



Googling for Schools: Do K-12 School Districts Purchase Adwords to Drive Website Traffic?

Joshua Childs ¹

 0000-0003-4181-0360

Zach Taylor ^{1*}

 0000-0002-6085-2729

¹ The University of Texas at Austin, Austin, TX, USA

* Corresponding author: zt@utexas.edu

Citation: Childs, J., & Taylor, Z. (2022). Googling for Schools: Do K-12 School Districts Purchase Adwords to Drive Website Traffic? *Online Journal of Communication and Media Technologies*, 12(3), e202215. <https://doi.org/10.30935/ojcm/12020>

ARTICLE INFO

Received: 11 Feb 2022

Accepted: 7 Apr 2022

ABSTRACT

For decades, K-12 school districts have advertised their educational programming to prospective students, parents, and support networks. However, as the Internet technologies have advanced, educational institutions, including colleges and universities, have spent millions of dollars per year in online advertising leveraging Google's search engine and data science marketing platforms. To date, no educational research has investigated the spending of K-12 school districts as to whether these educational entities have followed higher education's lead and also purchase Google's online advertising services to influence the educational marketplace and recruit students, parents, and support networks into the district. This study analyzes Google Adwords advertising and marketing data to evaluate 764 K-12 school districts in Texas to explore whether these school districts advertise online and how much they spend. Results suggest few K-12 school districts in Texas advertise, yet ones that do tend to be public charter schools with multiple campuses across the state. Implications for 21st century data science resources and K-12 web metrics are addressed, in addition to policy and practice scenarios.

Keywords: K-12 school districts, adwords, online marketing, Google, data science

INTRODUCTION

Since the Internet has been made widely available to K-12 school districts in the United States, these school districts have used the Internet to expand educational offerings and increase the digital footprint of their school district. Some of these Internet-driven initiatives include hosting a K-12 school district website, sharing school district-related news on the website and over email, publishing faculty and staff rosters for both students and parents, moving curriculum and teaching online to serve remote student populations, and a wealth of other technological innovations (Childs & Taylor, 2022; Gu et al., 2013; Kaufman, 2014; Kimmons et al., 2018, 2019). In no uncertain terms, the Internet has changed the way K-12 school districts disseminate information to a wide variety of stakeholders.

Although many educational researchers have investigated how K-12 school districts leverage Internet technologies regarding the development and improvement of teaching and learning (Arnesen et al., 2019; Childs & Taylor, 2022; Denham et al., 2016; Gu et al., 2013; Hew & Cheung, 2013), little research has explored whether K-12 school districts for other purposes, including how school districts use the Internet to compete with other school districts online. Few studies have articulated how school districts use the Internet to recruit teachers (Behrends et al., 2019; Fernandez, 2020; Jones & Figueiredo-Brown, 2018), which can be viewed as a form of competition (Darling-Hammond, 2010; Jabbar, 2016). However, beyond recruitment of teachers, there is exists a large gap in the research regarding how K-12 school districts leverage Internet technologies to compete online for traffic toward their website, and thus, interest in their district from a wide variety of stakeholders, including prospective students and families, teachers, and policymakers.

Of modern Internet search engines, Google has enjoyed an over 95% market share for decades, as the Google search engine produces billions of search results that drive traffic to countless websites across the world (Law, 2020). One common business marketing strategy employed by nearly all Fortune 500 companies and many limited liability corporations (LLCs) is the purchasing of Google Adwords (Baye et al., 2016; Taylor & Bicak, 2020). This strategy involves analyzing which search terms an Internet user enters into a Google search and which website hyperlink that user eventually clicks on in the search results. Then, marketing professionals analyze these terms and buy them, bidding on the words against other websites to purchase a higher position on the search results page, as extant literature suggests purchasing position on Google's first search results page produces much more website traffic and subsequent user interaction with one's website than on the second search results page or lower (Baye et al., 2016).

Within higher education literature, several studies have found that elite colleges and universities with high rankings on the *U.S. News & World Report* best colleges list often spend millions on Google Adwords every month, competing with other elite institutions for the best students, teachers, researchers, administrators, and competitive grants and funding sources (Taylor, 2018; Taylor & Bicak, 2020). Moreover, institutions of higher education have also been found to publish large websites with many webpages, combining this practice with search-engine optimization (SEO) to strategically purchase Google Adwords to recruit students to expensive online graduate programs (Taylor et al., 2019), programs in science, technology, engineering, and mathematics (STEM), or masters of business administration (MBA) programs (Alsmadi & Taylor, 2019; Taylor & Bicak, 2020).

Given the reliance on Internet technologies during the COVID-19 global pandemic, it seems important to understand how K-12 school districts spend to drive traffic, and thus, interest, in their school district. This is especially pressing understanding that only one K-12 study has analyzed website traffic and hosting expenditures, finding that school districts levying higher tax rates often spend more on traffic and website hosting than districts levying lower tax rates (Childs & Taylor, 2020, 2022).

To fill gaps in the literature, this study analyzes 764 K-12 school districts in Texas, and more specifically, analyzes whether or not school districts purchase strategic advertising search placement (via Google Adwords) to drive traffic toward their district websites. This study will inform several critical strands in the K-12 school district literature related to school competition, K-12 marketing, educational data science, and 21st century methods of school measurement, allowing the broader educational research and policy community to better understand how modern K-12 school districts utilize perhaps the most powerful communication tool ever created: the Internet. This study will answer the following research questions related to educational data science and strategic K-12 school district Internet marketing:

1. Do K-12 school districts purchase Google Adwords?
2. If so, how many school districts participate in this practice and how many adwords do school districts purchase and at what cost?

By answering these questions, educational researchers, policymakers, and practitioners will be able to better understand how K-12 school districts compete on the Internet and specifically what types of schools invest in innovative, 21st century marketing tactics. Moreover, educational data scientists will be exposed to a new method of gathering institutional website data to inform how K-12 school districts strategically spend their money to drive a student interest or external stakeholder interest toward their website and thus, interest in their school district.

METHODS

The following sections will outline how this study's population and sample size was calculated, how the research team collected analyzed data, and how the research team also addressed limitations. Implications for further research and practice will be discussed in the conclusion section of this study.

Rationale: Texas' Public and Charter School Competition

The research team envisioned Texas as an appropriate site for this state-level case study exploring whether K-12 school districts purchase Google Adwords for a variety of reasons. First, Texas is home to several

Table 1. Description of Texas K-12 school districts in the sample (n=764)

Type	District	n	Texas Education Agency (TEA)			
			Region	n	Region	n
Charter school		123	Region 1–Edinburg	22	Region 11–Fort Worth	53
Rural		210	Region 2–Corpus Christi	28	Region 12–Waco	49
Independent town		58	Region 3–Victoria	22	Region 13–Austin	43
Other Central City		35	Region 4–Houston	75	Region 14–Abilene	20
Other Central City Suburban		115	Region 5–Beaumont	24	Region 15–San Angelo	26
Non-Metropolitan, fast growing		26	Region 6–Huntsville	33	Region 16–Amarillo	41
Non-Metropolitan, stable		120	Region 7–Kilgore	56	Region 17–Lubbock	30
Major Suburban		66	Region 8–Mount Pleasant	30	Region 18–Midland	17
Major Urban		11	Region 9–Wichita Falls	23	Region 19–El Paso	15
			Region 10–Richardson	97	Region 20–San Antonio	60

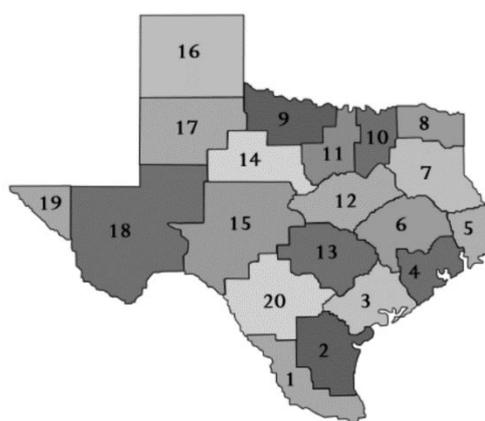


Figure 1. Map of Texas Education Association (TEA) regions

national charter school organizations, with charter schools often competing with both public schools and other charter districts for students and teachers (Whitmire, 2019). Second, in 2018, there were over 700 charter schools serving nearly 300,000 students in Texas, while nearly 150,000 students remained on waitlists, illustrating the demand for charter school education in Texas and the burgeoning competition within the Texas K-12 landscape (Texas Charter Schools Association, 2018). Finally, this expansion of charter school education in Texas has produced a sense of competition among K-12 school districts in Texas, especially in heavily urban areas such as Houston, Austin, Dallas, San Antonio, and El Paso, where charter schools have grown at a more rapid pace than traditional public school districts (Zedaker, 2019). Given the aggressiveness of how charter schools market themselves (Whitmire, 2019) and the changing demographics of Texas’ K-12 school districts (Texas Charter Schools Association, 2018; Zedaker, 2019), analyzing the websites of Texas’ K-12 school districts seemed appropriate and timely.

Population and Sample

In 2019, the Texas Education Agency (TEA) oversaw a combination of 1,203 public school districts, open enrollment public charter school districts, and juvenile justice and in-live facilities, as well as two schools serving special populations: the Texas School for the Blind and Visually Impaired and the Texas School for the Deaf. However, Texas the vast majority of Texas school districts are either public charter districts in predominantly urban areas (14.9% of all districts) or traditional public school districts in remote, rural areas (38.3% of all districts), compared to only 11 major urban school districts as classified by the TEA (Texas Education Agency, 2019a). This led to an interesting challenge in terms of sampling for this study, as it was not feasible to gather online data from all 1,203 districts in a timely manner.

As a result, we decided upon a purposive random sampling strategy across all TEA district types to identify a sample for this study, using GPower to calculate the sample at 95% confidence and a confidence interval of five. This resulted in 764 Texas K-12 districts being assigned to this study across all nine TEA district types and all twenty TEA regions. **Table 1** displays an overview of the school districts and district types in this study. A map of TEA regions can be found in **Figure 1**.

Table 2. K-12 school districts in Texas purchasing Google Adwords in Fall 2019 (n=10)

K-12 districts	n	TEA region
Charter school	7	
School of Excellence in Education		No regions (charter, open enrollment)
Trinity Basin Preparatory		
Education Center International		
Legacy Preparatory		
Premier High Schools		
Kipp, Incorporated		
Texas Preparatory School		
Rural	0	
Independent Town	0	
Other Central City	1	
Pharr-San Juan-Alamo ISD		Region 1–Edinburgh
Other Central City Suburban	0	
Non-Metropolitan, fast growing	0	
Non-Metropolitan, stable	0	
Major Suburban	1	
South San Antonio ISD		Region 20–San Antonio
Major Urban	1	
El Paso ISD		Region 19–El Paso

Data Collection and Analysis

We gathered data for this study from two sources: the Texas Education Agency (2019b) reports database and SEMrush (2019). We used Texas Education Agency (2019a) data to identify the population and sample of the study, and we employed SEMrush to gather the Google Adword data for the study.

SEMrush is a quantitative analytic tool used by website developers and software engineers to evaluate the popularity and cost of websites in an effort to inform online advertising techniques, optimize search-engines across desktop and mobile devices, and boost website visibility (SEMrush, 2019). To provide this insight, SEMrush’s interface connects with Google’s application program interface (API), specifically Google’s paid search and advertising data on the Google Adwords and analytics platforms. As a result, SEMrush can measure a website’s size and popularity on the Internet, along with how much money is spent on hosting a website’s traffic and whether the website pays for prioritized search results placement in Google’s search engine. Other studies focused on higher education have used SEMrush to analyze how web metrics may influence *U.S. News & World Report* rankings (Taylor et al., 2018), the competitiveness of historically Black colleges and universities (Taylor, 2018), and how elite institutions purchase Google Adwords to advertise programs and recruit students (Taylor & Bicak, 2020). Using SEMrush, we entered the home URL for each school district (e.g., <https://www.houstonisd.org/>) and gathered SEMrush data pertinent to each school district’s purchase of Google Adwords, including the number of adwords, the cost-per-click (CPC) of the adword, and how much traffic (in hits) that adword generated. These metrics will allow readers to understand not only the volume of adwords as a proxy for the school district’s online marketing aggressiveness strategy, but also the cost effectiveness of that strategy and the traffic outcomes of the strategy.

Initially, during the planning stages of this study, the research team had prepared to load the Google Adwords variables into a regression model to explore whether district-level characteristics (such as student enrollment) predicted expenditures on Google Adwords. However, given the results of the data collection section of the study, the sample of school districts purchasing Google Adwords was too small for advanced quantitative analysis. This small sample was a research limitation but also a critical finding, which we will discuss in the Discussion section of this study.

RESULTS

Table 2 displays the K-12 School District purchasing Google Adword and strategic search results placement.

Table 3. K-12 school districts Google Adwords volume and cost in Fall 2019 (n=10)

K-12 districts	Adwords purchased	Average cost per click	Average website hits per adword
Charter school			
School of Excellence in Education	1	\$6.16	2.0
Trinity Basin Preparatory	2	\$0	0
Education Center International	1	\$0	0
Legacy Preparatory	9	\$0.66	1.4
Kipp, Incorporated	135	\$1.23	30.6
Texas Preparatory School	2	\$0.60	4.5
Premier High Schools	24	\$1.19	3.1
Other Central City			
Pharr-San Juan-Alamo ISD	5	\$0	0
Major Suburban			
South San Antonio ISD	2	\$0	0
Major Urban			
El Paso ISD	2	\$0	0
Average	18.3	\$1.968	4.16

Prior studies focused on colleges and universities found that nearly every top-ranked institution in the United States in the *U.S. News & World Report* best colleges list purchase adwords regularly, spending hundreds of thousands of dollars per month on these adwords (Taylor & Bicak, 2020). However, this study suggests that purchasing of adwords and search result placement is far less common at the K-12 level than at the higher education level. Moreover, adword purchasing and strategic online marketing may be practiced predominantly by charter schools, many of whom may be new and do not enjoy the benefit of word of mouth advertising that traditional public schools may enjoy.

Of 764 K-12 school districts in Texas in this study, only ten K-12 school districts purchased Google Adwords and search results placement, with seven of these institutions being charter schools districts. Moreover, in very densely populated areas and metropolitan areas such as Houston, the Dallas-Fort Worth metroplex, and Austin, no school districts in these major metropolitan areas purchased any adwords or search result placement through Google during the Fall 2019 months. Instead, the independent school districts of El Paso, South San Antonio, and the Pharr-San Juan-Alamo district purchased Google Adwords.

Table 3 displays how many adwords K-12 school districts purchased, at what cost-per-click, and how many website hits (traffic) those adwords drove.

As the data suggests, certain charter school districts in Texas participated in adword purchasing much more frequently than their public peers. Moreover, the charter districts of Kipp Incorporated and Premier High Schools purchased far more adwords than any other school district in Texas, with the Kipp Incorporated district purchasing 135 adwords over the course of August, September, October, November, and December of Fall 2019, spending an average of \$1.23 per click and driving 30 website hits per adwords purchased. Although a relatively small investment, Kipp Incorporated was able to spend a few hundred dollars to drive over 4,000 overall hits to their website. Similarly, Premier High School’s charter district purchased 24 adwords at a cost of \$1.19 per click, driving an average of 3.1 website hits per adword. Comparing these results to Kipp Incorporated, it is clear that Kipp Incorporated purchased more attractive or appealing adwords, given how many more hits on their website were driven by the adwords they purchased, even though Kipp Incorporated spent a bit more per click than Premier High Schools.

Additionally, several charter school districts in this study purchased only a handful of adwords, with School of Excellence in Education purchasing only one adword at an average cost of \$6 per click and only driving one hit on their website over the course of a five-month period in Fall 2019. Meanwhile, two other charter districts, Trinity Basin Preparatory and Education Center International only purchased one or two adwords and did not pay for them, as their adwords did not drive any clicks toward their school district website: as a result, these school districts did not pay. From this data, it is clear that some charter school districts are much more savvy and adept at purchasing adwords to drive traffic for their school district, while many other public and charter school districts do not participate in the practice of purchasing Google Adwords and search results placement.

Regarding all other school districts purchasing adwords, only the El Paso, South San Antonio, and Pharr-San Juan-Alamo Independent School District purchased adwords during Fall 2019. Pharr-San Juan-Alamo

Independent School District purchased five adwords, and similar to the other two public school districts, their purchases did not result in payment, as the adwords they purchased did not result in a click toward their school district website. From here, this data not only suggests that public school districts may not participate in Google Adword purchasing and competitive search results placement, but the select few public school districts who do purchase adwords do not purchase them in a way that drives substantial traffic to their school district website. Here, charter schools may be practicing online marketing and advertising in a more competitive, effective fashion than traditional public school districts.

Additionally, the public school districts in this study that did purchase adwords tended to be located in suburban or urban areas, as the El Paso, San Antonio, and Pharr-San Juan-Alamo Independent School Districts are situated in cities or metropolitan areas of well over 100,000 people. As a result, the data in this study suggests that rural school districts or smaller school districts may not participate in purchasing Google Adwords and strategically driving traffic toward their school district website, possibly placing these districts in a competitive disadvantage in open enrollment education environments.

DISCUSSION AND CONCLUSION

Although a wealth of research has articulated how K-12 school districts compete (Behrends et al., 2019; Childs & Taylor, 2020; Darling-Hammond, 2010; Jabbar, 2016) and how they leverage the Internet technologies to communicate the offerings of their district (Childs & Taylor 2020; Jones & Figueiredo-Brown, 2018; Kimmons et al., 2019; Miller, 2017), this study makes a unique contribution to the literature by reporting how K-12 school districts may participate in competitive search results placement using the Google Adwords platform. However, as our data suggests, many K-12 school districts may not be participating in a practice that many institutions of higher education do participate in (Alsmadi & Taylor, 2019; Taylor & Bicak, 2020). As a result, this study's findings fill important gaps in the literature while also highlighting the stark contrast between the digital footprints and advertising techniques of K-12 school districts versus their higher education counterparts.

First, it is important to note that this study only reports on 764 K-12 school districts in Texas, yet it is surprising that so few school districts participate in a marketing and communications practice that is so common in the business sector and higher education sector. Taylor and Bicak (2020) found that nearly every single institution in the *U.S. News & World Report* top 100 best colleges participated in Google Adwords purchasing and competitive search results placement. Although extant research has articulated how competitive higher education is for students, faculty, and other stakeholders (Childs & Taylor, 2022; Kimmons et al., 2018; Taylor & Bicak, 2020), it seems that K-12 school district competition may not be as rampant in online spaces.

This phenomenon may be due in part to shrinking state allocations toward K-12 budgets in Texas, coined as "massive austerity" for Texas' public education sector (Lawrence, 2021, para. 1). In addition, many public schools across the United States, especially in Texas, have dealt with a critical teacher and staff shortage that was accelerated by the COVID-19 pandemic (Wiggin et al., 2021), signaling that K-12 school districts may not be as focused on advertising as they are on recruiting and retaining teachers and staff (Wiggin et al., 2021). However, the K-12 sector in the United States—especially in urban areas—has also been repeatedly criticized for being slow to invest in and adopt new technology to the detriment of student learning and district development (Kormos, 2022; Ogodo et al., 2021), also possibly explaining why few K-12 districts in this study participated in Google Adword strategies. Subsequently, education policymakers and practitioners should analyze how K-12 school districts do compete in online spaces using banner advertisements, email campaigns, or text message and phone call campaigns to reach a broader audience both online and in physical spaces.

Additionally, it is notable how many more charter school districts in this study purchased Google Adwords compared to traditional public school district peers. Perhaps public school districts, as a result of their history or notoriety in a certain area, do not feel compelled to compete in online spaces with charter schools who, as the study suggests, may spend hundreds or thousands of dollars in a semester to advertise their district and recruit teachers, students, and other stakeholders. Prior research has emphasized the fact that charter schools often compete with public schools for students and teachers (Behrends et al., 2019; Jabbar, 2016), as

states such as Texas have embraced an open enrollment model that allows students to attend any school district they wish, regardless of where that student lives. Moreover, Childs and Taylor (2022) recently found that public charter schools were much more likely to spend greater amounts of money on improving their website and writing more webpages than traditional school districts, signaling that charter schools may be attempting to compete with public school districts on the Internet, a space where traditional public schools may not be ready or willing to compete or invest dollars in.

Subsequently, charter schools in this study were much more likely to purchase Google Adwords and compete for search results placement, possibly suggesting that charter schools view the Internet as a competitive marketplace, whereas public school districts do not. From here, educational researchers and policy makers should investigate how public taxpayer dollars are funneled to charter school districts and how charter school districts use those funds to recruit and retain students and teachers, as well as advance other initiatives. As many charter school districts open and close rapidly (Whitmire, 2019; Zedaker, 2019), it is important to understand the flow of public taxpayer dollars into these entities to ensure that these funds are spent responsibly and in ways that support student learning and success.

Moreover, it is crucial to recognize that the school districts in this study who did participate in purchasing adwords were located in suburban or urban areas which are densely populated and offer a plethora of educational choices for K-12 students and their families. Most major urban areas in Texas provide students in those areas with a choice between public and charter school options, however, many rural districts in Texas only have physical brick and mortar public schools available to students and their families (Zedaker, 2019). Additionally, Childs and Taylor (2022) found that many urban charter schools invest heavily in their website, yet few charter schools who did make this investment were located in urban areas. For the simple reason of the economy of scale and abundance of choice, both charter and public schools in this study may have felt compelled to participate in an online space for survival. However, the motivations for purchasing these adwords by the school districts is unclear. As a result, future research should investigate why school districts compete or do not compete online, better informing the literature on school choice and open enrollment education environments (Behrends et al., 2019; Jabbar, 2016).

Finally, the results of this study begin important discussions around how school districts are measured and how their funds are used and tracked by educational researchers and policy makers. As this study is the first of its kind to report online advertising expenditures on the Google Adwords platform by K-12 school districts, educational researchers should embrace the power of big data and the Google Analytics and AdWords platforms to investigate how school districts spend money online to drive traffic toward their website and strategically advance their educational missions and visions. Without understanding how school districts operate online, it is difficult to understand that school district as an entire entity, as so many fundamental school operations may be conducted online in a COVID-19 and post-COVID-19 environment. Moreover, the results of this study beg important questions about school funding accountability and expenditures. In short, both educational researchers and policy makers should ask schools how are school districts spending their taxpayer dollars and are they spending these funds in a way that supports student learning and success? It is important for schools to raise the funds and the attention necessary to maintain operations for survival, but it is equally important for public taxpayers to understand where their taxpayer dollars are going to support their local public schools, including state subsidized charter school districts.

Ultimately, educational researchers and policy makers interested in K-12 school finance, big data, competition in online spaces, and school choice should take note of this study's findings and further explore how K-12 school districts spend online to strategically drive traffic toward their website. Given the enormity of the Google search engine and its dominance across the world (Law, 2020), educational researchers and policy makers should be *Googling for schools* just as select school districts in this study have recognized. School districts in this study understand that students and their families are literally *Googling for schools* to find the best educational opportunity for their child or themselves. Educational researchers and policy makers should take note and *Google for schools* as well to learn more about K-12 school district competition in the United States, and thus, make strides toward K12 school district accountability and equity towards student success for all.

Limitations

As with any study, this study was limited by several data-related, time-related, and research-related factors. First, this study's data is limited to both TEA data (one year) and SEMrush data (August to October 2019). As the Internet information changes constantly, it is difficult to overgeneralize this study's findings, given that the Google Adwords figures reported in this study are likely to have changed, especially given the seismic shift in the reliance on the Internet amid the COVID-19 global pandemic. In addition, SEMrush data was collected from the period of August to October 2019, as this is period represents the beginning of the academic year, even though online advertising expenditures likely fluctuate throughout the academic year.

Second, this study is also limited by the arduous nature of collecting SEMrush data from multiple websites. In all, this study included data from 764 unique K-12 school districts in Texas and their websites, but SEMrush is generally used by marketing and communications professionals working on one website, comparing their website to their competitors' websites (SEMrush, 2019). Moreover, all SEMrush requests for data are manual, meaning that SEMrush does not feature an export function to cleanly and efficiently choose web metrics (e.g., traffic cost) and export them from the SEMrush dashboard. All gathering of web metrics require entering a unique URL (e.g., <https://www.houstonisd.org/>) into the SEMrush search bar, one at a time, and then manually navigating to each metric (Google Adwords, CPC, and traffic), and then copying the data from the dashboard into a database. As a result, this study's data collection process was time consuming and limited the overall sample size of the study, as it was not feasible to gather web metrics from all K-12 school district websites in Texas.

This study is also limited by our analytic method and reliance on single-year quantitative data sources. Ideally, we would have gathered multiple years of data and attempt to demonstrate causal effects of school district characteristics on Google Adword expenditures: The research team plans to gather longitudinal data in the future. However, the collection of website metrics for each individual URL proved intensely time-consuming, as at the writing of this paper, SEMrush had only allowed for manual copy-and-paste scraping of website metrics using one URL at a time instead of any form of batch URL processing. Because of the time-consuming nature of the data collection, we were not able to pair the quantitative data from this study with any form of qualitative data, such as follow-up interviews with school district employees to understand their involvement with Google Adword strategies. Here, qualitative and mixed methods researchers could augment this study's findings by expanding beyond a quantitative analysis, speaking with school district employees with knowledge of their website's investment costs and benefits, exploring how competition exists in K-12 online spaces. However, as our data demonstrates, too few Texas K-12 school districts participated in Google Adword purchasing to justify a quantitative analysis, both a limitation and important finding of the study.

Finally, this study's data collection and analytic technique is limited by the extant research related to K-12 school district spending on technology, specifically its school district website. Had there been prior research to suggest certain school district characteristics may predict spending on Google Adword expenditures, we would have gathered that data and integrated those variables into our regression model. However, too few school districts purchased Google Adwords for any sort of quantitative analysis to explore district-level characteristics. Moreover, this study represents the first of its kind to explore online advertising purchases by K-12 school districts, rendering the exploratory nature of this study both a limitation and strength. Future research could continue to explore these online metrics, as institutions of higher education routinely spend hundreds of thousands of dollars per month in online advertising on the Google platform (Taylor & Bicak, 2020), potentially stratifying the higher education marketplace and spurring competition in online spaces.

Author contributions: All authors were involved in concept, design, collection of data, interpretation, writing, and critically revising the article. All authors approve final version of the article.

Funding: The authors received no financial support for the research and/or authorship of this article.

Declaration of interest: Authors declare no competing interest.

Data availability: Data generated or analyzed during this study are available from the authors on request.

REFERENCES

- Alsmadi, I., & Taylor, Z. W. (2019). Does size matter? An evaluation of institutional Internet ranking metrics. *Technology & Resources in Education*, 1-24. <https://doi.org/10.2139/ssrn.3441943>
- Arnesen, K. T., Hveem, J., Short, C. R., West, R. E., & Barbour, M. K. (2019). K-12 online learning journal articles: Trends from two decades of scholarship. *Distance Education*, 40(1), 32-53. <https://doi.org/10.1080/01587919.2018.1553566>
- Baye, M. R., Santos, B. D., & Wildenbeest, M. R. (2016). Search engine optimization: What drives organic traffic to retail sites? *Journal of Economics & Management Strategy*, 25(1), 6-31. <https://doi.org/10.1111/jems.12141>
- Behrends, M., Primus, A., & Springer, M. G. (2019). *Handbook of research on school choice*. Routledge. <https://doi.org/10.4324/9781351210447>
- Childs, J., & Taylor, Z. W. (2020). Are the rich getting richer? How school district wealth predicts website traffic expenditures. *Texas Education Review*, 8(2), 53-69. <https://doi.org/10.26153/tsw/9203>
- Childs, J., & Taylor, Z. W. (2022). Do charter schools outspend public schools online? Evidence from Texas. *Journal of School Choice*, 16(1), 49-70. <https://doi.org/10.1080/15582159.2021.1944737>
- Darling-Hammond, L. (2010). Recruiting and retaining teachers: Turning around the race to the bottom in high-need schools. *Journal of Curriculum and Instruction*, 4(1), 16-32. <https://doi.org/10.3776/joci.2010.v4n1p16-32>
- Denham, A. R., Mayben, R., & Boman, T. (2016). Integrating game-based learning initiative: Increasing the usage of game-based learning within K-12 classrooms through professional learning groups. *TechTrends*, 60, 70-76. <https://doi.org/10.1007/s11528-015-0019-y>
- Fernandez, M. L. (2020). Marketing strategies for attracting prospective secondary mathematics teachers. In W. G. Martin, B. R. Lawler, A. E. Lischka, & W. M. Smith (Eds.), *The mathematics teacher education partnership: The power of a networked improvement community to transform secondary mathematics teacher preparation* (pp. 319-336). Information Age Publishing.
- Gu, X., Zhu, Y., & Guo, X. (2013). Meeting the "digital natives": Understanding the acceptance of technology in classrooms. *Educational Technology & Society*, 16(1), 392-402. <https://www.jstor.org/stable/jeductechsoci.16.1.392>
- Hew, K. F., & Cheung, W. S. (2013). Use of web 2.0 technologies in K-12 and higher education: The search for evidence-based practice. *Educational Research Review*, 9, 47-64. <https://doi.org/10.1016/j.edurev.2012.08.001>
- Jabbar, H. (2016). Selling schools: Marketing and recruitment strategies in New Orleans. *Peabody Journal of Education*, 91(1), 4-23. <https://doi.org/10.1080/0161956X.2016.1119554>
- Jones, K. D., & Figueiredo-Brown, R. (2018). Finding the customers: Challenges and experiences marketing K-12 full-time virtual schools. *American Journal of Distance Education*, 32(2), 96-112. <https://doi.org/10.1080/08923647.2018.1440463>
- Kaufman, K. (2014). Information communication technology: Challenges & some prospects from preservice education to the classroom. *Mid-Atlantic Education Review*, 2(1), 1-11.
- Kimmons, R., Carpenter, J. P., Veletsianos, G., & Krutka, D. G. (2018). Mining social media divides: An analysis of K-12 U.S. School uses of Twitter. *Learning, Media and Technology*, 43(3), 307-325. <https://doi.org/10.1080/17439884.2018.1504791>
- Kimmons, R., Hunsaker, E. W., Jones, J. E., & Stauffer, M. (2019). The nationwide landscape of K-12 school websites in the United States: Systems, services, intended audiences, and adoption patterns. *The International Review of Research in Open and Distributed Learning*, 20(3), 180-201. <https://doi.org/10.19173/irrodl.v20i4.3794>
- Kormos, E. (2022). Technology as a facilitator in the learning process in urban high-needs schools: Challenges and opportunities. *Education and Urban Society*, 54(2), 146-163. <https://doi.org/10.1177/2F00131245211004555>
- Law, T. J. (2020). *Meet the top 10 search engines in the world in 2020*. <https://www.oberlo.com/blog/top-search-engines-world>
- Lawrence, C. (2021). School districts across Texas implement massive austerity and cuts to staff. *World Socialist Web Site*. <https://www.wsws.org/en/articles/2021/05/13/texs-m13.html>

- Miller, K. K. (2017). *Catholic school enrollment: A study on the impact of a marketing plan in a Catholic school* [Doctoral dissertation, University of St. Francis]. ProQuest.
- Ogodo, J., Simon, M., Morris, D., & Akubo, M. (2021). Examining K-12 teachers' digital competency and technology self-efficacy during COVID-19 pandemic. *Journal of Higher Education Theory & Practice*, 21(11), 13-27. <https://doi.org/10.33423/jhetp.v21i11.4660>
- SEMrush. (2019). *Overview: Features and analytics*. <https://www.semrush.com/features/>
- Taylor, Z. W. (2018). "Now you're competing": How historically-Black colleges and universities compete (and don't) on the Internet. *International Journal of Educational Technology in Higher Education*, 15(28), 1-15. <https://doi.org/10.1186/s41239-018-0111-4>
- Taylor, Z. W., & Bicak, I. (2020). Buying search, buying students: How elite U.S. institutions employ paid search to practice academic capitalism online. *Journal of Marketing for Higher Education*, 30(2), 271-296. <https://doi.org/10.1080/08841241.2020.1731910>
- Taylor, Z. W., Childs, J., Bicak, I., & Alsmadi, I. (2019). Is bigger, better? Exploring U.S. News graduate education program rankings and Internet characteristics. *Interchange*, 50(2), 205-219. <https://doi.org/10.1007/s10780-019-09366-0>
- Texas Education Agency. (2019a). *Education service centers: History*. https://tea.texas.gov/About_TEA/Other_Services/Education_Service_Centers/Education_Service_Centers
- Texas Education Agency. (2019b). *Reports and data*. <https://tea.texas.gov/reports-and-data>
- Whitmire, R. (2019). *The most important charter school network in America is not what you think*. <https://www.nydailynews.com/opinion/ny-oped-the-most-important-charter-school-network-in-america-is-not-wh-20190918-bgvvggj33vngbbnfw323xn6fxca-story.html>
- Wiggan, G., Smith, D., & Watson-Vandiver, M.J. (2021). The national teacher shortage, urban education, and the cognitive sociology of labor. *The Urban Review*, 53, 43-75. <https://doi.org/10.1007/s11256-020-00565-z>
- Zedaker, H. (2019). *Charter schools set sights on northwest Harris County*. <https://communityimpact.com/houston/spring-klein/education/2019/09/09/charter-schools-set-sights-on-northwest-harris-county/>

