

# Does full-day kindergarten reduce achievement gaps?

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As discussed earlier in this issue, academic achievement gaps by family income emerge early and persist. One approach to remediating these gaps is to expand kindergarten instruction from half-day to full-day. This article presents findings from a study that explored whether students in full-day kindergarten programs outperformed their half-day kindergarten peers in literacy skills by the end of the kindergarten year. I consider whether recent expansions in full-day kindergarten were wise or whether resources currently spent on those programs could be better used on other early investments.

## How could full-day kindergarten help close gaps?

Past work has noted the importance of early skill development for future outcomes.<sup>1</sup> Other research has identified long-term effects of interventions in early childhood and primary grades.<sup>2</sup> This evidence suggests that kindergarten, as the gateway to formal schooling, could be

an appropriate place for interventions aimed at closing the achievement gap. However, work on brain development, and emerging evidence that the brain's adaptability declines as a child ages, suggests that kindergarten interventions might be less effective than those applied at an earlier age.

As Figure 1 shows, while provision of full-day kindergarten has expanded dramatically—about three-quarters of kindergarten students in the United States have access to a full-day program—policymakers are considering further expansion. Importantly, this rise of full-day kindergarten has occurred largely in the absence of rigorous evidence about its effectiveness.

There are a number of possible mechanisms through which full-day kindergarten could help close achievement gaps, though I will not be able to disentangle them in the study discussed here. The first is increased instructional time, which we expect might directly improve educational outcomes. There are also other features of the increased time in school provided by full-day, as opposed to half-day, kindergarten that might be important, including crowding out what children might otherwise do during that time (which may or may not include educationally enriching activities). It is also effectively a childcare subsidy, which increases family resources and could allow parents to obtain employment or expand their working hours. Finally,

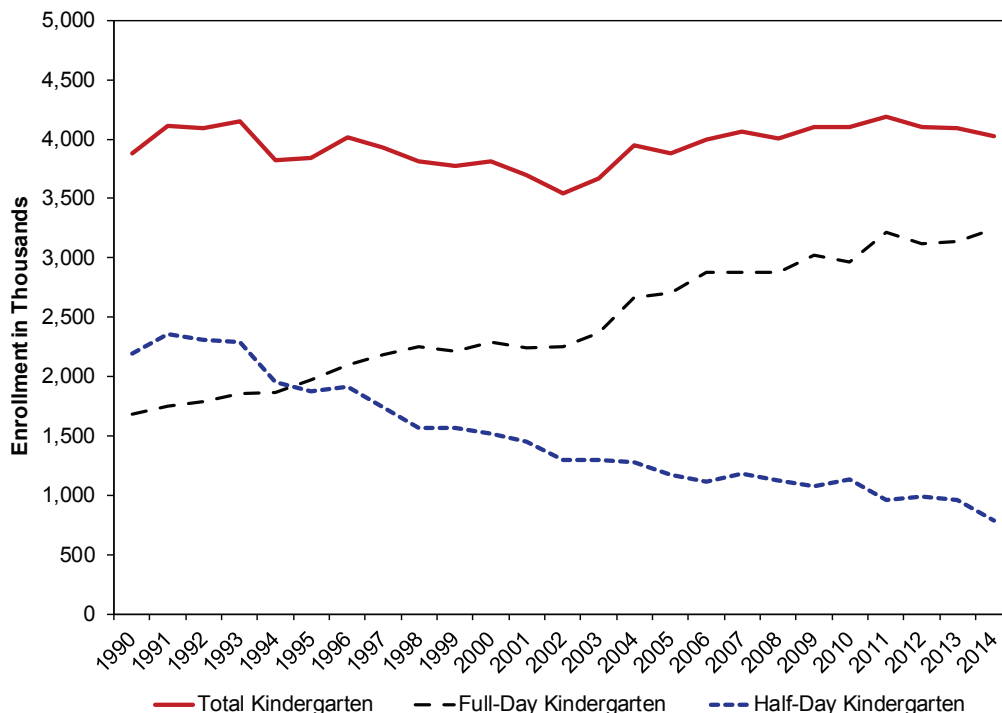


Figure 1. Kindergarten enrollment in thousands, 1990–2014.

Source: U.S. Department of Commerce, Bureau of the Census, CPS October school enrollment supplement.

children who attend full-day kindergarten may benefit from other aspects of the longer school day that are important for cognitive development, including additional snacks or meals at school and nap time.

## Policy landscape

Much of the action around full-day kindergarten is occurring at the state and local levels. Currently, 10 states and the District of Columbia provide full-day kindergarten at no charge to all children per state statute.<sup>3</sup> Kindergarten attendance is mandatory in only 16 states; seven of the 10 states requiring full-day kindergarten provision also mandate kindergarten attendance. Only 24 states specify a funding formula that funds full-day kindergarten at or above the level of first grade; in the remaining states, there is a financial disincentive to provide full-day kindergarten.<sup>4</sup>

## The kindergarten experience

In work with Daphna Bassok and Scott Latham, we illustrate how the kindergarten experience changed between 1998 and 2010. Over that time period, the proportion of kindergarten students attending a full-day program rose dramatically, from about 55 percent to around 80 percent. The proportion attending kindergarten in a building that also housed a pre-kindergarten program also increased, from below 40 percent to over 50 percent. Over the same time period, there was little change in class size or in whether a student’s peers had attended preschool. Black children have been consistently more likely than white or Hispanic children across this time

period to be attending a full-day program, and nearly all black kindergarten students are now in full-day kindergarten. In general, entire school districts decide whether to provide full-day kindergarten to all students, and those in low-income areas or with lower-performing schools are more likely to do so.

## Effect of full-day kindergarten expansions on academic achievement

In 2007, the Indiana General Assembly passed legislation to increase funding for greater access to and availability of full-day kindergarten in the state. Beginning in the 2007–2008 school year, school districts and charter schools were eligible to receive a full-day kindergarten grant from the state that provided a per-pupil allocation for kindergarten students in the district. My study makes use of this policy change to explore the causal effect of full-day kindergarten on early literacy skills, as measured by standardized assessment scores.

Figure 2 shows the impact of full-day kindergarten on end-of-kindergarten literacy skills. The effect size for all children was approximately 0.3 standard deviations, with Hispanic children experiencing particularly large gains. It is probable that the pronounced effects on Hispanic students are at least in part due to English language learning, though I cannot confirm this with the data I have. Figure 3 shows that there were also dramatic differences in achievement gaps at the end of the year for those attending full-day programs

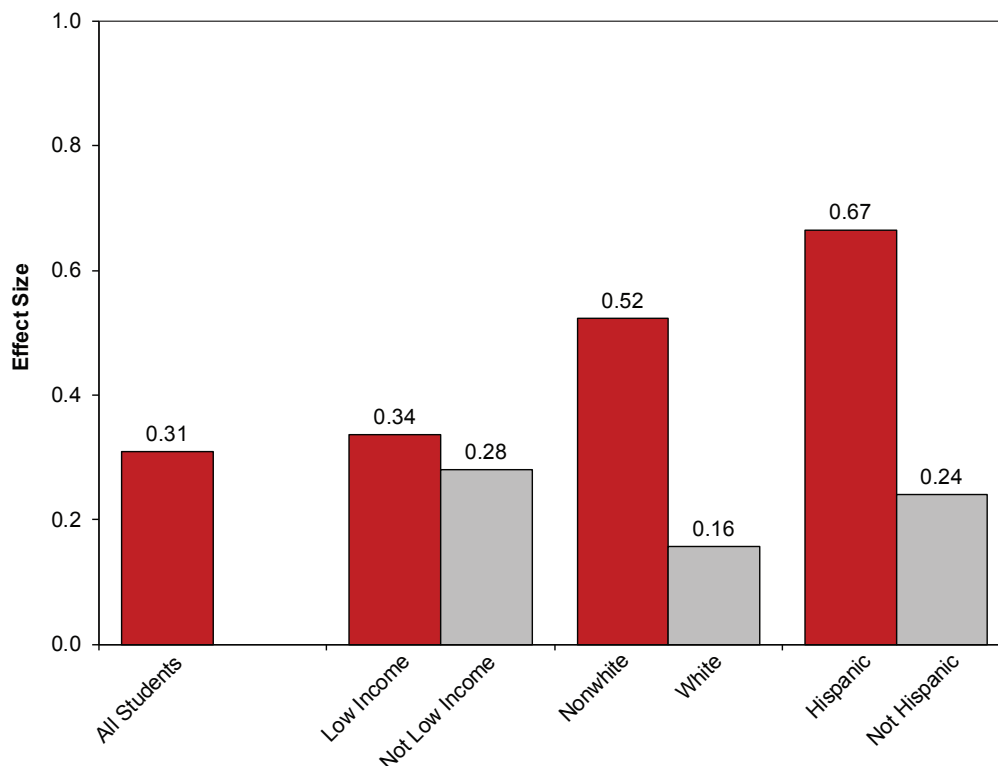


Figure 2. Literacy gains attributable to full-day kindergarten.

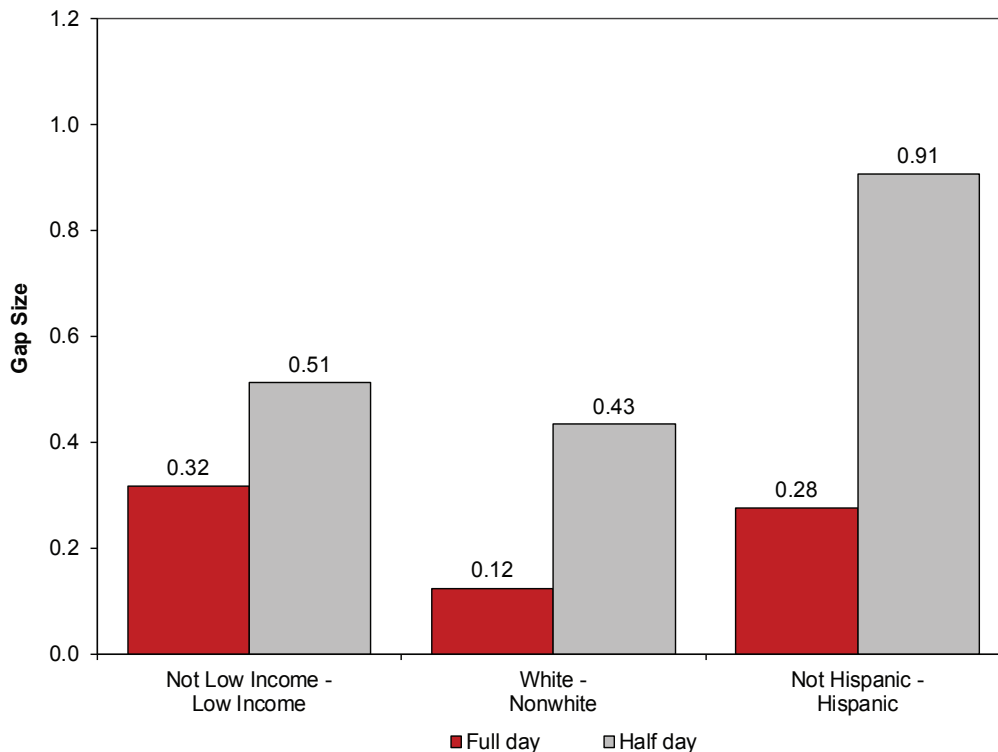


Figure 3. End-of-kindergarten achievement gaps in literacy skills.

compared to half-day programs; in particular, full-day kindergarten largely closes the gap in literacy skills between Hispanic and non-Hispanic students.

Rough estimates of cost-effectiveness suggest that full-day kindergarten generates an effect on early literacy skills of between 0.07 and 0.21 standard deviations per thousand dollars of spending. Notably, this is a higher return on investment for this particular outcome than has been found for either class-size reduction or Head Start.

Overall, I found that full-day kindergarten has a large, positive effect on literacy skills assessed at the end of kindergarten, skills that are associated with subsequent educational and labor market success. I also found differential effects for subgroups that may have implications for closing achievement gaps early in formal schooling; Hispanic students in full-day kindergarten had particularly large gains relative to their half-day kindergarten peers. This finding might also suggest that it would be effective to target full-day kindergarten to particular areas or students rather than use it universally; however, in other work I have found a strong peer effect, with the presence of above average students in the class resulting in larger gains for lower-performing students. In this setting, students received full-day kindergarten with a mixed ability peer group. Thus, I suggest caution in interpreting these findings as an endorsement of targeted programming. Finally, although full-day kindergarten has increased dramatically over time,

it remains a discretionary item that states and school districts are often considering in the context of the many ways to spend limited funds on early childhood education. Evidence about the effects of various early investments should be an important part of those deliberations. ■

<sup>1</sup>See, for example, G. J. Duncan, C. J. Dowsett, A. Claessens, K. Magnuson, A. C. Huston, P. Klebanov, L. Pagani, L. Feinstein, M. Engel, J. Brooks-Gunn, H. Sexton, K. Duckworth, and C. Japel, "School Readiness and Later Achievement," *Developmental Psychology* 43, No. 6 (November, 2007): 1428–1446.

<sup>2</sup>R. Chetty, J. N. Friedman, N. Hilger, E. Saez, D. W. Schanzenbach, and D. Yagan, "How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project STAR," *The Quarterly Journal of Economics* 126, No. 4 (2011): 1593–1660.

<sup>3</sup>These are: Alabama, Arkansas, Delaware, Louisiana, Maryland, Mississippi, New Mexico, North Carolina, South Carolina, Washington DC, and West Virginia.

<sup>4</sup>Education Commission of the States (ECS), "50-State Comparison: State Kindergarten Policies," March 1, 2014, accessed June 10, 2016, at <https://www.ecs.org/childcare/policies/>.