6	$69,215.00	$0.00	$0.00	$14,760.00	$0.00	$7,380.00	$91,355.00
Washakie #1	$124,828.00	$0.00	$0.00	$0.00	$0.00	$0.00	$124,828.00
Washakie #2	$25,028.00	$0.00	$0.00	$0.00	$0.00	$0.00	$25,028.00
Weston #1	$77,654.00	$244.00	$49,692.00	$2,835.00	$0.00	$0.00	$130,425.00
Weston #7	$16,200.00	$0.00	$3,644.00	$1,822.00	$0.00	$0.00	$21,666.00
State Total (48)	**$8,652,857.00**	**$149,455.00**	**$8,802,312.00**	**$1,264,339.00**	**$172,245.00**	**$222,251.00**	**$19,263,459.00**
% of Total Exp.	**45.32%**	**0.78%**	**46.11%**	**6.62%**	**0.89%**	**1.15%**	

Results

Student Enrollment and Completion Data -Extended-Day Intervention Programs

Tables 5 and 6 display student enrollment and completion data for Bridges SY13-14 Extended-Day offerings in math and language arts, respectively. As happened in SY 12-13, more students attended Extended-Day programs for additional instruction in math (11,325 students enrolled) than in language arts (11,092 students enrolled); in a typical year, the opposite is true. Attendance for both math and language arts increased from SY12-13 to SY13-14 by more than 20%.

Eighty percent of students identified as needing to attend Extended-Day programs actually enrolled in these additional learning opportunities. Of those enrolled, 86% of students met some or all goals set forth in their Individual Learning Plans (ILPs) in language arts and 80% in math. These percentages decreased significantly from SY12-13 when they were 98% and 97%, respectively. Student success in meeting learning plan goals varies among the districts, from 34% to 100% of participating students meeting some or all ILP goals.

The final data presented in Table 7 indicates the level of repeated supplemental instruction needed by students participating in Bridges Extended-Day programs during SY13-14. Districts estimated an average of 55% of students participating in SY13-14 Extended-Day programs had also taken part in supplemental instruction programs the previous year or the prior summer. This percentage ranged among districts from an estimated high of 100% to a low of 3%.

Student Enrollment and Completion Data – Summer School Programs

This year, districts identified 18,134 students in grades K-12 who could benefit from summer instruction, a decrease of 590 compared to SY13-14. Of this number, 11,875 students actually enrolled and 9,715 completed Bridges summer programs. The number of students reported by districts to be enrolled in summer school this year in grades K-12 decreased by 469 students compared to the prior year (see Table 8). Enrollment in summer school ranged from a low of 5% of total student enrollment in Niobrara #1 to a high of 36% in Fremont #21. In 2015, four districts did not have programs for high school students compared with three districts in the prior year.

Of those who enrolled in summer school, an average of 85.3% completed summer school, with completion rates ranging among the districts from 100% to only 17%. (NOTE: Observers will see some districts reporting more completing students than enrolled. This is a data quality issue.)

Some districts still report they are struggling to maintain attendance and interest in summer programs. In contrast, others report improving student attendance as well as parental interest and support, largely as a result of increased student engagement through the incorporation of enriched instructional approaches and project- or place-based education, with multiple hands-on learning opportunities. Provision of hot breakfasts and lunches along with transportation is also reported to increase student attendance. Several districts reported using various incentives to increase attendance. These included incorporating fun activities into the day such as clubs, supervised computer free time, and other high interest activities. Others partnered with community groups such as Big Brothers Big Sisters and County Extension offices. Some have offered attendance rewards and rewarding activities. One district reported increasing attendance by making home visits to non-responsive parents.

In 2015, 22 districts offered pre-kindergarten summer programs to 887 students, as shown in Table 9. Most of these programs were targeted to students who may be considered not ready for kindergarten, although some were made available to all incoming kindergarten students. Most participant districts indicated they used a pre and post assessments specifically designed to measure kindergarten readiness in young students, but some measure progress through classroom observation and parent surveys. The number of Pre-K programs remained the same as in 2014. The number of students served was also stable with only 40 fewer than the prior year.

Table 10 illustrates completer data for credit recovery in high school grades in the nine content areas of math, language arts, science, social studies, career/technical, fine arts, foreign language, health, and physical education for 2015 summer high school students. It is apparent that summer programs funded through Wyoming Bridges play an essential part in credit recovery for Wyoming high school students, enabling many to graduate. As can be seen in the table, high school students recovered a total of 2,088 semester credits. Please keep in mind the recovered credit count is not exact. For instance, a student recovering credits for both a fall and spring math course will show only one credit recovered in math.

All Wyoming school districts utilize the Bridges grant to provide additional learning opportunities for their struggling students. Since the inaugural year of the grant in 2005, the number of students enrolled in summer school has grown. However, because statewide enrollment has increased in general, the *percentage* of students enrolling in summer programs has remained fairly consistent across time, moving from 10.02% in 2005 to 15% in 2015 of total student enrollment in offered grades.

Table 5: Wyoming Department of Education
2014 Bridges Extended Day Completion Data — **Math**

District	# Students ID'd to Attend	# Students Enrolled	# Meeting ALL or SOME ILP Goals	% Meeting ALL or SOME Goals	# Meeting NO ILP Goals*	% Meeting NO Goals
Albany #1	470	587	566	96%	21	4%
Big Horn #1	248	259	216	83%	43	17%
Big Horn #2	90	90	86	96%	4	4%
Big Horn #3	80	56	36	64%	20	36%
Big Horn #4	47	47	39	83%	8	17%
Campbell #1	2066	1897	1577	83%	320	17%
Carbon #1	254	0	0	0%	0	0%
Carbon #2	407	155	113	73%	42	27%
Converse #1	165	140	98	70%	42	30%
Converse #2	64	55	48	87%	7	13%
Crook #1	222	209	202	97%	7	3%
Fremont #1	104	100	41	41%	59	59%
Fremont #2	0	0	0	0%	0	0%
Fremont #6	32	10	7	70%	3	30%
Fremont #14	684	147	144	98%	3	2%
Fremont #24	38	29	29	100%	0	0%
Fremont #25	243	215	73	34%	142	66%
Fremont #38	47	47	34	72%	13	28%
Goshen #1	204	189	174	92%	15	8%
Hot Springs #1	130	130	130	100%	0	0%
Johnson #1	152	127	127	100%	0	0%
Laramie #1	2730	2130	1239	58%	891	42%
Laramie #2	332	332	332	100%	0	0%
Lincoln #1	80	61	57	93%	4	7%
Lincoln #2	147	125	98	78%	27	22%
Natrona #1	1473	1473	1334	91%	139	9%
Niobrara #1	48	62	48	77%	14	23%
Park #1	212	246	223	91%	23	9%
Park #6	41	39	33	85%	6	15%
Park #16	14	14	14	100%	0	0%
Platte #1	106	83	68	82%	15	18%
Platte #2	78	57	56	98%	1	2%
Sheridan #2	845	222	188	85%	34	15%
Sublette #1	8	13	13	100%	0	0%
Sublette #9	64	61	61	100%	0	0%
Sweetwater #1	224	166	143	86%	23	14%
Sweetwater #2	231	214	169	79%	45	21%
Teton #1	342	137	122	89%	15	11%
Uinta #1	514	899	358	40%	541	60%
Uinta #4	81	87	82	94%	5	6%
Uinta #6	157	111	90	81%	21	19%
Washakie #1	418	196	151	77%	45	23%
Weston #1	50	40	40	100%	0	0%
Weston #7	73	68	67	98%	1	2%
State Total (44)	**13545**	**11325**	**8726**	**80% Avg.**	**2599**	**15% Avg.**

* Includes students who did not complete

Table 6: Wyoming Department of Education
2014 Bridges Extended Day Completion Data **Language Arts**

District	# Students ID'd to Attend	# Students Enrolled	# Meeting ALL or SOME ILP Goals	% Meeting ALL or SOME Goals	# Meeting NO ILP Goals*	% Meeting NO Goals
Albany #1	364	582	452	78%	130	22%
Big Horn #1	174	193	173	90%	20	10%
Big Horn #2	47	47	44	94%	3	6%
Big Horn #3	84	56	42	75%	14	25%
Big Horn #4	47	47	38	81%	9	19%
Campbell #1	1712	1564	1313	84%	251	16%
Carbon #1	289	37	35	95%	2	5%
Carbon #2	267	87	73	84%	14	16%
Converse #1	159	137	111	81%	26	19%
Converse #2	68	51	45	88%	6	12%
Crook #1	236	209	206	99%	3	1%
Fremont #1	112	104	51	49%	53	51%
Fremont #2	8	8	8	100%	0	0%
Fremont #6	32	13	8	62%	4	38%
Fremont #14	684	175	173	99%	2	1%
Fremont #21	33	26	25	96%	1	4%
Fremont #25	305	218	114	52%	104	48%
Fremont #38	47	47	37	79%	10	21%
Goshen #1	138	132	128	97%	4	3%
Hot Springs #1	102	102	102	100%	0	0%
Johnson #1	147	115	115	100%	0	0%
Laramie #1	2587	2258	1450	64%	808	36%
Laramie #2	339	339	339	100%	0	0%
Lincoln #1	80	61	57	93%	4	7%
Lincoln #2	129	119	115	97%	4	3%
Natrona #1	1477	1477	1317	89%	160	11%
Niobrara #1	48	62	48	77%	14	23%
Park #1	212	246	222	90%	24	10%
Park #6	84	84	78	93%	6	7%
Park #16	14	14	14	100%	0	0%
Platte #1	90	64	52	81%	12	19%
Platte #2	59	46	44	96%	2	4%
Sheridan #2	835	251	198	79%	53	21%
Sublette #1	12	12	9	75%	3	25%
Sublette #9	64	61	57	93%	4	7%
Sweetwater #1	375	356	321	90%	35	10%
Sweetwater #2	257	228	183	80%	45	20%
Teton #1	335	156	129	83%	27	17%
Uinta #1	474	825	357	43%	468	57%
Uinta #4	60	61	53	87%	8	13%
Uinta #6	167	117	100	85%	17	15%
Washakie #1	422	184	173	94%	11	6%
Weston #1	58	58	58	100%	0	0%
Weston #7	68	63	62	98%	1	2%
State Total (44)	**13301**	**11092**	**8729**	**86% Avg.**	**2362**	**14% Avg.**

* Includes students who did not complete

Table 7: Wyoming Department of Education
2014 Bridges Estimated Extended Day or Summer School Repeaters

District	Percent Attending Prior Year Intervention Programs
Albany #1	44%
Big Horn #1	60%
Big Horn #2	51%
Big Horn #3	70%
Big Horn #4	21%
Campbell #1	37%
Carbon #1	90%
Carbon #2	82%
Converse #1	26%
Converse #2	39%
Crook #1	55%
Fremont #1	100%
Fremont #2	50%
Fremont #6	46%
Fremont #14	65%
Fremont #21	50%
Fremont #24	50%
Fremont #25	74%
Fremont #38	100%
Goshen #1	35%
Hot Springs #1	70%
Johnson #1	41%
Laramie #1	30%
Laramie #2	50%
Lincoln #1	90%
Lincoln #2	65%
Natrona #1	82%
Niobrara #1	75%
Park #1	63%
Park #6	44%
Park #16	75%
Platte #1	67%
Platte #2	54%
Sheridan #2	33%
Sublette #1	3%
Sublette #9	75%
Sweetwater #1	37%
Sweetwater #2	43%
Teton #1	8%
Uinta #1	52%
Uinta #4	65%
Uinta #6	76%
Washakie #1	37%
Weston #1	40%
Weston #7	66%
State Total (44)	**55%**

Table 8: Wyoming Department of Education **UNDUPLICATED COUNT**

2015 Bridges Summer School Enrollment and Completer Data

District	Grades Offered	Students Identified	Students Enrolled	% of Total Enrollment	Students Completing	Percent Completing
Albany #1	K-12	681	444	12%	277	62.4%
Big Horn #1	K-12	171	122	12%	105	86.0%
Big Horn #2	K-12	147	76	11%	56	73.7%
Big Horn #3	K-12	164	106	20%	86	81.0%
Big Horn #4	K-12	71	34	11%	30	88.0%
Campbell #1	K-12	1367	609	7%	509	83.6%
Carbon #1	K-12	265	168	9%	171	101.8%
Carbon #2	K-12	140	86	14%	80	93.0%
Converse #1	K-12	312	260	15%	102	39.0%
Converse #2	K-12	150	79	12%	73	92.4%
Crook #1	K-12	207	152	13%	153	100.0%
Fremont #1	K-12	218	161	10%	123	76.4%
Fremont #2	K-12	28	20	13%	13	65.0%
Fremont #6	K-12	90	62	17%	35	56.5%
Fremont #14	K-12	281	206	34%	206	100.0%
Fremont #21	K-8	170	166	36%	166	100.0%
Fremont #24	K-12	43	33	9%	33	100.0%
Fremont #25	K-12	588	322	13%	400	124.0%
Fremont #38	K-12	149	138	30%	93	67.4%
Goshen #1	K-12	467	136	8%	162	119.0%
Hot Springs #1	K-12	178	122	20%	90	73.7%
Johnson #1	K-12	170	161	13%	161	100.0%
Laramie #1	K-12	2857	1969	14%	1081	54.9%
Laramie #2	K-12	209	152	15%	137	90.1%
Lincoln #1	K-12	78	54	9%	43	79.6%
Lincoln #2	K-12	528	328	12%	251	76.5%
Natrona #1	K-12	2548	2142	16%	2127	99.3%
Niobrara #1	K-12	97	45	5%	49	108.8%
Park #1	K-12	300	236	13%	220	93.2%
Park #6	K-12	225	209	10%	171	81.8%
Park #16	K-12	19	19	17%	18	94.7%
Platte #1	K-12	227	175	17%	175	100.0%
Platte #2	K-12	81	37	16%	35	94.6%
Sheridan #1	K-12	285	213	22%	36	17.0%
Sheridan #2	K-12	499	369	11%	322	87.3%
Sheridan #3	K-12	29	19	23%	19	100.0%
Sublette #1	K-12	80	54	5%	56	103.7%
Sublette #9	K-12	148	115	18%	64	55.7%
Sweetwater #1	K-12	1599	631	11%	458	72.6%
Sweetwater #2	K-12	380	269	10%	270	100.0%
Teton #1	K-12	567	278	10%	278	100.0%
Uinta #1	K-12	401	343	16%	317	92.4%
Uinta #4	K-12	233	155	20%	93	60.0%
Uinta #6	K-12	187	97	14%	87	89.7%
Washakie #1	K-12	290	157	12%	157	100.0%
Washakie #2	K-12	35	20	22%	15	75.0%
Weston #1	K-12	122	97	12%	83	85.6%
Weston #7	K-8	53	29	11%	29	100.0%
State Total (48)		**18134**	**11875**	**15% Avg.**	**9715**	**85.3% Avg.**

Student counts exclude Pre-K; percent completing higher than enrolled in five districts due to reporting anomalies

Table 9: Wyoming Department of Education
2015 Summer Pre-K Enrollment

District	Students Enrolled
Albany #1	165
Big Horn #4	4
Carbon #1	1
Converse #1	151
Fremont #2	6
Fremont #21	
Fremont #25	27
Hot Springs #1	32
Laramie #1	168
Laramie #2	15
Lincoln #2	14
Natrona #1	15
Park #1	17
Park #6	38
Park #16	
Sheridan #1	48
Sheridan #3	5
Sublette #1	52
Sublette #9	24
Uinta #1	23
Uinta #4	56
Washakie #2	6
Weston #1	20
State Total (22)	**887**

Table 10: Wyoming Department of Education
2015 Bridges High School Summer Enrollment
Number of Credits Recovered

Subject (District Offering)	9th Grade	10th Grade	11th Grade	12th Grade	9-12 Total
Math (39)	16	206	214	13	449
Language Arts (39)	296	215	215	36	762
Scienct (36)	245	121	91	13	470
Social Studies (33)	100	89	83	20	292
Career Tech (8)	16	8	7	11	42
Health (7)	5	5	3	1	14
PE (6)	17	9	15	7	48
Foreign Language (4)	6	1	2	0	9
Fine Arts (2)	0	0	2	0	2
Total Credits Recovered	**701**	**654**	**632**	**101**	**2088**

Best Practice

A number of districts report best practices in both Extended-Day and summer school programs. The following is a list of the highlights:

- Robotics and hands-on projects used to enhance learning and interest
- Learning games for practice and engagement, especially utilizing technology
- Adjust teacher schedules to allow time for them to tutor
- Commit to supporting the individual needs of all students
- Students complete survey or vote on high interest activities and learning materials such as novels and themes
- Autonomy for teachers around instructional techniques and activities
- Inquiry-based approach
- Using fine arts, PE and technology to teach core content concepts
- Using outdoor activities to engage students and teach math, reading and writing
- Use of community resources for everything from field trips and learning experiences to mentors
- Incorporating local culture, including Native American culture
- Use PBIS approach to improve attendance
- Using technology tools
- Data notebooks for students to track progress
- Service Learning
- Begin day with high energy kinesthetic activity that students don't want to miss
- Blended learning

The most commonly cited effective practices were the use of small group and one-on-one instruction, as well as a project-based approach. Most programs also take advantage of Wyoming's wealth of outdoor spaces to enhance learning experiences.

<u>Site Monitoring Visits</u>

The Department has undertaken the monitoring of both summer and Extended-Day programs over the past five years and is learning what models of successful programs look like. During the summer of 2015, three Summer School programs were monitored in Teton #1, Washakie #2, and Campbell #1. Programs were chosen in different regions of the state and representing different size districts. Each program received a complete report of monitoring results. None of the three programs was found to have non-compliance in any area.

Recommendations

<u>Recommendations from Districts</u>

Each year as part of the end-of-program reporting process, districts are asked to relate information they think might be helpful to other districts in planning or operating Extended-Day programs. Recommendations from SY2014-15:

- Try to be flexible with scheduling, perhaps offering more than one summer session;
- Small groups and small class sizes are critical for students at risk to gain the most;
- Virtual school – distance education can help support students who need to work or have other scheduling issues;
- Use Public Library activities and community presentations to extend the classroom into the community;
- Focus on effective communication among teachers, Bridges staff and parents;
- Best practice strategies that show results include: project-based, place-based, hands-on learning, use of technology cooperative learning, and brain-based instruction;
- Ability grouping rather than age and grade grouping
- Cross-content and team teaching.

<u>Recommendations to Policymakers</u>

Districts continue to express their appreciation of the availability of Bridges funds to provide summer and Extended-Day learning opportunities for students. They see these funds supporting programs that can personalize instruction for students and strengthen their skills and knowledge by addressing individual needs in a timely manner. Districts appreciate the legislature's continued policy of maintaining the administration of the Bridges Summer School and Extended-Day grant independent of the block grant school funding model to ensure program quality, integrity, and effectiveness can be maintained. In particular, they emphasize the benefit of funding at a level to guarantee small groups and highly qualified teachers. Additionally, allowing both summer school and Extended-Day programs to be funded as a single entity gives districts flexibility in targeting resources according to perceived need. Policymakers are asked to continue these practices and to retain funding for the Wyoming Bridges grant as part of the Wyoming Department of Education's budget process.

Districts continue to express that they appreciated the separate funding for enrichment provided in the past and were disappointed when the funding program ended. They continue to request this type of program. Many have noted the difficulty in reserving resources to provide enriched learning experiences for all students. In particular, they are interested in funding for STEM programs and for using technology for learning. Policymakers are asked to consider reviving the enrichment funding.

Personalized Learning and Blended Learning are an especially good fit for the summer school learning environment. Bridges already emphasizes individualized learning plans and a more personalized, hands-on approach. Policymakers are asked to review the Bridges legislation and incorporate more flexibility in terms of place and time limitations.

While results from the attached Bridges Summer School Effectiveness Study show no significant difference in growth between students who attended summer school and those who did not, the study summary encourages the continuation of the program. The WDE concurs with this recommendation. Summer school succeeds primarily in slowing summer loss, as well as credit recovery for students who participate in the Bridges program. These high needs students would likely be further behind rather than showing similar growth compared to their peers without a stimulating summer experience. Our challenge is to find means to improve the current program so that students experience growth.

Appendix A

APPENDIX A

Effects Associated with Summer Bridges Participation during the Summers of 2012 through 2014: Synopsis of Findings

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Summary of Findings

- On average, Wyoming students, in most grades and content areas, fall one step backwards during the summer for between 3.7 and 9.5 steps forward during the school year, depending upon the content area and grade in school
    - Grade five math is one exception – for each 2.2 steps forward during the school year, Wyoming students, on average, fell one step backwards during the summer that followed
    - Grade seven reading is an exception – for each 34 steps forward during the school year, Wyoming students, on average, fell one step backwards during the summer that followed
- The most definitive findings about the effects associated with completing summer school came from a study that used a propensity score method for identifying a control group
    - Using this method a control group was identified for each grade, for each content area, and for each school year that was balanced with the summer completer group on prior fall and spring test scores, gender, education disability, lunch eligibility, ethnicity, and on school context variables of percent lunch eligible and percent minority
    - *In both reading and math, the summer completers did not have statistically significant or meaningfully different effects for summer change over and above that of the control group for either content area for any of the grades studied in any of the school years studied*
    - The summer growth effect sizes from the propensity score control group studies were within a range from -0.097 to +0.02
- Three districts in Wyoming were identified that had multiple positive effects for summer school
    - The positive effects were small
    - The positive effects were not consistent for all years in any content area across all three years
- The research literature is clear that there is no guarantee that summer school will produce positive effects
    - The average effect size in the literature was +0.20 with the range of effect sizes from -0.24 to +1.50
    - The average effect size for four programs using random assignment was +0.14
    - The effect sizes from the propensity scores matched control group analyses in the current study were well within the range reported above

Recommendations

- Despite the current findings, *there remains a large body of research literature in support of implementation of effective summer programs as a means of preventing growth in the achievement gap of disadvantaged students*

- If summer programs are to continue in Wyoming very intentional improvement efforts are needed – simply continuing existing practices is unlikely to lead to different results
- *Researchers recommend that ongoing evidence of effectiveness of summer program be collected to assist with program improvement efforts*
  - No studies have occurred over a three year period in Wyoming
  - The current methodology that includes use of a propensity score control group permits more definitive conclusions to be reached
  - Authors have identified a method for categorizing district effectiveness into one of three categories:
    - Positive growth for summer completers
    - Neutral growth for summer completers
    - Negative growth for summer completers
  - This type of feedback could be provided to districts on an annual basis going forward
    - Would assist districts with their improvement efforts
    - Would inform policy makers of progress
  - Staff development activities organized by Wyoming Department of Education staff designed to assist in the improvement effort could be provided
  - Research literature supports having eligibility for participation in summer school focus more on evidence of disadvantage, regardless of achievement level, and on education disability, rather than strictly on low achievement

APPENDIX B
Effects Associated with Summer Bridges Participation during the Summers of 2012 through 2014

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Summer learning associated with completion of a Wyoming summer bridges program was previously studied (see Flicek, 2012). The current study looked at summer learning in math and reading associated with completing Wyoming summer bridges programs during the summers of 2012 through 2014. Past studies compared the summer growth of students who completed summer bridges programs with that of all students in Wyoming[1]. In most cases, students attending summer school either grew similarly to all Wyoming students or they had slightly more growth in the summer than all students.

The current investigation involved four studies for each of three summers and both content areas to identify effects associated with summer completers. Summer completers were students that school districts reported as having completed summer school. There were summer completers in math, summer completers in reading and summer completers in both math and reading. In the first study, typical growth in math and reading skills in Wyoming for each grade during a school year (i.e., from a fall test to a spring test) was documented along with the typical change in math and reading skills that occurred during the summer that followed each grade (i.e., from a spring test to a fall test). In the second study, the studies from previous years were replicated for each year and content area. Specifically, the amount of change in math and reading skills for students who completed summer school was compared with that of all Wyoming students while controlling for the effect associated with education disability and lunch eligibility.

Third, propensity score matching was employed to identify a matched control group of students who were similar to summer completers on a variety of relevant variables but who did not attend summer school. The matched control group can be thought of as including students who were equally eligible for, but who did not attend, summer school. The summer change in math and reading skills of the summer completers were then compared with that of the matched control group. The fourth study sought to identify individual districts that had positive summer completer effects. The results from these districts could serve as existence proof of the kind of positive growth associated with summer school that is possible.

Method

Summer School Program

Districts apply to the Wyoming Department of Education for grants to fund Bridges summer school programs. The following details about the programs is taken from the applications schools were required to complete in order to receive the grants. The grants were not competitive, all districts were eligible. Districts were required to have comprehensive elementary and middle school remedial summer school offerings. Districts were to offer at least 60 hours of summer instruction. The 60 hours of

[1] While controlling for the effects associated with lunch eligibility and education disability.

instruction was confined to either reading or math for some students. For other students it was divided among both reading and math instruction according to each district's plan.

Summer programming was required to include enrichment to encourage higher order thinking skills through real world application of hands on experiences. Each student attending summer school had an individual learning plan that was developed by the referring teacher or team. The summer school teachers each received, each year they participated as teachers, seven clock hours of instruction in research-based instructional methods and individualized instruction for at-risk students. Districts were highly encouraged to provide meals and most districts did so.

Waves of Test Scores

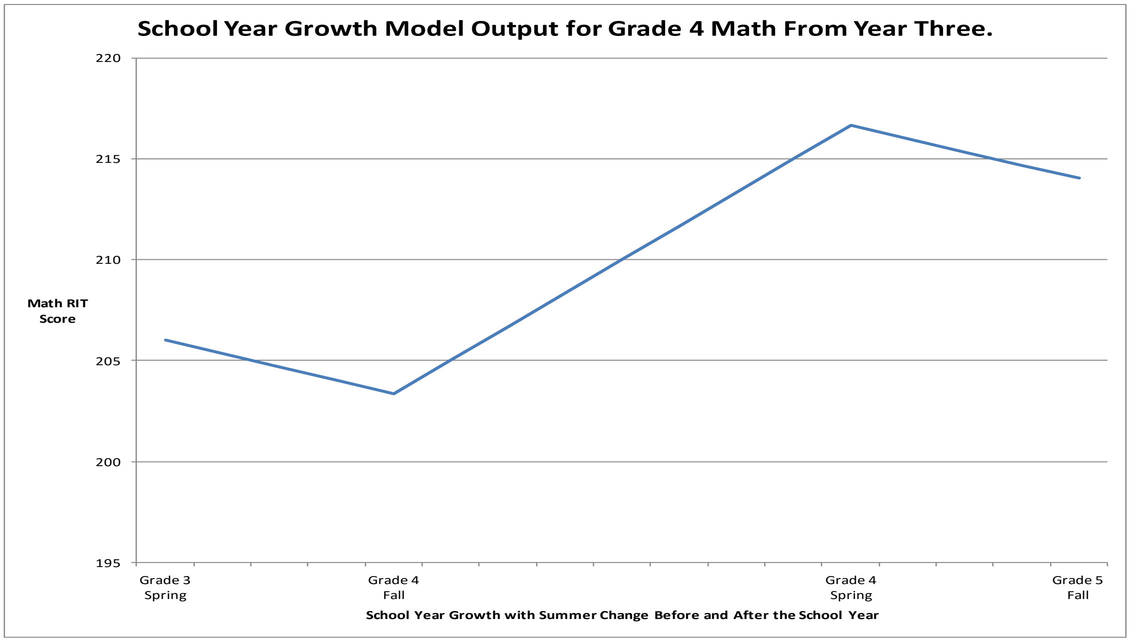
For each of the three summers, students included in the study were all Wyoming students with the four waves of test scores in both math and reading that were used to model growth for each of the studies. For the first part of the study which documented the typical school year math and reading growth, the four waves of test scores included a spring test score from the prior grade, a fall test score from the current grade, a spring test score from the current grade, and a fall test score from the next grade. These four waves of data had information about the summer before the grade, the summer after the grade and the school year of interest.

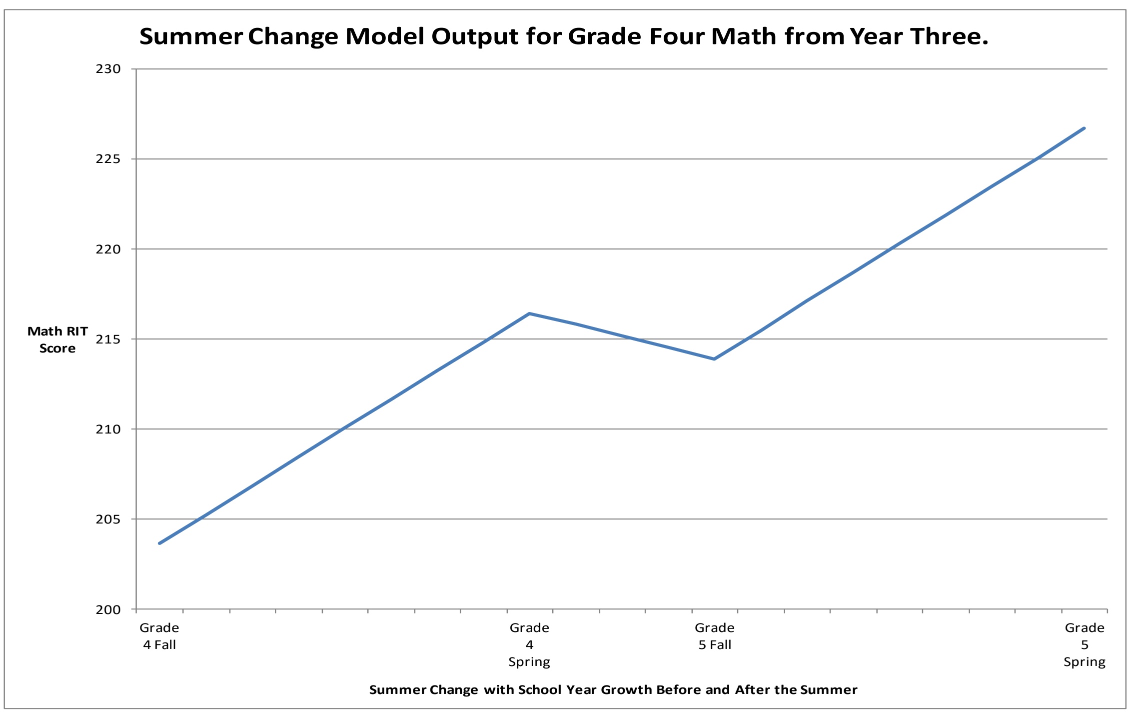
The remainder of the analyses were primarily interested in change in test scores during one summer, the summer after each grade. The four waves of test scores used for measuring summer change, therefore, included the fall and spring test scores from the identified grade and the fall and spring test scores from the grade that followed. Using these waves of data provided information about growth during the school years before and after the summer of interest and about the summer itself.

A growth modeling approach was used to measure school year growth and summer change. The method of analyses was piecewise hierarchical linear model (HLM). While it would be possible to compute growth estimates using a simple pretest/posttest model with just one pretest and one posttest, such an approach would have serious limitations (see Willett, 1997). Including additional waves of data to capture two summers (i.e., a prior and a trailing summer) for the measurement of school year growth and two school years (i.e., a prior and a trailing school year) for the measurement of summer growth decreased the standard errors of the growth estimates for each student and thereby improved reliability with which change was measured (Willett 1997). This approach ensured, consistent with Willett's recommendation, that each model had one more wave of data than there were parameters in the level 1 model. Each level 1 model had three parameters and four waves of data. The parameters included (a) the intercept (i.e., initial status or starting point), (b) a growth parameter for the interval before and after the interval of primary interest[2] (i.e., either the summers before and after the school year of interest or the school years before and after the summer of interest) and (c) a growth parameter for the interval of primary interest (i.e., either the one school year or the one summer). See Figure 1 for an illustration of the two models.

[2] This parameter (b), represented a single slope. In the case of a summer change model, the actual slopes of the school year before and the school year after would not be equal. The (b) parameter in the model, however, was an average of the slopes for both school years.

Figure 1. Illustrations of the School Year Growth Model and the Summer Change Model.





In all cases the growth parameters represented *monthly* growth or change. It was assumed that fall tests occurred approximately one half month into the school year and that spring tests occurred approximately one half month prior to the end of the school year. Therefore, *effect sizes for a school* *year* were always computed using the school year slope parameter times eight (i.e., to represent the eight months between a fall test and a spring test) divided by the pooled standard deviation of the four waves of test scores. Similarly, the *effect sizes for a summer* were always computed using the summer slope parameter time four (i.e., to represent the four months between a spring test and a fall test) divided by the pooled standard deviation of the four waves of data.

Study One Models

In the models for every study, Y_{ij} is a test score for student *i* at time *j*. There were four waves of test scores for each student. Equation 1 shows the unconditional growth model with initial status[3] (i.e., the starting point β_{0j}) with one slope for the summers before and after the school year (i.e., β_{1j}) and a second slope for the school year (i.e., β_{2j}). This model was used for the first study for the purpose of establishing typical school year growth for all Wyoming students. This model fit two linear trajectories to each student in the data set. One growth parameter modelled the change for the spring to fall periods, both prior to, and following the school year. The second growth parameter modelled growth from fall to spring for the school year. These analyses were performed separately for twelve grade-by-content areas (i.e., grades 2-7, reading and math). Time was coded in months with the first slope including eight months (i.e., four for the summer before and four for the summer after the school year) and a school year slope that included eight months. This unconditional growth model was applied separately for each grade-by-content area for each of the school years.

Level-1 Model (1)

$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{summers before and after}_{ij}) + \beta_{2j}(\text{school year}_{ij}) + r_{ij}$

Level-2 Model

$\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10} + u_{1j}$

$\beta_{2j} = \gamma_{20} + u_{2j}$

In order to document typical summer change a similar unconditional growth model was employed. As previously described the four waves of test scores used in the summer change model differed from the school year growth model. In addition, β_{1j} in the summer change model (i.e., see equation 2) was a growth parameter fitted for the school year (i.e., fall test to spring test) prior to and the school year following the one summer. The second growth parameter in the summer change model was fitted for change from the first spring to the second fall wave of test scores. Time was coded so that school year growth included sixteen months (i.e., eight months for the school year before the summer and eight months for the school year following the summer). The second growth parameter, the one for the summer, represented four months of growth for the interval between the first spring and the second fall test.

[3] The test score from the first wave of test scores.

Level-1 Model (2)
$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{school years before and after}_{ij}) + \beta_{2j}(\text{summer}) + r_{ij}$
Level-2 Model
$\beta_{0j} = \gamma_{00} + u_{0j}$
$\beta_{1j} = \gamma_{10} + u_{1j}$
$\beta_{2j} = \gamma_{20} + u_{2j}$

Study Two Model

The second study employed a conditional model with the level-1 of the model identical to that represented in equation 2. Level-2 of the conditional model for each grade-by-content analyses had three predictor variables for initial status and both growth parameters. All three predictors were coded one for yes and zero for no. The *summer completer* variable was coded one when the district reported the student as having completed the summer bridges program. Lunch eligibility and having an educational disability were associated with low achievement and were over represented in the sample of summer completers. In order to obtain initial status and growth estimates for summer completers that were independent of lunch eligibility or having an education disability, the latter two conditions were entered as predictors for each parameter in the model. The final model for a reading is presented in equation 3.

Level-1 Model (3)
$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{school years before and after})_{ij} + \beta_{2i}(\text{summer})_{ij} + r_{ij}$
Level-2 Model
$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{summer completer})_{j} + \gamma_{02}(\textit{lunch eligible})_{j} + \gamma_{03}(\textit{education disability})_{j} + u_{0j}$
$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{summer completer})_{j} + \gamma_{12}(\textit{lunch eligible})_{j} + \gamma_{13}(\textit{education disability})_{j} + u_{1j}$
$\beta_{2j} = \gamma_{20} + \gamma_{21}(\text{summer completer})_{j} + \gamma_{22}(\textit{lunch eligible})_{j} + \gamma_{23}(\textit{education disability})_{j} + u_{2j}$

Study Three Model

Study two compared summer change for students who attended summer school to all Wyoming students after controlling for the effects associated with education disability and lunch eligibility. A different comparison group was used in study three. A control group design that is gaining more widespread use (Thoemmes, 2011) in educational studies involves the use of propensity score matching for the identification of control groups. With propensity score matching, the control group is identified based upon being similar to the treatment group on characteristics that are relevant to eligibility for participation in summer school. For example, students in the control group would be similar to students in the summer completer group on variables like prior school year test scores, education disability, lunch eligibility, and so on. Study three used propensity score matching to identify a control group based upon variables that are relevant to eligibility for participating in summer school. For each summer completer, one matched student was identified for the control group via a one-to-one nearest neighbor approach.

Propensity scores were derived using a logistic regression model. Covariates at the student level included: a student's test events from the fall and spring of the school year prior to the summer of interest, education disability, lunch eligibility, gender and race (i.e., defined as White/Asian or other). Covariates at the school level were also included in the logistic regression model. These included: proportion students attending a student's school who were lunch eligible and the proportion of students attending a student's school with race that was not White/Asian. Summer completion is the event of interest. We assume that a student's summer completion is independent of other students' completion. The general model is presented in equation 4.

$$\text{logit}(\pi_i) = X_i\beta, \quad (4)$$

Where π_i is the probability that the ith student attends the Summer Bridges program. X_i is the design matrix corresponding to the ith student. β is the vector of regression coefficients. The full model including the student level and school level covariates is presented in equation 5.

$$\text{Log}(\pi_i / (1- \pi_i)) = \beta_0 + \beta_1 (\textit{1}^{st} \textit{ fall test score}) + \beta_2 (\textit{1}^{st} \textit{ spring test score}) + \beta_3 (\textit{education disability}) \quad (5)$$
$$+ \beta_4 (\textit{lunch eligible}) + \beta_5 (\textit{gender}) + \beta_6 (\textit{not White/Asian}) + \beta_7 (\textit{school \% lunch eligible})$$
$$+ \beta_8 (\textit{school \% not White/Asian})$$

The balance for the summer completers and the matched control group on the matched variables was strong[4]. Appendix A provides the balance results for grade four math for 2014 as an example. The balance for the other grade-by-content-by-school year matching were all very similar to the balance presented in Appendix A. Only summer completers and the matched control students were included in the sample for the HLM analyses used in study three.

Equation 4 presents the conditional HLM model used for the analyses in study three. Since each student who was not a summer completer was a matched control in study three, the only predictor introduced at level-2 was summer completer, which was coded one for yes or zero for no. The summer growth parameter for summer completers was the parameter of primary interest in this study.

Level-1 Model (6)

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{school years before and after})_{ij} + \beta_{2i}(\text{summer})_{ij} + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{summer completer})_j + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{summer completer})_j + u_{1j}$$
$$\beta_{2j} = \gamma_{20} + \gamma_{21}(\text{summer completer})_j + u_{2j}$$

Study Four Model

Study four investigated summer change associated with summer completer status at the district level. The primary purpose of this study was to identify the districts that had the most positive, statistically significant (i.e., at least $p < .05$) summer change effects associated with summer completer. If districts like this could be identified these districts would be *existence proof* of the kind of results that are possible and their programs could be seen as examples of programs that yielded positive summer results.

In order to have an adequate sample size at a district level the test scores were standardized within each test season for each statewide matched cohort of students included in this study. Standardization was completed within each test-by-content area for each test season within each year.

[4] Balance statistics for all matching samples are available from the authors.

The resulting standard scores had a mean of zero and the standard deviation was one within each test season, grade level and content area for each of the matched student cohorts. Using the standardized scores enabled the combining of data across all grades at a school for the HLM analysis.

Two district level HLM analyses were completed. First, the student sample was limited to an individual district. Then the HLM model in equation 3 was used to analyze the data. Next, propensity score matched control groups within each district were identified by using equation 5 within each each grade level for each of the three summers. Once the within grade control groups were identified, the summer completers and the district control groups were aggregated so that the sample for analyses included summer completers and matched controls for all grades within the district. The second HLM analyses for districts were then completed using equation 6.

Results

Findings for Math

Study 1. Table 1 presents the means and standard deviations for the four waves of test scores used for each grade for the school year growth models. The school year growth was measured within each grade for each of the three school years using an unconditional growth model. Within a grade-by-school year growth was fairly consistent across the three school years included in the study. Across grades, however, the amount of school year growth declined steadily as the grades progressed. For example, the average school year growth for the three school years in grade two was 126% of a standard deviation (i.e., monthly growth times eight divided by the standard deviation of the pooled scores for all four waves of test scores which equaled 1.26). By grade 7, however, average growth across the three school years was 46% of a standard deviation. Each grade had lower school year growth than the prior grade and the changes were incremental. For the effect sizes for each grade and school year see Table 2.

Table 3 presents the means and standard deviations for the four waves of test scores used for each grade for the summer change models. Table 4 presents the summer change results from an unconditional growth model. Two grades represented outliers for summer change. First, the summer change for the summer following grade five was, on average across the three school years, minus 40% of a standard deviation. Next, the summer change for the summer following grade seven was, on average, just minus 6% of a standard deviation. The remaining grades had summer change, on average, of between minus 15% of a standard deviation and minus 19% of a standard deviation.

One way to put the amount of summer change into perspective is to think about it relative the amount of growth that the student had in the school year prior to the summer when the change took place. For example, in grade five, average student growth across the three school years was 86% of a standard deviation. Average summer change for the summer after grade five was minus 40% of a standard deviation. The quotient that is obtained by dividing 86 by 40 is 2.15. We might conclude, therefore, that, on average, for each 2.15 steps forward in math achievement during grade five, students, on average, took one step backwards during the summer that followed. Average school year growth across the school years in grade seven was 46% of a standard deviation while average summer change was minus 6% of a standard deviation. In this example we could conclude that for every 7.7 steps the average student took forward in grade seven math achievement, the student took one step backwards during the following summer. Summer loss, therefore, was more problematic following grade five than it was following grade seven. Table 5 presents ratio of summer loss to school year growth quotients for each of the grades.

The reason why math summer loss in grade five was so much larger than in the other grades is not known. One possible explanation might be related to a transition from elementary school to middle school. There are just two districts in Wyoming where grade nine is in junior high schools instead of high schools. This suggests that most districts have a middle school grade configuration. Grade six is likely a transition grade from elementary to middle school for most Wyoming students. In middle schools the fall test in grade six is administered at a time when students have just begun adjusting to a middle school system. To the extent that this adjustment is associated with low performance on the grade six fall test, greater loss in the summer following grade five would result.

Study 2. Previous studies (see Flicek, 2012) reported summer growth associated with summer school completion after controlling for the impact of lunch eligibility and education disability[5]. Study 2 replicated these previous studies by entering summer completion, lunch eligible and education disability for each parameter for both levels of the models. The results reported in Flicek (2012) for the summer of 2011 showed the effects associated with summer completer in math during that summer for all grades were not statistically significant. This indicated that summer completer in math was neither associated with higher summer loss nor was it associated with growth in the achievement gap associated with summer completer.

The findings from the current study reflect findings from grades two[6] through seven for the three summers since 2011. The results for summer completer for the three summers are presented in Table 6. The initial status effect sizes reported in Table 6 suggest that, on average, students completing summer programs for math scored about one half of a standard deviation lower on the MAP math test than non-summer participants. The summer math instruction was intended to serve students with low achievement in math and the initial status findings confirms the program was serving the intended students.

Next, after controlling for education disability and lunch eligibility, math growth during the school years before and after the summer for summer completer was significantly low relative to all Wyoming students for seven of the seventeen grade-by-school years that were studied (i.e., at least $p < .05$; from about 4% to 11% of a standard deviation low for one school year). In addition, after controlling for education disability and lunch eligibility, summer completer was associated with significantly high school year growth relative to all Wyoming students for two of the years for grade two (i.e., at least $p < .05$; about 3% of a standard deviation one year and about 5% of a standard deviation the other year).

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[5] Students on free or reduced lunch and students with disabilities were overrepresented among summer school completers. Both of these groups are known to experience high summer loss. Therefore, by including all three variables (i.e., summer completer, lunch eligibility and education disability) we get summer completer parameters independent of effects associated with lunch eligibility and education disability.

[6] Grade 2 was not included in 2012 because many districts did not provide the needed waves of test results for the analyses.

Finally, after controlling for education disability and lunch eligibility, most of the summer coefficients associated with summer completer were positive and the grades five and seven coefficients were statistically significant (i.e., at least $p < .05$) all three summers. The reduction in summer loss associated with summer completer following grade five ranged from 6.5% of a standard deviation to about 13% of a standard deviation, depending upon the school year, relative to all Wyoming students. Statistically significant (i.e., at least $p < .05$) reductions in summer loss associated with summer completer were also evident in grade seven for all three summers. The magnitude of the reduction in the summer loss across the three years was from about 6% of a standard deviation to about 9% of a standard deviation. In all other grades the reductions in summer loss were not statistically significant (i.e., they were $p > .05$).

While this study was most interested in the effect of summer completer status on summer learning, study 2 also has findings for initial status, school year growth and summer change associated with both education disability and lunch eligibility. The math findings for education disability are presented in Table 7 and the math findings for lunch eligible are presented in Table 8.

The initial status parameter can be thought of as the average test score for the grade-by-year cohort for the first wave of test scores (i.e., the fall test of the first of the two school years). Table 7 shows a consistent pattern associated with education disability for all three school years where initial status for each subsequent grade was lower than the prior grade. These data are cross sectional and not longitudinal. Nevertheless, the findings are remarkably consistent across the school years and document a pattern of an increase in the math achievement gap associated with education disability as grades advance. In grade three, the average initial wave math score for students with an education disability was 31% of a standard deviation lower than students with no education disability. This difference was 40% of a standard deviation in grade four, 54% of a standard deviation in grade five, 77% of a standard deviation in grade six, and 101% of a standard deviation in grade seven.

Statistically low growth during the school year associated with education disability was documented on seven of the seventeen grade-by-school comparisons presented in Table 7. Education disability was associated with significantly high growth during the school year during one of seventeen grade-by-school years. Summer loss in math skills appears particularly problematic for students with education disabilities. Education disability was associated with significantly high summer loss in twelve of the seventeen grade-by-school year comparisons presented in Table 7.

The parameters for three predictor variables (i.e., summer completer, education disability and lunch eligibility) in the model used for this study are additive. In other words, the mean summer growth for the group of students who were summer completers and were also students with an education disability would be estimated by adding the summer slope parameters for the two groups. For example, for grade seven math in 2013, the summer parameter associated with education disability was minus 7% of a standard deviation and summer parameter associated with summer completer was plus 9% of a standard deviation. The mean summer growth estimate for the group of students with both conditions would be plus 2% of a standard deviation (i.e., -7 + 9). In this example, the positive effect on summer change associated with summer completion would mitigate the negative effect on summer loss associated with education disability.

The findings for lunch eligibility, while ancillary, were also interesting. Initial status associated with lunch eligibility was between about 25% to about 35% of a standard deviation below the mean. Fifteen of seventeen school year parameters were statistically significant (i.e., at least $p < .05$) for low growth. The findings for summer change were mixed. Just seven of the seventeen parameters for summer change were statistically significant and four of the seven were positive.

Study 3. Study 3 compared the summer change of summer completers with that of a propensity score matched control group. Table 9 presents the *n* count, pooled means and pooled standard deviations for each grade-by-content area-by-summer cohort of students in the matched sample (i.e., the summer completers plus their matched controls). The standard deviations from Table 9 were used in computing the effect sizes that are included in Table 10. The parameters in Table 10 indicate the extent that summer completer differs from the matched control. It is not surprising therefore that none of the initial status parameters were statistically different. We would expect initial status of summer completer would not be significantly different from the control since both test scores (i.e., the fall and spring scores) from the prior school year were used in the propensity score matching that was used to identify the control group. This matching largely explains the lack of difference on the school year growth parameter. Because the prior school year fall and spring scores were used in the propensity score matching, similar school year growth would be expected. The school year growth parameter is expressed as monthly growth for two school years combined, the school year before summer school and the school year after summer school. Growth during the school year for the summer completers versus controls was not constrained to be the same since growth during the school year following the summer, which was not included in the matching, had the potential to influence the school year growth parameter. Any effect from the second school year on the school year growth slope, however, was not large enough to result in a statistically significant difference in the summer completer group versus the matched control group for any of the grade-by-school year comparisons.

Finally, the parameter of primary interest in this study was that for summer change. None of the summer change parameters for summer completer were statistically significant. Summer completion was not associated with an effect on summer change above and beyond that experienced by the control group. This was true for all grades including grades five and seven which means study 3 was unable to confirm the positive findings for summer completer for math summer loss that were present for grades five and seven in study 2. The effect sizes for summer change associated with summer completer ranged from minus 5% of a standard deviation to plus 2% of a standard deviation.

Findings for Reading

Study 1. The means and standard deviations for the four waves of test scores in reading, for each grade, for the school year growth models are included in Table 1. The standard deviations from Table 1 were used to compute the effect sizes reported here for school year growth. The effect sizes are expressed as a percent of a standard deviation. The school year growth in reading was measured within each grade for each of the three school years using an unconditional growth model. Within a grade-by-school year, growth in reading was fairly consistent across the three school years included in the study. Across grades, however, the amount of school year growth in reading declined steadily as the grades progressed. For example, the average school year growth in reading for the two school years in grade two was 105% of a standard deviation (i.e., monthly growth times eight divided by the standard deviation of the pooled scores for all four waves of test scores from Table 1 which equaled 1.05). By grade 7, however, average growth in reading across the three school years was 35% of a standard deviation. Each grade had lower school year growth than the prior grade and the changes were incremental. For the effect sizes for each grade and school year in reading see Table 2.

Table 3 presents the means and standard deviations for the four waves of test scores used for each grade for the summer change model. Table 4 presents the summer change results from an unconditional growth model. There was less summer loss in reading than in math. The two grades that represented outliers for summer change for math also had the most loss (i.e., for grade five) in reading and the least loss in reading (i.e., for grade seven). The summer change in reading for the summer following grade five was, on average across the three school years, minus 14% of a standard deviation. Next, the summer change in reading for the summer following grade seven was, on average, just minus 1% of a standard deviation. The remaining grades had summer change in reading, on average, of between minus 7% of a standard deviation and minus 11% of a standard deviation.

Table 5 presents the quotients obtained when school year growth effect sizes were divided by summer change effect sizes in reading. In reading, in grade five, average student growth across the three school years was plus 52% of a standard deviation. Average summer change in reading for the summer after grade five was minus 14% of a standard deviation. The quotient that is obtained by dividing 52 by 14 is 3.7. Therefore, on average, for each 3.7 steps forward in reading achievement during grade five, students, on average, took one step backwards during the summer that followed. Average school year growth in reading across the school years in grade seven was 34% of a standard deviation while average summer change in reading was minus 1% of a standard deviation. Therefore, for every 34 steps on average that students took forward in grade seven reading achievement, students took one step backwards during the following summer. Summer loss in reading, therefore, was more problematic following grade five than it was following grade seven. This pattern of grade five having the most detrimental effect associated with summer loss and grade seven having the least detrimental effect associated with summer loss was evident in math also. Table 5 presents a ratios of school year growth to summer loss for each of the grades. Again, the fact that grade six is a transition year from elementary to middle school for most Wyoming students might contribute to the finding that summer loss is most detrimental following grade five.

Study 2. Previous studies (see Flicek, 2012) reported summer growth associated with summer school completion after controlling for the impact of lunch eligibility and education disability. The comparison group for these studies was all Wyoming students. Study 2 replicated these previous studies by entering summer completer, lunch eligible and education disability for each of the model's three parameters (i.e., (a) initial status, (b) growth for school years before and after summer combined and (c) change during the summer). The results reported in Flicek (2012) for the summer of 2011 showed the effects associated with summer completer in reading during that summer for all grades were not statistically significant with just one exception. This indicated that summer completer was not associated with an impact on the achievement gap one way or another in any grades except for grade six in the 2011 study. Summer completer was associated with the reading achievement gap narrowing in grade six.

The findings from the current study reflect findings from grades two[7] through seven for reading for the three summers since 2011. The reading results for summer completer, for the three summers are presented in Table 11. The initial status effect sizes reported in Table 11 indicate that the range of deficit in reading associated with summer completer in the fall of the school year prior to the students attending summer school varied across grades and school years from 31% of a standard deviation low to 75% of a standard deviation low. This suggests that students taking advantage of summer programs for reading were, indeed, students with low achievement in reading. The summer reading instruction in Wyoming was intended to serve students with low achievement in reading and the initial status findings confirm the program was serving the intended students.

Next, the school year growth parameter is one parameter that expresses average monthly growth during both the school year before and the school year after the summer of interest. All of these parameters were positive and 14 of the 17 parameters were statistically significant (i.e., at least $p < .05$). Within each of the given school years (i.e., the eight months between the fall and spring tests), growth associated with summer completer in reading was averaged within each grade. These averages ranged from plus 4% of a standard deviation in two grades to plus 12% of a standard deviation in one grade.

Finally, the summer coefficients for reading associated with summer completer are presented in Table 11 and were a mix of positive and negative effects across the grades and school years represented. Twelve of the 17 coefficients were not statistically significant (i.e., $p > .05$). There was no grade where the summer completer coefficients for reading were statistically significant for more than one of the three school years. Five of the six statistically significant coefficients out of the 17 were negative and just one was positive. In summary, the evidence presented here primarily supports the conclusion that summer reading growth for summer completers differed little from that of all Wyoming students after the effects associated with lunch eligibility and education disability were controlled. In the few instances where the findings rose to a level of statistical significance (i.e., at least $p < .05$) the findings were mostly negative and were not stable given that statistically significant findings were not present for any one grade for more than one of the three years studied.

Next, as described above, the study 2 model investigated summer change for summer completer, education disability and lunch eligibility. Therefore, the findings presented in Table 12 show the effects associated with education disability independent of the effects associated with summer completer or lunch eligibility. Likewise, the findings presented in Table 13 report the effects associated with lunch eligibility independent of the effects associated with summer completer or education disability. In grade two, education disability had an initial status that averaged 54% of a standard deviation below all Wyoming students for the three years studied. This gap increased incrementally until grade six where the gap averaged 118% of a standard deviation across the three school years. The grade seven average was nearly identical to the grade six deficit.

By inspecting Table 12 it is evident that growth during the school year in reading associated with education disability was statistically significant (i.e., at least $p < .05$) and positive for every grade analyzed for each of the three school years. The effect sizes for growth during a school year were fairly

[7] Grade 2 was not included in 2012 because many districts did not have the needed waves of test results for the analyses.

consistent across school years for each grade. Therefore, these effect sizes were averaged across the three years to assist with summarization. The statistically significant and positive reading parameters for school year associated with education disability ranged from plus 6% of a standard deviation in grade two to plus 14% of a standard deviation in grade three. These findings suggest that the increasing initial deficit in reading as grades increased is likely *not* attributable to significantly low school year growth.

The summer change parameter for education disability was negative for every grade for every school year. Fourteen of the seventeen negative parameters were statistically significant (i.e., at least $p < .05$). The magnitude of the summer loss when averaged for each grade across the three school years ranged from minus 3% of a standard deviation to minus 12% of a standard deviation. Thus, for education disability, summer loss was a salient factor in limiting reading progress during the grades studied. Effective summer learning opportunities in reading may be especially important for students with education disabilities.

Table 13 presents the reading findings for lunch eligibility after controlling for summer completer and education disability. The initial status effect sizes in reading associated with lunch eligibility were averaged within each grade across the three years. These averages ranged from minus 31% of a standard deviation to minus 38% of a standard deviation. All seventeen initial status parameters were statistically significant (i.e., at least $p < .001$). School year growth was also averaged across the three years within each grade and these averages ranged from 0% of a standard deviation to 1% of a standard deviation. Thus, lunch eligibility was associated with initial status between 30% and 40% of a standard deviation below all Wyoming students and school year growth about the same as all Wyoming students. For summer change in reading, lunch eligibility was associated with statistically significant low growth for nine of the seventeen grade by content comparisons. The findings for summer change were mixed. Just seven of the seventeen parameters for summer change were statistically significant and four of the seven were positive. The magnitude of summer loss in reading that was associated with lunch eligibility was quite small. The summer loss effect sizes, in all seventeen comparisons, ranged from 0% of a standard deviation to minus 5% of a standard deviation.

Study 3. Study 3 compared the reading summer change of summer completers with that of a propensity score matched control group. Table 9 presents the *n* count, pooled means and pooled standard deviations for each grade-by-content area-by-summer cohort of students in the matched sample (i.e., the summer completer group and control group combined). The standard deviations from Table 9 were used in computing the effect sizes that are included in Table 14. The parameters in Table 14 indicate the extent that summer completer differs from the matched control. It is not surprising therefore that none of the initial status parameters were statistically different. We would expect initial status of summer completer would not be significantly different from the control since both test scores (i.e., the fall and spring scores) from the prior school year were used in the propensity score matching that was used to identify the control group.

The use of prior school year test scores in the matching largely explains the lack of difference on the school year growth parameter. The school year growth parameter is expressed as monthly growth for two school years combined, the school year before summer school and the school year after summer school. Growth during the school year for the summer completers versus controls was not constrained to be the same since growth during the school year following the summer, which was not included in the matching, had the potential to influence the school year growth parameter. Any effect from the second school year on the school year growth slope, however, was not large enough to result in a statistically significant differences in the summer completer group versus the matched control group for any of the grade-by-school year comparisons.

Finally, the parameter of primary interest in this study was that for summer change. The effect sizes for summer change associated with summer completer ranged from minus 5% of a standard deviation to plus 1% of a standard deviation. Four of the summer change parameters for summer completer were statistically significant (i.e., at least $p < .05$). None of these four negative effects showed consistently across years. With the number of tests being run, some false positives are to be expected. We can think of no reason that summer completers would experience less summer growth than the control.

Findings for Study 4

The primary purpose of study 4 was to determine if there were any districts that had the type of positive results for summer completer that we'd like to see on a statewide basis. Separate analyses were completed for each grade-by-content area during each school year for studies 2 and 3. Statewide, the sample size was large enough for this level of analyses. Within districts, however, the sample sizes for grade-by-content area were much smaller. So, for each grade-by-content area, the math and reading scores were converted to standardized *z* scores by subtracting the statewide grade-by-content area mean score from each student's RIT score and dividing by the grade-by-content area standard deviation for the statewide sample. The resulting scores had a statewide mean of zero and standard deviation of one for each grade-by-content area. Unlike the unconverted math and reading scores, these standardized scores had a consistent meaning regardless of grade in school. This made it possible to combine all grades within a district for the district level analyses.

The next step involved isolating the sample to just one school district. Once that was accomplished, the methodology used in study 2 was applied to the district sample. This resulted in the identification of a summer growth parameter for summer completer in that district that was independent of the impact of education disability or lunch eligibility. When this was done a few districts did not have adequate sample size for the analyses. There were eight districts that were too small to analyze in 2012, five districts in 2013 and 2 districts in 2014.

Most of the districts that were large enough to be analyzed, however, did not have a statistically significant (i.e., at least $p < .05$) summer growth parameter for summer completer. In math this was true for 43 districts in 2014, 35 districts in 2013 and 38 districts in 2012. In reading there were 39 districts without a statically significant parameter in 2014 and 37 districts without a statistically significant parameter in 2012 and 2013. This finding was not surprising considering the scant evidence in the statewide analyses of positive effects on the summer growth parameter for summer completers.

For each district there were three analyses for math and three analyses for reading (i.e., one for each of the three school years in each content area). Three districts were identified that had statistically significant *p* values for the summer growth parameter for summer completer for multiple of the school year-by-content areas measured when the study 2 methodology was implemented. The summer growth parameters associated with summer completer for these three districts are presented in Table 15.

We had two metrics of effectiveness for districts. One metric of effectiveness was statistically significant *p* values (i.e., at least $p < .05$). Another source of evidence was effect sizes. Particularly for the district level studies, the samples sizes in some Wyoming districts were small. This was especially true when study 3 methodology involving a matched sample control group was implemented. About 10% of students in the tested grades were summer completers. Another 10% of students were identified for the matched sample control groups. Therefore the matched sample control group studies generally included only about 20% of the students in the tested grades. Sample size has a substantial influence when computing *p* values. Even small effects will reach a level of statistically significance (i.e., *p* values of at least < .05) when the sample size is large but very large. Very large effects, however, will not reach a level of statistical significance when sample sizes are small. Given the small sample sizes we report on both statistically significant *p* values and effect sizes.

Once the three districts were identified based upon results from the methodology used in study 2, the methodology from study 3 was applied to the sample of students for these districts. This involved identifying a propensity score matched control group of within district students who would be considered equally eligible for summer school but who did not attend summer school. The summer growth parameter findings for summer completer from these matched sample analyses for the three identified districts are also presented in Table 15.

Because of the small sample sizes involved with the district specific analyses, particularly when the methodology from study 3 was implemented, it was not surprising that few statistically significant results emerged. When the methodology from study 3 was applied to a statewide matched sample the effect sizes for summer growth for the summer completers ranged from -.05 to +.02 in math and from -0.14 to +0.02 in reading. With that perspective, a district specific effect size for summer growth for summer completers of +0.10 or higher will be considered a positive finding that is worth mentioning for this particular study[8].

Inspecting the findings for district 1 in Table 15 we see that the summer growth parameter from methodology of study 2 for math was statistically significant in 2014 and 2013. Five of the six school year-by-content area analyses using study 2 methodology had summer growth parameter effect sizes for summer completers above +0.10 with three of these being above +0.20. Just two of the six *p* values reached statistical significance of $p < .05$, however, with one other at $p < .10$. This district had particularly strong summer growth in math in 2013. The summer growth effect size for summer completers was plus 33% of a standard deviation with study 2 methodology and plus 46% of a standard deviation with study 3 methodology. This was by far the strongest evidence of a positive effect for summer completer in this study. Strong summer math growth for summer completers for both methodologies was limited to this one of the three years, however. In reading, district 1 had positive summer growth for summer completers for two of the three years with the effect sizes for both study designs all being between plus 15% of a standard deviation and plus 25% of a standard deviation.

The summer growth parameter for summer completers in district 2 was statistically significant (i.e., at least $p < .05$) for four of the six school year-by-content areas studied when study 2 methodology

[8] Cohen's (1988) suggested guidelines for interpretation of effect sizes in the social sciences was that an effect size of 0.20 could be considered a small effect. The authors acknowledge that designating an effect size of 0.10 as "worth mentioning" is a much more liberal interpretation than that suggested by Cohen.

was employed. For the summer of 2013 the math effect sizes for summer growth for summer completers were plus 16% and plus 10% of a standard deviation for study 2 and study 3 methodology respectively. Also, reading in 2013 and 2012 had effect sizes for summer growth for summer completers above plus 10% of a standard deviation for both study methodologies.

Finally, district 3 was a larger district and the *p* values for five of the six analyses with study 2 methodology were statistically significant (i.e., at least $p < .05$) for the summer growth parameter associated with summer completer. The effect sizes for summer growth for summer completers were plus 13% of a standard deviation for the study 3 methodology for 2014 math and 2013 reading. The remaining four effect sizes from study 3 methodology were negative or small.

While these three districts had some positive effects for summer growth for students who completed summer school, none of the three districts had consistently positive findings three years in a row for a particular content area. Nevertheless, these districts do provide existence proof evidence of positive summer completer effects in Wyoming in some school years in some content areas.

Summary and Conclusions

First, the amount of school year growth during grades two through seven and summer change following grades two through seven was documented over three school years and three summers for samples including nearly all Wyoming students. The amount of school year growth in both reading and math declined as grade in school advanced. The impact of summer loss on learning varied by grade and content area. The greatest summer loss in both content areas followed grade five and the least summer loss followed grade seven. The detrimental impact of summer loss was negligible in reading following grade seven. The detrimental impact of summer loss in math following grade five was quite large. For each 2.2 steps forward during the school year in grade five students went 1 step backwards during the summer that followed. Depending upon the grade and content area students, with the exceptions already mentioned, went 1 step backward in the summer for between 3.7 and 9.5 steps forward during the school year.

The primary purpose of this study was to document the impact of completing a summer bridges program in Wyoming on summer change in math and reading test scores. In the past studies that culminated in the Flicek (2012) report, the conclusion was that students who attended Bridges summer school had summer change that was equal to or, in some grades-by-content areas, more positive than all Wyoming students after controlling for the effects of education disability and lunch eligibility. There was an assumption that students attending summer school had an achievement gap entering summer school and that, without participation in summer school, their achievement gap would likely have grown during the summer. This assumption was not directly assessed, however. Since the gap either did not change during the summer or, in some instances, decreased during the summer, it was concluded that summer school was likely helping to prevent a summer slide for participating students.

Study 2 essentially replicated the previous findings reported by Flicek (2012). After controlling for effects associated with education disability and lunch eligibility, summer completer was generally associated with no effect relative to all Wyoming students or occasional small positive effects. The only positive effect associated with summer school in the current study came from grades five and seven in math. Summer completers in math had statistically significant (i.e., at least $p < .05$) positive change in summer math growth compared to all Wyoming students, after controlling for the effects of education disability and lunch eligibility, in grades five and seven for all three years studied. Summer change in math for summer completers in grades two, three, four and six were not statistically significant. Had the positive findings in grades five and seven in math been verified in the matched control group study (i.e., study 3) the support for the positive conclusion about summer school effectiveness in these grades would have been stronger.

Study 3 in the current research provided more direct evidence about the assumption that the achievement gap would likely grow without summer school for summer completers. Study 3 compared the summer change of students who completed summer school with the summer change of a control group identified using propensity score matching methodology. Using this method, the characteristics of the summer completer group and the control group were balanced on a set of variables thought to be relevant to the need for participating in summer school. The control group was matched with the summer completer group on the primary characteristic that defined eligibility for summer school, specifically low math and/or reading achievement during the prior school year, and on other relevant variables. As such, students in the control group could be considered eligible for, but not attending, summer school. The summer completer and control groups were balanced on the prior fall and spring test scores in the relevant content area, education disability, lunch eligibility, not white, gender and on school context variables of percent lunch eligible and percent not white.

In both reading and math, the summer completers did not have statistically significant positive summer change over and above that of the control group for either content area for any of the grades studied in any of the school years studied. This finding calls into question the previous assumption that summer school prevented growth in the achievement gap. If the assumption in the previous studies had been correct we would have found significantly more summer growth for summer completers compared to the control group in the current study.

There is one important caveat to the conclusion in the above paragraph, however. The purpose of using a control group is to control for selection bias. The preferred method for controlling selection bias in a study is the use of a randomized control trial. To implement a randomized control trial for summer completer, a pool of students eligible for summer school would be identified. From that pool of students, half of them would be randomly assigned to summer school and the other half would not be assigned to summer school. This type of random assignment is rarely used in applied settings, however, since parents and policymakers are uneasy about using random assignment of eligible students for determining which students will get treatments that are assumed to be effective. This explains why propensity score matching has come into increasing use in recent years (Thoemmes, 2011).

While propensity score matching is able to identify control students who are very similar to the summer completers on a wide variety of relevant selection variables, there is no assurance that some relevant variables remain unmeasured which might account for the findings on the treatment outcomes. Using propensity score matching, one variable on which the treatment and control groups in the current study are known to differ is the decision to attend and complete a summer program. The basis for that decision is unknown (i.e., unmeasured) for students in the treatment and control groups in this study. It is possible that unmeasured variable influenced the summer change for the two groups.

There have been other studies with disappointing findings similar to those reported here. Specifically, Charlton, Valentine, Muhlenbruck and Borman (2000) conducted a meta-analysis and, although they reported an average effect size of +0.20 for remedial summer programs, the range of effect sizes was from -0.24 to +1.50. The average effect size for four programs that used random assignment was +0.14. The effect sizes in this study for summer completers were within the low end of the range reported by Cooper, et al. Based upon the program descriptions from the method section of this report, Wyoming has many policies in place in terms of time for training teachers, individual learning plans for students provided by referring teachers, meals, amount of time served, enrichment to encourage performance on higher levels of cognitive complexity, etc. that would be supported by existing literature.

The current study addressed the impact of summer school on growth in math and reading skills during the summer. It is important to keep in mind that there are other potential benefits to participation in summer programs that were not measured or addressed by this study. For example, McCombs, Augustine, Schwartz, Bodily, McInnis, Lichter and Cross (2011) suggested that some non-academic benefits of summer school might include improved attendance during the school year, a decreased likelihood of being retained, increased persistence and an associated increase in the likelihood of graduating and social/emotional/behavioral benefits like reduced discipline problems, more attachment to school and improved self-efficacy for academic learning.

Finally, the findings for education disability were quite interesting. In math, there were many statistically significant findings of low growth across the school years both during the school year and the summer. The findings in reading were quite different. Statistically significant positive reading growth occurred during the school year at nearly every grade for all three school years. Most of the summer change parameters for education disability were negative, however, and many of the negative findings were statistically significant. This suggests that students with education disabilities as a group are students who would benefit greatly from effective summer programs for both math and reading. During the school year when special education services are provided these students were closing the gap in reading. During the summer, however, the gap grew. The initial status achievement gap for education disability tended to be larger as grades advanced in both reading and math. Much of this increase in the initial status gap was likely due to new members joining this group because of the increasing problems experienced in general education programs as they advanced in grades. Some of the growth in the gap, however, was also likely due to the higher summer loss in both math and reading that was documented for this group of students. In addition, there was an achievement gap associated with lunch eligibility and, particularly in reading, there was evidence that the achievement gap associated with lunch eligibility grew during the summer in many of the grades during each of the three years studied.

A Way Forward

According to the research literature there is no guarantee that summer school will mitigate summer learning loss (McCombs et al., 2011). Despite the paucity of positive findings in this study, *there remains a large body of research literature in support of implementation of effective summer programs as a means of preventing growth in the achievement gap of disadvantaged students* (Cooper, Charlton, Valentine, Muhlenbruck & Borman, 2000; McCombs et al., 2011). Clearly, though, if summer programs are to continue in Wyoming, very intentional improvement efforts would be required. Simply continuing with existing practices would be unlikely to yield results different than those presented here.

Researchers recommend (Beckett, 2008; Bell & Carrillo, 2007; Boss & Railsback, 2002; McLaughlin & Pitcock, 2009) that ongoing evidence of effectiveness of summer programs be collected to assist with program improvement efforts. The current study occurred after a three year interval without any study of program effectiveness. Furthermore, the current study advanced the methodology from previous studies and provided more definitive conclusions as a result. This study concluded that, for most Wyoming districts, there was little evidence that completion of a summer bridges program was associated with a positive effect on summer growth in math or reading. Study four did isolate some instances of positive performance within three districts. Even in these districts, however, the positive performance was not consistent across all three years for any one district.

The authors have identified a method for providing districts with information about district level summer completer effects on each of the three parameters of interest: (a) initial status, (b) school year growth and (c) summer growth. This information has potential to help districts, with guidance from Wyoming Department of Education (WDE) staff, to understand how their program compared to the overall state program in terms of the achievement levels and school year growth patterns of students being served in summer programs and in the amount of summer growth produced. The method involves the use of the propensity score control group. Using this methodology it would be possible to report each districts summer growth in both math and reading as falling within one three categories. The categories would represent (a) positive growth for summer completers, (b) neutral growth for summer completers or (c) negative growth for summer completers. These findings would be in support of improvement efforts within the districts. The WDE staff could provide professional development related to factors that would support improved math and reading growth during summer programs. The goal over a five year interval would be to have more districts with positive growth each year[9].

In order to implement the evaluation plan that would inform districts in their improvement efforts, however, math and reading testing in both the fall and the spring is a requirement. All students, in the tested grades, i.e., not just the students in summer school, would need to be tested at each school in both the fall and the spring each year. Without testing all students there is no way to identify a control group. Ideally the tests would be administered close to the start of school and the end of school each year. The test should be a measure of reading and math skills appropriate for a given grade. An adaptive test is preferred since many of the students in summer school have low achievement and adaptive tests are better suited to provide more reliable scores for low performing students. In order to obtain the most appropriate model fit for the analyses used to inform school improvement, the four waves of test data should include the spring test in the year following the summer program that is being evaluated. This would mean the evaluation would be ongoing during the summer following the summer that the students were summer completers.

Finally, eligibility for Bridges in Wyoming is based upon low achievement in math and/or reading. There is a difference between low achievement and being economically disadvantaged. Much of the research on the role of summer loss in increasing the achievement gap has found this to be true for students who are disadvantaged (Alexander, Estwisle, & Olson, 2007; McCombs et al., 2011). Some students with low achievement come from backgrounds that are economically advantaged. Not all

[9] Some districts may be too small to receive scores. Also, negative growth relative to a propensity score control group is unlikely but not impossible. When negative growth occurs, it would be reported.

students from a background of economic disadvantage have low achievement. Students from backgrounds of economic disadvantage without low achievement, however, have been found to lose ground relative to their academic peers during summers (McCall, Hauser, Cronin, Kingsbury, & Houser, 2006). An effort to refine eligibility criteria so that backgrounds of economic disadvantage are privileged, regardless of level of achievement, could result serving the type of students that research suggests are most at risk of summer slides. In addition, the findings from the current study clearly point to a need for effective summer programming for students with education disabilities.

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Table 1. Pooled Means and Standard Deviations for Test Scores from the School Year Growth Models (i.e., Prior Grade Spring, Current Grade Fall, Current Grade Spring, and Subsequent Year Fall) for Each Grade Level Cohort of Students.

		Math		Reading	
Grade	*n* of Students	Pooled Mean Score	Pooled Standard Deviation	Pooled Mean Score	Pooled Standard Deviation
Year 2013-2014					
2	6350	187.8	13.3	185.9	15.9
3	6277	199.4	13.1	196.5	15.2
4	5969	210.0	13.5	204.9	14.2
5	6035	218.6	13.7	211.2	13.4
6	5673	224.5	13.6	216.0	13.2
7	5697	229.2	14.1	219.7	13.3
Year 2012-2013					
2	5509	187.0	13.5	185.2	16.0
3	5382	199.2	13.1	196.1	15.0
4	5446	210.3	13.0	204.8	13.9
5	5200	218.9	13.5	211.2	13.3
6	5204	224.6	13.5	215.8	13.1
7	5139	229.8	14.0	220.1	13.1
Year 2011-2012					
2	--	--	--	--	--
3	4788	199.6	13.0	196.2	14.5
4	4508	210.2	13.1	204.5	13.6
5	4569	218.5	13.6	210.9	13.3
6	4491	224.8	13.5	216.0	13.2
7	4421	229.7	13.7	219.7	12.9

Table 2. Wyoming School Year Growth (Fall Test to Spring Test) on MAP Test.

	Math			Reading		
Grade	Monthly Growth	Fall Test to Spring Test Score Growth[a]	Fall Test to Spring Test Effect Size	Monthly Growth	Spring Test 2 to Fall Test 2 Score Growth[a]	Spring Test 2 to Fall Test 2 Effect Size
Year 2013-2014						
2	2.113	16.9	1.27	2.134	17.1	1.07
3	1.816	14.5	1.11	1.501	12.0	0.79
4	1.659	13.3	0.98	1.133	9.1	0.64
5	1.558	12.5	0.91	0.964	7.7	0.57
6	1.055	8.4	0.62	0.713	5.7	0.43
7	0.786	6.3	0.44	0.603	4.8	0.36
Year 2012-2013						
2	2.088	16.7	1.24	2.063	16.5	1.03
3	1.755	14.0	1.07	1.481	11.9	0.79
4	1.586	12.7	0.97	1.091	8.7	0.63
5	1.446	11.6	0.86	0.910	7.3	0.55
6	0.991	7.9	0.59	0.633	5.1	0.39
7	0.759	6.1	0.43	0.528	4.2	0.32
Year 2011-2012						
2	--	--	--	--	--	--
3	1.785	14.3	1.09	1.467	11.7	0.81
4	1.489	11.9	0.91	1.097	8.8	0.64
5	1.396	11.2	0.82	0.927	7.4	0.56
6	1.091	8.7	0.65	0.748	6.0	0.45
7	0.849	6.8	0.49	0.587	4.7	0.36

[a]Monthly growth times eight.

Table 3. Pooled Means and Standard Deviations for Test Scores from the Summer Change Models (i.e., Prior Grade Fall, Prior Grade Spring, Following Grade Spring, and Following Grade Fall) for Each Grade Level Cohort of Students.

		Math		Reading	
Grade	*n* of Students	Pooled Mean Score	Pooled Standard Deviation	Pooled Mean Score	Pooled Standard Deviation
Year 2014					
2	6176	193.5	15.4	191.0	17.4
3	6153	205.2	15.3	200.9	15.7
4	5901	215.1	15.7	208.3	14.7
5	5978	221.6	14.3	213.9	13.7
6	5592	226.5	14.2	218.0	13.5
7	5602	231.7	15.0	221.7	13.5
Year 2013					
2	5352	192.9	15.4	190.4	17.5
3	5233	204.8	14.9	200.6	15.6
4	5311	215.1	15.0	208.2	14.4
5	5058	221.8	14.0	213.8	13.6
6	5039	226.5	14.2	217.7	13.5
7	4966	232.0	14.6	222.0	13.3
Year 2012					
2	--	--	--	--	--
3	4691	205.2	14.5	200.5	15.0
4	4406	215.1	14.7	208.0	14.0
5	4467	221.6	14.1	213.4	13.5
6	4373	226.9	14.1	217.8	13.4
7	4280	232.0	14.6	221.4	13.1

Table 4. Wyoming Summer Change (Spring Test to Fall Test) on MAP Test During the Summer Following Each Grade.

	Math			Reading		
Grade	Monthly Change	Fall Test to Spring Test Score Change[a]	Fall Test to Spring Test Effect Size	Monthly Change	Spring Test 2 to Fall Test 2 Score Change[a]	Spring Test 2 to Fall Test 2 Effect Size
Year 2014						
2	-0.563	-2.3	-0.15	-0.472	-1.9	-0.11
3	-0.517	-2.1	-0.14	-0.416	-1.7	-0.11
4	-0.635	-2.5	-0.16	-0.320	-1.3	-0.09
5	-1.610	-6.4	-0.45	-0.451	-1.8	-0.13
6	-0.527	-2.1	-0.15	-0.269	-1.1	-0.08
7	-0.202	-0.8	-0.05	-0.039	-0.2	-0.01
Year 2013						
2	-0.747	-3.0	-0.19	-0.496	-2.0	-0.11
3	-0.711	-2.8	-0.19	-0.447	-1.8	-0.11
4	-0.812	-3.2	-0.22	-0.362	-1.4	-0.10
5	-1.394	-5.6	-0.40	-0.492	-2.0	-0.15
6	-0.528	-2.1	-0.15	-0.196	-0.8	-0.06
7	-0.217	-0.9	-0.06	-0.037	-0.1	-0.01
Year 2012						
2	--	--	--	--	--	--
3	-0.768	-3.1	-0.21	-0.409	-1.6	-0.11
4	-0.675	-2.7	-0.18	-0.271	-1.1	-0.08
5	-1.213	-4.9	-0.34	-0.516	-2.1	-0.15
6	-0.542	-2.2	-0.15	-0.254	-1.0	-0.08
7	-0.272	-1.1	-0.07	-0.015	-0.1	0.00

[a]Monthly change times four.

Table 5. Average[a] School Year Growth and Average[a] Summer Change Expressed as a Percent of a Standard Deviation with Growth Divided by Change.

	Math			Reading		
Grade	School Year Growth	Summer Change	Growth / Change	School Year Growth	Summer Change	Growth / Change
2	126	-17	7.4	105	-11	9.5
3	109	-18	6.1	74	-11	6.7
4	95	-19	5.0	61	-9	6.8
5	86	-40	2.2	52	-14	3.7
6	62	-15	4.1	39	-7	5.6
7	46	-6	7.7	34	-1	34.0

[a]Averaged across the three school years in this study.

Table 6. Math Results of the Piecewise Hierarchical Linear Regression for the Total Wyoming Sample for *Summer Completers* Independent of Effects for Lunch Eligibility and Education disability.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
School Year 2013-2014								
2	-7.667***	-0.498	0.101***	0.808	0.053	0.051	0.204	0.013
3	-7.668***	-0.502	-0.032	-0.256	-0.017	0.007	0.028	0.002
4	-6.715***	-0.428	-0.078**	-0.624	-0.040	0.079	0.316	0.020
5	-6.441***	-0.449	-0.196***	-1.568	-0.109	0.457***	1.828	0.128
6	-4.781***	-0.337	-0.024	-0.192	-0.014	-0.033	-0.132	-0.009
7	-7.438***	-0.495	0.005	0.040	0.003	0.234*	0.936	0.062
School Year 2012-2013								
2	-7.182***	-0.467	0.060*	0.480	0.031	-0.104	-0.416	-0.027
3	-6.698***	-0.451	-0.001	-0.008	-0.001	0.020	0.080	0.005
4	-5.792***	-0.386	-0.102**	-0.816	-0.054	0.015	0.060	0.004
5	-6.919***	-0.494	-0.088**	-0.704	-0.050	0.240**	0.960	0.068
6	-4.618***	-0.326	-0.068*	-0.544	-0.038	0.005	0.020	0.001
7	-8.320***	-0.569	-0.113**	-0.904	-0.062	0.321***	1.284	0.088
School Year 2011-2012								
2	--	--	--	--	--	--	--	--
3	-6.926***	-0.477	0.054	0.432	0.030	0.125	0.500	0.034
4	-7.766***	-0.530	-0.058	-0.464	-0.032	0.215*	0.860	0.059
5	-8.068***	-0.571	-0.031	-0.248	-0.018	0.229*	0.916	0.065
6	-7.334***	-0.521	-0.049	-0.392	-0.028	0.180	0.720	0.051
7	-6.243***	-0.429	-0.079*	-0.632	-0.043	0.228*	0.912	0.063

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Monthly change times eight for one school year.

[b]Monthly change times four for the summer.

Table 7. Math Results of the Piecewise Hierarchical Linear Regression for the Total Wyoming Sample for *Education disability* Independent of Effects for Summer Completers and Lunch Eligibility.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
School Year 2013-2014								
2	-4.755***	-0.309	-0.022	-0.176	-0.011	0.001	0.004	0.000
3	-5.287***	-0.346	-0.062*	-0.496	-0.032	-0.286***	-1.144	-0.075
4	-8.123***	-0.518	-0.150***	-1.200	-0.077	-0.127*	-0.508	-0.032
5	-9.700***	-0.677	-0.110***	-0.880	-0.061	0.071	0.284	0.020
6	-13.272***	-0.926	-0.035	-0.280	-0.020	-0.439***	-1.756	-0.122
7	-16.021***	-1.066	0.078**	0.624	0.042	-0.099	-0.396	-0.026
School Year 2012-2013								
2	-4.678***	-0.304	-0.010	-0.080	-0.005	-0.231**	-0.924	-0.060
3	-6.287***	-0.423	0.012	0.096	0.006	-0.337***	-1.348	-0.091
4	-7.954***	-0.530	-0.133***	-1.064	-0.071	-0.220**	-0.880	-0.059
5	-11.445***	-0.817	-0.046	-0.368	-0.026	0.049	0.196	0.014
6	-13.547***	-0.956	-0.063*	-0.504	-0.036	-0.347***	-1.388	-0.098
7	-14.122***	-0.966	-0.005	-0.040	-0.003	-0.270***	-1.080	-0.074
School Year 2011-2012								
2	--	--	--	--	--	--	--	--
3	-6.321***	-0.436	0.011	0.088	0.006	-0.235**	-0.94	-0.065
4	-8.415***	-0.574	0.028	0.224	0.015	-0.462***	-1.848	-0.126
5	-11.39***	-0.806	-0.062*	-0.496	-0.035	-0.200*	-0.800	-0.057
6	-12.25***	-0.871	-0.041	-0.328	-0.023	-0.242**	-0.968	-0.069
7	-14.603***	-1.003	-0.109***	-0.872	-0.06	-0.038	-0.152	-0.010

*p < .05. **p < .01. ***p < .001.
[a]Monthly change times eight for one school year.
[b]Monthly change times four for the summer.

Table 8. Math Results of the Piecewise Hierarchical Linear Regression for the Total Wyoming Sample for *Lunch Eligibility* Independent of Effects for Summer Completers and Education disability.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
School Year 2013-2014								
2	-3.766***	-0.245	-0.043*	-0.344	-0.022	-0.095*	-0.380	-0.025
3	-3.995***	-0.261	-0.043*	-0.344	-0.023	-0.097*	-0.388	-0.025
4	-4.289***	-0.274	-0.098***	-0.784	-0.050	-0.086	-0.344	-0.022
5	-4.769***	-0.333	-0.087***	-0.696	-0.049	0.112*	0.448	0.031
6	-4.790***	-0.338	-0.095***	-0.760	-0.054	-0.070	-0.280	-0.020
7	-4.977***	-0.331	0.004	0.032	0.002	0.004	0.016	0.001
School Year 2012-2013								
2	-4.388***	-0.285	-0.015	-0.120	-0.008	-0.016	-0.064	-0.004
3	-4.669***	-0.314	-0.071***	-0.568	-0.038	0.030	0.120	0.008
4	-4.319***	-0.288	-0.079***	-0.632	-0.042	0.001	0.004	0.000
5	-4.700***	-0.335	-0.095***	-0.760	-0.054	0.179**	0.716	0.051
6	-4.694***	-0.331	-0.087***	-0.696	-0.049	0.011	0.044	0.003
7	-5.017***	-0.343	-0.081***	-0.648	-0.044	0.000	0.000	0.000
School Year 2011-2012								
2	--	--	--	--	--	--	--	--
3	-4.137***	-0.285	-0.048*	-0.384	-0.026	0.046	0.184	0.013
4	-4.545***	-0.310	-0.049*	-0.392	-0.027	0.026*	0.104	0.007
5	-3.891***	-0.275	-0.056**	-0.448	-0.032	-0.071*	-0.284	-0.020
6	-4.456***	-0.317	-0.103***	-0.824	-0.059	0.032	0.128	0.009
7	-5.179***	-0.356	-0.087***	-0.696	-0.048	0.054*	0.216	0.015

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Monthly change times eight for one school year.

[b]Monthly change times four for the summer.

Table 9. Pooled Means and Standard Deviations for Summer Change Test Scores (i.e., Current Grade Fall, Current Grade Spring, Subsequent Year Fall, Subsequent Year Spring) for Each Matched Sample, Grade Level Cohort of Students.

	Math			Reading		
Grade	*n* of Students	Pooled Mean Score	Pooled Standard Deviation	*n* of Students	Pooled Mean Score	Pooled Standard Deviation
Year 2014						
2	1690	186.4	15.3	1862	179.6	17.4
3	1776	196.8	14.8	1850	190.2	15.8
4	1446	206.7	14.2	1460	199.4	14.7
5	1276	212.8	13.7	1310	205.2	14.2
6	1002	219.2	14.6	1068	210.9	14.3
7	910	220.4	13.7	886	212.1	14.0
Year 2013						
2	1524	186.1	15.0	1654	180.8	17.0
3	1284	197.2	13.9	1384	190.5	15.6
4	1244	207.5	13.6	1320	199.7	13.8
5	974	212.8	12.8	992	204.4	13.9
6	920	219.2	14.5	956	210.9	13.8
7	728	220.9	14.5	652	210.7	14.3
Year 2012						
2	--	--	--	--	--	--
3	1130	197.7	13.8	1280	191.4	14.9
4	898	205.3	13.7	998	197.0	13.9
5	730	211.3	12.8	764	202.4	13.3
6	692	216.9	12.8	704	207.9	13.9
7	584	224.2	13.4	534	212.3	13.0

Table 10. Math Results of the Piecewise Hierarchical Linear Regression for the Propensity Score Matched Sample.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
2013-14 School Year								
2	0.146	0.010	-0.034	-0.272	-0.018	-0.047	-0.188	-0.012
3	0.024	0.002	0.009	0.072	0.005	-0.160	-0.640	-0.043
4	0.010	0.001	-0.010	-0.080	-0.006	-0.024	-0.096	-0.007
5	0.157	0.011	-0.045	-0.360	-0.026	-0.091	-0.364	-0.026
6	0.025	0.002	-0.024	-0.192	-0.013	-0.086	-0.344	-0.024
7	0.108	0.008	-0.025	-0.200	-0.015	-0.008	-0.032	-0.002
2012-13 School Year								
2	0.364	0.024	-0.054	-0.432	-0.029	-0.204	-0.816	-0.054
3	0.073	0.005	-0.036	-0.288	-0.021	0.016	0.064	0.005
4	-0.243	-0.018	-0.007	-0.056	-0.004	-0.106	-0.424	-0.031
5	0.149	0.012	-0.007	-0.056	-0.004	-0.161	-0.644	-0.050
6	0.284	0.020	-0.049	-0.392	-0.027	-0.098	-0.392	-0.027
7	0.286	0.020	-0.002	-0.016	-0.001	0.008	0.032	0.002
2011-12 School Year								
2	--	--	--	--	--	--	--	--
3	0.410	0.030	-0.001	-0.008	-0.001	0.027	0.108	0.008
4	-0.089	-0.007	0.000	0.000	0.000	-0.011	-0.044	-0.003
5	0.008	0.001	-0.016	-0.128	-0.010	-0.073	-0.292	-0.023
6	-0.043	-0.003	0.051	0.408	0.032	-0.103	-0.412	-0.032
7	-0.621	-0.046	-0.021	-0.168	-0.013	0.078	0.312	0.023

*$p < .05$. **$p < .01$. ***$p < .001$.
[a]Monthly change times eight for one school year.
[b]Monthly change times four for the summer.

Table 11. Reading Results of the Piecewise Hierarchical Linear Regression for the Total Wyoming Sample for *Summer Completers* Independent of Effects for Lunch Eligibility and Education disability.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
School Year 2013-2014								
2	-13.046***	-0.750	0.273***	2.184	0.126	-0.156	-0.624	-0.036
3	-11.000***	-0.701	0.198***	1.584	0.101	-0.176*	-0.704	-0.045
4	-7.973***	-0.542	0.126***	1.008	0.069	-0.123	-0.492	-0.033
5	-6.932***	-0.506	0.029	0.232	0.017	-0.078	-0.312	-0.023
6	-4.931***	-0.366	0.098**	0.784	0.058	-0.218*	-0.872	-0.065
7	-7.438***	-0.551	0.005	0.040	0.003	0.234*	0.936	0.069
School Year 2012-2013								
2	-11.100***	-0.635	0.261***	2.088	0.120	-0.423***	-1.692	-0.097
3	-9.869***	-0.631	0.120***	0.960	0.061	0.112	0.448	0.029
4	-7.322***	-0.510	0.066*	0.528	0.037	-0.135	-0.540	-0.038
5	-7.232***	-0.533	0.063	0.504	0.037	0.043	0.172	0.013
6	-4.245***	-0.314	0.002	0.016	0.001	0.035	0.140	0.010
7	-9.466***	-0.710	0.090*	0.720	0.054	-0.121	-0.484	-0.036
School Year 2011-2012								
2	--	--	--	--	--	--	--	--
3	-9.228***	-0.613	0.156***	1.248	0.083	-0.037	-0.148	-0.010
4	-10.176***	-0.726	0.224***	1.792	0.128	-0.292**	-1.168	-0.083
5	-8.458***	-0.627	0.103**	0.824	0.061	-0.084	-0.336	-0.025
6	-7.866***	-0.586	0.111**	0.888	0.066	-0.071	-0.284	-0.021
7	-7.664***	-0.585	0.129**	1.032	0.079	-0.128	-0.512	-0.039

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Monthly change times eight for one school year.

[b]Monthly change times four for the summer.

Table 12. Reading Results of the Piecewise Hierarchical Linear Regression for the Total Wyoming Sample for *Education Disability* Independent of Effects for Summer Completers and Lunch Eligibility.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
School Year 2013-2014								
2	-9.258***	-0.533	0.093**	0.744	0.043	-0.137	-0.548	-0.031
3	-11.680***	-0.744	0.199***	1.592	0.101	-0.264***	-1.056	-0.067
4	-12.983***	-0.883	0.216***	1.728	0.118	-0.432***	-1.728	-0.118
5	-13.208***	-0.964	0.115***	0.920	0.067	-0.244**	-0.976	-0.071
6	-16.064***	-1.191	0.204***	1.632	0.121	-0.246**	-0.984	-0.073
7	-16.021***	-1.188	0.078**	0.624	0.046	-0.099*	-0.396	-0.029
School Year 2012-2013								
2	-9.588***	-0.549	0.173***	1.384	0.079	-0.578***	-2.312	-0.033
3	-12.647***	-0.809	0.282***	2.256	0.144	-0.450***	-1.800	-0.115
4	-13.506***	-0.940	0.212***	1.696	0.118	-0.441***	-1.764	-0.123
5	-14.639***	-1.079	0.225***	1.800	0.133	-0.521***	-2.084	-0.154
6	-16.647***	-1.230	0.174***	1.392	0.103	-0.094	-0.376	-0.028
7	-14.358***	-1.077	0.140***	1.120	0.084	-0.187*	-0.748	-0.056
School Year 2011-2012								
2	--	--	--	--	--	--	--	--
3	-12.940***	-0.860	0.339***	2.712	0.180	-0.577***	-2.308	-0.153
4	-12.840***	-0.916	0.220***	1.760	0.126	-0.371***	-1.484	-0.106
5	-14.738***	-1.092	0.200***	1.600	0.119	-0.452***	-1.808	-0.134
6	-14.872***	-1.108	0.262***	2.096	0.156	-0.467***	-1.868	-0.139
7	-16.228***	-1.238	0.161***	1.288	0.098	-0.199	-0.796	-0.061

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Monthly change times eight for one school year.

[b]Monthly change times four for the summer.

Table 13. Reading Results of the Piecewise Hierarchical Linear Regression for the Total Wyoming Sample for *Lunch Eligibility* Independent of Effects for Summer Completers and Education disability.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
School Year 2013-2014								
2	-4.922***	-0.283	-0.003	-0.024	-0.001	-0.073	-0.292	-0.017
3	-5.186***	-0.330	0.046*	0.368	0.023	-0.175**	-0.700	-0.045
4	-5.477***	-0.373	0.029	0.232	0.016	-0.169**	-0.676	-0.046
5	-5.547***	-0.405	0.028	0.224	0.016	-0.073	-0.292	-0.021
6	-5.151***	-0.382	-0.008	-0.064	-0.005	-0.108*	-0.432	-0.032
7	-4.977***	-0.369	0.004	0.032	0.002	0.004	0.016	0.001
School Year 2012-2013								
2	-5.851***	-0.335	0.041	0.328	0.019	-0.123	-0.492	-0.028
3	-5.881***	-0.376	0.047*	0.376	0.024	-0.188**	-0.752	-0.048
4	-5.639***	-0.392	0.023	0.184	0.013	-0.129*	-0.516	-0.036
5	-5.044***	-0.372	-0.010	-0.080	-0.006	-0.068	-0.272	-0.020
6	-4.852***	-0.359	0.005	0.040	0.003	-0.160**	-0.640	-0.047
7	-5.157***	-0.387	0.033	0.264	0.020	-0.029	-0.116	-0.009
School Year 2011-2012								
2	--	--	--	--	--	--	--	--
3	-4.887***	-0.325	-0.007	-0.056	-0.004	-0.055	-0.220	-0.015
4	-4.668***	-0.333	0.001	0.008	0.001	-0.096	-0.384	-0.027
5	-4.287***	-0.318	0.005	0.040	0.003	-0.136*	-0.544	-0.040
6	-5.058***	-0.377	0.032	0.256	0.019	-0.133*	-0.532	-0.040
7	-5.010***	-0.382	0.005	0.040	0.003	-0.133*	-0.532	-0.041

Table 14. Reading Results of the Piecewise Hierarchical Linear Regression for the Propensity Score Matched Sample.

	Intercept		School Year[a]			Summer[b]		
Grade	Initial Score	Initial Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size	Monthly Growth	Total Test Score Growth	Total Growth Effect Size
School Year 2013-2014								
2	0.030	0.002	-0.012	-0.096	-0.006	-0.226	-0.904	-0.052
3	0.176	0.011	-0.058	-0.464	-0.029	-0.029	-0.116	-0.007
4	-0.489	-0.033	0.040	0.320	0.022	-0.265*	-1.06	-0.072
5	0.096	0.007	-0.062	-0.496	-0.035	-0.186	-0.744	-0.052
6	-0.055	-0.004	0.063	0.504	0.035	-0.257	-1.028	-0.072
7	-0.422	-0.030	0.012	0.096	0.007	-0.087	-0.348	-0.025
School Year 2012-2013								
2	-0.015	-0.001	-0.028	-0.224	-0.013	-0.413***	-1.652	-0.097
3	-0.092	-0.006	-0.042	-0.336	-0.022	0.062	0.248	0.016
4	0.101	0.007	-0.018	-0.144	-0.010	-0.303*	-1.212	-0.088
5	0.385	0.028	-0.052	-0.416	-0.030	-0.052	-0.208	-0.015
6	-0.162	-0.012	0.005	0.04	0.003	-0.088	-0.352	-0.025
7	-0.280	-0.020	0.049	0.392	0.027	-0.484**	-1.936	-0.136
School Year 2011-2012								
2	--	--	--	--	--	--	--	--
3	-0.495	-0.033	0.002	0.016	0.001	-0.138	-0.552	-0.037
4	-0.105	-0.008	-0.024	-0.192	-0.014	-0.141	-0.564	-0.040
5	-0.067	-0.005	-0.013	-0.104	-0.008	-0.029	-0.116	-0.009
6	-0.979	-0.070	0.039	0.312	0.022	-0.121	-0.484	-0.035
7	0.450	0.035	0.019	0.152	0.012	-0.294	-1.176	-0.090

**p* < .05. ***p* < .01. ****p* < .001.

[a]Monthly change times eight for one school year.

[b]Monthly change times four for the summer.

Table 15. District Specific Results for Three Districts with Some Examples of Positive Effects.

		Study 2 Methodology				Study 3 Methodology			
Cohort Year	Content	*P*-value	Summer Growth Parameter	Pooled SD	Summer Effect Size	*P*-value	Summer Growth Parameter	Pooled SD	Summer Effect Size
District 1									
2014	*Math*	*0.020*	*0.068*	*0.89*	*0.31*	*0.991*	*-0.001*	*0.75*	*-0.01*
2013	*Math*	*0.004*	*0.072*	*0.86*	*0.33*	*0.112*	*0.072*	*0.62*	*0.46*
2012	*Math*	*0.385*	*0.018*	*0.86*	*0.08*	*0.367*	*0.034*	*0.83*	*0.16*
2014	*Reading*	*0.073*	*0.064*	*0.93*	*0.28*	*0.836*	*0.011*	*0.84*	*0.05*
2013	*Reading*	*0.219*	*0.039*	*0.85*	*0.18*	*0.400*	*0.032*	*0.71*	*0.18*
2012	*Reading*	*0.343*	*0.032*	*0.88*	*0.15*	*0.333*	*0.043*	*0.70*	*0.25*
District 2									
2014	*Math*	*0.745*	*-0.007*	*1.03*	*-0.03*	*0.547*	*-0.020*	*0.92*	*-0.09*
2013	*Math*	*0.015*	*0.042*	*1.03*	*0.16*	*0.342*	*0.024*	*0.96*	*0.10*
2012	*Math*	*0.027*	*0.052*	*0.96*	*0.22*	*0.712*	*0.012*	*0.83*	*0.06*
2014	*Reading*	*0.033*	*0.053*	*1.09*	*0.19*	*0.957*	*-0.002*	*1.10*	*-0.01*
2013	*Reading*	*0.006*	*0.058*	*1.06*	*0.22*	*0.163*	*0.041*	*1.04*	*0.16*
2012	*Reading*	*0.070*	*0.048*	*0.99*	*0.19*	*0.493*	*0.028*	*1.05*	*0.11*
District 3									
2014	*Math*	*0.000*	*0.045*	*1.04*	*0.17*	*0.092*	*0.027*	*0.82*	*0.13*
2013	*Math*	*0.002*	*0.034*	*1.03*	*0.13*	*0.483*	*-0.014*	*0.86*	*-0.07*
2012	*Math*	*0.000*	*0.065*	*1.03*	*0.25*	*0.727*	*0.008*	*0.80*	*0.04*
2014	*Reading*	*0.010*	*0.023*	*1.02*	*0.09*	*0.103*	*-0.023*	*0.89*	*-0.10*
2013	*Reading*	*0.000*	*0.042*	*1.03*	*0.16*	*0.088*	*0.031*	*0.97*	*0.13*
2012	*Reading*	*0.247*	*-0.013*	*1.04*	*-0.05*	*0.022*	*-0.048*	*0.98*	*-0.20*

Appendix

Grade Four Math in 2014 Control Group Statistics Before and After Propensity Score Matching[10].

	Means		Standard Deviations	
	Summer Completers	Control	Summer Completers	Control
All Data				
	n = 5340	*n* = 638		
Distance	0.1739	0.0987	0.0811	0.0752
Spring 1 Math Score	215.71	226.865	13.9572	-11.1549
Fall 1 Math Score	205.1771	214.1839	12.0339	-9.0068
Education Disability	0.3276	0.1371	0.344	0.1905
Lunch Eligible	0.5408	0.3624	0.4807	0.1784
Male	0.5266	0.5155	0.4998	0.0111
Not White/Asian	0.279	0.1843	0.3877	-0.0947
School % Lunch Eligible	0.4471	0.4003	0.1684	0.0468
School % Not White/Asian	0.2425	0.2074	0.1422	-0.0351
Matched Data				
	n = 638	*n* = 638		
Distance	0.1739	0.1736	0.112	0.0003
Spring 1 Math Score	215.71	215.5078	13.558	0.2022
Fall 1 Math Score	205.1771	205.3307	11.9513	-0.1536
Education Disability	0.3276	0.3213	0.4673	0.0063
Lunch Eligible	0.5408	0.5564	0.4972	-0.0157
Male	0.5266	0.5047	0.5004	0.0219
Not White/Asian	0.279	0.2727	0.4457	-0.0063
School % Lunch Eligible	0.4471	0.4347	0.1854	0.0124
School % Not White/Asian	0.2425	0.2341	0.1768	-0.0084

[10] For illustration purposes. The other grade-by-content area matching results were very similar to those presented here.