

# Transitional Kindergarten and Student Outcomes

Los Angeles Unified School District  
*Independent Analysis Unit*

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The views expressed herein are those of the Independent Analysis Unit and do *not* necessarily reflect those of the District, the Board of Education, or any individual Board Member. Any views expressed about collective bargaining issues are suggestions by the Independent Analysis Unit for study and consideration, and should *not* be interpreted as reflective of the District's position in any current negotiations.

## EXECUTIVE SUMMARY

In the December 2017 Independent Analysis Unit (IAU) work plan survey, several Board members expressed interest in the effectiveness of early childhood education (ECE). This report presents our preliminary evaluation of L.A. Unified’s transitional kindergarten (TK) program.

The District currently operates TK programs for four-year-olds in every elementary school, serving students too young for kindergarten to maximize their school readiness. The outcomes for students who attend a TK program are positive and endure past the initial kindergarten year. The IAU found that TK students outperformed comparison groups academically in math, writing, and reading classroom grades, and math and English language arts SBAC test scores. The TK students also had better work effort grades than the comparison group. Our analysis also finds that English language learners in TK had higher scores on English language development classroom grades than the comparison group.

These findings – and the areas the District could improve upon – are particularly important considering the recent Board resolution to create a Birth to Eight Roadmap for the District (Resolution 020-17/18). While the academic outcomes (coursework for all TK students and coursework for English learners) are encouraging and show a positive association to investing in early education, the association varies across grade level and content area, an issue that the District can examine further. There is also a positive association between the District’s TK program and improved socioemotional skills, which may impact long-term outcomes for these students.

The District should also reexamine combined TK/kindergarten classrooms and the idea of merging TK and expanded TK classes. Currently, 71% of the District’s TK classrooms are also kindergarten classrooms (combined TK/K) and teachers must manage two different age groups and two different curricula simultaneously.

In addition, there is the potential to increase enrollment in both TK and expanded transitional kindergarten given the demographics of Los Angeles. The National Institute for Early Education Research found that only 35% of all four-year-olds in California are enrolled in state or local district programs with an additional 8% enrolled in Head Start.<sup>1</sup> Important factors for higher enrollment are intensified statewide coordination on early education and advocacy around increased funding for students who qualify for expanded transitional kindergarten. Given the initial findings on TK, it is worth the effort required.

Finally, more research needs to be done both on TK as the students move up grade levels and on expanded transitional kindergarten. Several studies on early education have found outcomes that go beyond academics and beyond the early years of education. This possibility should be an area of future research and evaluation for the District.

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<sup>1</sup> National Institute for Early Education Research (NIEER). (2016). State of Preschool: California.

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## SECTION ONE: EARLY CHILDHOOD EDUCATION IN CALIFORNIA

Early education can have substantial impacts on a child's future. If a third grader does not read proficiently, he or she is four times less likely to graduate high school compared to a proficient reader. Moreover, black and Hispanic students in this situation are twice as likely as their white peers to leave school without a diploma.<sup>2</sup> Low reading achievement levels can have a large impact on a child's future. To ensure children are proficient by third grade, the early years of their schooling are very important.

In addition to academic outcomes, there are social benefits to early education. These benefits, or social returns on investment, can show the economic value of social outcomes beyond a student's education. This value can include a decrease in criminal activity and better health outcomes, both of which decrease costs for society.<sup>3</sup> Several studies have shown social returns of \$7-\$10 for every dollar invested in high-quality early childhood interventions before kindergarten. One 2005 RAND study found social returns of up to \$14-\$17 for every dollar invested in early education.<sup>4</sup>

In 2010, the California Legislature passed the Kindergarten Readiness Act, which changed the age eligibility criterion for beginning kindergarten. Previously, a child was eligible to attend kindergarten if she turned five by December 2 of the kindergarten school year, which meant she could be four years old from the beginning of school up until the beginning of December. The new rule was children must turn five by September 2 to be eligible for kindergarten, so after the first few weeks of class, all kindergarteners would be at least five years old.

But this new rule left out children who were previously eligible to attend kindergarten. Transitional kindergarten (TK) was created to help address this problem by accommodating the oldest of these students: just the four-year-olds who would turn five between September 2 and December 2. The program is now the optional first year of a two-year kindergarten program for those students who qualify and is available at all L.A. Unified elementary schools.

In 2015, the Education Omnibus Trailer Bill (AB 2014) allowed local education agencies to offer the program to even younger children, those who would turn five after December 2, but before June 30. This program is referred to as expanded transitional kindergarten (ETK) and L.A. Unified began offering it in 2015-2016.<sup>5</sup> The oldest students in the group—those who will turn five first—are prioritized for admission in the District.

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<sup>2</sup> The Annie E. Casey Foundation. (2013). Early Warning Confirmed: A Research Update on Third-Grade Reading. Retrieved from <http://www.aecf.org/resources/early-warning-confirmed/>

<sup>3</sup> Moretti, E. (2005). Social Returns to Human Capital. NBER Reporter: Research Summary. Retrieved from <http://www.nber.org/reporter/spring05/moretti.html>

<sup>4</sup> Phillips et al. (2017). The current state of scientific knowledge on pre-kindergarten effects; Karoly, L.A., Kilburn, M.R., and Cannon, J.S. (2005). Early Childhood Interventions: Proven Results, Future Promise. Santa Monica, CA: RAND Corporation.

<sup>5</sup> Tully, S. and D. Willis. (2015, June 18). LA Unified plan saves preschool slots with new transitional kindergarten. *EdSource*. Retrieved from <https://edsources.org/2015/la-unified-plan-saves-preschool-slots-with-new-transitional-kindergarten/81750>



teaching credential and a bachelor's degree. L.A. Unified has several alternatives for early education enrollment, including programs that are not enumerated in this report.<sup>7</sup>

Thus far, no long-term studies have been completed on California's state pre-kindergarten programs, though such studies have been completed for programs in other states and cities. Though it is important to understand the relationship between all pre-kindergarten programs and academic outcomes, this report focuses specifically on L.A. Unified TK academic and behavioral outcomes in the three years following kindergarten.

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<sup>7</sup> For example, the California State Preschool Program (CSPP) is managed separately from the District's TK and ETK programs as part of L.A. Unified's contract with the State Department of Education. CSPP is a part-day, three-hour program for three and four-year-olds whose families are at or below 70% of the state medium income. Priority for enrollment is given to four-year-olds. In 2017-2018, L.A. Unified hosted CSPP at 90 elementary school sites and two sessions were available each school day, 180 days per year. Some of the sites specifically serve three-year-olds, as permitted by California Education Code. CSPP is also hosted at nonprofit sites as well as District sites.

## SECTION TWO: TRANSITIONAL KINDERGARTEN OUTCOMES

L.A. Unified serves approximately 30,000 students in its early education programs, including approximately 10,000 additional students in transitional kindergarten. This total represents approximately 5% of the District's total enrollment, including adult education and continuation schools.

TK is available at all L.A. Unified elementary schools and has a full-day, six-hour daily schedule, 180 days per year. District TK teachers must hold a teaching credential, just like kindergarten teachers, and the class size is limited to 24 students. However, the existence of a TK program at a school does not mean the school has an additional classroom and teacher for younger children. Instead, most TK classrooms in L.A. Unified are transitional kindergarten/kindergarten combined classrooms.

The first cohort of TK students started the program in 2011-2012. Today, L.A. Unified enrolls approximately 10,000 students in the program, the majority of whom are socioeconomically disadvantaged (83%) and Hispanic or Latino (75.5%).<sup>8</sup>

### *Methods*

To understand the potential impact of L.A. Unified's transitional kindergarten program on later outcomes, the IAU examined the outcomes of 11,662 TK (treatment) students born between October 1 and December 2 compared to 25,891 similar students who did not attend TK because they were too young; their birthdays were after December 3, but before February 2. This date range is outside the cutoff for TK eligibility, but meant that the maximum age difference between TK and comparison students was four months. Both groups entered kindergarten the same years and became classmates.<sup>9</sup> To maximize the sample size, we used three cohorts of students: 2012-2013, 2013-2014, and 2014-2015.

To best represent the association between TK and future student outcomes, the comparison group and the treatment group needed to be similar to each other. Therefore, the IAU "matched" students who attended TK to similar students who did not attend TK, in terms of race, gender, parent education, Free or Reduced Price Meal qualifications, and English learner status.<sup>10 11</sup>

After matching TK students with their counterparts in the comparison group, the demographics of each group were more similar to each other than they had been prior to matching, though there were still differences between the two groups. As seen in Table 3 below, TK students across the majority of the three cohorts were more likely than matched non-TK students to:

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<sup>8</sup> Source: CDE, as of 2015-2016 using the school year's cumulative count of students.

<sup>9</sup> Choosing this band of birthdates (two months before and after the final cutoff date for TK eligibility), created a sufficient sample size for robust regression analyses. The IAU performed several experiments with narrower birthdate bands, but the differences between the groups did not change. The IAU therefore chose to go with the wider birthdate band to maximize sample size.

<sup>10</sup> The method used for matching was coarsened exact matching, or CEM. Other matching techniques (i.e., nearest neighbor matching with 1-5 neighbors, inverse probability weighting with regression adjustment) were utilized and produced the same results as the ones from the coarsening exact matching model.

<sup>11</sup> Iacus, S., King, G., and Porro, G. (2011). Causal Inference without Balance Checking: Coarsened Exact Matching. *Society for Political Methodology*. Retrieved from [https://gking.harvard.edu/files/political\\_analysis-2011-iacus-pan\\_mpr013.pdf](https://gking.harvard.edu/files/political_analysis-2011-iacus-pan_mpr013.pdf)



- To be English language learners; and
- To qualify for the Free or Reduced Price Meal program.

As TK is designed for, though not restricted to, students who “may benefit from an enriched foundational early childhood education program to prepare them for success in traditional Kindergarten,” these descriptive statistics suggest that L.A. Unified is successfully recruiting certain subgroups of students.

**Table 3. Demographics of Treatment and Comparison Groups for Three Cohorts Post-Matching<sup>12</sup>**

	COHORT 2012-2013		COHORT 2013-2014		COHORT 2014-2015	
	TK	COMPARE	TK	COMPARE	TK	COMPARE
<b>N=</b>	2,275	9,112	4,776	7,931	4,526	7,133
<b>FEMALE</b>	50.2%	49.8%	51.3%*	48.4%	49.7%	49.2%
<b>RACE</b>						
<b>AM INDIAN/ALASKA NATIVE</b>	0.1%	0.9%	0.2%*	0.0%	0.1%	0.0%
<b>ASIAN</b>	5.3%	5.7%	4.7%	4.6%	3.8%	4.0%
<b>BLACK</b>	9.0%	9.9%	8.8%	9.2%	8.0%	8.7%
<b>FILIPINO</b>	0.8%	0.7%	0.9%*	1.6%	1.5%	1.6%
<b>HISPANIC</b>	73.7%	72.8%	75.0%*	70.5%	72.5%	71.8%
<b>PACIFIC ISLANDER</b>	0.4%	0.3%	0.4%	0.4%	0.2%	0.2%
<b>WHITE</b>	10.7%	10.5%	10.2%*	13.7%	13.0%	13.2%
<b>FREE/REDUCED PRICE MEAL</b>	94.6%	93.7%	95.7%*	91.4%	93.8%*	88.4%
<b>EVER ENGLISH LEARNER</b>	50.1%*	36.2%	49.6%*	27.1%	46.6%*	26.0%
<b>PARENT EDUCATION LEVEL</b>						
<b>HIGH SCHOOL OR LESS</b>	43.6%	42.3%	46.1%*	41.6%	44.2%	43.8%
<b>SOME COLLEGE OR MORE</b>	28.9%	28.3%	28.4%*	25.5%	24.8%*	26.3%
<b>UNKNOWN</b>	27.5%	29.4%	25.5%	32.9%	31.1%	30.0%

\* $p < 0.05$

We then compared the TK students with their matched counterparts to understand if and how the outcomes differed. The outcomes we examined included: academic classroom grades in math, writing, and reading; SBAC outcomes in third grade; and work effort grades. The regression analyses used to find the outcome results adjusted for parent education level, race, English learner status, Free and Reduced Price Meal status, gender, and special education designation.

We averaged the grades and scores across three cohorts of student outcomes. By averaging across three cohorts, we were able to maximize the sample size and get a better estimate of outcomes than we would have only using one cohort.

### *Classroom Course Marks*

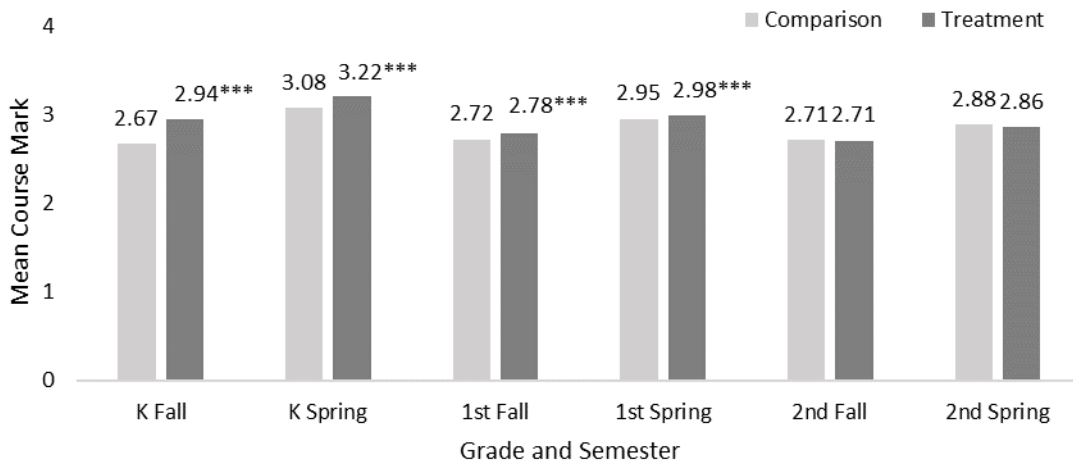
The first indicator of how TK students performed compared to their counterparts was course marks in kindergarten and first grade in the fall and spring quarters. Individual teachers gave

<sup>12</sup> Cohort year indicates the year students were enrolled or not enrolled in transitional kindergarten.

grades to TK and comparison students on a scale of 1 to 4, with 4 as the highest score. Each subject area showed similar trends.

Figure 2 shows the largest gap in math achievement between TK students and the comparison group (0.27 points) at kindergarten entry, with TK students outperforming the comparison group. TK students have similar outcomes in the spring of their kindergarten year, but the gap between TK students and their comparison group closes over time. The differences between groups decrease as students progress through elementary school, which is an outcome frequently seen in evaluations of early childhood education programs. By second grade, the gap disappeared.

**Figure 2. Mean Math Course Marks across Three Cohorts<sup>13</sup>**



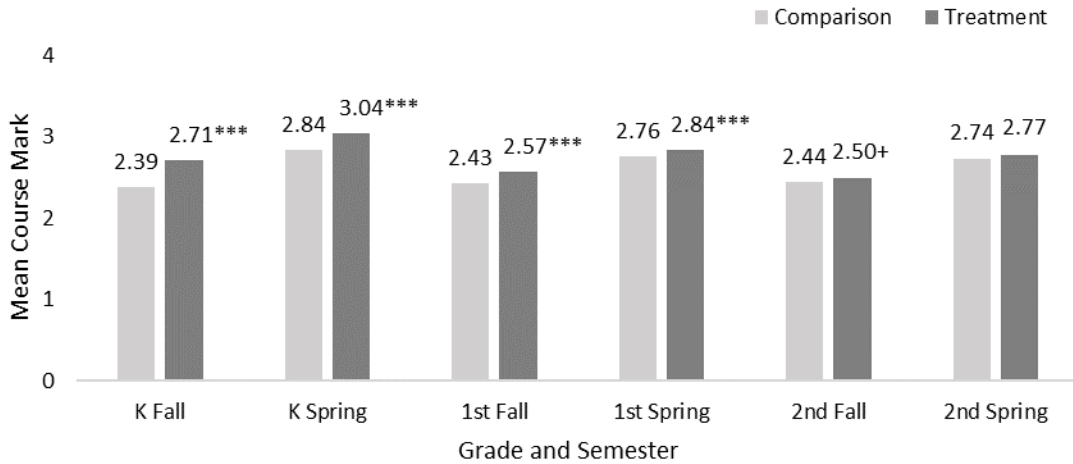
*Note:* Authors’ analysis of student scores from data sourced from L.A. Unified’s Office of Data and Accountability. \*\*\*  $p < 0.001$ .

Though the difference in scores for the two groups appears to decrease across time, this change does not necessarily mean that TK students are learning less. Rather, the comparison group is catching up to the treatment group.

Similarly to Figure 2, Figure 3 shows the largest gap in writing achievement between TK students and the comparison group at kindergarten entry. The gap for writing is even larger than math (0.33 points). Again, TK students have similar outcomes in the spring of their kindergarten year, but we can see the gap between TK students and their comparison group narrow. As in Figure 2 regarding math, the gap between the two groups in Figure 3 regarding writing decreases as the students enter first grade, with an additional decrease in the spring of first grade.

<sup>13</sup> All outcome graphs utilize coarsened exact matching effects and control for parent education, race, EL, FRL, gender, and SPED. All graphs report statistically significant effects.

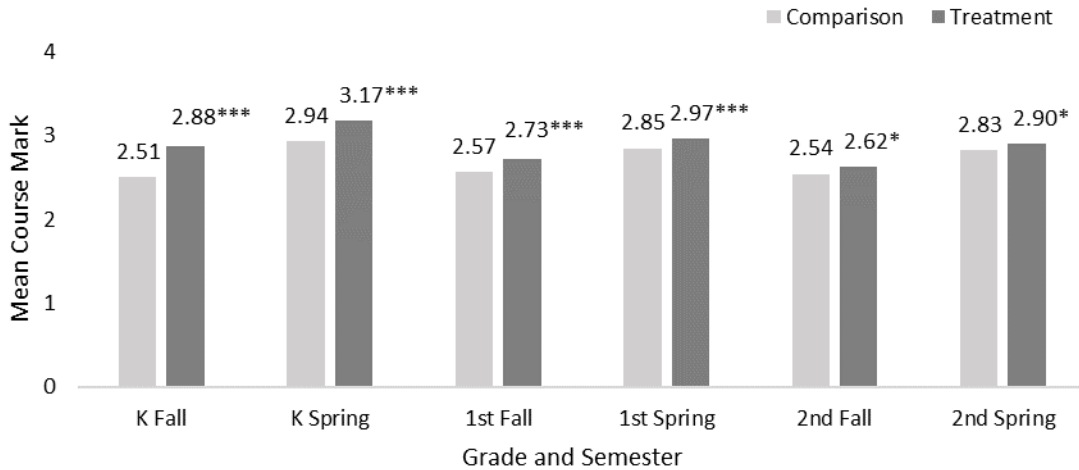
Figure 3. Mean Writing Course Marks across Three Cohorts



Note: Authors' analysis of student scores from data sourced from L.A. Unified's Office of Data and Accountability. +  $p < 0.10$ . \*\*\*  $p < 0.001$ .

Figure 4 shows that the gap between TK students and the comparison group in reading achievement at kindergarten fall entry is the largest of the three subject areas (0.37 points). This outcome also shows the comparison group catching up to the TK students, but the gap between the comparison group and the TK group remains through second grade.

Figure 4. Mean Reading Course Marks across Three Cohorts



Note: Authors' analysis of student scores from data sourced from L.A. Unified's Office of Data and Accountability. \*  $p < 0.05$ . \*\*\*  $p < 0.001$ .

The outcomes above show that not only did TK students perform better than the comparison group in terms of mean achievement grades in math, writing, and reading, but they did statistically significantly better than the comparison group in every subject for both kindergarten

and first grade. **In other words, not only were TK students more prepared for kindergarten than the comparison group, the positive results of TK continued beyond kindergarten in all subjects.**

Other research has found that students' experiences after their pre-kindergarten program also impacts longer-term outcomes. Long term outcomes such as the achievement measures described above cannot be viewed in isolation from a student's subsequent years of education.<sup>14</sup> L.A. Unified's alignment of transitional kindergarten to kindergarten curriculum is likely an important factor in these outcomes.

### *Smarter Balanced Assessment Consortium (SBAC)*

Both work effort and achievement scores are somewhat subjective because they are graded by individual teachers and there are differences in how teachers grade. The IAU, therefore, also examined state test scores, which are more objective outcomes than classroom grades. Students begin taking the Smarter Balanced Assessment Consortium (SBAC) test in third grade. The 2012-2013 cohort took its first SBAC in 2016-2017 and the results are shown in Figures 5 and 6 for both ELA and Math. The scores below show that the TK students from the 2012-2013 cohort did better than the comparison group on both the math (+7.7 points,  $p < 0.05$ ) and ELA exams (+10.7 points,  $p < 0.01$ ).

However, in ELA and Math both the TK students and the comparison group performed below the mean for L.A. Unified (the mean for ELA was 2421 and the mean for Math was 2433). Several factors could explain this outcome. The kindergarten students in the cohort who did not attend TK may have had access to other—and possibly more years of—early childhood education or could be from less economically disadvantaged families. Fewer of these non-TK students could be English learners or more could have participated in after school programs than the students in the treatment or comparison groups. Another factor may be a lack of differentiated instruction. If teachers do not use strategies that teach to a variety of learning profiles, students can lose focus or comprehend less of the materials.<sup>15</sup> Any of these reasons could influence the higher test scores for the cohort as a whole, compared to the test scores of the TK and comparison groups. The majority of L.A. Unified students do not show proficiency on the SBAC. The mean for both ELA and Math is still below standard on this test. For this entire cohort, 64% did not meet ELA standards and 60% did not meet Math standards.<sup>16</sup>

Though both the treatment and comparison groups performed below the mean, the TK group still significantly outperformed the comparison group in both ELA and Math and thus came closer to the overall mean of the cohort than the non-TK group. The issue with proficiency remains an important issue for the District, but based on the outcomes, TK has helped students become more proficient compared to other students like them who did not attend TK.

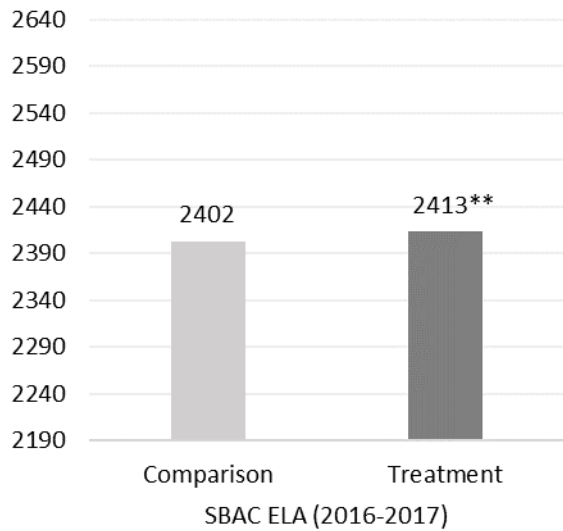
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<sup>14</sup> Phillips et al. (2017). The current state of scientific knowledge on pre-kindergarten effects.

<sup>15</sup> Morgan, H. (2013). Maximizing Student Success with Differentiated Learning. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 87:1.

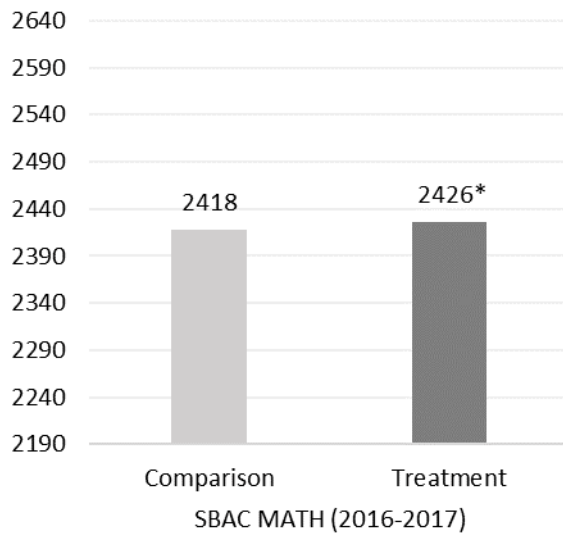
<sup>16</sup> CAASPP Test Results for English Language Arts/Literacy and Mathematics. SBAC Test Results for Los Angeles Unified. Retrieved from <https://caaspp.cde.ca.gov/sb2017/ViewReport?ps=true&lstTestYear=2017&lstTestType=B&lstGroup=1&lstCounty=19&lstDistrict=64733-000&lstSchool=0000000>

**Figure 5. Transitional Kindergarten Students' Outcomes v. Comparison Group on SBAC ELA Scores**



*Note:* Authors' analysis of student scores from data sourced from L.A. Unified's Office of Data and Accountability.  
\*\*  $p < 0.01$ .

**Figure 6. Transitional Kindergarten Students' Outcomes v. Comparison Group on SBAC MATH Scores**



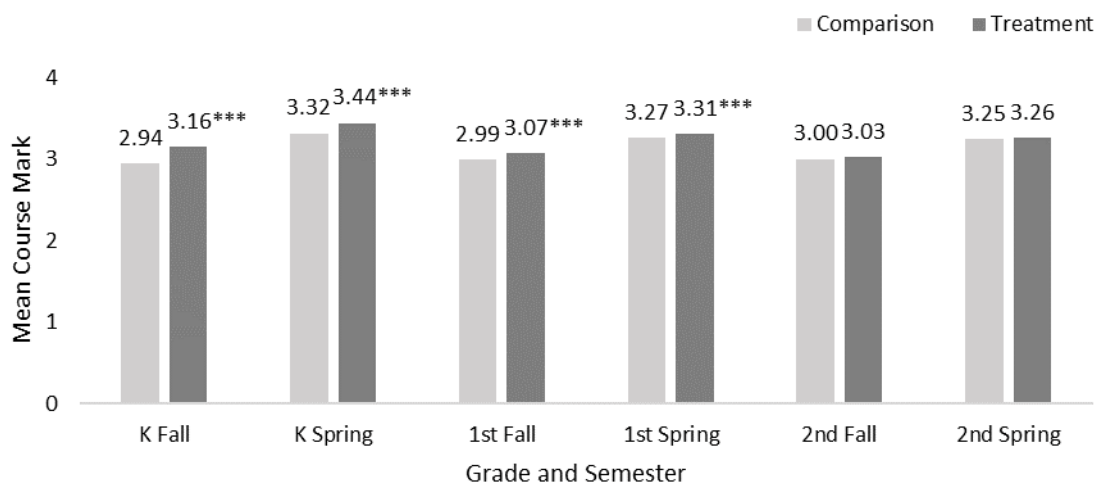
*Note:* Authors' analysis of student scores from data sourced from L.A. Unified's Office of Data and Accountability.  
\*  $p < 0.05$ .

## **Work Effort**

While achievement is an important result, academic grades are not all that matter in educating a child. Research shows that noncognitive or socioemotional skills, such as conscientiousness,

empathy, and self-efficacy, predict success later in life and are important to consider when developing educational policies.<sup>17</sup> Figure 7 shows results for student work effort in reading, which may be similar to conscientiousness. Like classroom grades, work effort is graded by teachers on a 1 to 4 scale. TK students and their comparison groups had similar outcomes in writing and math work effort scores (see Appendix for work effort outcomes in writing and math).

**Figure 7. Average Transitional Kindergarten Student Outcomes v. Comparison Group on Reading Work Effort in Subsequent Semesters**



*Note:* Authors’ analysis of student scores from data sourced from L.A. Unified’s Office of Data and Accountability. \*\*\*  $p < 0.001$ .

The results show that TK students performed better than the comparison group, as they did with academic outcomes. Again, evident in the results is the catching up of the comparison group over time. The gap between TK students and the comparison group decrease from fall to spring and again from grade to grade.

### **English Language Development (ELD) Course Marks**

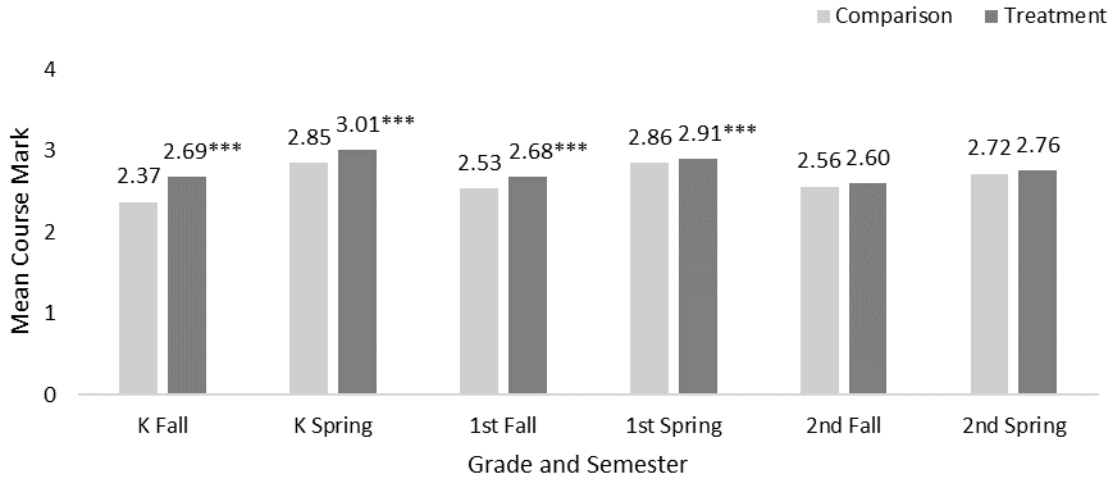
L.A. Unified has a high share of English learners (25%) and the outcomes for English learners is thus very important to the District. In the cohorts analyzed in this report, approximately half of all TK students were English learners. While comprehensive IAU analyses on English learners and District programs are forthcoming, below are English Language Development (ELD) writing and reading course marks for TK students.

Figure 8 shows that English learner TK students, like all TK students, outperformed the comparison group of English learners across kindergarten, first, and second grade. The gap is largest entering kindergarten—where English learner TK students outperform the comparison

<sup>17</sup> Heckman, J. J., & Kautz, T. (2012). Hard evidence on soft skills. *Labour economics*, 19(4), 451-464.

group by 0.31 points—and decreases over time. The difference in ELD course marks for English learner TK students and the comparison group is significant and positive.

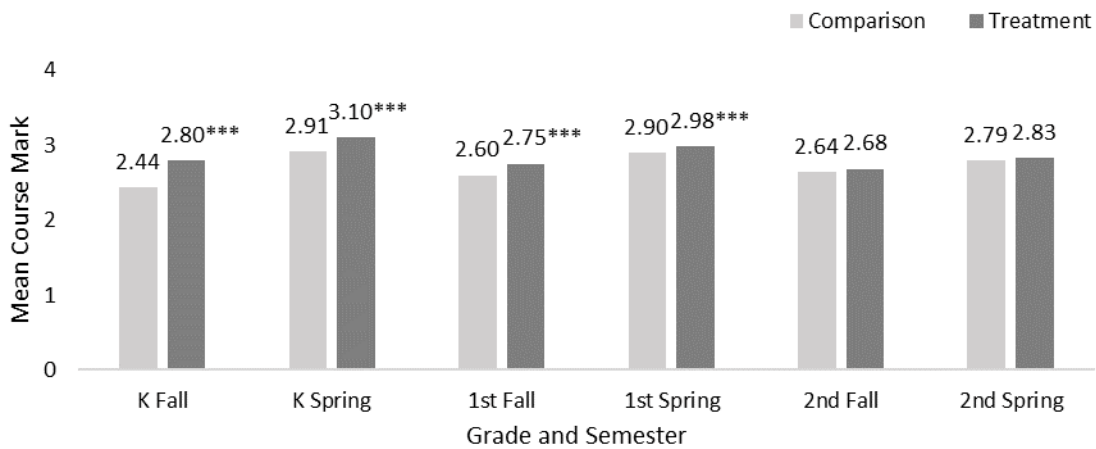
**Figure 8. Average Transitional Kindergarten Student Outcomes v. Comparison Group on ELD Writing Achievement in Subsequent Semesters**



*Note:* Authors’ analysis of student scores from data sourced from L.A. Unified’s Office of Data and Accountability. \*\*\*  $p < 0.001$ .

Figure 9 shows that the English learner outcomes for TK students is even more encouraging for ELD reading coursework than writing. Again, TK students outperform the comparison group in both kindergarten and first grade. The gap at kindergarten entry is 0.36 points, though this gap also decreases over time.

**Figure 9. Average Transitional Kindergarten Student Outcomes v. Comparison Group on ELD Reading Achievement in Subsequent Semesters**



*Note:* Authors’ analysis of student scores from data sourced from L.A. Unified’s Office of Data and Accountability. \*\*\*  $p < 0.001$ .

## *Limitations*

Similar to other studies that lack random assignment, this study has some limitations in terms of the inferences that can be made. Because we were not able to randomly select students from the pre-K population and then randomly assign them to treatment or control conditions, we lack assurances that the treatment and comparison student group were equivalent in terms of all of the characteristics that could influence achievement. These two groups may have differed in important ways that affected outcomes. In addition, because we could not collect data on students before they enrolled in L.A. Unified, we could not determine whether comparison students had attended non-LAUSD early kindergarten-type programs.

In regards to observed student characteristics, the TK students were more likely to be English learners and more likely to qualify for Free or Reduced Priced Meals than the comparison group. These characteristics are often correlated with lower academic outcomes, so this difference may mean that the results described above for TK students are conservative estimates. On the other hand, TK students are slightly older than the comparison group, which may mean that the results are optimistic for TK students and it is possible that if we had used a random assignment model, the differences between the two groups may have decreased.

The largest issue with not using a random assignment model is the unobserved characteristics. We do not know if, for example, parents who enrolled their children in a TK program were more motivated by future educational outcomes. This parent quality could also inflate the outcomes for TK students. Or, it is also possible that the families in the comparison group were more likely to enroll their child in a program outside of L.A. Unified, which could also change the outcomes in this report if we could control for that factor.

Participation in other ECE programs may also have affected outcomes for both the TK and comparison groups in kindergarten and beyond. A recent American Institutes for Research (AIR) report on California's transitional kindergarten program found that "more than 80% of their comparison groups attended some type of center-based preschool program the year before kindergarten (while TK students were enrolled in TK), according to parent reports. And, more than half of all students in the AIR comparison group in both cohorts attended their preschool programs for at least 15 hours per week (roughly equivalent in duration to half-day TK)."<sup>18</sup> The comparison groups in this report did not contain any students who went to the L.A. Unified pre-kindergarten program as coded in the MISIS data, but if the comparison group attended non-public ECE programs before kindergarten, this participation would be expected to elevate their achievement. Thus, our estimates of the TK group's achievement may be underestimated.

In addition, though L.A. Unified TK does not specifically enroll students who have already been in a classroom, it is also possible, as was found in the AIR report, that some or many of the students who attended L.A. Unified's transitional kindergarten program also could have attended a center-based preschool before attending transitional kindergarten. This extra ECE may have affected their performance in TK and beyond. If we could have used a comparison group that matched the treatment group in terms of quality and quantity of formal schooling before

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<sup>18</sup> Manship, K., Holod, A., Quick, H., Ogut, B., Anthony, J., et al. (2017). The Impact of Transitional kindergarten on California Students: Final Report. American Institutes for Research (AIR). Retrieved from <https://www.air.org/system/files/downloads/report/Transitional-Kindergarten-Final-Report-June-2017.pdf>



kindergarten entry, we could have produced more robust estimates of achievement differences between the two groups.

Despite the limitations to this study, the outcomes it found reflect the results found by AIR in their study of TK programs in California. AIR’s analysis, which used several L.A. Unified TK programs in its sample, was able to use methods more rigorous than ours and therefore the reflection of similarities between this report and the AIR report makes us confident that the positive outcomes are valid within limits.

### *Summary of Outcomes*

Overall, the outcomes for students who attended TK at L.A. Unified compared to similar students are positive. Based on the results in this section, TK has the greatest impact on reading and writing-based subjects, which is likely due to the specifics of the TK curriculum. The positive association of TK with English language development course marks should especially be noted given the District’s high English learner population.

The results for TK students often decrease in magnitude from fall to spring and again from kindergarten to first grade. This outcome is consistent with other findings of early childhood education<sup>19</sup> and may be partially explained by the comparison group “catching up” to their TK classmates. Conversations with District staff as well as comparison research also found potential issues with TK and ETK as well as opportunities for further development in L.A. Unified’s early education programming.

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<sup>19</sup> Phillips et al. (2017). The current state of scientific knowledge on pre-kindergarten effects.

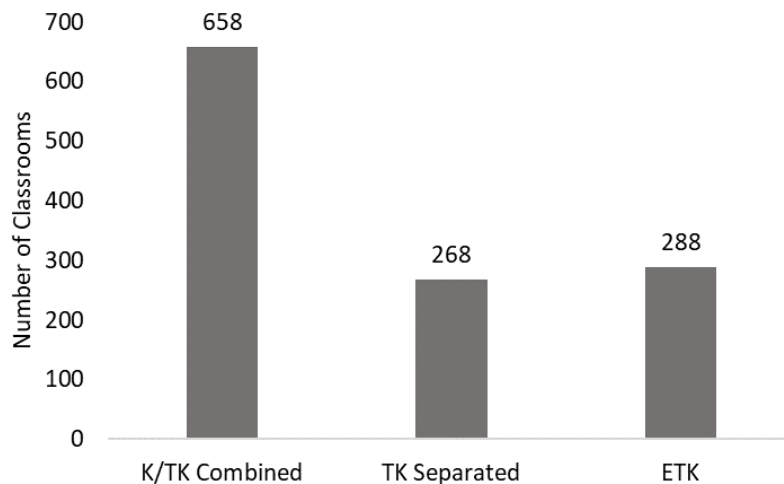
## SECTION THREE: CONSIDERATIONS MOVING FORWARD

### *Combined Classrooms*

One issue that deserves further consideration is the use of combined versus separated classrooms to serve transitional kindergarten students. Most TK classrooms in L.A. Unified are TK/kindergarten combined classrooms, which means that a teacher is serving both five-year-olds and four-year-olds at the same time. A separated classroom is comprised only of students in that grade. Teachers in combined classrooms were likely kindergarten teachers who then had to learn a new curriculum for four-year-olds and teach two curricula at the same time.<sup>20</sup>

Alternatives to a combined TK/kindergarten classroom include making TK an off-norm classroom or creating TK “hubs” in order to increase the number of TK students in a classroom. If TK were an off-norm program, TK classrooms could have fewer than 24 children enrolled and serve only TK students. Alternatively, the District could create a TK hub for schools that do not have enough TK students enrolled to fill an entire classroom. For example, instead of having three TK classes at three separate schools with seven or eight students, the TK classroom could be located at one school and serve a full class of 21-24 TK students. Either option could help prevent a TK/kindergarten combined classroom. As of 2016-2017, 71% of TK classrooms are combined with kindergarten, as seen below.

**Figure 10. Combined vs. Separated Classrooms for Transitional Kindergarten and Expanded Transitional Kindergarten (2016-2017)<sup>21</sup>**



Students in ETK classrooms may be closer in age to TK students than TK students are to kindergarteners, but ETK classrooms enrolled only with ETK students. This separation is because ETK is funded differently than TK, as well as concerns about developmentally appropriate curricula for both groups of four-year-olds. The different funding streams also led to a separation

<sup>20</sup> Note that in accordance with SB 876, teachers assigned to a TK class must by August 2020 have a minimum number of units in early education, comparable experience in preschool, or a child development permit issued by the Commission on Teacher Credentialing.

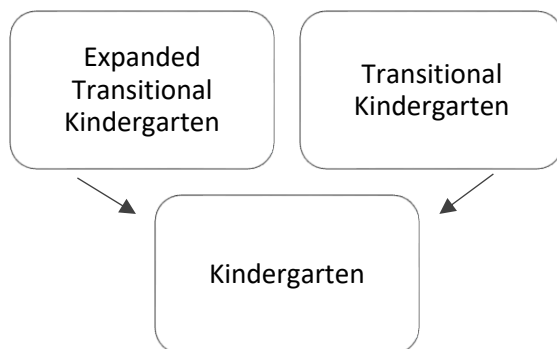
<sup>21</sup> Source: L.A. Unified Division of Instruction, February 2018.

of program management at the District level. ETK is managed by the Early Childhood Education Division and TK is under the Division of Instruction. This separation of programs for four-year-olds may have unintended consequences regarding a student's progression into kindergarten, though that analysis is beyond the scope of this report.

Though this report also does not examine what should be taught at which age, in a combined kindergarten/TK classroom, the oldest kindergarten child is 11 months older than the youngest TK child. If classrooms were separated kindergarten and combined TK/ETK classes, the oldest TK child would be nine months older than the youngest ETK child. L.A. Unified prefers to enroll the oldest ETK children because ADA funding becomes available only when children turn five, so most children in a TK/ETK combined classroom would be closer together in age than nine months.

In addition to concerns about teaching two curricula at once in combined TK/kindergarten classes, the progression of entering kindergarten would indicate that ETK and TK classes should be joined instead of TK with kindergarten. Both ETK and TK students enroll in kindergarten the year after their respective programs end and become classmates, as seen below. In order for both groups of students to be kindergarten ready together, curricula should be aligned and similar across these two programs.

**Figure 11. Progression into Kindergarten**



The Division of Instruction reports that teachers would prefer to teach either a separated kindergarten or separated transitional kindergarten classroom and it is currently unclear what the impact is of combined classrooms on both the teachers and the students. The following questions should be addressed in order to ensure that the District's pre-kindergarten programs are best serving students.

- Are both curricula addressed adequately in a combined classroom?
- Is the combined classroom equally beneficial for both age groups or does one age group experience lower gains?
- Is it feasible or desirable to have combined TK/ETK instead of combined TK/kindergarten classrooms?<sup>22</sup>

Depending on interest from the Board, future work by the IAU can explore these questions.

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<sup>22</sup> This discussion should involve the District departments that handle school attendance and CALPADS.

## *Sustainable Outcomes*

The outcomes for course marks and work effort in Section Two show that the differences between the TK students and the comparison group shrink after kindergarten and then again after first grade. This decreasing difference in L.A. Unified's outcomes over time is not unique to the District. TK is designed to better prepare students for kindergarten, not for later grade levels. Other studies of early childhood programs, including studies of Head Start,<sup>23</sup> also show that the advantage of TK students over the comparison group diminishes over time,

There are several reasons that the positive association of early education could decline over time.<sup>24</sup> It may be an effect of scaling up programs to reach many thousands of students or an indication that students who do not attend a similar program are able to catch up through regular classroom learning. An additional reason may be a lack of differentiated instruction or teachers' lack of access to curriculum above or below their immediate grade level. While teachers have access to curriculum for their specific classroom grade, they may not have access to curriculum in the grade above or below their class and therefore cannot provide differentiated instruction beyond their grade level. It is possible that with increased differentiated instruction, students in TK could continue to improve and reach higher benchmarks over time. It could also be the way the program itself is designed or, more likely, a combination of reasons.

## *Funding*

Early childhood education is funded with a mix of federal, state, and local monies and, according to the Economics Policy Institute, it costs approximately \$8,230 per year for a four-year-old's child care in California (2016 estimate).<sup>25</sup> Another estimate by the Institute for Women's Policy Research,<sup>26</sup> a high-quality pre-kindergarten program<sup>27</sup> costs approximately \$8,570 per child per

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<sup>23</sup> Michael Puma et al. (2012). Third Grade Follow-up to the Head Start Impact Study Final Report. Washington: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. OPRE Report 2012-45; U.S. Department of Health and Human Services, Administration for Children and Families. (2010). Head Start Impact Study Final Report. Washington: U.S. Department of Health and Human Services.

<sup>24</sup> This decrease in difference over time is sometimes referred to as "fade out" but the IAU prefers to use more positive terminology. To call it a "fade out" is to make a value judgement that is akin to focusing on the achievement gap, or other deficit ways of talking.

<sup>25</sup> Economic Policy Institute. (2016). The cost of child care in California. Retrieved from <http://www.epi.org/child-care-costs-in-the-united-states/#/CA>

<sup>26</sup> Gault, B., Mitchell, A.W., Williams, E., Dey, J., Sorokina, O. (2008). Meaningful Investments in Pre-K: Estimating the Per-Child Costs of Quality Programs. Institute for Women's Policy Research. Retrieved from [http://www.niusileadscape.org/docs/FINAL\\_PRODUCTS/LearningCarousel/meaningfulinvestmentsbrief\\_may2008.pdf](http://www.niusileadscape.org/docs/FINAL_PRODUCTS/LearningCarousel/meaningfulinvestmentsbrief_may2008.pdf)

<sup>27</sup> Here a high-quality pre-kindergarten program includes: one lead teacher and one assistant with early childhood credentials, high-quality educational materials, promotion of parent involvement, internal and external evaluations, regular monitoring, and adequate facilities. This estimate holds the following assumptions: a teacher with a bachelor's degree in a related field earning kindergarten-level wages, a six-hour program 185 days per year, and a 20 student class size.

year (in 2016 dollars).<sup>28</sup> The state of California currently spends approximately \$6,400 per year per child enrolled.<sup>29</sup>

As mentioned at several L.A. Unified Board of Education meetings, the Average Daily Attendance (ADA) funding available for pre-kindergarteners is a potential source of increased revenue. This opportunity is only true for those students eligible for TK, as those students receive ADA from the first day of school even if they are not yet five years old. According to the California State Constitution, no student enrolled in transitional kindergarten can be made to pay a fee, a regulation stemming from Title IX of the constitution guaranteeing free public schools.<sup>30</sup>

However, the bill that helped to create ETK specifies different funding restrictions. The law states that children shall not generate ADA or be included in the unduplicated pupil count until they turn five. Therefore, less funding is available for ETK than TK. L.A. Unified uses General Fund monies to make up the difference until a child in ETK turns five and generates ADA funding.

A state-wide change to ETK funding needs to occur before the District can maximize ETK enrollment. Since ETK students do not get ADA until the day they turn five, the number of children that L.A. Unified can serve is restricted by the District's available funds. This funding issue should be part of the lobbying efforts around getting \$20,000 per student by 2020 ("20 by 2020"). If ETK students earned ADA like their TK counterparts, L.A. Unified could enroll more students and ensure that more children were kindergarten ready than at present.

## *Increasing Enrollment*

Early childhood education is an area where L.A. Unified could increase enrollment and create a larger platform to introduce families to the District. Even with L.A. Unified's TK program as well as several other local early education options,<sup>31</sup> there are large numbers of children who are not enrolled in an early education program. A 2016 report by the NIEER found that California's public pre-kindergarten programs are not serving as many children as possible; only 35% of all four-year-olds are enrolled in state or local district programs with an additional 8% enrolled in Head Start.<sup>32</sup> There is, therefore, room for increasing enrollment into TK as well as ETK and as a result, increasing ADA revenue.

There are 129,418 children aged four in LA County (2017). This number has hovered around 125,000-130,000 for several years, but is expected to start declining by 2020 and continue to decline over the next several decades. By 2047, the population of four-year-olds in LA County is projected to be around 99,000, a 24% decline from today.

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<sup>28</sup> The IWPR report cites this number as \$7,454 per child per year in 2007 dollars. The 2016 estimate was done using the Bureau of Labor Statistics CPI inflation calculator.

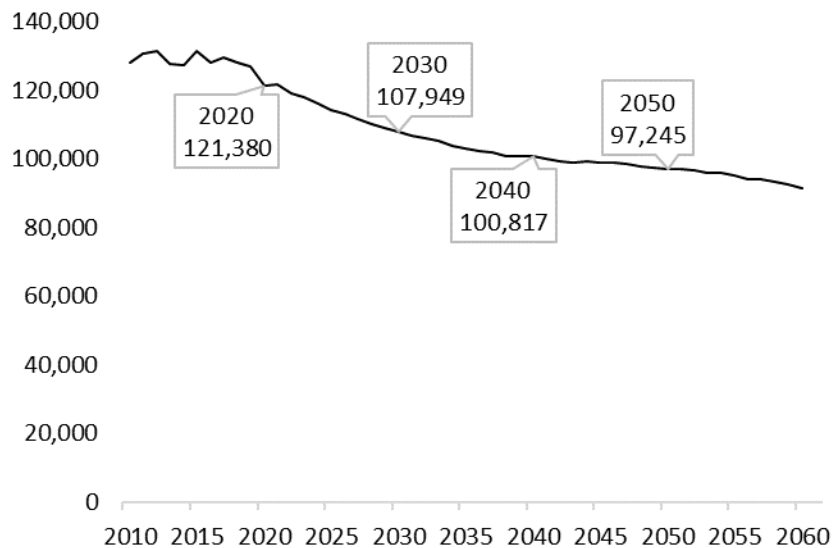
<sup>29</sup> National Institute for Early Education Research (NIEER). (2016). State of Preschool: California. Retrieved from [http://nieer.org/wp-content/uploads/2017/05/California\\_YB16.pdf](http://nieer.org/wp-content/uploads/2017/05/California_YB16.pdf)

<sup>30</sup> If not already utilized, the District should take note of the California Transitional Kindergarten Stipend Incentive Program. The CA Office for the Advancement of Early Care and Education has made available professional stipends for TK teachers and California State Preschool Program teachers with bachelor degrees. This incentive program is available until March 2019.

<sup>31</sup> Other prominent programs serving children aged four in Los Angeles include Child360 (formerly LAUP), Head Start LA, and the CA State Preschool Program, which has sites at District schools.

<sup>32</sup> National Institute for Early Education Research (NIEER). (2016). State of Preschool: California.

Figure 12. Projected Children Aged Four in L.A. County<sup>33</sup>



In order to increase enrollment, funds will have to be made available for advertising. Many families still are uncertain about the purpose of transitional kindergarten and expanded transitional kindergarten. Some believe that the programs are for students who are low-performing or have specific needs. Some families do not know why their child would be placed in TK and want them to be enrolled directly into kindergarten.<sup>34</sup> While flyers were sent to schools at the start of both TK and ETK programs, it appears that there was little additional advertising done across Los Angeles by the central office. Increased advertising could be something to consider in the future if the District wants to increase enrollment. When New York City piloted its pre-kindergarten program, it utilized a door-to-door campaign to spread the news about the opportunity, particularly in low-income communities.<sup>35</sup>

When considering where to expand programming or recruitment, the District should continue to utilize county indexes on where there is high need for early childhood programs. The District should also continue to consider how best to serve families in programs that require in-depth personal information for registration in the current, uncertain political environment. Early Childhood Education Division is currently working with First 5 and the We Are One L.A. Unified campaign to ensure that families feel safe enrolling in school and that the general community knows that the District is standing with immigrant families.<sup>36</sup>

### *Long Term Outcomes and Follow-Up*

As the L.A. Unified transitional kindergarten and expanded transitional kindergarten programs are still relatively new programs (in 2017-2018 the oldest TK students entered fifth grade and the oldest ETK students entered first grade), much is still unknown about the long-term outcomes of

<sup>33</sup> Source: CA Department of Finance, 2017

<sup>34</sup> Source: L.A. Early Education Division and Division of Instruction, February 2018.

<sup>35</sup> Kirp, D.L. (2016, February 13). How New York Made Pre-K a Success. *New York Times*. Retrieved from <https://www.nytimes.com/2016/02/14/opinion/sunday/how-new-york-made-pre-k-a-success.html>

<sup>36</sup> Source: L.A. Unified Early Education Division, February 2018.

students who participated in these programs. Several studies on other pre-kindergarten programs, such as the Abecedarian Preschool, Perry Preschool Project, Chicago Child-Parent Center, and Early Training Project programs, found evidence of long-term outcomes into young adulthood.<sup>37</sup> While these programs differ from TK and ETK (by program design, location, staffing, and/or funding levels), these outcomes are still promising.

Long term outcomes have included: increases in high school completion, increases in college attendance, higher wages as adults, and better health outcomes. Students who attended the Chicago Child-Parent Center had lower rates of felony arrests (25% lower) and substance abuse (24%) than the comparison group. In addition, participants had much lower juvenile arrest rates than their peers (42% lower). Not only were these outcomes positive for the participants, but the program also had financial benefits to society as a whole in terms of increased earnings and tax revenues, decreased costs to the criminal justice system, and savings from potential grade retention.<sup>38</sup> The caveat, however, is that it is unclear what specifically caused these long term outcomes.

As L.A. Unified's TK and ETK programs are still young, additional follow-up research should be completed in order to better understand the impact these programs may have for students as well as what could help the programs improve.

### *Statewide Coordination on Early Childhood Education*

It is clear that early learning and child development is integral to a child's success in school. However, the systems that provide these opportunities are particularly disjointed before a child enters formal schooling. This system includes home visiting programs, TK and District programs, Head Start and other licensed centers, special education services, and private care. These many programs are managed across multiple federal, state, county, city, and private entities. Consistency and collaboration across the platforms and organizations that provide early learning and child development care may improve outcomes in the long run. Ensuring an ongoing conversation between organizations providing services to this age group will help alleviate some of the fragmentation that is frequently found in early childhood services.

An important aspect of increasing funding and enrollment is increased statewide coordination on early education and advocacy California falls behind the rest of the nation in state-wide coordination of early childhood education programs. A multitude of programs serve students with different qualifications and the programs are managed, funded, and held accountable by a number of different county, state, and federal agencies. While L.A. Unified cannot create a new system for the state to follow, the District does have the power to lobby Sacramento and the State Department of Education for more coordination of these important programs than at present.

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<sup>37</sup> F. Campbell, G. Conti, J.J. Heckman, S.H. Moon, R. Pinto, E. Pungello, and Y. Pan. (2014). Early Childhood Investments Substantially Boost Adult Health. *Science* 343(6178), 1478-85; J.J. Heckman (2006). Skill Formation and the Economics of Investing in Disadvantaged Children. *Science* 312, 1900-02; S.W. Gray and R.A. Klaus (1970). The Early Training Project: A Seventh-Year Report. *Child Development* 41, 909-924.

<sup>38</sup> Reynolds, A., Temple, J.A., White, B.A., Ou, S., and Robertson, D.L. (2011). Age-26 Cost-Benefit Analysis of the Child-Parent Center Early Education Program. *Child Development* 82(1).

Increased coordination would also help families understand their options and allow for increased enrollment in District programs.<sup>39</sup>

## *Birth to Age Eight Roadmap*

In January 2018, the L.A. Unified Board of Education passed Resolution 020-17/18 “Creating a Birth to Eight Roadmap for Success in Los Angeles,”<sup>40</sup> which created a steering committee to create and implement the Birth to Eight Roadmap. Similar work has been done in Boston,<sup>41</sup> Detroit,<sup>42</sup> and Denver<sup>43</sup> and signals the District’s ongoing commitment to early education.

The Birth to Eight Roadmap is not only an investment by L.A. Unified, but an opportunity to build stronger connections to the local nonprofits, businesses, and government organizations around Los Angeles doing the important work of educating our youngest citizens. As the last Early Childhood Education Ad Hoc Committee was disbanded after 2016-2017, the new steering committee will provide additional support to this project and continued education of youth.

The Early Childhood Education Division is already reaching out to community contacts to create the steering committee and the IAU supports the Division’s goal of recruiting a high number of parents from different early education programs to the committee.<sup>44</sup> Partnerships will be extremely important, as demonstrated by other cities’ roadmaps. Some suggested partnerships based on other roadmaps include: parents and families, caregivers and teachers, other professionals working with children, neighborhood groups, nonprofit programs, schools, businesses, and local and state organizations.<sup>45</sup> This steering committee could also lobby Sacramento on some of the issues described in the above sections, including statewide coordination on early education and increases in funding to expand programming to more children than are currently being served. The District’s Office of Government Relations should also be involved in any lobbying efforts by the steering committee.

Boston’s early education initiative, Thrive to 5 Boston, started in 2008 and recently ended. The city’s pre-kindergarten outcomes had similarities to what is reported in prior sections for L.A. Unified’s transitional kindergarten program. Research outcomes included statistically significant positive results in participants’ vocabulary, early reading, numeracy, and geometry as well some small effects in students’ executive function and emotional development.<sup>46</sup> Boston’s school district estimates that it spends approximately \$12,450 per pre-kindergarten student per year to provide universal preschool. Boston received some private funding for a time as well as

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<sup>39</sup> Melnick et al. (2017). Understanding California’s early care and education system.

<sup>40</sup> L.A. Unified Board of Education. (2018, January 18). Regular Meeting Stamped Order of Business. Retrieved from <https://boe.lausd.net/sites/default/files/01-16-18RegBdSTAMPED.pdf>

<sup>41</sup> Thrive in 5: Boston. (2018). Retrieved from <http://thrivein5boston.org/>

<sup>42</sup> Excellent Schools Detroit. (2016). Readiness in Detroit: A Local Policy Roadmap for Birth to Eight Success. Retrieved from [http://birthtoeight.org/content/images/2016/10/Readiness\\_In\\_Detroit.pdf](http://birthtoeight.org/content/images/2016/10/Readiness_In_Detroit.pdf)

<sup>43</sup> Denver Public Schools. (2018). Our Birth to Eight Roadmap for Success. Retrieved from <https://www.dpsk12.org/our-birth-to-eight-roadmap-for-success/>

<sup>44</sup> Source: L.A. Unified Early Education Division, February 2018.

<sup>45</sup> Denver Public Schools. (2016). Birth to Eight Roadmap. Retrieved from [https://foundationforsuccess.dpsk12.org/wp-content/uploads/sites/26/Birth-to-Eight-Roadmap\\_Jan2017-web.pdf](https://foundationforsuccess.dpsk12.org/wp-content/uploads/sites/26/Birth-to-Eight-Roadmap_Jan2017-web.pdf)

<sup>46</sup> Weiland, C. & Yoshikawa H. (2012). Impacts of BPS K1 on Children’s Early Numeracy, Language, Literacy, Executive Functioning, and Emotional Development. Harvard Graduate School of Education. Retrieved from <https://drive.google.com/file/d/0B3qKorUGb2mHM3pUVVnKWUFCRGM/view>



some federal grant money, both of which the steering committee should look into.<sup>47</sup> Based on Boston's experience, the key areas for advancing best practices to ensure kindergarten readiness are: family engagement and parent leadership, quality early education, and universal child development screening.<sup>48</sup>

While not cited in the recent Board Resolution, the city of Tulsa and the state of Oklahoma should also be researched when preparing L.A. Unified's Birth to Eight roadmap. Oklahoma has been offering universal pre-kindergarten to all children since 1993<sup>49</sup> and 74% of the state's four-year-olds attend public school compared to 35% of California's four-year-olds.<sup>50</sup> A report on the school readiness of children who attended the universal pre-kindergarten program in Tulsa showed that the program significantly improved reading, writing, and math skills for children who enrolled.<sup>51</sup>

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<sup>47</sup> Mongeau, L. (2016, August 2). What Boston's Preschools Get Right. *The Atlantic*. Retrieved from <https://www.theatlantic.com/education/archive/2016/08/what-bostons-preschools-get-right/493952/>

<sup>48</sup> Thrive in 5: Boston. (2016). Every Child Given Every Opportunity to Thrive. Retrieved from [http://thrivein5boston.org/wp-content/uploads/2016/08/T5\\_Impact-Report\\_082516.pdf](http://thrivein5boston.org/wp-content/uploads/2016/08/T5_Impact-Report_082516.pdf)

<sup>49</sup> Oklahoma State Department of Education. (2017). Legislative Briefing: Pre-Kindergarten Program. Retrieved from

<http://sde.ok.gov/sde/sites/ok.gov.sde/files/Legislative%20Briefing%20PreK%20Program.pdf>

<sup>50</sup> Oklahoma State Department of Education. (2017). Four Year Old Program. Retrieved from <http://sde.ok.gov/sde/four-year-old-program>

<sup>51</sup> Gormley et al. (2005). The Effects of Universal Pre-K on Cognitive Development. *Developmental Psychology*.

## SECTION FOUR: CONCLUSION

Overall, L.A. Unified’s transitional kindergarten program is doing strong work towards ensuring that the District’s youngest learners arrive in kindergarten ready to learn. However, there is still more work to be done and the District should continue to consider how to grow its early education programs for the benefit of students, families, schools, and society as a whole. The Birth to Eight Roadmap and the partnerships it can build is a step in the right direction.

A recent report by the American Education Research Association found that students who had participated in high-quality early education programs were less likely to be placed in special education (8.1 percentage points), less likely to be retained (8.3 percentage points), and more likely to graduate from high school (11.4 percentage points) than those students who did not participate in such programs.<sup>52</sup> These results also suggest that early childhood education can decrease future costs to a school district and society as a whole. Nationally, per pupil expenditures for special education and grade retention can range from \$8,000 to \$12,000 per year.<sup>53</sup> In addition, a high school dropout not only reduces their own lifetime earnings, but costs approximately \$262,000 to the broader economy.<sup>54</sup>

The District should ensure that evaluations are completed on new programs like expanded transitional kindergarten and there is more research needed to understand the outcomes for program participants and how those outcomes can be improved upon. The IAU suggests the following questions for future research and study by the District:

- What are the best strategies to increase enrollment in L.A. Unified’s TK and ETK programs?
- What is the financial impact on the District’s costs and revenues if TK and ETK programs are expanded?
- What is the impact of a TK/kindergarten combined classroom and the feasibility of a TK/ETK combined classroom model?<sup>55</sup>

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<sup>52</sup> McCoy et al., 2017 (AERA)

<sup>53</sup> Chambers, Parrish, & Harr (2002); Office of Special Education Programs (2014); U.S. Department of Education (2015); Warren, Hoffman, & Andrew (2014).

<sup>54</sup> Chapman, Laird, Ifill, & Kewal-Ramani (2011); Levin et al. (2007)

<sup>55</sup> Note that these topics may have implications for human resources, ADA reporting, norming, budget planning, and other District systems.

## APPENDIX

Table A. Demographics of All TK Students Compared to Their Entire Kindergarten Class

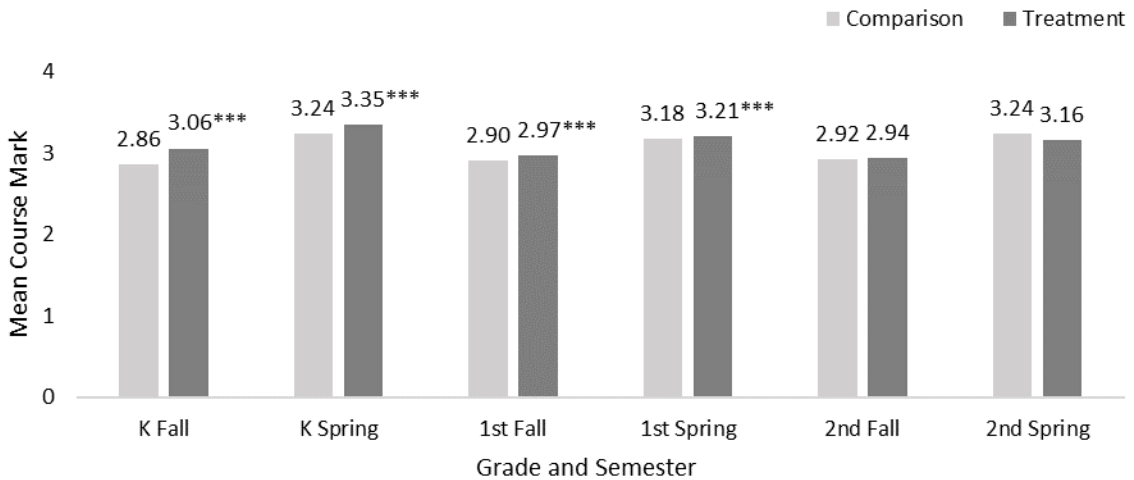
	COHORT 2012-2013		COHORT 2013-2014		COHORT 2014-2015	
	TK	ALL K	TK	ALL K	TK	ALL K
N=	2,656	30,525	5,153	25,416	7,397	23,172
FEMALE	47.78%	50.27%	50.82%	50.37%	49.38%	50.23%
RACE						
AM INDIAN/ALASKA NATIVE	0.34%	0.32%	0.35%	0.15%	0.14%	0.14%
ASIAN	5.31%	5.62%	4.48%	4.91%	4.16%	5.48%
BLACK	8.62%	9.21%	8.44%	8.57%	8.08%	9.45%
FILIPINO	0.83%	0.88%	0.87%	1.80%	1.51%	1.64%
HISPANIC	72.21%	70.10%	74.19%	66.61%	71.02%	66.58%
PACIFIC ISLANDER	0.34%	0.43%	0.41%	0.28%	0.26%	0.38%
WHITE	12.35%	13.44%	11.26%	16.56%	13.69%	16.08%
FREE/REDUCED PRICE MEAL	94.25%	94.17%	95.56%	91.35%	93.65%	84.50%
EVER ENGLISH LEARNER	49.06%	42.50%	49.16%	39.51%	46.09%	38.02%
PARENT EDUCATION LEVEL						
HIGH SCHOOL OR LESS	43.11%	41.23%	45.26%	40.31%	43.00%	41.35%
SOME COLLEGE OR MORE	29.67%	31.47%	29.11%	28.07%	25.58%	31.37%
UNKNOWN	27.22%	27.30%	25.63%	31.62%	31.42%	27.28%

**Table B. Demographics of Treatment and Comparison Groups for Three Cohorts Pre-Matching<sup>56</sup>**

	COHORT 2012-2013		COHORT 2013-2014		COHORT 2014-2015	
	TK	COMPARE	TK	COMPARE	TK	COMPARE
<b>N=</b>	2,286	9,604	4,792	8,793	4,584	7,494
<b>FEMALE</b>	50.1%	49.3%	51.3%*	47.8%	49.7%	49.1%
<b>RACE</b>						
AM INDIAN/ALASKA NATIVE	0.3%	0.3%	0.3%*	0.1%	0.2%	0.1%
ASIAN	5.3%	5.8%	4.7%	4.6%	3.9%	4.4%
BLACK	9.0%	10.0%	8.8%	8.6%	7.9%	8.5%
FILIPINO	0.8%	1.0%	0.9%*	1.5%	1.6%	1.7%
HISPANIC	73.6%	71.6%	74.8%*	71.2%	72.1%	71.6%
PACIFIC ISLANDER	0.4%	0.5%	0.4%	0.4%	0.2%	0.3%
WHITE	10.6%	10.8%	10.1%*	12.9%	13.0%	12.9%
<b>FREE/REDUCED PRICE MEAL</b>	94.4%*	90.6%	95.7%*	88.3%	93.7%*	87.9%
<b>EVER ENGLISH LEARNER</b>	50.3%*	35.5%	49.6%*	29.7%	47.0%*	25.1%
<b>PARENT EDUCATION LEVEL</b>						
HIGH SCHOOL OR LESS	43.4%	41.2%	46.0%*	41.3%	43.7%	42.9%
SOME COLLEGE OR MORE	29.1%	28.2%	28.5%*	24.7%	25.1%	26.7%
UNKNOWN	27.5%	30.6%	25.5%	34.0%	31.2%	30.4%

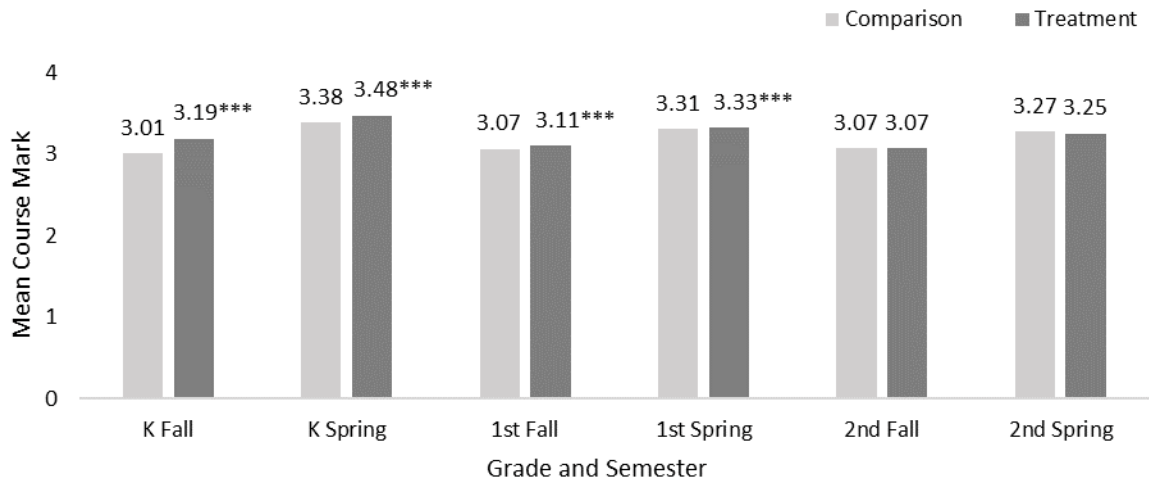
\* $p < 0.05$

**Figure A. Average Transitional Kindergarten Student Outcomes v. Comparison Group on Writing Work Effort in Subsequent Semesters**



Note: Authors' analysis of student scores from data sourced from L.A. Unified's Office of Data and Accountability.  
 \*\*\*  $p < 0.001$ .

**Figure B. Average Transitional Kindergarten Student Outcomes v. Comparison Group on Math Work Effort in Subsequent Semesters**



*Note:* Authors' analysis of student scores from data sourced from L.A. Unified's Office of Data and Accountability.  
 \*\*\*  $p < 0.001$ .