



"Now you're competing": how historically-Black colleges and universities compete (and don't) on the Internet

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Abstract: No extant research has examined the web presence, web popularity, and paid adword tactics of historically-Black colleges and universities (HBCUs) compared to similar institutions. This study explores these measures and evaluates how HBCU web presence, web popularity, and paid search tactics compare to similar institutions to learn whether HBCUs are competing in one of the most competitive global higher education markets: the Internet. Findings suggest HBCU websites are smaller and less popular, and HBCUs spend less on web advertising than non-HBCU peers. Additionally, non-HBCUs are 3.8 times more likely to purchase desktop adwords and 4.3 times more likely to purchase mobile adwords than HBCUs. HBCUs need to harness the power of this global market to compete in a globalized, twenty-first century higher education market. If not, the financial situations between HBCUs could exacerbate, potentially threatening the livelihood of some of the most successful and time-honored institutions in the United States.

Keywords: Historically-black colleges and universities, Internet, Web presence, Web popularity, Adwords, Paid search

Introduction

Although historically-Black colleges and universities (HBCUs) comprise only 3% of all institutions of higher education in the United States (U.S.), over 20% of all African-American postsecondary students receive their degree from an HBCU. Beyond degree attainment, 40% of African-Americans in U.S. Congress, 50% of African-American lawyers in the U.S., and 80% of African-American U.S. judges graduated from an HBCU (Camera 2017), speaking to the value of an HBCU credential. Overall student enrollment at HBCUs has risen over the past four decades, as roughly 230,000 students attended an HBCU in 1980 compared to 293,000 students in 2015, yet the postsecondary-going population has doubled in the U.S., with HBCUs growing at a much slower rate than many other U.S. colleges and universities (Anderson 2017).

Beyond 2015, African-American student interest and enrollment in HBCUs has been both high and low for these institutions across the U.S. Hampton University, Dillard University, and other highly-ranked HBCUs have reported significant increases in African-American and overall student enrollment in recent years, with Alcorn State University reporting a 6% increase in 2016, representing the largest enrollment increase in Alcorn State's history (The Journal of Blacks in Higher Education 2016).

However, many HBCUs have faced unprecedented struggles in recent years. In May 2017, Cheyney University—the United States' oldest HBCU—released a report detailing its problems retaining high-quality leadership, as frequent turnover of executive leadership at Cheyney has proven costly both in terms of finances and long-term planning for increased student enrollment (Savage 2017). This problem has not been unique to Cheyney, as HBCU presidents stay at their institution an average of three years, whereas the presidents at predominantly-White institutions (PWIs) stay an average of seven years, emphasizing the difficulty of long-term planning for increased student enrollment at HBCUs (Morris 2016). As a result, HBCUs such as Hampton, Dillard, and Alcorn State have grown, while Morris Brown College witnessed a sharp drop in student enrollment from 2700 students in 2003 to forty students in 2017 (Medina and Allen 2017). University of Pennsylvania Professor Marybeth Gasman, a noted scholar of HBCUs, best summarized this dual existence of modern HBCUs:

There are some [HBCUs] that are quite strong, and have good enrollment, and then there are some that are sort of in the middle, that have to really ramp up their fundraising, and make sure their students graduate. And then there are some — probably about 15 of them — that are having a really difficult time. (Jacobs 2015, para. 8).

Outgoing President of the Thurgood Marshall College Fund Johnny C. Taylor Jr. elaborated on Gasman's assertion, noting the low enrollment of African-Americans at HBCUs as a reason for HBCUs to increase their competitive nature: "When you used to have a captive audience, you were guaranteed that your seats were going to be filled... Now you're competing... The market shifted, and you are economically challenged" (Hong 2017, para. 11). This competitive postsecondary market has resulted in only 9% of African-American postsecondary students attending an HBCU in 2016, while 91% of African-American postsecondary students attended other types of postsecondary institutions (Anderson 2017), with nearly 25% enrolled in predatory, for-profit colleges and universities (Deming et al. 2013). As a result, many HBCU leaders and scholars have called for HBCUs to increase their competitiveness to ensure the survival of the 100 HBCUs across the U.S., including expanding course offering, partnering with other educational organizations, (Collins 2015), increasing affordability and loan transparency for students and borrowers (Worf 2015), and amplifying efforts to recruit outstanding students and faculty members to elevate the rankings of HBCUs (America 2012). However, as HBCUs have endeavored to become more competitive in certain contexts, these institutions may be ignoring a critical method of twenty-first-century competition: competing on the Internet.

The Internet is now the most popular source of pre-college information for prospective students and their support networks (Burdett 2013; Daun-Barnett and Das 2013), with over 80% of U.S. households including at least one person of pre-college or college-going age (ages 15–24) having paid Internet subscriptions. In addition, younger U.S. households are more likely to have high-speed Internet access and multiple computers and smartphones than older U.S. households (Ryan and Lewis 2017), speaking to the popularity of the Internet with young people, many of whom are prospective postsecondary students. African-American use of the Internet is nearly ubiquitous across age demographics, as 85% of all African-Americans regularly use the Internet to connect with each other, gather information, and conduct their day-to-day lives (Pew Research Center 2017).

For over twenty years, institutions of higher education have published institutional websites to recruit students, share programmatic offerings, and disseminate institutional materials of many types (Hickey 2014). As Internet technologies have advanced in recent years, these institutions have accessed big data sources to drive strategic Internet marketing initiatives (Selingo 2017). In addition to a web presence and big data analysis, institutions of higher education often engage in paid search tactics to drive traffic to their institutional website. For instance, Harvard University regularly purchases thousands of paid adwords per month between August and December to drive traffic to their website during application season (SEMrush 2017). For as influential and ubiquitous as the Internet is, no extant research has examined how HBCUs leverage the power of the Internet to increase their web presence and web popularity—and thus, prospective student interest—in their institution, potentially resulting in increased enrollment, revenue, and appeal to attract high-quality educational leaders. In short, this study's two main objectives are as follows:

- 1.) How does HBCU web presence and popularity compare with institutions of similar sector, size (measured by total student enrollment), admission rate, and yield?
- 2.) Do HBCUs employ paid adword tactics to increase their web traffic toward their institutional web domain? If so, how do these paid adword strategies compare with institutions of similar sector, size, admission rate, and yield?

Answering these questions will inform researchers and marketing professionals working in HBCUs to better understand how HBCUs currently compete for web presence and popularity against other institutions on the Internet. Moreover, these questions will inform how HBCUs could increase their web presence and popularity, thus increasing their competitiveness and other educational stakeholders' interest in their institution.

Literature review

Although institutions of higher education have had a presence on the Internet for over twenty years (Hickey 2014), the researching of web presence, popularity, and paid adword tactics is a new and emerging field of inquiry in higher education. As the aims of this paper are to articulate how HBCU web presence, popularity, and paid adword tactics compare to similar institutions, it is important to review the literature—albeit limited—regarding both institutional use of web analytics and paid search tactics to drive web traffic toward their institutional .edu domain. Reviewing these sets of literature will provide an understanding of how institutions of higher education compete on the web, informing the practices of HBCUs in their quest to increase student enrollment and publicity.

How institutions of higher education use web analytics

For years, institutions of higher education across the U.S. have used big data sources to drive the strategic recruitment and enrollment of students. In 2007, Saint Louis University, facing a projected 33% drop in student enrollment by 2028, began a strategic marketing initiative to target prospective students through College Board and American College Testing (ACT) databases, choosing to purchase the names of prospective

students whose measurables were similar the previous year's incoming cohort. By 2016, Saint Louis University had enrolled five of the six largest freshman classes in the university's history while increasing their four-year graduation rate from 62% in 2010 to 71% in 2016 (Selingo 2017). Over the course of a decade, Georgia State University used big data sources and analytics to cut their dropout rates by 32% (Svrluga 2017). The University of Maryland at College Park's data analytics initiative was so successful in retaining students that the institution formed a separate consulting company, Helio-Campus, that now provides data analytics services to institutions of higher education across the U.S. (Cortez 2017).

Coupled with big data, institutions of higher education use a variety of web analytics services to identify their web audience and craft web material to cater to their needs. Many institutions use the free version of Google Analytics to examine the traffic on their institutional .edu webpages, adding or altering content to make frequently-visited pages more informative and less-visited pages more attractive (Quacquarelli Symonds Limited 2017). However, some institutions of higher education have used the paid Google Analytics Premium to improve the user experience of their institutional .edu webpages, such as Arizona State University. Arizona State University used this service to analyze who was visiting their website and when, learning why visitors were leaving the website, why visitors were not performing a desired action on a webpage (such as completing an application), and why more alumni weren't donating more money (Stein 2015). Over fifty institutions of higher education across sectors—such as Syracuse University, the University of Pittsburgh, and Colby College—have used Capture Higher Ed, a big data and web analytics company that has tracked 20 million unique web visitors on their clients' sites, gleaning such information as what webpages prospective students visited, how long they visited, how often they visited, and what the students did before and after visiting the institution's website (Selingo 2017). Through premium data analytics services and the strategic analysis of organic keywords—search words employed by users to find content on the Internet—organizations of many types have been able to improve the content and volume of their website by aligning their content with organic keyword searches and paying for adwords to drive web traffic toward their domain, also known as search engine optimization (SEO) (Clifton 2012; Ledford 2015; Wallace 2016).

The scholarly research regarding postsecondary use of web analytics to drive institutional website traffic has primarily focused on measuring the effectiveness of institutional libraries. Fang (2007) used Google Analytics to improve Rutgers University's Law Library website by tracking visitor behavior and then reorganizing and reformatting the main menu to prioritize the most popular webpages near the top of the menu. Texas Tech University's librarians developed an online reference tool for their institution's library and then used Google Analytics to refine the tool and integrate its elements into other areas of the website to increase its effectiveness (Barba et al. 2013). Similarly, librarians at Boise State University used Google Analytics to decrease their bounce rate—or the percentage of visitors who leave a website after visiting only one page—from 65% in 2012 to 4.5% in 2014 (Vecchione et al. 2016). However, no scholarly research examines how institutions of higher education use web analytics—particularly paid search tactics—to drive web traffic toward their institutional website.

How institutions use paid search tactics to drive web traffic

New data mining services, such as SEMrush, have allowed web developers to better understand why people visit their website and what they can do to make their visitors' experience more engaging. SEMrush uses Google Analytics data to allow users to see which organic and paid keywords are most likely to drive web traffic toward a given website, while also learning how competitors are using paid adwords to drive traffic toward their website. SEMrush can also calculate the overall size and popularity of a website by counting all webpages linked to a certain website and the number of backlinks, or links from other websites that refer visitors to the web resource (SEMrush 2018a). For instance (current as of January 2018), www.ucla.edu, the main website for the University of California at Los Angeles (UCLA), featured 28,256 webpages on their website, while there existed 9.6 million backlinks on other websites that referred the user to www.ucla.edu or a webpage on that website. Comparatively, www.uci.edu, the main website for the University of California at Irvine (UC Irvine), featured 11,633 webpages on their website, while there existed 7 million backlinks to that website, rendering UCLA's website both larger and more popular on the Internet (SEMrush 2018b).

Regarding paid search, many institutions of higher education have employed paid adword search tactics during application season to drive web traffic toward their institutional .edu domain. A paid adword is the method in which an organization can compose an online advertisement and pay for search keywords that direct Internet users toward that advertisement on an organization's website by moving the search result of that keyword closer to the top of the search results page (Google, Inc. 2018). For instance (current as of January 2018), the University of Florida (UF) paid for the Google adword "forensic" to drive traffic toward their Forensic Science website at <https://forensicscience.ufl.edu/>. As a result, when Internet users would search for the word "forensic," UF's Forensic Science website would be displayed higher on the Google search results page than it otherwise would be if UF did not pay for "forensic" (SEMrush 2018b).

A cursory evaluation of institutional websites during undergraduate application season (September to December) demonstrated that institutions of higher education paid for adwords specifically to drive traffic to their website during application season. For example, from September 2017 to December 2017, Harvard University steadily increased their paid adword search monthly, as Harvard paid for 15,300 keywords in September, 22,500 keywords in October, 24,000 keywords in November, and 24,000 keywords in December 2017 to boost their web traffic via Google's paid search results. Although Harvard's marketing budget was likely larger than the average HBCU's marketing budget, Harvard's paid search tactic resulted in between 31,000 and 33,000 more visits each month to Harvard's website (SEMrush 2017), with many of these visits likely coming from prospective students during application season. Other elite, non-Ivy League institutions performed the same paid search tactic, as the University of Texas at Austin (39% acceptance rate; National Center for Education Statistics 2017) paid for 1600 keywords in September; 4600 in October; 5400 in November; and 5400 in December 2017 as a way to drive web traffic toward their institutional .edu domain during application season (SEMrush 2017). Wellesley College (28% acceptance rate; National Center for Education Statistics 2017) did the same, albeit on a smaller scale, as Wellesley paid for 55 keywords in September, 286 in October, 329 in November, and 329 in December 2017 (SEMrush 2017).

However, no extant research has examined these paid adword tactics, nor has extant research compared HBCU web presence and popularity to similar institutions. Therefore, the purpose of this study is to explore HBCU web presence and popularity, compare that presence and popularity to similar institutions, and evaluate how HBCU paid search tactics compare to similar institutions to learn whether HBCUs are competing in one of the most competitive global higher education markets: the Internet.

Methods

The following sections will detail how data were collected and analyzed from multiple databases, as well as how this study is limited and how future research can further explore the phenomenon of web presence, popularity, and paid adword search tactics.

Data collection and analysis

All HBCU institutional data was gathered from the Integrated Postsecondary Education Data System (IPEDS; National Center for Education Statistics 2017), current as of the 2016–2017 academic year. This search included 39 public, four-year institutions, 50 private, non-profit four-year institutions, 10 public two-year institutions, and 1 private non-profit two-year institution (100 HBCUs in total). As a proxy for institution size and prospective student interest, the following variables were collected: sector, total undergraduate enrollment, undergraduate applications, undergraduates admitted, and undergraduates enrolled. After these variables were collected, admission rate and yield were calculated to provide a metric of student interest in each HBCU, following the logic that prospective students show interest in an institution of higher education by applying to that institution and enrolling in that institution.

To generate a database of institutions comparable to HBCUs, institutional data was gathered from IPEDS using the following search: institutions in the U.S. only, public and private non-profit four-year institutions and public and private two-year institutions. The same variables were then collected as were for the HBCUs: sector, total undergraduate enrollment, undergraduate applications, undergraduates admitted, and undergraduates enrolled. From this database, admission rate and yield were calculated, and then the database was sorted by sector, admission rate, yield, and total enrollment. Excel's index matching function was used to pair each HBCU with a comparable institution, first in terms of sector, then total enrollment, then admission rate, and then yield. All HBCUs were paired with an identical institution in terms of sector and admission rate. Standard deviation between HBCUs and the comparable institution in terms of total undergraduate enrollment and yield was 601 students and 16% respectively. There was no HBCU that identically matched their peer institution in terms of sector, enrollment, admission rate, and yield.

Once these two datasets were generated, each institution's .edu web domain was investigated by SEMrush, examining the following variables associated with web presence, popularity, and paid adwords: backlinks, keywords, web traffic, cost of web traffic, total number of webpages, paid desktop adwords, desktop traffic gain from paid adwords, desktop paid adwords cost, paid mobile adwords, mobile traffic gain from paid adwords, and mobile paid adwords cost. Both desktop and mobile paid adword data were gathered as 92% of people ages 18–29—the approximate age category for the majority of

postsecondary students—regularly use the Internet on their smartphones every day, the highest percentage across any age demographic in the U.S. (Pew Research Center 2017). Furthermore, extant research has suggested that mobile advertising is effective among college-aged (18–24) people (Hanley and Becker 2008; Saran et al. 2015; Unni and Harmon 2007).

Descriptive statistics were generated by sorting each dataset—the HBCU set and the set of comparable peer institutions—by sector and then finding absolute distances between each variable of each HBCU and their peer institution. Means and standard deviations for all HBCUs by sector—and all peer institutions by sector—was calculated per variable and then displayed in Tables 1, 2, 3 to demonstrate the differences between HBCUs and comparable peer institutions.

Findings

A comparison of HBCU to peer institution by web presence and popularity can be found in Table 1 below.

Regarding public, four-year institutions, data in this study suggest that HBCU websites are much smaller, much less popular, and spend less on web hosting than non-HBCU peers. Public, four-year non-HBCUs are 61% more popular on the Internet than their HBCU peers measured by backlinks, while non-HBCUs have 35% more organic keywords leading Internet users to their institutional domains and experience over three times as much web traffic as their HBCU peers. Public, four-year non-HBCUs also spend nearly twice as much on web hosting and are over three times as large as HBCU peers as measured by webpages on their institutional domain. Inversely, private four-year HBCUs are nearly four times as popular on the Internet as their non-HBCU peers; however, Paul Quinn College (PQC) was mentioned as an outlier in this study, as PQC has over 20 million backlinks. PCQ's outlier status was likely owed to its unique history, mission, and location as the oldest HBCU west of the Mississippi River and the first “urban work college” in the United States situated in the Dallas-Fort Worth metropolis of nearly 7 million residents (Young 2018, para. 3). Beyond backlinks, private, four-year non-HBCUs were four times as popular than HBCUs by organic keywords and twice as popular by web traffic, while non-HBCUs also spent slightly more on web advertising and were over five times as large as measured by webpages on their institutional domain.

Additionally, data in this study suggest public two-year HBCUs and non-HBCUs were much more comparable in terms of web presence and popularity. HBCUs were slightly more popular than non-HBCUs measured by backlinks, organic keywords, and web traffic. However, HBCUs outspent non-HBCUs by an average of \$200,000 per year on web advertising, although non-HBCU websites were larger by an average of 1958. This finding indicates that public two-year HBCUs feature fewer webpages on their institutional websites than their non-HBCU peers, but these webpages are more popular and cost the institution more in terms of web advertising.

Finally, Shorter College, the only private, two-year HBCU in this study, is smaller and less popular than its non-HBCU peer, Louisburg College, measured by backlinks, organic keywords, web traffic, web advertising, and webpages.

A comparison of HBCU to peer institution by desktop paid adwords can be found in Table 2 below.

Table 1 Comparison of HBCUs to comparable institutions by web presence and popularity, current as of January 2018

Web presence and popularity metrics: (backlinks, keywords, traffic, cost, size)	HBCU metrics	Peer(s) metrics
Public, 4-year (<i>n</i> = 39)		
Mean (standard deviation)		
Backlinks	97,269 (203,057)	158,847 (248,274)
Organic keywords	23,425 (17,790)	67,316 (71,034)
Web traffic (in hits, yearly)	793,200 (511,164)	2,580,000 (2,040,684)
Web cost (in dollars, yearly)	\$147,323 (\$116,651)	\$240,917 (\$242,576)
Web size (by webpages)	2467 (1729)	8424 (8264)
Private, 4-year (<i>n</i> = 50)		
Mean (standard deviation)		
Backlinks ^a	474,760 (2,869,910)	120,668 (202,258)
Organic keywords	8924 (14,602)	38,290 (56,022)
Web traffic (in hits, yearly)	326,376 (505,263)	742,241 (773,352)
Web cost (in dollars, yearly)	\$130,186 (\$198,346)	\$142,182 (\$161,768)
Web size (by webpages)	951 (1387)	4948 (6356)
Public, 2-year (<i>n</i> = 10)		
Mean (standard deviation)		
Backlinks	15,400 (23,234)	11,961 (10,668)
Organic keywords	19,030 (33,498)	14,276 (15,117)
Web traffic (in hits, yearly)	678,360 (1,375,997)	468,480 (420,269)
Web cost (in dollars, yearly)	\$326,710 (\$630,178)	\$126,730 (\$134,110)
Web size (by webpages)	1419 (2407)	1958 (2398)
Private, 2-year (<i>n</i> = 1) ^b		
Backlinks	220	4400
Organic keywords	200	4100
Web traffic (in hits, yearly)	16,800	115,200
Web cost (in dollars, yearly)	\$7900	\$50,300
Web size (by webpages)	25	676

^aNote: Paul Quinn College was an outlier in this study in terms of backlinks with 20,200,000, nearly ten times as many as the #2 institution, Wiley College, with 2,600,000 backlinks

^bNote: Shorter College (HBCU) and Louisburg College were the only two private two-year institutions in this study

Across all sectors, data in this study suggest non-HBCUs employ desktop paid adword tactics more frequently than HBCUs. Public, four-year non-HBCUs were three times as likely to use desktop paid adwords, while the gap was notably larger between private four-year institutions: 32 private four-year non-HBCUs used desktop paid adwords in 2017 compared to 3 HBCUs. The number of public two-year institutions using desktop paid adwords was the same, and neither private two-year institution in this study employed desktop paid adwords in 2017.

Likewise, across all sectors, non-HBCUs paid for more desktop adwords and experienced more web traffic than non-HBCUs. Four-year non-HBCUs outspent HBCUs, yet public two-year HBCUs outspent non-HBCUs by 57%, although this tactic did not result in a comparable gain in web traffic. Here, data in this study indicate public two-year HBCUs paid much more per desktop adword than their non-HBCU peer, yet this paid tactic did not translate to comparable gains in web traffic. Data in this study was

Table 2 Comparison of HBCUs to comparable institutions by desktop paid adwords, current as of January 2018

Paid adword metrics: (desktop adwords, gain, cost)		
	HBCUs (n = 10) ^a	Peers (n = 29)
Public, 4-year		
Mean (standard deviation)		
Paid adwords	55 (221)	270 (465)
Traffic gain (in hits, yearly)	4373 (21,183)	17,976 (25,316)
Paid adwords cost (in dollars, yearly)	\$1884 (\$7930)	\$5772 (\$10,473)
Private, 4-year	HBCUs (n = 3)	Peers (n = 32)
Mean (standard deviation)		
Paid adwords	55 (53)	445 (1645)
Traffic gain (in hits, yearly)	4712 (6021)	11,952 (35,988)
Paid adwords cost (in dollars, yearly)	\$1594 (\$2690)	\$3991 (\$10,542)
Public, 2-year	HBCUs (n = 4)	Peers (n = 4)
Mean (standard deviation)		
Paid adwords	37 (65)	199 (213)
Traffic gain (in hits, yearly)	13,179 (23,303)	13,212 (19,458)
Paid adwords cost (in dollars, yearly)	\$6389 (\$11,073)	\$3631 (\$4027)
Private, 2-year (n = 1) ^b		

^aNote: The University of the District of Columbia and Delaware State University were outliers in this study in terms of paid adwords and cost with 1100 and 874 paid adwords at costs of \$5600 and \$45,100 respectively. The #3 institution was West Virginia State with 65 paid adwords at a cost of \$21,500

^bNote: Shorter College (HBCU) and Louisburg College did not purchase adwords in 2017

influenced by two public, four-year HBCU outliers, the University of the District of Columbia (UDC) and Delaware State University (DSU). The phenomenon exemplified by UDC and DSU—namely the concerted effort to engage with paid adwords tactics, while similar institutions did not—will be addressed in the Implications section of this study.

A comparison of HBCU to peer institution by mobile paid adwords can be found in Table 3 below.

Akin to desktop paid adwords, more non-HBCUs paid for mobile adwords than HBCUs in 2017. Across 200 institutions in this study, only 12 HBCUs paid for mobile adwords, while 53 non-HBCUs paid for mobile adwords. Particularly notable was the finding that 27 private four-year non-HBCUs paid for mobile adwords, whereas Howard University was the only private, four-year HBCU to do so. Similarly, non-HBCUs across all sectors paid for more mobile adwords, experienced more mobile web traffic, and paid more for mobile adwords.

Public, two-year institutions were more comparable, as 3 HBCUs and 4 non-HBCUs paid for mobile adwords, yet non-HBCUs experienced much more traffic while paying roughly the same amount. This finding indicates non-HBCUs paid for mobile adwords that better directed mobile web traffic to their institutional domain than their HBCU peers. St. Philip's College was an outlier in this study, as this HBCU paid for 99 mobile adwords at \$34,500 in 2017 compared to Coahoma Community College, another HBCU, that paid for 10 mobile adwords at \$36.00. This discrepancy was likely due to the postsecondary competition that St. Philip's College encounters, as its campus is located in San Antonio, Texas, whereas Coahoma Community College is located in Clarksdale, Mississippi without another institution of higher education in its county.

Table 3 Comparison of HBCUs to comparable institutions by mobile paid adwords, current as of January 2018

Paid adword metrics: (mobile adwords, gain, cost)		
Public, 4-year	HBCUs (n = 8) ^a	Peers (n = 22)
Mean (standard deviation)		
Paid adwords	38 (69)	72 (68)
Traffic gain (in hits, yearly)	7726 (11,397)	26,868 (31,940)
Paid adwords cost (in dollars, yearly)	\$2293 (\$3409)	\$8077 (\$13,214)
Private, 4-year	HBCUs (n = 1) ^b	Peers (n = 27)
Mean (standard deviation)		
Paid adwords	2	185 (453)
Traffic gain (in hits, yearly)	13	21,889 (34,668)
Paid adwords cost (in dollars, yearly)	\$1.00	\$9140 (\$12,580)
Public, 2-year	HBCUs (n = 3) ^c	Peers (n = 4) ^d
Mean (standard deviation)		
Paid adwords	38 (53)	60 (50)
Traffic gain (in hits, yearly)	14,884 (22467)	50,433 (74,608)
Paid adwords cost (in dollars, yearly)	\$11,822 (\$19,644)	\$11,239 (\$10,559)
Private, 2-year (n = 1) ^e		

^aNote: The University of the District of Columbia was an outlier in this study in terms of paid adwords and cost with 207 paid adwords at a cost of \$7500. The #2 institution was Delaware State University with 36 paid adwords at a cost of \$2500

^bNote: Howard University was the only private, four-year HBCU to purchase adwords in 2017

^cNote: St. Philips College was an outlier in this study in terms of paid adwords and cost with 99 paid adwords at a cost of \$34,500. The #2 institution was Coahoma Community College with 10 paid adwords at a cost of \$36.00

^dNote: Moore Norman Technology Center was an outlier in this study in terms of traffic gain, as it paid for 76 mobile adwords and generated 160,800 yearly hits from those adwords. Comparatively, the University of Arkansas Community College at Morrilton paid for 123 mobile adwords and generated 30,000 yearly hits

^eNote: Shorter College (HBCU) and Louisburg College did not purchase adwords in 2017

Limitations

This study is primarily limited in three ways: sample size, search engine data, and other forms of institution-to-student communication outside of the Internet.

First, although all accredited HBCUs were examined in this study ($n = 100$), there was only one institution compared to each HBCU given both the lack of comparable institutions and the time necessary to gather all SEMrush data. For example, the Morehouse School of Medicine (MSM) was compared to the Curtis Institute of Music given their similar sectors (private, four-year institutions), total enrollment (both institutions enrolled fewer than 500 students in 2016–2017), admission rates (Morehouse at 2% and Curtis at 4% for 2016–2017), and yield rates (both at 89% in 2016–2017). After comparing the HBCU dataset to the comparable institution dataset, it was clear that the MSM and Curtis was the only possible pairing, as other comparable private four-year institutions were either much larger in terms of total enrollment, more inclusive in terms of admission, or more popular in terms of yield. In fact, the most similar private four-year institution to the MSM in terms of sector and size was a rabbinical school in New York that was much more inclusive (36% admission rate) but much less popular (50% yield) than Curtis. This phenomenon was common across all HBCUs, as each HBCU only had between one and four comparable institutions in terms of sector and size, and usually only one or two institutions with the same or comparable admission rate and yield. For this reason, future research should examine the web presence

and employment of paid adwords across different institution types using advanced statistical methods to better understand how institutions of higher education compete against each other on the Internet.

Second, current as of January 2018, Google is the most popular search engine in the world by a wide margin, firmly ahead of both Microsoft's Bing and Yahoo! (Bhangu 2018). Coupling this information with the recent research demonstrating that the Internet is the leading source of pre-college information for prospective students (Burdett 2013; Daun-Barnett and Das 2013), all SEMrush data requests were made using Google Analytics data in this study. Because the Internet is such a popular and influential landscape for pre-college students, future research should investigate which search engines prospective students use, how they use organic keywords to search for institutional information, and how they make their postsecondary choice using Internet resources. This information would likely inform institutional practitioners in terms how to best use web analytics to compete on the Internet and drive prospective student traffic to their institutional website.

Finally, this study does not examine forms of institution-to-student communication outside of the Internet. Although a wealth of longitudinal research has focused on recruiting students to HBCUs from a variety of backgrounds (Freeman and Thomas 2002; McRae 2016; Southerland and Lewis 2016; Tanaka and Gladney 1993), future research could address new ways HBCUs could recruit prospective students using digital means aside from the Internet, including telephone and text messaging initiatives, given the popularity of smartphone use among college-age people in the U.S. (Pew Research Center 2017).

Discussion and implications

This study answered both research questions. First, HBCU websites—across sectors—are smaller and less popular than institutions of similar sector, size, admission rate, and yield. Second, HBCUs do not employ paid adword tactics—in desktop or mobile format—at the same rate as institutions of similar sector, size, admission rate, and yield. Hearkening back to the words of Outgoing President of the Thurgood Marshall College Fund Johnny C. Taylor Jr., HBCUs are indeed competing with other institutions of higher education, yet the data in this study indicates that HBCUs do not compete well in the largest global market, the Internet, and the number one source of pre-college information for prospective students (Burdett 2013).

Practitioners at HBCUs—especially those in web development and marketing—can glean several insights from this study. First, data in this study suggest HBCU websites are much smaller in terms of webpages than peer institutions. From here, web developers at HBCUs should collaborate across departments, including admissions, financial aid, and prospective student recruitment, to produce attractive, keyword-specific web content for prospective students and post that content on their institutional website. Furthermore, HBCU practitioners could explore collaborations with other institutions or organizations and produce content that could be added to other websites. Across sectors, HBCUs had markedly fewer backlinks to their websites than non-HBCU institutions, meaning that Internet users are much more likely to encounter non-HBCU institutional material in other places on the Internet than HBCU material. HBCUs could consider collaborating among themselves to embed backlinks to other HBCU websites

on their own, increasing the number backlinks and web presence that HBCUs could have. Paul Quinn College could serve as a model institution in terms of how to increase web presence and popularity: HBCUs could learn to compete from one of their own.

HBCU practitioners should also become well-versed in the science of search engine optimization (SEO) to ensure that HBCU web content is easily searchable and locatable by Internet users, especially prospective students and educational leaders. Data in this study suggest HBCUs lagged behind their non-HBCU peers in terms of organic keywords and web traffic; yet, these gaps could be closed by HBCU practitioners analyzing the organic keywords leading Internet users to their websites and learning how to better write their website content and produce new content to engage with those organic keywords. Although public two-year HBCUs far outspent their four-year counterparts likely due to the larger student enrollment and larger marketing budgets at two-year institutions, four-year HBCUs should look to increase their web budget to compete with non-HBCU institutions who, in this study, were demonstrated to outspend them by over 30% in the world's largest market.

As Internet and mobile phone technology has dramatically increased in popularity among college students in recent years (Pew Research Center 2017), HBCUs should analyze their website's SEO and strategically purchase adwords to drive prospective student traffic to their institutional website, hopefully producing a stronger applicant field and a higher student yield. Data in this study show non-HBCUs were nearly four times as likely to purchase desktop adwords (17 HBCUs to 65 non-HBCUs; 3.8 times as likely), and this gap was increased in terms of mobile adwords (12 HBCUs to 53 non-HBCUs; 4.3 times as likely). HBCU practitioners must speak to their prospective students where they are: on the Internet and, more specifically, on their smartphones. As a result, HBCU's should consider reallocating prospective student marketing funds to pay for desktop and mobile adwords to compete with their non-HBCU peers, who are engaging with paid adwords and experiencing increases in web traffic. Public, two-year HBCUs were comparable to their non-HBCU peers considering paid adwords, although non-HBCUs were able to drive more web traffic with similar (Table 3) or smaller budgets (Table 2). Without access to each HBCU's marketing and web development budget, this paid search tactic does not seem impossible for HBCUs to attempt, considering how the University of District Columbia and Delaware State University invested heavily in paid adwords in 2017. Akin to Paul Quinn College's ability to establish a strong web presence, other HBCUs should look to the University of District Columbia and Delaware State University to learn how to strategically purchase desktop and mobile adwords to drive traffic to their institutional website.

As imitation is the sincerest form of flattery, HBCUs should examine peer institutions—especially those comparable in enrollment, geographic location, admission rate, and yield—to better understand how to reach prospective students on the Internet. Consider Grambling State and Texas A&M University at Commerce (TAMU Commerce): Both institutions are public, four-year, had identical admission and yield rates in 2017, and are both located in rural areas in their respective states. Although TAMU Commerce had just over 12,000 enrolled students in 2017 compared to Grambling's 4863, TAMU Commerce's website was over four times as large, had 8000 more backlinks, and drove over 100,000 more yearly visitors to its website in 2017 than did Grambling. Ultimately, TAMU Commerce spent over \$300,000 on its own website in

2017, whereas Grambling invested roughly \$20,000.¹ Although tight and ever-tightening, perhaps HBCU marketing budgets are better spent on the Internet than over other forms of marketing, especially given the incredible popularity of the Internet among college-aged people in the U.S. (Pew Research Center 2017).

Ultimately, data in this study suggest HBCUs ought to consider increasing the size of their website, increasing their collaborations with other institutions and organizations on the Internet to increase their popularity, practice SEO, and engage with paid adword tactics that drive prospective students to HBCU websites.

Conclusion

By many measures, HBCUs are highly unique and successful institutions. HBCUs only comprise 3% of all institutions of higher education in the U.S., yet these institutions graduate 20% of all African-American postsecondary students in the U.S. (Camera 2017). Data suggest HBCU alumni are more financially successful than African-American graduates from other non-HBCU peer institutions (Gallup 2015). HBCUs have also provided unparalleled access and support for economically-disadvantaged students, as nearly 75% of all HBCU students are Pell Grant-eligible (Gasman and Samayoa 2017). Given the disparities between African-American and White students in terms of STEM (science, technology, engineering, and mathematics) degrees, HBCUs accounted for 10 of the top 20 colleges and universities in the U.S. producing African-American STEM degree holders (Leichter 2016). In short, the quality of HBCUs speaks for itself. Now, HBCUs need to speak to prospective students online.

As Johnny C. Taylor asserted, HBCUs are now “competing” with other institutions given the shifting market, resulting in “economically-challenged” HBCUs (Hong 2017, para. 11). Data in this study suggest that this economic struggle, partly due to stagnant or decreasing enrollments at some HBCUs (Medina and Allen 2017; Savage 2017), could be influenced by the lack of competitiveness HBCUs demonstrate on the Internet. As the largest global higher education market, the Internet must be viewed as a competitive advantage for HBCUs: These are successful institutions with a wealth of history, quality, and affordability to offer prospective students. Now, all HBCUs need to harness the power of this global market and share these positive institutional traits in order to compete for the best and brightest students. If not, the financial situations between HBCUs could exacerbate, potentially threatening the livelihood of some of the most successful and time-honored institutions in the United States.

Endnotes

¹All figures are included in the HBCU/peer database, which is available upon request.

Abbreviations

HBCU: Historically-Black college or university; IPEDS: Integrated Postsecondary Education Data System;
PWI: Predominantly-White institution; SEO: Search engine optimization; U.S.: United States

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Authors' contributions

All authors read and approved the final manuscript.

Competing interests

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References

- America, R. F. (2012). Can HBCUs compete? *Journal Blacks Higher Education* Retrieved from <https://www.jbhe.com/2012/10/can-hbcus-compete/>. Accessed 18 May 2018.
- Anderson, M. (2017). A look at historically black colleges and universities as Howard turns 150. Retrieved from <http://www.pewresearch.org/fact-tank/2017/02/28/a-look-at-historically-black-colleges-and-universities-as-howard-turns-150/>. Accessed 18 May 2018.
- Barba, I., Cassidy, R., De Leon, E., & Williams, B. J. (2013). Web analytics reveal user behavior: TTU libraries' experience with Google analytics. *Journal of Web Librarianship*, 7(4), 389–400. <https://doi.org/10.1080/19322909.2013.828991>
- Bhangu, G. (2018). Top 10 most popular search engines in the world, 2018. Retrieved from <https://otechworld.com/most-popular-search-engines-in-world/>. Accessed 18 May 2018.
- Burdett, K. R. (2013). How students choose a college: Understanding the role of internet based resources in the college choice process (Doctoral dissertation). Available from ProQuest database. (UMI No. 3590306)
- Camera, L. (2017). Keeping a promise to HBCUs. Retrieved from <https://www.usnews.com/news/the-report/articles/2017-09-29/struggling-hbcus-look-for-help-from-the-trump-administration>. Accessed 18 May 2018.
- Clifton, B. (2012). *Advanced web metrics with Google Analytics*, (3rd ed.). Indianapolis: Wiley.
- Collins, D. E. (2015). Three things HBCUs could do to survive and succeed. Academe Retrieved from <https://www.aaup.org/article/three-things-hbcus-could-do-survive-and-succeed#WjFvEIQ-cdA>. Accessed 18 May 2018.
- Cortez, M. B. (2017). Temple University's real-time feedback app is the latest analytics business spinoff. Retrieved from <https://edtechmagazine.com/higher/article/2017/12.temple-university-s-real-time-feedback-app-latest-analytics-business-spinoff>. Accessed 18 May 2018.
- Daun-Barnett, N., & Das, D. (2013). Unlocking the potential of the internet to improve college choice: A comparative case study of college-access web tools. *Journal of Marketing for Higher Education*, 23(1), 113–134. <https://doi.org/10.1080/08841241.2013.805708>
- Deming, D. J., Goldin, C., & Katz, L. (2013). For-profit colleges. *The Future of Children*, 23(1), 137–163 Retrieved from http://scholar.harvard.edu/files/goldin/files/for-profit_colleges.pdf.
- Fang, W. (2007). Using Google analytics for improving library website content and design: A case study. *Library Philosophy and Practice*, 1–17 Retrieved from <http://digitalcommons.unl.edu/libphilprac/121>
- Freeman, K., & Thomas, G. E. (2002). Black colleges and college choice: Characteristics of students who choose HBCUs. *The Review of Higher Education*, 25(3), 349–358. <https://doi.org/10.1353/rhe.2002.0011>
- Gallup. (2015). USA funds minority college graduates report. Retrieved from <http://www.gallup.com/services/186305/gallup-usa-funds-minority-college-graduates-report.aspx>. Accessed 18 May 2018.
- Gasman, M., & Samayoa, A. C. (2017). Historically Black colleges and universities: Fostering familial learning environments for student success. Retrieved from <https://www.higheredtoday.org/2017/10/04/historically-black-colleges-universities-fostering-familial-learning-environments-student-success/>. Accessed 18 May 2018.
- Google, Inc. (2018). Search ad campaigns. Retrieved from https://adwords.google.com/home/how-it-works/search-ads/?subid=us-en-et-g-aw-awhpm_a1lo2-awhpm-000000002-000000001#modal_active=none. Accessed 18 May 2018.
- Hanley, M., & Becker, M. (2008). Cell phone usage and advertising acceptance among college students: A four-year analysis. *International Journal of Mobile Marketing*, 3(1), 67–80.
- Hickey, R. (2014). The history of online Education Retrieved from <https://www.petersons.com/articles/online-degrees/online-education-history>. Accessed 18 May 2018.
- Hong, J. (2017). Outgoing TMCF leader says HBCUs must boost enrollment, finances. Retrieved from <http://diverseeducation.com/article/105826/>. Accessed 18 May 2018.
- Jacobs, P. (2015). There's an unprecedented crisis facing America's historically black colleges. Retrieved from <http://www.businessinsider.com/hbcus-may-be-more-in-danger-of-closing-than-other-schools-2015-3>. Accessed 18 May 2018.
- Ledford, J. L. (2015). *Search engine optimization bible*, (2nd ed.). Indianapolis: Wiley.
- Leichter, K. (2016). HBCUs: An unheralded role in STEM majors and a model for other colleges. Retrieved from <https://www.chronicle.com/article/HBCUs-an-Unheralded-Role-in/235481>. Accessed 18 May 2018.
- McRae, S. L. (2016). A time for change: An examination of a historically Black college or university (HBCU) and its efforts to globalize and acculturate international students into campus life (Doctoral dissertation). Retrieved from <http://digitalcommons.auctr.edu/cauetds/30/>. Accessed 18 May 2018.
- Medina, D. A., & Allen, R. (2017). What is the future for America's historically Black colleges and universities? Retrieved from <https://www.nbcnews.com/nightly-news/what-future-america-s-historically-black-colleges-universities-n725811>. Accessed 18 May 2018.
- Morris, C. (2016). HBCU stakeholders cite leadership instability, finances as greatest challenges. *Diverse Issues in Higher Education*, 33(21), 7 Retrieved from <http://www.diverseeducation.com/article/88473>
- National Center for Education Statistics. (2017). Data center: Compare institutions. Retrieved from <https://nces.ed.gov/ipeds/datacenter/InstitutionList.aspx>. Accessed 18 May 2018.
- Pew Research Center. (2017). Internet/broadband fact sheet. Retrieved from <http://www.pewinternet.org/fact-sheet/internet-broadband/>. Accessed 18 May 2018.

- Quacquarelli Symonds Limited. (2017). How to use Google Analytics to track student recruitment leads. Retrieved from <http://www.qs.com/how-to-use-google-analytics-to-track-student-recruitment-leads/>. Accessed 18 May 2018.
- Ryan, C., & Lewis, J. M. (2017). Computer and Internet use in the United States: 2015. Retrieved from <https://www.census.gov/content/dam/Census/library/publications/2017/acs/acs-37.pdf>
- Saran, A., Cruthirds, K., & Minor, M. S. (2015). Ad acceptance: Scale development, purification, and validation of cell phone advertising acceptance. *Revolution in Marketing: Market Driving Changes*, 62–66. https://doi.org/10.1007/978-3-319-11761-4_31
- Savage, G. (2017). An uncertain future for the nation's oldest HBCU. *Diverse Issues in Higher Education*, 34(14), 21–22. Retrieved from <http://www.diverseeducation.com/article/100704/>
- Selingo, J. (2017). How colleges use big data to target the students they want. Retrieved from <https://www.theatlantic.com/education/archive/2017/04/how-colleges-find-their-students/522516/>. Accessed 18 May 2018.
- SEMrush. (2017). Domain analytics. Retrieved from SEMrush database. https://www.semrush.com/info/empty/domain_overview/?country=us
- SEMrush. (2018a). Analytics reports. Retrieved from <https://www.semrush.com/features/>
- SEMrush. (2018b). Domain analytics. Retrieved from SEMrush database. https://www.semrush.com/info/empty/domain_overview/?country=us
- Southerland, E. C., & Lewis, J. R. (2016). Social media and HBCU admissions: An analysis of two-way communication. In C. B. W. Prince, & R. L. Ford (Eds.), *Administrative challenges and organizational leadership in historically Black colleges and universities*, (pp. 142–150). <https://doi.org/10.4018/978-1-5225-0311-8.ch008>.
- Stein, E. (2015). Web analytics in action in higher ed. Retrieved from <https://www.universitybusiness.com/article/web-analytics-action-higher-ed>. Accessed 18 May 2018.
- Svrluga, S. (2017). Big data could solve the college-dropout problem. Retrieved from https://www.washingtonpost.com/news/grade-point/wp/2017/12/12/big-data-could-solve-the-college-dropout-problem/?utm_term=.19d00e0acddc. Accessed 18 May 2018.
- Tanaka, J. C., & Gladney, L. D. (1993). Teaching biophysics: Strategies for recruiting and retaining minorities in physics and biophysics. *Biophysical Journal*, 65(1), 552–558. [https://doi.org/10.1016/S0006-3495\(93\)81085-3](https://doi.org/10.1016/S0006-3495(93)81085-3)
- The Journal of Blacks in Higher Education (2016). More good news on enrollments at historically black universities. *The Journal of Blacks in Higher Education* Retrieved from <https://www.jbhe.com/2016/09/more-good-news-on-enrollments-at-historically-black-universities/>
- Unni, R., & Harmon, R. (2007). Perceived effectiveness of push vs. pull mobile location based advertising. *Journal of Interactive Advertising*, 7(2), 28–40. <https://doi.org/10.1080/15252019.2007.10722129>
- Vecchione, A., Brown, D., Allen, E., & Baschnagel, A. (2016). Tracking user behavior with Google analytics events on an academic library web site. *Journal of Web Librarianship*, 10(3), 161–175. <https://doi.org/10.1080/19322909.2016.1175330>
- Wallace, P. (2016). *The psychology of the internet*, (2nd ed.). New York: Cambridge.
- Worf, L. (2015). HBCUs seek to distinguish themselves in competition for students. Retrieved from <http://wfae.org/post/hbcus-seek-distinguish-themselves-competition-students>. Accessed 18 May 2018.
- Young, J. R. (2018). Turning a football field into a farm: How the 'urban work college' could lower college costs. Retrieved from <https://www.edsurge.com/news/2018-01-09-turning-a-football-field-into-a-farm-how-the-urban-work-college-could-lower-college-costs>. Accessed 18 May 2018.

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