

NEPC Review: Charter School Funding: Support for Students with Disabilities (University of Arkansas, July 2021)



Reviewed by:

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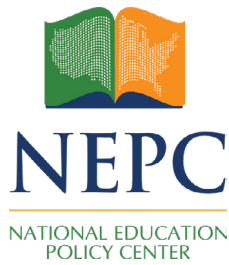
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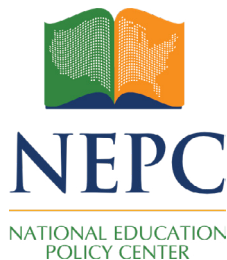
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Summary

The report *Charter School Funding: Support for Students with Disabilities* from the University of Arkansas Department of Education Reform, released in July 2021, asserts that charter schools, despite serving only marginally fewer children with disabilities than Traditional Public Schools (TPS), are significantly shortchanged of funding for those children, in addition to being significantly shortchanged on funding in general. This assertion is erroneous because the report ignores substantial differences in the classifications, needs, and costs of children with disabilities in district-operated versus charter schools. To reach its incorrect conclusions, the report exclusively self-cites deeply flawed, self-published evidence of a general charter school funding gap, ignoring more rigorous studies yielding contradictory findings. The report adds no value to legitimate debate over the comparability or adequacy of general or special education funding of charter schools.



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I. Introduction

The report *Charter School Funding: Support for Students with Disabilities* from the University of Arkansas Department of Education Reform, released in July 2021, asserts that charter schools, despite serving only marginally fewer children with disabilities than Traditional Public Schools (TPS), are significantly shortchanged of funding for those children, in addition to being significantly shortchanged on funding in general, per the authors' own previous reports. The report acknowledges substantive differences in the special education populations served by charters and TPS but then ignores them in its calculations of estimates of special education funding gaps. It uses these estimates to frame policy recommendations that would increase funding to charter schools, including specifically for providing special education services.

II. Findings and Conclusions of the Report

The broad inference presented in the report is that charter schools are serving relatively similar—only slightly lower, and in some cases even higher—shares of children with disabilities than their TPS counterparts. But, the report claims, charter schools are significantly underfunded to begin with and those gaps are partly explained by the fact that charter schools are receiving substantially less funding for children with disabilities. Special education funding gaps, the report concludes, are a significant contributor to, but not the full explanation for, the charter school funding disadvantage.

The specific findings (paraphrased from pages 4 and 5 of the study) are a bit more obtuse:

1. Disparities in spending on students with disabilities account for 39% of the average per-pupil charter school funding gap, based on the authors' own prior studies of charter school funding gaps.
2. For Memphis and Boston, differences in enrollments of students with disabilities completely explained the charter school funding gap.
3. Charter school sectors in the sample generally enrolled a lower proportion of students with disabilities than TPS.
 - a. To explain these differences, the report points to a handful of studies finding that children with disabilities in charter schools are more likely to shed their designation, implying that actual needs may be even more similar and that differences lie in classification practices rather than actual need.
4. Students with more severe disabilities are more likely to attend TPS than charters.
5. Providing equitable dollars to charter schools will better position them to develop programs for students with disabilities.
6. Another policy to “assist charter schools” would be to better fund “risk pools” for students with extraordinary resource needs and ensure that charters have equal access to those funds.

III. The Report's Rationale for Its Findings and Conclusions

The report draws its conclusion regarding student needs by comparing traditional public school and charter school overall rates of children classified as having disabilities (presumably those classified under IDEA), regardless of the severity or related costs of providing services to those children. It acknowledges that TPS tend to serve children with more severe disabilities, but does not explore how this may affect its conclusions.

The report relies on research which also compares special education students broadly between charter schools and TPS to assert that charter schools do better with children with disabilities as compared to their TPS counterparts, both in terms of declassifying children with disabilities, and in terms of producing improved outcomes like graduation and college attendance.

The report combines estimates of special education funding gaps, with its authors' own prior reports of overall revenue gaps between charter schools and TPS to provide the basis for its claims that charter schools are shorted of special education funding and that special education funding gaps make up a significant part—though not all—of the overall revenue gaps faced by charter schools.

IV. The Report's Use of Research Literature

The report touches on two bodies of literature related to its key findings—the first related to purported charter school funding gaps and the second related to charter school disability classification rates and student outcomes. Part of the report's premise is that policymakers should better fund charter schools to serve children with disabilities because they serve these students better than do TPS.

Charter School Funding Gaps

The report asserts the following, regarding research on funding differentials between TPS and charter schools:

Our team and other researchers have carefully documented the fact that public charter schools tend to receive less funding per-pupil than their TPS peers, in most places and during most years.¹

This claim is supported only by a footnote citing several of the authors' own prior reports and reports by the coauthors of those reports, all of which share the same deeply flawed methods.² No "other researchers" are actually cited. As I explained seven years ago, these methods of determining charter school funding gaps are simply wrong, leading to demonstrably false conclusions about charter and district funding gaps.³

The report ignores studies that are peer reviewed, or otherwise independent, using more rigorous and appropriate methods. Baker, Libby, and Wiley (2015), in a peer-reviewed article, find that in Houston, the average charter school spent about \$424 less than predicted and NYC charter schools were spending \$2,000 more than predicted given their population characteristics.⁴ That is, using models to compare otherwise similar schools, spending gaps vary by context, with modest spending gaps disadvantaging charter schools in Houston, but with charters holding a significant spending advantage in New York City. More recently, Knight and Toenjes (2020), in a study of Texas charter schools, found "after accounting for differences in accounting structures and cost factors, charter schools receive significantly more state and local funding compared to traditional public schools with similar structural characteristics and student demographics."⁵

In a study completed on behalf of the Maryland Department of Education, authors from the American Institutes for Research (AIR) found, "in all districts except Frederick, the predicted expense is less than the actual charter expense, indicating that average spending would be less for these charter schools if they followed the spending patterns of traditional schools in their district."⁶ That is, when modeled by regression analysis, given a variety of student and school characteristics, charter schools were spending more than expected (meaning, more than otherwise similar TPS). Authors from AIR arrived at similar findings using similar methods in a study completed as part of the *Getting Down to Facts* project in California:⁷

The conditional analyses, accounting for student needs and grade configuration, show that average traditional and charter spending within our sample were not

substantially different in 2014-15 and 2015-16. In 2016-17, Aspire schools were expected to spend \$1,000 or more than traditional schools in both LAUSD and OUSD when controlling for student needs and grade configuration (Exhibit B). When special education spending was excluded, Aspire and Green Dot schools in Los Angeles spent more than otherwise similar traditional schools in Los Angeles.

Note that LAUSD and OUSD are among those cities for which the present report proclaims large funding gaps. Perhaps more importantly, the studies referenced above have established a standard set of rigorous methods for making such comparisons—methods the University of Arkansas authors have chosen to ignore time and time again. Appendix A provides instructions for how to conduct such analyses.

Charter School Classification and Outcomes for Children with Disabilities

The report uses a second body of literature to argue that children with disabilities actually do better in long-term outcomes when they attend charter rather than district schools, and that these charter school students are more likely to shed their special education classification—citing Setren (2020)⁸ and also Gilmour et al. (2021).⁹ The problem is that both of these studies suffer the same flaw of simply labeling (via dummy variable) a child as having a disability or not having a disability, assuming that those who have disabilities and sort into charter schools are otherwise similar to those who have disabilities and remain in public district schools. If those who enter charter schools are more likely to have speech impairment, ADHD (under OHI category) or mild specific learning disability, those children would be far more likely to be declassified than children in district schools with more severe intellectual disabilities, blindness, deafness, traumatic brain injury, or autism.¹⁰ They would also be more likely to post better long-term outcomes, but not because the charter schools have engaged in some especially effective practices. Rather, these results would be because the children’s needs were substantively different from the outset.

V. Review of the Report’s Methods

The report compares aggregate special education classification rates and then calculates a special education funding gap by taking special education spending and dividing by those aggregate special education counts. Further, it relies heavily on deeply flawed estimates of charter school per-pupil revenue gaps to substantiate the argument of a systemic and substantial charter school disadvantage.¹¹

The report acknowledges that the composition of these populations might differ across charter schools and TPS, noting:

While we lack access to data on the incidence rates of specific types of disabilities in our 18 cities in 2017-18, studies of several of these cities, using evidence

from previous years, indicate that public charter schools tend to enroll students with low-incidence disabilities that require significant supports and services at lower rates than TPS.¹²

But it does not acknowledge that this could completely undermine its findings and conclusions. Nor does it provide summaries of the data from previous years that provide the basis for this observation, which it then ignores.

The range of severity and associated costs for children with disabilities is substantial.¹³ As such, if charter schools serve largely (if not exclusively) those with the least severe and least costly disabilities—specific learning disability, speech/language impairment, or “other health impairment” (a category which has come to largely consist of children with ADHD)—then it stands to reason that charter schools would receive substantially less funding for special education services.

Table 1 below shows a quick tabulation using data downloaded from the New Jersey Department of Education web site, for Camden, New Jersey, which is one of the report’s locations. What we see here is that Camden City schools have a special education population among which only 60% classified fall into the low need/cost categories. In contrast, for all of the City’s charter schools that share is over 80%—and for three of those charters, that share is 100%. These differences are huge and have significant cost implications.

Table 1. Disabilities by Classification for District and Charter Schools in Camden, NJ

District Name	General Ed. Enrollment	Special Ed. Enrollment	Classification Rate ^[1]	% SLI/ SLD/ OHI ^[2]
Camden City	6496	1175	18.09	60%
Camden Prep, Inc.	1008	159	15.77	100%
Camden’s Promise Charter School	2199	209	9.5	100%
Freedom Prep Charter School	834	191	22.9	92%
Hope Community Cs	132	29	21.97	NA
Kipp: Cooper Norcross, A New Jersey Nonprofit Corporation ^[3]	1770	268	15.14	84%
Leap Academy University Cs	1562	127	8.13	100%
Mastery Schools Of Camden, Inc. ^[4]	2736	572	20.91	80%

[1] https://www.nj.gov/education/specialed/data/2020/Lea_Classification_Pub.xlsx

[2] https://www.nj.gov/education/specialed/data/2020/5_21DisabilityVsEducationalEnvironment.xlsx

[3] all others are EMN (Emotional Disturbance) or ID (intellectual disability)

[4] all others are AUT (Autism), EMN (Emotional Disturbance) or ID (intellectual disability)

As such, the following description of methods for comparing funding gaps for special education is problematic, at best.

Camden TPS special education (SPED) expenditures total \$40,088,515; charter school SPED expenditures total \$8,542,982. The related per student amounts are

\$5,048 (\$40,088,515 / 7,941 total student enrollment) and \$1,001 (\$8,542,982 / 8,535 total student enrollment), respectively. Therefore, Camden's SPED Expenditure Gap Per Total Student Enrollment is \$4,047 (\$5,048 less \$1,001).¹⁴

It may be entirely sensible and driven by legitimate cost differences that Camden TPS spend about five times as much per pupil on special education services as Camden charter schools, which serve very few children with severe disabilities.

Adding to this misleading presentation of the special education numbers, the report asserts, based on the authors' prior work, that:

Camden's total revenue disparity is \$16,317 favoring TPS, so special education expenditures explain only 25% of the total funding disparity (\$4,047 / \$16,317). The amounts for each city, and for the aggregate (weighted average) of 14 cities in the last row, are computed in the same way.¹⁵

While attempting to trace the origins of those calculations and specific data sources, what I found was a path of self-reference leading to a dead end, citing Appendix B¹⁶ of the authors' prior report, which merely lists state education agencies as the data source without specific data files, measures or locations.

VI. Review of the Validity of the Findings and Conclusions

While the report does avoid making bold and sweeping conclusions, the bottom line is that no valid conclusions can be drawn about special education population differences, needs, costs, and funding gaps from the deeply flawed methods presented. Given that variations in needs and costs from the least to most severe cases of disability are greater than differences in needs and costs from the average (regular education) child to a child with mild to moderate disabilities, it is unreasonable to draw inferences from aggregate disability population comparisons between the charter sector and TPS. It is equally if not even more problematic to extend those conclusions to estimates and comparisons of funding gaps.

VII. Usefulness of the Report for Guidance of Policy and Practice

Perhaps the only usefulness of the present report is as an illustration of how NOT to compare special education populations between sectors and by extension, how NOT to calculate funding gaps with respect to the presumptive needs of those populations. This embarrassingly and transparently crude and flawed analysis may be instructive, for those purposes only, in introductory graduate-level coursework.

Appendix A: How to Use Regression Analysis to Compare School Expenditures

School finance researchers have been evaluating and comparing district- and school-level expenditures for decades, drawing largely on regression-based approaches which account for differences in needs and costs across settings, districts and schools.¹⁷ With charter schools introduced into the mix over the past several decades, researchers have extended those methods to study differences in spending between district and charter schools serving otherwise similar student populations. The most thorough example, and specific application of this approach is the study conducted on behalf of the Maryland Department of Education in 2016.

Step 1: Matching the Dollars to the Students

The first step in the process is ensuring that the right revenues and expenditures (numerator) are attached to the right students (denominator) when calculating per-pupil resources. This is a fatal flaw in the prior UARK charter funding gap reports. Where charter schools are fiscally dependent on public districts (as in most of the locations addressed by the authors), some revenues sent to and spent by districts are spent on services for children attending charter schools. If we leave those in the district's funding numerator, but take those pupils out (as they are in charter schools) that overstates district per-pupil funding and understates resources to charter schools. Further, some district revenue sources may be dedicated to other services outside of their own schools—be they community services or students tuitioned elsewhere. Step 1 is to get a comparable, comprehensive school site spending figure for both district and charter schools, likely excluding special schools or services (those served and the resources spent) from the comparisons. A detailed explanation of the process of achieving a comparable spending figure is explained on page 9, section 2 of the AIR study referenced in this report (<http://marylandpublicschools.org/stateboard/Documents/01242017/TabG-CharterPublicSchoolFundingStudy.pdf>).

Step 2: Modeling Spending Variation with Respect to Cost and Need Factors

The second step is to use that comparable spending figure (spending per pupil, school site) as the dependent variable in a regression model which accounts for a standard, well-known and frequently used set of factors. This is the approach used in the Maryland and California studies, as well as several peer-reviewed articles evaluating school site spending variation (whether focused on charter schools or not). The standard model is:

$$\text{Spend} = f(\% \text{ Low Income, \% ELL, \% SWD LI/HC, \% SWD HI/LC, \% Grades 6 to 8, \% Grades 9 to 12, Geographic Location, Year, Control*})$$

That is, spending is modeled as a function of the share of children from low-income families (using a measure set to an income threshold sufficient to capture variation across schools), % who are English language learners, % students with disabilities preferably at least in two

groups by severity, % in different grade ranges such as to compare schools of similar grade range, and if beyond a single metropolitan area, some geographic indicator to capture labor cost differences. To determine whether charter schools are funded differently than TPS, one can include a dummy variable on charter status (control).

Table A1 provides an illustration with Maryland data. Table A1 shows that a school with 100% children from low-income families spends about \$1,500 more per pupil than a school with 0% children from low-income families. A school with 100% ELL children spends only about \$360 more than a school with 0% children who are ELLs. Special education populations, in the aggregate are by far the largest driver of spending differences with a school having 100% children with disabilities expected to spend nearly \$22,000 per pupil more than a school with 0% children with disabilities. Notably, however as the share of those children with disabilities who are in the mild/moderate category increases, the overall spending margin decreases. Finally, charter schools are spending approximately \$630 more per pupil than district schools—in the same district (fixed effect)—and serving otherwise similar student populations.

Table A1. Model of Maryland School Site Spending 2013-2015, Includes LEA Fixed Effect [Schools Weighted for Enrollment. Estimated with Robust Standard Errors Clustered on School]

VARIABLES	(1) Commensurate Expense per Pupil
Charter	630.360* (181.284)
% school enrollment in grades 6 to 8	850.170* (84.529)
% school enrollment in grades 9 to 12	558.609* (89.590)
Percent Special Education	21,929.519* (1,132.973)
% Students with Disabilities that are Non-Severe Disabilities	-1,212.161* (361.059)
Percent ESL	358.567 (435.256)
Percent Low Income	1,515.191* (244.471)
year = 2014	183.814* (19.534)
year = 2015	263.468* (27.582)
Constant	8,475.939* (410.742)
Observations	3,966
R-squared	0.504

Robust standard errors in parentheses

* p<0.05

Table A2. Partial Correlations

Variable	Partial Corr.	Semipartial Corr.	Partial Corr.^2	Semipartial Corr.^2	Significance Value
charter	0.0615	0.0434	0.0038	0.0019	0.0001
pct_6_8	0.2173	0.1568	0.0472	0.0246	0.0000
pct_9_12	0.1577	0.1125	0.0249	0.0127	0.0000
pct_sped	0.4839	0.3895	0.2342	0.1517	0.0000
pct_non_s~e	-0.0949	-0.0672	0.0090	0.0045	0.0000
pct_esl	0.0194	0.0136	0.0004	0.0002	0.2246
pct_farms	0.1570	0.1120	0.0247	0.0125	0.0000

Notes and References

- 1 Syftestad, C., Wolf, P.J., Tucker, W., & Rhim, L.M. (2021, July). *Charter school funding: Support for students with disabilities* (p. 17). School Choice Demonstration Project, University of Arkansas. Retrieved August 16, 2021, from <https://cpb-us-e1.wpmucdn.com/wordpressua.uark.edu/dist/9/544/files/2018/10/charter-school-funding-support-for-students-with-disabilities.pdf>
- 2 The report's footnote reads as follows: "See for example Meagan Batdorff, Larry Maloney, Jay May, Sher-ee Speakman, Patrick J. Wolf, and Albert Cheng, *Charter school funding: Inequity expands*. School Choice Demonstration Project, University of Arkansas, Fayetteville, AR, 2014. Patrick J. Wolf, Larry D. Maloney, Jay F. May, and Corey A. DeAngelis, *Charter school funding: Inequity in the city*. School Choice Demonstration Project, University of Arkansas, Fayetteville, AR, 2017. Corey A. DeAngelis, Patrick J. Wolf, Larry D. Maloney, and Jay F. May, *Charter school funding: (More) inequity in the city*. School Choice Demonstration Project, University of Arkansas, Fayetteville, AR, 2018. Corey A. DeAngelis and Ben DeGrow, *Doing more with less: The charter school advantage in Michigan*. Mackinac Center for Public Policy, 2018. Corey A. DeAngelis, *The cost-effectiveness of public charter schools in Texas*. EdWorkingPaper No. 19-133, Annenberg Institute at Brown University, Providence, RI, 2019."
- 3 Baker, B.D. (2014). *NEPC review: Charter funding: Inequity expands*. Boulder, CO: National Education Policy Center. Retrieved August 7, 2014, from <https://nepc.colorado.edu/thinktank/review-charter-funding-inequity>
- 4 Baker, B.D., Libby, K., & Wiley, K. (2015). Charter school expansion and within-district equity: Confluence or conflict? *Education Finance and Policy*, 10(3), 423-465.
- 5 Knight, D.S., & Toenjes, L.A. (2020). Do charter schools receive their fair share of funding? School finance equity for charter and traditional public schools. *Education Policy Analysis Archives*, 28(51), 1-40. Retrieved August 5, 2020, from <https://doi.org/10.14507/epaa.28.4438>
- 6 Levin, J., Baker, B., Atchison, D., Brodziak, I., Boyle, A., Hall, A., & Becker, J. (2016). *Study of funding provided to public schools and public charter schools in Maryland*. American Institutes for Research. Retrieved August 10, 2021, from <http://marylandpublicschools.org/stateboard/Documents/01242017/TabG-Charter-PublicSchoolFundingStudy.pdf>
- 7 Atchison, D., Levin, J., & de los Reyes, I.B. (2018). *Study of spending in public charter and traditional schools in California. Making research relevant* (p. vii). American Institutes for Research. Retrieved August 10, 2021, from <https://gettingdowntofacts.com/publications/study-spending-public-charter-and-traditional-schools-california>
- 8 Setren, E. (2020). A charter boost for special-ed students and English learners. *Education Next*, 20(2), 42-61.
- 9 Gilmour and colleagues find:

Consistent with Setren (2019)'s recent findings from Boston, our results from Newark indicate that enrolling in a participating charter school increases the likelihood that a student with a disability is declassified out of special education, but does not impact the probability that a student is newly placed into special education. This result suggests that charter schools have disproportionately fewer students classified as having a disability in part because of differences in how the sectors would identify the same student for special education services.

Gilmour, A., Shanks, C., & Winters, M.A. (2021). *The effect of charter schooling on student mobility and classification status*. Working Paper 2021-6. Wheelock Educational Policy Center, Boston University, Boston, MA. Retrieved August 10, 2021, from https://wheelockpolicycenter.org/wp-content/uploads/2021/05/CharterEffectOnMobility_WP2021-6.pdf

But Baker and Weber show, for example, that Newark district schools serve far more children with severe disabilities who would not be easily declassified. When children with disabilities are all lumped together under a single dummy variable, it would appear that declassification occurred at a higher rate in charter schools, because more of those children are identified as having speech impairment, ADHD (under the classification OHI) or mild specific learning disability.

Baker, B.D., & Weber, M. (2017). *Newark's schools: The facts*. New Jersey Education Policy Forum. Retrieved August 11, 2021, from <https://njedpolicy.files.wordpress.com/2017/12/baker-weber-newark-12-13-17.pdf>

- 10 Related work in Denver (by one of the co-authors of the Gilmour paper but not cited in this report) finds that even among milder disabilities, children with mild SLD specifically are most likely to avoid classification:

We find evidence that attending a Denver charter school reduces the likelihood that a student is classified as having a specific learning disability, which is the largest and most subjectively diagnosed disability category. We find no evidence that charter attendance reduces the probability of being classified as having a speech or language disability or autism, which are two more objectively diagnosed classifications (p. 449).

Winters, M.A., Carpenter, D.M., & Clayton, G. (2017). Does attending a charter school reduce the likelihood of being placed into special education? Evidence from Denver, Colorado. *Educational Evaluation and Policy Analysis*, 39(3), 448-463.

- 11 Baker, B.D. (2014). *NEPC review: Charter funding: Inequity expands*. Boulder, CO: National Education Policy Center. Retrieved August 7, 2014, from <https://nepc.colorado.edu/thinktank/review-charter-funding-inequity>

- 12 Syftestad, C., Wolf, P.J., Tucker, W., & Rhim, L.M. (2021, July). *Charter school funding: Support for students with disabilities* (p. 15). School Choice Demonstration Project, University of Arkansas. Retrieved August 16, 2021, from <https://cpb-us-e1.wpmucdn.com/wordpressua.uark.edu/dist/9/544/files/2018/10/charter-school-funding-support-for-students-with-disabilities.pdf>

- 13 Harr, J.J., Parrish, T., Chambers, J., Levin, J., & Segarra, M. (2006). *Considering special education adequacy in California*. American Institutes for Research.

Chambers, J.G., Parrish, T.B., Lieberman, J.C., & Wolman, J.M. (1998). *What are we spending on special education in the US?* Center for Special Education Funding (CSEF) brief.

Chambers, J.G., Parrish, T.B., Esra, P.E., & Shkolnik, J.L. (2002). *How does spending on special education students vary across districts? An analysis of spending by urbanicity, district size, median family income, and student poverty levels in 1999-2000*. Report. Special Education Expenditure Project (SEEP).

Chambers, J.G., Shkolnik, J., & Perez, M. (2003). *Total expenditures for students with disabilities, 1999-2000: Spending variation by disability*. Report. Special Education Expenditure Project (SEEP).

- 14 Syftestad, C., Wolf, P.J., Tucker, W., & Rhim, L.M. (2021, July). *Charter school funding: Support for students with disabilities* (p. 19). School Choice Demonstration Project, University of Arkansas. Retrieved August 16, 2021, from <https://cpb-us-e1.wpmucdn.com/wordpressua.uark.edu/dist/9/544/files/2018/10/charter-school-funding-support-for-students-with-disabilities.pdf>

- 15 The authors provide the following explanation:

SPED Expenditure Gap Per Student calculated by subtracting average special education expenditures per pupil in the charter sector from average special education expenditures per pupil in the TPS sector. Total Revenue Disparity Per Student is taken from Corey A. DeAngelis, Patrick J. Wolf, Larry D. Maloney, and Jay F. May, *Charter school funding: Inequity surges in the cities*. School Choice Demonstration Project, University of Arkansas, Fayetteville, AR, 2020, Table 1, p. 14. This table is reproduced from that same source, Table 3, p. 17. Disparity Net of SPED is the SPED Expenditure Gap plus the Total Revenue Disparity, with negative numbers

indicating an enduring gap favoring TPS. Disparity Explained by SPED (%) is the absolute value of the SPED Expenditure Gap Per Student divided by the Total Revenue Disparity Per Student. Weighted averages exclude Atlanta, Chicago, New Orleans, and Oakland due to incomplete SPED expenditure data. (Note to Table 3, p. 20)

- 16 DeAngelis, C.A., Wolf, P.J., Maloney, L.D., & May, J.F. (2020). *Charter school funding: Inequity surges in the cities* (Table 1, p. 14). School Choice Demonstration Project, University of Arkansas, Fayetteville, AR. Retrieved August 10, 2021, from <https://files.eric.ed.gov/fulltext/ED612068.pdf>

- 17 Baker, B.D. (2009). Within-district resource allocation and the marginal costs of providing equal educational opportunity: Evidence from Texas and Ohio. *Education Policy Analysis Archives*, 17(3). Retrieved August 10, 2021, from <https://www.redalyc.org/pdf/2750/275019727003.pdf>

Chambers, J.G., Levin, J.D., & Shambaugh, L. (2010). Exploring weighted student formulas as a policy for improving equity for distributing resources to schools: A case study of two California school districts. *Economics of Education Review*, 29(2), 283-300.

Chambers, J., Shambaugh, L., Levin, J., Muraki, M., & Poland, L. (2008). *A tale of two districts: A comparative study of student-based funding and school-based decision making in San Francisco and Oakland Unified School Districts*. American Institutes for Research.

Atchison, D., Baker, B., Levin, J., & Manship, K. (2017). *Exploring the quality of school-level expenditure data: Practices and lessons learned in nine sites*. Office of Planning, Evaluation and Policy Development, US Department of Education. Retrieved August 10, 2021, from <https://files.eric.ed.gov/fulltext/ED584614.pdf>

Baker, B.D., & Weber, M. (2016). State school finance inequities and the limits of pursuing teacher equity through departmental regulation. *Education Policy Analysis Archives/Archivos Analíticos de Políticas Educativas*, 24(37), 1-36.

Baker, B.D., Libby, K., & Wiley, K. (2015). Charter school expansion and within-district equity: Confluence or conflict? *Education Finance and Policy*, 10(3), 423-465.

Toutkoushian, R.K., & Michael, R.S. (2007). An alternative approach to measuring horizontal and vertical equity in school funding. *Journal of Education Finance*, 32(4), 395-421.

Kolbe, T., Baker, B.D., Atchison, D., Levin, J., & Harris, P. (2021). The additional cost of operating rural schools: Evidence from Vermont. *AERA Open*, 7. Retrieved August 10, 2021, from <https://journals.sagepub.com/doi/pdf/10.1177/2332858420988868>

Berne, R., & Stiefel, L. (1994). Measuring equity at the school level: The finance perspective. *Educational Evaluation and Policy Analysis*, 16(4), 405-421.

Stiefel, L., Rubenstein, R., & Berne, R. (1998). Intra-district equity in four large cities: Data, methods and results. *Journal of Education Finance*, 23(4), 447-467.

Knight, D.S., & Toenjes, L.A. (2020). Do charter schools receive their fair share of funding? School finance equity for charter and traditional public schools. *Education Policy Analysis Archives*, 28(51), 1-40.