Out-of-School Time Participation and Student Outcomes: An Evaluation Brief

Valerie Evans, Ph.D. and Tonya Wolford, Ph.D. 18 June 2014

Introduction and Students

The School District of Philadelphia matched the City of Philadelphia's Out of School Time (OST) program participants with district student identification numbers to compare program participation to academic and behavioral outcomes at school. The first task of the analysis was to compare OST attendance for all participants to attendance for OST participants who were matched with a district student identification number. This analysis determined the degree to which there was a difference between the groups, with regard to program attendance. Table 1 describes the participants with district student identification numbers ("Matched Students") and Table 2 describes all students identified as having participated in the City's OST programs ("All Students").

Table 1. Description of Matched Students' Program Attendance by Year

	Total Students	Minimum Days Attended	Maximum Days Attended	Attendance Sum	Mean Days Attended	Std. Deviation	Variance
Total Days FY2011	13,105	1	300	1,109,354	85	62	3,872
Total Days FY2012	12,725	1	226	1,055,509	83	65	4,272

Source: PHMC attendance files

Table 2. Description of All Students' Program Attendance by Year

	Total Students	Minimum Days Attended	Maximum Days Attended	Attendance Sum	Mean Days Attended	Std. Deviation	Variance
Total Days FY2011	19,463	1	222	1,521,916	78	62	3,798
Total Days FY2012	17,693	1	226	1,376,772	78	65	4,177

Source: PHMC attendance files

Table 2. Description of all students' program attendance by year

Independent t-tests were conducted to determine the difference between the matched students and all participants of the OST programs for fiscal years 2011 and 2012 (fiscal years encompass July 1, 2010–June 30, 2011 and July 1, 2011–June 30, 2012, respectively). The 2011 analysis determined less than 1% of the variance in program participation was accounted for by difference between the matched students and all participants ($r = 0.034$). The 2012 analysis had similar findings ($r = 0.024$), determining that less than 1% of variance in 2012 program attendance was accounted for by difference between the identified students and all participants. These analyses

conclude that the participants with student identification numbers represent all participants of OST programs with regard to total days attended. The analyses that follow include participants with student identification numbers only.

Student Attendance and Demographics

Total days attended were organized into attendance categories based on the 21st Century Community Learning Centers (21CCLC) attendance groupings, represented in Table 3. The 1–29 days attended was further broken down to take a closer look at participants who attended 29-day summer programs only. Students with high summer-only attendance are included in the "21 to 29 days attended" category. The attendance category with the most students is the "90+ days." The "21-29 days attended" category is the smallest range of days but contains the highest number of students proportionally. These trends are observed for both the 2011 and 2012 fiscal years.

Table 3. Participant Distribution Across Attendance Categories

	2011	2012
1 to 10 days	1,169	1,028
11 to 20 days	1,249	1,550
21 to 29 days	2,039	2,401
30 to 59 days	1,395	1,182
60 to 89 days	1,229	1,054
90+ days	6,024	5,510

Source: PHMC attendance files

Student demographics and program models are compared for 2011 (Table 4) and 2012 (Table 5). The gender constitution of both years follows the same trend, with slightly more females. The racial make-up is predominantly African American and Latino, which represent the two largest racial groups district-wide. Elementary school programs make-up over 75% of total participants for 2011 and 2012. This group also shows excellent attendance, with about 50% of all participants in the "90+ days" attendance classification. The city confirmed that many of these students are enrolled in aftercare programs, for which attendance is a necessary part of their families' work schedules. For this reason, student motivation for attendance is different in the elementary programs than it is in the middle and high programs. It is also true that students who elect to attend

these programs should be qualitatively different than students who are placed in the programs out of necessity. A closer look at grade distribution is shown in Figure 1. Median attendance rates by grade are displayed in the left column and the mean attendance rates by grade are displayed in the right column for 2011 and 2012. For both years, mean attendance drops off dramatically after grade 5, supporting the role that after-care plays in OST program attendance. Further, the K-5 median attendance shows less variation than mean attendance. This suggests that a smaller sub-group of high-attenders in the K-5 grades offset the mean.

Table 4. Number of Identified Students in 2011 Program Model, Demographics & School Data

	TOTAL	1 to 10 days	11 to 20 days	21 to 29 days	30 to 59 days	60 to 89 days	90+ days
Model: Elementary	10,109	643	851	1,655	902	858	5,281
Model: High	1,314	306	189	99	279	205	236
Model: Middle	1,601	220	209	285	214	166	507
Female	6,629	571	597	1,041	679	629	3,112
Male	6,476	598	652	998	716	600	2,912
African American	8,900	828	860	1,475	962	828	3,947
Latino	2,572	192	252	366	285	252	1,225
Asian	635	45	46	59	55	51	379
White	648	76	68	90	60	68	286
Other	329	26	21	47	33	27	175

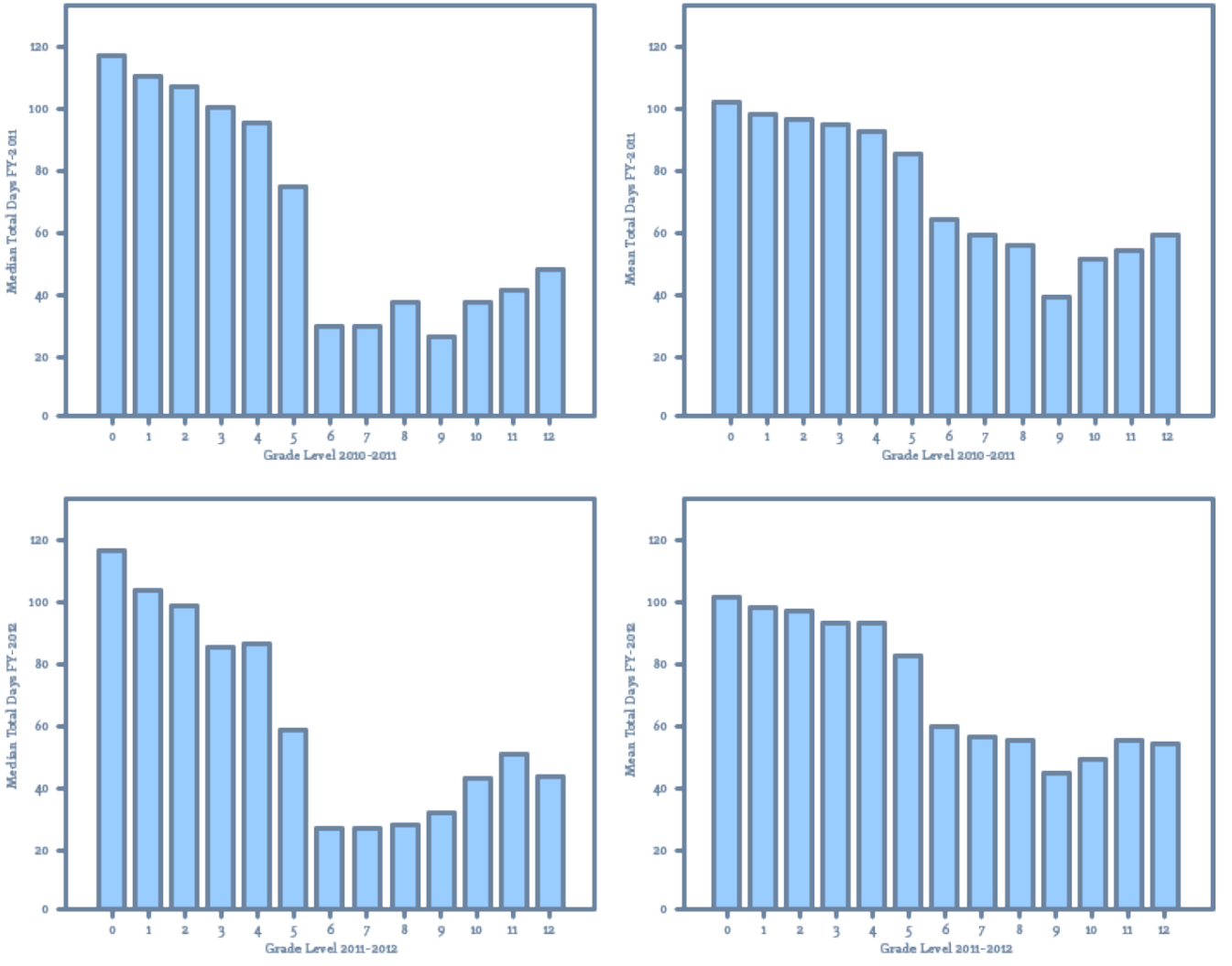
Source: EDW July 2013 and PHMC FY2011 attendance file
**promoted at end of school year, does not include students who are promoted following summer school*
Total number of students District data does not match total number of matched students who participated in 2011 due to changes in enrollment.

Table 5. Number of Identified Students in 2012 Program Model, Demographics & School Data

	TOTAL	1 to 10 days	11 to 20 days	21 to 29 days	30 to 59 days	60 to 89 days	90+ days
Model: Elementary	9,972	584	1,100	1,980	720	704	4,884
Model: High	1,454	295	195	112	330	256	266
Model: Middle	1,299	149	255	309	132	94	360
Female	6,450	505	715	1,219	596	519	2,896
Male	6,275	523	835	1,182	586	535	2,614
African American	8,580	743	1,110	1,722	823	725	3,457
Latino	2,459	179	273	431	194	190	1,192
Asian	657	32	23	68	59	63	412
White	640	57	91	106	77	48	261
Other	369	17	50	70	25	28	179

Source: EDW July 2013 and PHMC FY2012 attendance file
Total number of students District data does not match total number of matched students who participated in 2012 due to changes in enrollment.

Figure 1. Days attended by grade, median and mean by year



Source: 2010-12 academic records, queried July 2013 frm EDW and PHMC FY 2011-12 attendance files

Academic and Behavior Outcomes

A common assertion of OST programs is that they improve academic and behavior outcomes. If OST participation is an agent of student outcomes, it is expected that greater participation rates are related to the best outcomes. Tables 6 and 7 arrange outcomes by program model and attendance categories. Truancy is defined as 10 or more absent days and is reported as a percentage of students in a group that qualify as truant during the respective school year. Average daily attendance (ADA) is the total number of school days attended over the total days enrolled. Perfect attendance is an ADA of 100%. The values are reported by program model and attendance category and represent the average student ADA for each category. Suspension is a behavioral indicator that is measured as total days of out-of-school suspensions. Suspensions are reported below in Tables 6 and 7 as an average for each student in the respective category. Finally, academic performance is reported below as promotion rates for grades K-8 and ratio of credits earned for grades 9-12. Promotion rates are based on the respective year's final report card and do not account for summer school make-ups. Each value is the percentage of students recommended for promotion on their final report card. The ratio of credits earned is a calculation of total credits earned over total credits attempted. The values reported below represent the average ratio for all students in each category.

Table 6. 2011 Student outcomes by category of attendance

	attended 1-10 days	attended 11-20 days	attended 21-29 days	attended 30-59 days	attended 60-89 days	attended 90 days or more
Truancy: Elementary	48%	43%	25%	48%	47%	31%
Truancy: Middle	51%	37%	30%	50%	49%	27%
Truancy: High	73%	75%	81%	67%	62%	56%
ADA: Elementary	92%	94%	96%	93%	93%	96%
ADA: Middle	92%	95%	96%	93%	94%	96%
ADA: High	83%	85%	86%	87%	89%	90%
Suspension: Elementary	0.39	0.3	0.19	0.35	0.25	0.12
Suspension: Middle	0.83	0.65	0.44	0.86	0.80	0.38
Suspension: High	1.09	1.16	1.24	1.16	0.67	0.63
Proportion promoted: Elementary	0.91	0.93	0.95	0.91	0.92	0.95
Proportion promoted: Middle	0.89	0.91	0.94	0.94	0.94	0.94
Ratio of Credits Earned: High	0.82	0.87	0.88	0.88	0.92	0.90

Source: EDW July 2013 and PHMC FY2011 attendance file
**promoted at end of school year, does not include students who are promoted following summer school*

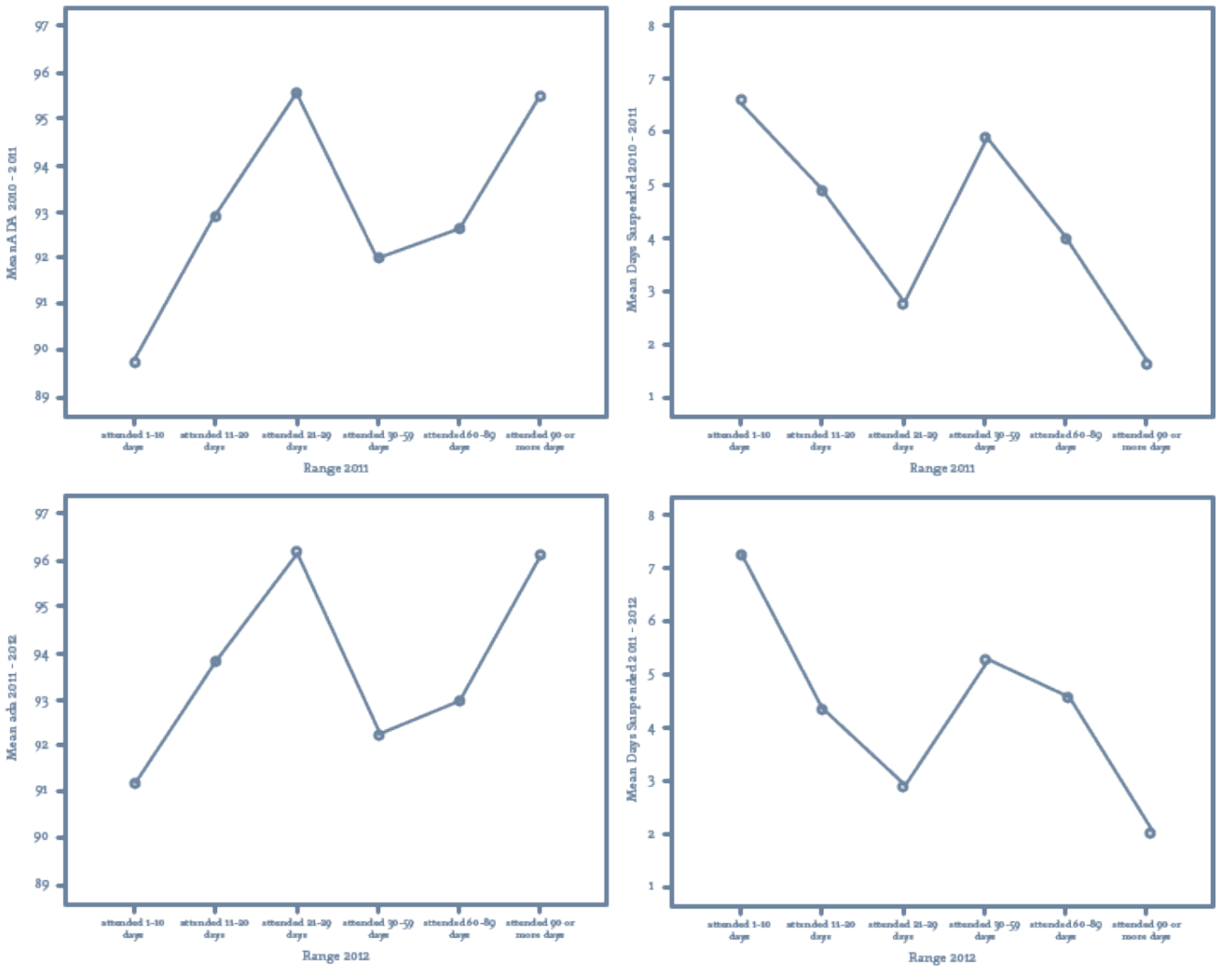
Table 7. 2012 Student outcomes by category of attendance

	attended 1-10 days	attended 11-20 days	attended 21-29 days	attended 30-59 days	attended 60-89 days	attended 90 days or more
Truancy: Elementary	46%	33%	22%	43%	40%	25%
Truancy: Middle	43%	36%	22%	41%	36%	20%
Truancy: High	69%	70%	64%	65%	59%	44%
ADA: Elementary	94%	95%	97%	94%	94%	96%
ADA: Middle	94%	95%	97%	93%	95%	97%
ADA: High	85%	85%	87%	88%	89%	93%
Suspension: Elementary	0.36	0.33	0.23	0.41	0.39	0.17
Suspension: Middle	1.02	0.6	0.43	0.85	0.6	0.39
Suspension: High	1.29	0.79	0.96	0.66	0.59	0.53
Proportion promoted: Elementary	0.95	0.95	0.96	0.93	0.95	0.97
Proportion promoted: Middle	0.97	0.94	0.96	0.95	0.96	0.98
Ratio of Credits Earned: High	0.81	0.84	0.86	0.88	0.91	0.92

Source: EDW July 2013 and PHMC FY2012 attendance file
**promoted at end of school year, does not include students who are promoted following summer school*

Figure 2 provides a visual analysis of student outcomes for ADA and suspension. Both years follow the same trends across attendance categories. The relationship between the attendance categories and outcomes is generally linear, with better outcomes predicted as days attended increases. Student outcomes for the “21-29 days attended” category deviate from this linear trend as students in this category have better attendance at school and lower rates of suspension than predicted by their participation in OST programs. This difference is likely accounted for by participants who attend summer programs only. A hypothesis may be formed that there is something qualitatively different about these students or something highly effective about these programs that accounts for the spike in outcomes that deviates from an otherwise mostly-linear relationship of attendance rates to outcomes. Further analysis of these students and a qualitative review of these programs may better clarify the difference demonstrated in Figure 2. Mean days suspended were compared across attendance categories using an ANOVA analysis, which found a statistically significant relationship ($p<0.01$). A statistically significant relationship was also found when ADA was compared across attendance categories ($p<0.01$).

Figure 2. Visual analysis of school behaviors by attendance category: ADA and suspension

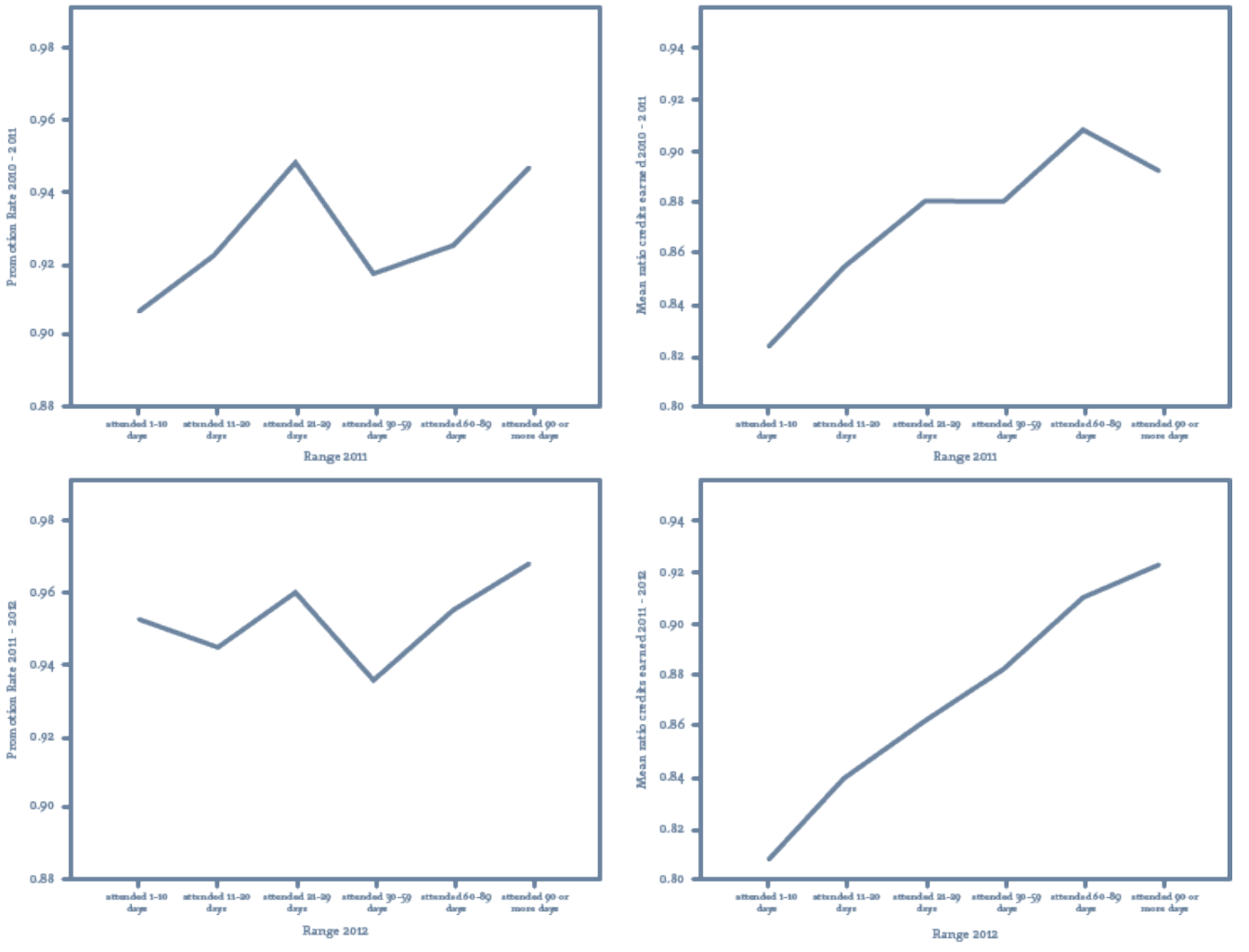


Source: 2010-12 academic records, queried July 2013 frm EDW and PHMC FY 2011-12 attendance files

Figure 3 is a visual analysis of promotion rates and credits earned by attendance categories. For these analyses, the K-8 students are represented in the promotion rates (left column) and the high school students are represented in the ratio of credits earned (right column). The trend noted by Figure 2 regarding better outcomes for the "21-29 days" attendance category only appears in the promotion rates graphs. In contrast, the "21-29 days" attendance category falls into the larger trend for the high school students, a possible indication that the "summer-only" students are in elementary or middle school grades. The Spearman correlation for promotion rates and attendance category is 0.41 in 2011 and 0.42 in 2012. These values

represent a consistent positive relationship across years. The ratio of credits earned were compared across attendance categories using an ANOVA and found a statistically significant relationship ($p<0.01$).

Figure 3. Visual analysis of mean credits earned and promotion rates by attendance category

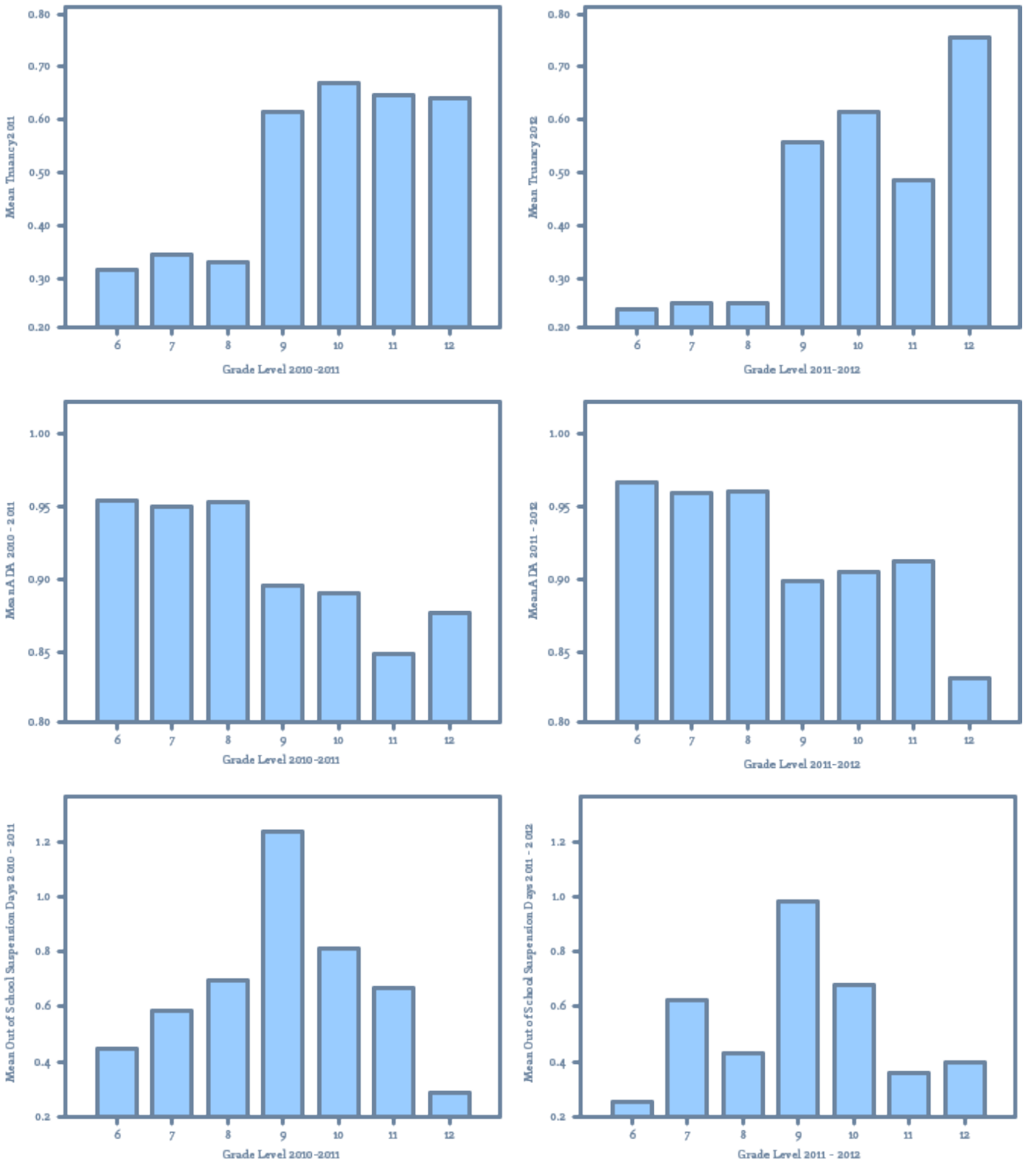


Source: 2010-12 academic records, queried July 2013 frm EDW and PHMC FY 2011-12 attendance files
*promotion rates do not include summer school make-ups

Due to the high number of K-5 participants and the difference in programming (i.e., aftercare) and attendance rates, these students account for most of the mean calculations when all grades are grouped. To take a closer look at grade-level difference of older participants, Figure 4 displays the mean truancy rates, ADA, and mean days suspended for grades 6-12. Only students who attended more than 20 days were included in the figure. Truancy rates increase dramatically from grade 8 to grade 9 for

both years. Suspension rates spike in grade 9 and then improve through grade 12. This a typical trend in education data, as students who struggle behaviorally in grades 9 are more likely to drop out or receive a transfer to an alternative placement.

Figure 4. Student outcomes by grade levels 6-12, participants who attended more than 20 days only



Source: 2010-12 academic records, queried July 2013 from EDW and PHMC FY 2010-12 attendance files

Conclusions

This report served as an initial collaboration between the district and the city toward demonstrating and tracking outcomes of OST programs. Regarding the demographics of participants, the racial and gender composition is consistent with the composition of the entire district. More than 75% of all participants are enrolled in the elementary model. It is likely that the elementary model is largely comprised of aftercare programs.

Regarding student outcomes, measures of academic and behavioral performance included truancy rates, average daily attendance, days of out-of-school suspension, promotion rates (grades K-8 only) and ratio of credits earned (grades 9-12 only). Using categories of OST attendance, outcomes were reported in tables and graphed for visual analysis. A consistent positive relationship between desirable academic and behavioral outcomes and attendance in OST programs was found. The greater the number of OST days attended predicted better outcomes across variables. These relationships were statistically significant and mostly linear, with the exception of the "21-29 days attended" category, for which outcomes deviated in a positive direction. Based on the data available, these deviations seem to represent students who attended summer programs only and may be mostly comprised of students who are in grades lower than 9-12 (based on the return to linearity of the ratio of credits earned, a measure that includes high school students exclusively).

For information about this report, please contact Valerie Evans (evans2@philasd.org) or Tonya Wolford (twolford@philasd.org).