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The Rundown podcast transcript for Performance Audit report titled ***Estimating the Cost of K-12 Education*** – Released October 2023

Mohri Exline, Host and Senior Auditor: [00:00]

Welcome to The Rundown, your source for the latest news and updates from the Kansas Legislative Division of Post Audit featuring LPA staff, talking about recently released audit reports and discussing their main findings, key takeaways and why it matters. I'm Mohri Exline. In October 2023, Legislative Post Audit released a performance audit that estimated the cost of K-12 education. I'm here with Heidi Zimmerman, principal auditor at Legislative Post Audit, who supervised this audit and Cade Graber, senior auditor at Legislative Post Audit, who served as a team member on this audit. Heidi and Cade, welcome to The Rundown.

Heidi Zimmerman, Supervisor and Principal Auditor: [00:38]

Thanks for having us.

Mohri Exline, Host and Senior Auditor: [00:40]

So, to get started, can you give some background about recent trends in spending enrollment and test scores in Kansas school districts?

Heidi Zimmerman, Supervisor and Principal Auditor: [00:46]

So, sure. We looked back several years for several metrics. So, we went back to 2017 and looked from 2017 to 2022 across kind of several things. So first of all, we looked at funding and after controlling for inflation, funding is up by about 12%. So, funding was about \$7 billion in 2017 and by 2022, it was 7.9 billion. A lot of that increase though was due to increases in federal funding related to COVID and also some increases in state funding as well. We also looked at enrollment and found that enrollment has decreased slightly - about 2%. So, from about 490,000 kids in 2017 to about 480,000 kids in 2022. That decline started in 2021 and is most likely related to some COVID related issues. We also looked at staff and total staff in Kansas school districts is up from about 68,000 to 73,000. And we especially saw some big increases in the categories of counselor, psychologists, social workers and so that was driving at least some part of that increase. Spending is also up. Again, once we controlled for inflation, spending on a per student basis was up about 14%. So, per student funding in 2017 was \$14,400 and in 2022 it was \$16,400. And then last we looked at test scores just to see the trends. Again, that same time period, 2017 to 2022, we looked at math, we looked at English language arts, and we looked at

science and in all three of those subjects, scores are trending downward over that time period. So, for example, in math, in 2017, 35% of students met state standard in math, which state meeting state standards is scoring a three or a four, but by 2022, that number was down to 30% of students meeting state standards in math.

Mohri Exline, Host and Senior Auditor: [02:56]

The audit mentions that the audit objective was to create a cost model, but that the team chose to do something a little different. Can you tell me a little bit about what you did instead and why?

Heidi Zimmerman, Supervisor and Principal Auditor: [03:07]

So, the original audit objective was for us to create a cost model and state statute asked us to estimate the costs of providing an education such that every public school student in Kansas had the opportunity to achieve performance outcome standards. The standards that are set by the Board of Education, but a couple of things caused this to change course just a little bit. So first of all, measuring opportunity is subjective and certainly can vary from student to student and it's unlikely that every student in the state will meet state standards, even if provided the opportunity to do so, because, you know, not all students have the same academic abilities. They don't all have the same support at home to do well in school and so a model that assumes, you know, a subjective and kind of unlikely outcome probably isn't going to lead to a really reliable or realistic answer. Additionally, models built on the assumption that spending alone will lead to significant improvements and outcomes may be too simplistic. Outcomes are very much a complex relationship between individual student traits and home environment and what's going on in the school and the school district and so sometimes the cost models can give an impression that increases in funding or spending alone will always result in better outcomes. And so, we did things just a little bit different. So, what we did was two models. One is a regular education model that examined the relationship between regular education spending and outcomes. So, the model basically predicts how increases in spending could change outcomes and then we did a special education model as well. And that model is a little more of a traditional cost model, but it connects cost to delivering a certain level of service rather than assuming a specific outcome.

Mohri Exline, Host and Senior Auditor: [05:19]

Let's start with the regular education model. Tell me a little bit about that model and how it works.

Cade Graber, Team Member and Senior Auditor: [05:22]

So we use something called a logistic regression model and a logistic regression model is a type of statistical model that essentially tries to map out the relationships that exist between a set of variables and a binary outcome variable. And then it can be used to make predictions. So, in our case, the model used a bunch of variables,

including spending variables to predict whether or not a student met standards, so whether or not they scored at level three or four on the state assessment. Now, in addition to making this kind of prediction, the model also essentially gives us a kind of probability estimate for whether or not a student would meet standards, and it can tell us which variables are statistically significant.

Mohri Exline, Host and Senior Auditor: [06:03]

So, the report notes that you ran, different iterations, what was the key difference and what were the results?

Cade Graber, Team Member and Senior Auditor: [06:09]

So, we first split students up into 12 different groups, students receiving free lunch, students receiving ESL services, students receiving both of those services, and then other students. And for each of those groups, there were three different test types, English, math, and science. That gives us a total of 12 groups. So, we built a logistic regression model for each of those groups to account for any potential differences between the groups. And we constructed each of those models using software. And then once they were built, we used them to make predictions on how many students would meet standards under two different spending scenarios. So, the first spending scenario, we examined how across the board increases in spending would impact student outcomes. So, this is spending where, say, a 15% total increase corresponds to a 15% increase in all of the different individual spending categories that we looked at. So, that's scenario number one. And scenario number two, we assumed that spending increases would be targeted towards only the categories where the model showed that spending was having a positive effect on outcomes. So, a 15% total increase in this scenario does not actually correspond to a 15% increase in every category. The increase in spending is split evenly among the positive impact categories. So, after running all 12 of the models through these two different spending scenarios, we found that the results were clearly best for the targeted spending increases, which that's scenario number two. Across the board, increases under scenario number one, were associated with little to no improvement in the number of students meeting standards. But under scenario number two, we found that targeted increases were associated with improvements in student outcomes, especially for disadvantaged students. So, for example, a targeted spending increase of 15% for students receiving ESL services was associated with an increase in the number of those students meeting state science standards from 13% to 23%.

Mohri Exline, Host and Senior Auditor: [08:08]

How did spending affect the different groups of students?

Cade Graber, Team Member and Senior Auditor: [08:12]

So, we found that targeted spending under scenario number two, seemed to move the needle the most for the disadvantaged students, which is the students receiving

free lunch or ESL services or both. So, spending increases did improve student outcomes, but even after a 15% increase, the model predicted that around 70 to 80% of students would still not meet standards. And the story was the same for the other non-disadvantaged students. Targeted spending increases did seem to be associated with improving student outcomes, but even at a 15% increase, around 50% of those students were still predicted to not meet standards. I think it's important to keep in mind that no matter how much you increase spending, no matter what the total spending level is at, there is no guarantee that every single student will meet standards. There's just too much individual variability.

Mohri Exline, Host and Senior Auditor: [09:01]

You also note that there were several factors other than just spending that were important. What were some of those factors?

Cade Graber, Team Member and Senior Auditor: [09:08]

So, we found that some of the biggest factors besides spending that influenced student outcomes or related to teachers and then other kind of district characteristics. So, for example, we found that districts that paid higher average teacher salaries in the preceding five years generally had students that were more likely to meet standards. We also found that having a higher student to teacher ratio was associated with more positive outcomes, which you could say is a little unexpected, but from what we saw, it appeared that students from districts with fewer potentially higher quality teachers were more likely to meet standards than their counterparts in other districts. We also found that factors like district attendance rates and some other demographic variables were tied to student outcomes as well. In general, though, these factors had predictable relationships to student outcomes. So, for example, students in districts with higher attendance rates tended to perform better on the state assessments than students from districts with lower attendance rates.

Mohri Exline, Host and Senior Auditor: [10:06]

The report notes that there are some important caveats to the model. What are some of those things?

Cade Graber, Team Member and Senior Auditor: [10:12]

So, as with all non-experimental studies like this, we can't know for sure if the factors that we see are actually causing the outcomes. We only know that they're correlated with each other. So, we can't say for sure that increases in spending will guarantee increases in student outcomes. Additionally, there are many, many factors that can impact a student's academic performance. For our models, we controlled for as many variables as we feasibly could, but there are still many variables that we couldn't account for, such as, you know, student motivation and other things that are just very difficult to actually measure. Another caveat is that our model doesn't really differentiate between actual increases in spending or just reallocation of

existing spending. So, a district can spend more by simply, you know, receiving more funding. Alternatively, a district that keeps their total spending level the same while reallocating spending to certain categories of spending could still theoretically end up seeing the same kind of student outcome effects. And lastly, although we broke expenditures down into categories for our models, current educational funding mechanisms do not allocate funding to specific categories like this. It's really up to the districts to determine how specifically to spend their funding. So, as a result, we can't determine what kinds of funding may improve student outcomes.

Mohri Exline, Host and Senior Auditor: [11:31]

How did the results of your model compare to the other research you reviewed?

Heidi Zimmerman, Supervisor and Principal Auditor: [11:35]

Many of the results of the regular education model are really very similar to what we saw in the research. So, most research that we looked at found that spending has at least some impact on outcomes, but there is some inconsistency. So, for example, one of the literature reviews we looked at, they examined 20 single state studies and they found that seven of them had no significant relationship between spending and outcomes, but the other 13 did. So, there's a little bit of inconsistency there. One of the studies that we reviewed even concluded that even if spending matters on average, it does not matter in all settings or in all contexts, which really is very similar to what we found, which is spending matters, but the context of that spending also matters as well. A few studies also found that disadvantaged students benefit more from increases in spending than other students, and that was exactly what we found as well. Some of the research discussed the importance of high-quality teachers. One of them noted the focusing on improving teacher quality was more cost effective for improving student outcomes than reducing class size. Others noted that higher teacher salaries might attract more high-quality teachers to the profession, which over time may lead to better outcomes and our model found some very similar things as well. And then last, a couple studies noted that adding more resources without addressing how that money will be spent will not ensure improvements in student outcomes. Our model kind of supports that same sentiment.

Mohri Exline, Host and Senior Auditor: [13:31]

Let's talk now about special education. What kinds of special education services do districts provide and how do they provide them?

Heidi Zimmerman, Supervisor and Principal Auditor: [13:35]

Public school districts provided special education services to about 88,000 students in the 2022 school year. State and federal law requires districts to provide special education services and districts provide a wide range of services, anything from speech and language services to physical therapy to para support and a regular classroom. They also sometimes provide things like assistive technology so that you

know, so that they can help a student communicate. So, there's a wide variety of services that districts must offer and must provide to their students who need those services, but districts have a few options though for providing those services. One option is that a district can independently provide services, kind of using their own staff. There's also special education cooperatives where a sponsoring district arranges for the provision of services among all of the member districts in that co-op. And then there's also special education interlocals and an interlocal is a separate entity. Typically, districts have a seat on the board to the interlocal, but then it's the interlocals responsibility to hire staff and make sure that services are provided.

Mohri Exline, Host and Senior Auditor: [14:53]

What type of model did you use to estimate special education costs and why?

Heidi Zimmerman, Supervisor and Principal Auditor: [14:55]

For special education, we used a cost model rather than a spending model for a couple of reasons. So, first of all, appropriate expectations for student outcomes for students who are receiving special education services are highly individual. So, for some of these students, meeting state standards may not be reasonable. For some students recognizing, you know, more letters or learning to regulate their behavior better, those, those things may be the most important goals. So, evaluating a single metric, which is what we did in the regular education model is just not as reasonable. Additionally, we lacked the detailed expenditure data for the special education organizations that we would've needed for a spending model. So, instead what we did was a more kind of traditional cost model. It was an input oriented professional judgment approach, which is a lot of fancy words for basically the cost estimate reflects kind of the resource levels that knowledgeable people indicated were optimal to help students achieve their IEP goals. So, an IEP is an individualized education plan, and every student who receives special education has one and they outline goals for the student and what services they will receive to assist them in meeting those goals and so our cost model sets is kind of sets services at a level where students or at least a level that is optimal for students to be able to meet those IEP goals.

Mohri Exline, Host and Senior Auditor: [16:37]

So, how much did you estimate that it cost to provide special education services?

Heidi Zimmerman, Supervisor and Principal Auditor: [16:41]

We estimated it would cost a total of \$1.2 billion to \$1.5 billion annually to provide special education services that would allow students to meet those IEP goals and these costs, they are total, they're not additional. This is the total cost. We estimated a range of costs, though, because student needs in special education vary significantly. The reality is that the answer is probably somewhere in between those two estimates, but the costs in those estimates, really they're in about four different categories. So, first of all, there's instructional costs, which are things like teacher and

para salaries, training, instructional materials, and that's about 62% of the cost. So, the majority of the costs in our estimate are related to instruction. Then there's student support, and that's things like salaries and benefits for physical therapists or transportation or assistive technology and that's about 30% of the costs. There's administrative costs for, say, salaries for directors and office staff, office supplies, those sorts of things and that's about 5% of the cost. And then there's a small amount that's operational costs, so, things like salaries for janitorial staff or utilities, it's about 3%. I should note though, that in 2022, districts spent about \$1.2 billion on special education services, which is at the bottom of our estimate. However, that that doesn't necessarily mean though that students are receiving services and the quantity or quality that they need. So, for example, if districts deliver services inefficiently or ineffectively, their expenditures could still be high, but students wouldn't necessarily be receiving appropriate services. Additionally, our cost estimate is tied to students receiving the services they need to meet their IEP goals, but if IEP goals are not sufficient for ensuring positive outcomes for these students, then spending an amount similar to our estimated cost may not result in positive outcomes.

Mohri Exline, Host and Senior Auditor: [18:59]

The report notes that there are some caveats to this model as well. What are some of those things?

Heidi Zimmerman, Supervisor and Principal Auditor: [19:04]

So, the estimate is based on really more staff than special education organizations can likely hire. Currently, most of these special education organizations that we talk to during the course of the audit told us that they have a lot of difficulties hiring special education staff. So, hiring more staff may not be feasible. Currently, our estimate is also likely slightly understated and that's because we assumed a little more efficiency that can actually exist in special education. So, for example, if a student can only be on a school bus for a very short period of time, you know, he may have, you know, a route dedicated to getting him to and from school. This isn't very efficient, but it may be necessary. So, we accounted for some of the costs associated with those inefficiencies, but we may not have been able to count for them fully. And then last, we did not include costs related to capital expenditures for buildings. When we surveyed a number of districts, we found that those costs were pretty rare and inconsistent from year to year. Additionally, the data is just not maintained in a way that allowed us to evaluate that cost completely, but because it is rare and pretty inconsistent, it likely has only a very small impact on our model's estimates.

Mohri Exline, Host and Senior Auditor: [20:28]

So, finally what is the biggest takeaway from this audit?

Heidi Zimmerman, Supervisor and Principal Auditor: [20:32]

So, for an audit of this scope there's really probably two takeaways. First of all, not all spending has the same impact on student outcomes. Some spending seems to have very little impact on student outcomes, while other spending can matter more to improving outcomes. And knowing the difference is important. But second, it's unlikely that educational spending alone is going to lead to significant numbers of students meeting state standards. So, it's very likely that other strategies are going to be needed in order to offer Kansas kids the best chance of academic success.

Mohri Exline, Host and Senior Auditor: [21:15]

Heidi Zimmerman is a principal auditor at Legislative Post Audit, and Cade Graber is a senior auditor at Legislative Post Audit. They worked on an audit that estimated the cost of K 12 education. Heidi and Cade, thanks for visiting the rundown and discussing this audit's findings with me.

Heidi Zimmerman, Supervisor and Principal Auditor: [21:31]

Thanks for having us.

Mohri Exline, Host and Senior Auditor: [21:32]

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