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## **Comparing Advertising Agencies' Resources to Academic Libraries' Collections**

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## **Abstract**

Collection development analysis in academic libraries typically involves collection-centered and user-centered methods. These approaches focus on building collections that help students with their academic needs but may overlook resources that students need experience with when employed. To address this gap, the authors analyzed early career advertising agency positions to identify a list of information resources that advertising agencies expect employees to use. This list was then compared against the library websites of 158 universities with advertising programs to see how sufficiently libraries are fulfilling these resource needs. The authors found that overall, university libraries only subscribe to a small number of resources used by advertising agencies.

Keywords: collection development, databases, advertising education, advertising resources

## **Introduction**

Preparing students for the workplace is often the underlying aim of higher education. In advertising education, much attention is paid to the value of education in a student's future career. The American Advertising Federation's (2011) *Statement of Principles: What Advertising Students Should Know*, recommends advertising students learn not only theoretical and practical applications and skills, but also states, "Advertising students should be proficient in using equipment and technology they will use in their careers" (2011, par. 4).

However, for all the importance placed on learning for the professional environment, libraries have traditionally evaluated collections based on either collection-centered methods or user-centered methods. Libraries have generally not focused on resources that are used in the professional environment. Following the literature review, this paper will analyze the types of resources used in advertising agencies and compare these resources to academic libraries' database subscriptions to understand if libraries are fulfilling advertising education needs.

## **Literature review**

Collection-centered methods often aim to create a core list of resources or compare a collection to an established standard. An example of a collection-centered method is represented in research conducted by Johnson and Johnson (2017), which analyzed Physician Assistant LibGuides across multiple libraries in order to create a list of frequently recommended resources in that discipline. Another study conducted by Aubele and Perruso (2017) used indexing of social work journals in databases combined with rankings from Journal Citation Reports to create a tiered hierarchy of core journals. Other examples of collection-centered methods include citation analyses (Currie and Monroe-Gulick 2013; Gao 2015; Ke and Bronicki 2015), analyzing syllabi for resources used in classes (Lukes, Thorpe, and Leshner 2017; Williams, Cody, and

Parnell 2004) and using established lists to evaluate current collections (Meehan and Nisonger 2007; Torres 2017).

User-centered collection development methods typically involve surveys or usage statistics to gauge the usefulness of a collection. Circulation statistics are often used to evaluate print items. Dinkins (2003) evaluated circulation statistics of librarian-selected materials in order to assess selection effectiveness. Rose-Wiles and Irwin (2016) looked at in-house usage statistics of print materials and also reviewed corresponding circulation statistics to determine if in-house usage could predict the circulation of an item. Additionally, monitoring usage of electronic items is an important goal of many user-centered collection development studies. Biswas and Marchesoni (2016) used Google Analytics to assess usage of their library's digital collections. A study conducted by Foote and Rupp-Serrano (2010) combined a survey with observation to look at user behavior regarding e-books in the geoscience discipline.

### **Collection development for advertising, marketing, and business**

This paper focuses on the subject area of advertising. Broadly, advertising is a subset of marketing that involves paid promotion to create awareness of a business, product, or service (Lake 2017). In higher education, psychology, business, and journalism programs began teaching advertising and marketing between 1890 and 1910. Advertising education was left “with a less-than-unified direction” as three different disciplines taught advertising with some programs emphasizing science and psychology while others taught applied concepts (Ross and Richard 2008, 18). In the late 1950s, business schools were criticized for being too practical and recommendations were made to discontinue all advertising courses. This caused business schools to drop advertising and journalism and mass communication schools to adopt these programs. While advertising activity is a component of business and marketing, in higher education, the

majority of advertising programs are located in journalism, mass media, and communication schools (Applegate 2008; Ross and Richard 2008).

There is little research about information resources used in advertising. One conference presentation from 1995 surveyed 77 advertising agencies to explore their adoption of online databases (Herling and Merskin 1995). The authors found that more than half of the agencies surveyed had access to ratings services like Nielsen (57%) and Arbitron (55%). Other resources available included LexisNexis (35%), MRI (33%), ProQuest's Dialog (26%), SRDS (26%), and Simmons (25%). Neill and Schauster (2015) researched the skills and competencies needed to work in advertising and public relations. Interviewees mentioned they use the social listening and content management platforms Radian 6 (now called Social Studio), Hootsuite, and Sysomos. Executives also use the media planning and buying platforms comScore, DART (now called DoubleClick for Publishers), Trade Desk, Rubicon, PubMatic, ThinkVine, and AgilOne. The authors noted how quickly the tools change, and advertising and public relations faculty have difficulty staying current with these technologies. In addition, new agency hires spend at least one year learning the tools. Gilbert (2017) reviewed early-career advertising agency positions and found that Adobe Marketing Cloud, comScore, Google Analytics, MRI, and numerous Nielsen resources were the most frequently mentioned databases and electronic resources. Information from clients, user experience tools, colleagues, vendors or media companies, and trade publications were also mentioned as informational resources in the workplace (Gilbert 2017).

Although there is little research on information resources in advertising, there are a number of articles on resources used in marketing and business. In the marketing discipline, marketers find information through general web searches (e.g. Google, Wikipedia, and Twitter)

(Du 2014; Du et al. 2013), internet-based grey literature, and trade publications (Bennett 2007). Other informational resources in the marketing workplace include internal databases, documents (e.g. emails and text messages), and information over the intranet; mass media other than the internet; informal sources like colleagues, friends, and students; and personal networks to exchange information (Du 2014; Du et al. 2013). These studies are limited in that they only discuss the format of information, not the names of the resources, and that they only looked at experienced marketers, such as managers (Bennett 2007) or people with an average of 12.5 years of experience (Du 2014; Du et al. 2013). Additionally, the American Marketing Association U.S. Top 50 Reports ranks the top 50 marketing research organizations by considering factors like revenue, the company's management services, and specializations (Bowers and Brereton 2017). The 2017 Report placed advertising-related resources like Nielsen Holdings at number one, followed by Kantar (third), IRI (fourth), GfK (seventh), and Simmons Research (35th) (Bowers and Brereton 2017). ComScore was not considered for the 2017 rankings due to company changes, but in 2016 it ranked number 10 (Bowers and Brereton 2016).

Analyses of business resources in libraries have largely involved collection-centered methods. Librarians have extensively researched the most common business databases academic libraries provide for their patrons. Abels and Magi (2001), Kim and Wyckoff (2016), and Schnedeker (2003) surveyed business libraries supporting the top-rated U.S. business schools to find which database subscriptions were the most common. Lenox (2009) conducted a similar survey, asking librarians supporting midsized business schools that do not have PhD programs and separate business libraries to identify their business database subscriptions. Gonzalez et al. (2009) also employed surveys, asking librarians supporting a wide range of business schools to identify innovation and best practices in business librarianship, as well as recommend top

business resources. Rather than using surveys, Kim and DeCoster (2011) looked at the library websites for the top 50 business schools in the U.S. and analyzed the business databases' annotations and organizational schemes to find the "top" or most popular business databases.

Across these six studies, common databases or the most recommended databases tended to be general databases with a broad range of business information. Databases also contained scholarly and newspaper articles, financial information, and statistics. Databases that fell within the top 10 of the most common or recommended databases in three or more studies included ABI/Inform or ABI/ProQuest, EconLit, Factiva, LexisNexis Academic, PsycINFO/PsycARTICLES, and Stat USA (Abels and Magi 2001; Gonzalez et al. 2009; Kim and Wyckoff 2016; Kim and DeCoster 2011; Lenox 2009; Schnedeker 2003).

Databases specific to marketing and advertising were usually ranked outside of the top 10, with one exception: in one study, Mintel was tied in eighth for resources recommended for business collections in academic libraries (Gonzalez et al. 2009). For articles that provided rankings beyond the top 10, frequently mentioned marketing and advertising databases included Ad\$ponder, eMarketer, Frost & Sullivan, MarketResearch.com, Mintel, Simmons (also called Choices II), Sports Business Research Network (SBRNet), and SRDS (Abels and Magi 2001; Kim and Wyckoff 2016; Lenox 2009; Schnedeker 2003).

These studies provide insight into collection-centered and user-centered collection development assessments, advertising resources used in the workplace, and the most common marketing and business databases in academic libraries. The authors could not find literature on current information resources used in advertising agencies or collection development analyses of

the advertising discipline. This study fills a gap in the research by examining information resources used in early-career positions at advertising agencies by asking:

- What information resources are early-career advertising professionals in advertising agencies expected to use?
- How do these resources compare to libraries' database offerings at universities that have advertising programs?

This research will help inform librarians and those who support advertising programs which information resources advertising agencies use in the workplace. This study can also serve as an example of how the workplace can influence collection development decisions.

### **Methodology**

Two different methodologies were used to answer the research questions. First, a content analysis of job postings was performed in order to create a list of resources used by advertising agencies. Second, the identified resources were compared to library websites to find which advertising agencies' resources are available at universities with advertising programs.

### **Information resources in advertising agency positions**

This study uses content analysis to answer “What information resources are early-career advertising professionals in advertising agencies expected to use?”. Content analysis tries to find meaning in text documents by systematically categorizing the text (Payne and Payne 2004).

Content analysis has been used to study workplace skills in the marketing (Pefanis Schlee and Harich 2010), advertising (Gilbert 2017), and business fields (Klusek and Bornstein 2006). This

method allowed the authors to objectively and consistently organize the information resources found in hundreds of positions.

First, the authors created criteria for the types of position descriptions they wanted to analyze. In order to be included in this study, a position had to:

- require zero to four years of minimum experience because Pefanis Schlee and Harich (2010) define “early career” as less than four years of experience,
- be one of the career possibilities in the Advertising Educational Foundation’s (2014) guide to advertising careers to ensure the positions focus on advertising and eliminate positions in human resources, finance, legal, and so on.
- be a full-time position,
- be located in the United States, and
- require the use of at least one information resource.

Next, the authors collected position descriptions using purposive sampling to ensure the job postings fit the criteria. Purposive sampling, selecting the sample based on specific characteristics, is a commonly used technique for studying job announcements (Harper 2012). The authors used Advertising REDBOOKS’s top agencies lists to find advertising agencies. REDBOOKS determines top agencies based on factors like the agencies’ clients and work. The authors compiled a list of agencies from the following REDBOOKS’s lists: Branding Agencies (n.d.a), Chicago Agencies (n.d.b), Interactive Agencies (n.d.c), Los Angeles Agencies (n.d.d), Media Buying Agencies (n.d.e), and New York Agencies (n.d.f). These lists were chosen because they covered different types of advertising positions and a range of geographic locations. The authors then visited all of the top advertising agencies’ websites and eliminated companies

that did not have public job postings. This method is similar to Gilbert’s (2017) study as that paper also used REDBOOKS and visited each agency’s website to collect position descriptions.

From the beginning of January 2017 to the end of June 2017, the authors visited each company’s website every few weeks and collected job descriptions that fit the criteria above. If the authors came across exact duplicate positions, only one description was used. However, job announcements from the same company often contained similar language. For example, if there were two different positions, a few paragraphs within the descriptions might be the same, and both of these positions were included in the study.

The final sample size was 407 job announcements from 49 companies. As seen in Table 1, the majority (58% or  $n=235$ ) of positions required a minimum of two years to four years and eleven months of experience. Over half of the jobs (58% or  $n=223$ ) were in media planning and buying, followed by data and analytics positions (22% or  $n=90$ ). While creative agencies and their positions were reviewed, there were zero positions that matched the sample criteria.

Table 1: Sample Size ( $n=407$ )

	Job Type							Minimum Years of Experience		Total
	Account Manager	Community Manager	Creative	Data and Analytics	Interactive Marketing	Media and Buying	Strategy	0 - 1 year and 11 months	2 - 4 years and 11 months	
Total Sample ( $n$ )	2	4	0	90	79	223	9	172	235	407
% Breakdown of Sample	0.5%	1.0%	0.0%	22.1%	19.4%	54.8%	2.2%	42%	58%	100%

### *Content analysis*

To carry out content analysis, a codebook was developed to guide the coding. The codebook was initially developed from information resources noted in Gilbert’s (2017) research, and a pilot study conducted by the authors added numerous resources to the codebook. The pilot study allowed the authors to discuss disagreements in the coding process and come to a consensus. The final codebook (Appendix A) is comprised of specific information resources, a

company name if a position did not specify a research product within the company, and codes to describe non-specific resources (e.g. “trade publications”).

The authors each coded half of the sample for years of experience, type of advertising career, and information resources. Eleven percent of the sample ( $n=45$ ) was independently coded by both authors to find intercoder reliability. Using Krippendorff’s alpha, the intercoder reliability was 1.0 for years of experience and .67 for type of job. Agreement on most resources, including any descriptions of non-specific resources, were at least .88, above the acceptable limit of .80. The “DoubleClick Campaign Manager” code was .79 and “unspecified syndicated resources” was .78, which is above the agreement limit of .67 for tentative conclusions. One code that did not meet the agreement limit was the resource “MediaMind Omniture”, which, even after discussion, remained confusing because it is a blend of two separate products, “MediaMind” and “Omniture”, the latter now owned by Adobe Analytics. Thus, the authors do not make conclusions based on the “MediaMind Omniture” resource. Atlas.ti was used to code the position descriptions and the ReCal software was used to find intercoder reliability (Freelon 2017).

### **Library holdings of advertising-related databases**

After the authors performed content analysis to find the types of information resources advertising agencies use, they then compared these resources to database holdings in university libraries. They first developed a list of universities that offered advertising programs by combining the list of advertising programs analyzed by Schauster et al. (2016) and the programs found in the online brochure *Where Shall I Go to Study Advertising and Public Relations?* which was created based on research from the American Academy of Advertising (n.d.). The combined list of 190 universities was narrowed down to only universities that offered a major, minor, or

concentration in advertising. Universities that offered a primarily public relations-focused degree program were not included in the list. The final list included 158 universities (Appendix B).

The authors used the results from the content analysis to record the number of advertising agency resources offered by each university library, as well as databases that contained trade journals. Only databases that were near matches to the industry resource were considered. Some databases, like Statista and Data Planet, have data from resources used by advertisers. These resources were not included in this study. Databases were found by reviewing a library's A-Z database list, which is typically a comprehensive list of all the libraries' databases holdings. Using a similar database list across all of the libraries' websites allowed for consistent searching of the libraries' resources. This methodology is similar to Gottfried (2010), who analyzed library holdings of business databases, and Stachokas (2016), who reviewed library websites for alumni resources.

## **Results**

### **Resources used in advertising agencies**

From the content analysis, 186 different research resources were found in the 407 job postings. As seen in Table 2, of the 186 resources, only 23 appear in 5% or more positions.

Appendix C has a complete list of resources identified in the analysis.

Table 2: Most Frequently Mentioned Advertising Agencies' Resources

Resource	<i>n</i>	% of all jobs	Resource Category
comScore†	120	29%	Reach/Frequency and Audience Measurement
Google Analytics	109	27%	Web and Mobile Analytics
GfK MRI	82	20%	Reach/Frequency and Audience Measurement
Nielsen†	71	17%	Market Research
Adobe Analytics	70	17%	Web and Mobile Analytics
DoubleClick for Publishers	62	15%	Programmatic Advertising
Atlas DMT	58	14%	Programmatic Advertising
Online @Plan	58	14%	Consumer Research
Online AdRelevance	53	13%	Advertising Intelligence, Performance, and Creatives
DoubleClick for Advertisers	48	12%	Programmatic Advertising
Google AdWords	44	11%	Search Engine Marketing
DoubleClick†	42	10%	Programmatic Advertising
Media Metrix	42	10%	Reach/Frequency and Audience Measurement
Kenshoo	34	8%	Search Engine Marketing
NetRatings	32	8%	Reach/Frequency and Audience Measurement
Simmons Market Research	32	8%	Consumer Research
MediaMind†	30	7%	Programmatic Advertising
Marin	28	7%	Search Engine Marketing
DoubleClick Search	25	6%	Search Engine Marketing
DoubleClick Campaign Manager	23	6%	Programmatic Advertising
Webtrends†	23	6%	Web and Mobile Analytics
Scarborough	19	5%	Market Research
Sizmek†	19	5%	Programmatic Advertising
<b>Total number of resources appeared in 5% or more of jobs</b>	<b>23</b>		
<b>Total number of named resources</b>	<b>186</b>		
<b>Total number of jobs (<i>n</i>)</b>	<b>407</b>		

†Jobs that mentioned the research company, but did not specify the which product(s) within the company the position uses.

When categorizing the resources, the authors found three different types of resource descriptions. One description mentions resource names. For example, a position might say “Media Metrix”, which is one of many products offered by comScore. The second type of description references a company but does not specify a product, like saying “comScore” rather than “Media Metrix”. The authors coded these cases using the company name with the understanding the position probably uses one of the company's specific resources.

The third resource description describes a type of resource, but does not provide a name or company, and, sometimes, not even a purpose (Table 3). For example, a position might say, “use syndicated research”, “read trade journals”, or “online resources”. These vague descriptions were grouped together into the categories of media, competitive, and consumer resources ( $n=37$ ), syndicated resources ( $n=37$ ), third-party advertising servers ( $n=36$ ), news and trade journals ( $n=34$ ), web analytics ( $n=7$ ), social listening tools ( $n=4$ ), and unspecified resources (e.g. “online resources”) ( $n=10$ ). For the purposes of coding for the content analysis and analyzing the results, these categories are mutually exclusive; however, the authors understand that some descriptions might refer to resources that overlap categories. Using Krippendorff’s alpha, the intercoder reliability was at least .88 for all of these categories with the exception of unspecified syndicated resources which was .78.

Table 3: Unspecified Advertising Agencies’ Resources

Resource	<i>n</i>	% of all jobs
Unspecified media, consumer, and competitive resources	37	9%
Unspecified syndicated resources	37	9%
Unspecified third party advertising servers and programmatic resources	36	9%
Unspecified trade journals	34	8%
Unspecified information resources (such as use internet for research)	10	2%
Unspecified web analytics resources	7	2%
Unspecified social listening tools	4	1%
<b>Total number of jobs (<i>n</i>)</b>	<b>407</b>	

In total, the authors coded 1,940 information resources or descriptions of information resources. The top resource advertising agency positions are expected to use is unspecified comScore products ( $n=120$ ), which appeared in nearly one-third of all job announcements. Behind this is Google Analytics ( $n=109$ ), GfK MRI consumer data ( $n=82$ ), and unspecified Nielsen products ( $n=71$ ). comScore’s Media Metrix was in 10% ( $n=42$ ) of the positions. In addition to unspecified Nielsen products, Nielsen’s Online @Plan ( $n=58$ ), Online AdRelevance ( $n=53$ ), NetRatings ( $n=32$ ), and Scarborough ( $n=19$ ) appeared in 5% or more positions. Besides Google Analytics, Google has six other products in the top 23: DoubleClick for Publishers

( $n=62$ ), DoubleClick for Advertisers ( $n=48$ ), Google AdWords ( $n=44$ ), unspecified DoubleClick products ( $n=42$ ), DoubleClick Search ( $n=25$ ), and DoubleClick Campaign Manager ( $n=23$ ).

To better analyze the resources, the authors researched each resource and categorized it into one of 11 groups, depending on the resources' main purpose. These categories are guidelines as some resources have dual purposes. The categories are presented below starting with the highest number of resources to the smallest number of resources per category. The number of resources per category is summarized in Table 4.

Table 4: Advertising Agencies' Resource Categories

Categories	Number of Resources
Programmatic Advertising	27
Search Engine Marketing	27
Reach/Frequency and Audience Measurement	25
Advertising and Marketing Management	24
Market Research	21
Social Media Analytics, Marketing, and Listening	21
Web and Mobile Analytics	14
Advertising Intelligence, Performance, and Creatives	10
Consumer Research	8
News Articles and News Monitoring	8
Other	1

### *Programmatic advertising*

Resources that assist in automated media buying and integrate data and media buying or selling into one process were categorized as *programmatic advertising*. Examples of resources in this group include Data Management Platforms (DMP), Demand Side Platforms (DSP), Supply Side Platforms (SSP), and general advertising servers. There are 27 different resources in this category, making the programmatic advertising and the search engine marketing categories tied with the highest number of resources.

Six DoubleClick products, owned by Google, are in this category and five of the six appeared in 13 or more positions. DoubleClick for Publishers, an advertising server with additional features to manage online advertisement sales, was the most mentioned ( $n=62$ ).

Additional programmatic advertising DoubleClick resources are DoubleClick for Advertisers ( $n=48$ ), unspecified DoubleClick products ( $n=42$ ), and DoubleClick Campaign Manager ( $n=23$ ).

Other highly mentioned resources in this category are Atlas DMT ( $n=58$ ) and MediaMind ( $n=30$ ). Both products are advertising servers with analytical features to further customize advertising campaigns. Additionally, 36 positions mentioned using third-party advertising servers but did not list specific resources.

### *Search engine marketing*

The category *search engine marketing* (SEM) includes resources whose main function is to optimize search results for given search terms. Different types of resources that fall within this category include Search Engine Optimization (SEO) resources, which use techniques such as keyword optimization, and Paid Search Marketing resources, which are platforms that help facilitate the purchase of advertisements on search engines. The top SEM resource is Google AdWords ( $n=44$ ), a service by Google that allows advertisers to place advertisements within the Google network. The second and third most noted resources are Kenshoo ( $n=34$ ) and Marin ( $n=28$ ).

### *Reach/frequency and audience measurement*

Resources in the *reach/frequency and audience measurement* category contain information on audience media consumption (e.g. television ratings and website impressions) and can calculate the number of people an advertisement reached and the frequency of which people were exposed to the advertisement. Twenty-five resources are in this category. The most frequently mentioned resource is unspecified comScore ( $n=120$ ) products which is mainly known for tracking consumers web and mobile data through their tool, Media Metrix, the third most noted resource in this category ( $n=42$ ). The second top resource is Gfk MRI ( $n=82$ ), which

surveys consumers on their media use, interests, and psychographics. In addition to Media Metrix, NetRatings ( $n=32$ ) and Hitwise ( $n=6$ ) are two other resources that contain web browsing data. The fifth most frequently mentioned resource is IMS Clear Decisions ( $n=17$ ), a software platform by Nielsen that has reach/ frequency and crosstab capabilities with consumer survey data from MRI and Simmons.

### *Advertising and marketing management*

Advertising agencies utilize *advertising and marketing management* resources in order to optimize and monitor the performance of ongoing advertising campaigns. With 24 resources, it is the fourth largest category; however, no one resource appears in more than four percent of the positions. The top resources in this category are Prisma ( $n=18$ ), a campaign management software, and Integral Ad Science ( $n=15$ ), a resource that uses analytic measurements of current advertisements in order to evaluate their return on investment.

### *Market research*

The *market research* category includes resources that contain reports and data on markets and industries. There were 21 resources in this category. The top two resources are non-specified Nielsen products ( $n=71$ ) and Scarborough ( $n=19$ ), which is owned by Nielsen and has information on local consumer media trends (The Nielsen Company 2018). The third most mentioned resource, eMarketer ( $n=16$ ), has data and reports on technology and media consumption.

Additional resources include Kantar's Millward Brown ( $n=15$ ) and non-specified Kantar products ( $n=13$ ). Millward Brown produces research on brand equity, advertising, media research, and digital advertising (Kantar Millward Brown 2017). Forrester, a market research firm that focuses on technology, appeared in 13 job postings. Other resources include

unspecified Mintel products ( $n=3$ ), WARC ( $n=2$ ), Passport ( $n=1$ ), and Pew Research Center ( $n=1$ ).

### *Social media analytics, marketing, and listening*

The 21 resources in the *social media analytics, marketing, and listening* category analyze, monitor, and manipulate social media activities for advertising campaigns. The most frequently found resources in this category are Social Studio ( $n=12$ ), Sysomos ( $n=9$ ), and Facebook Insights ( $n=8$ ). A number of third-party organizations that collect social media analytics were mentioned. These include NetBase Enterprise ( $n=8$ ), Brandwatch products ( $n=5$ ), and Crimson Hexagon ( $n=5$ ). There were also references of using social media platforms for research purposes, such as Twitter Analytics ( $n=5$ ), unspecified Facebook products ( $n=4$ ), Facebook Ads Manager ( $n=1$ ), Pinterest ( $n=1$ ), and Instagram ( $n=1$ ).

### *Web and mobile analytics*

The *web and mobile analytics* category includes resources that analyze, measure, and/or report web traffic or web usage. There are 14 named resources and seven positions mentioned using web analytics without specifying the type of products. The top resource is Google Analytics ( $n=109$ ), which was found in 27% of all of the positions analyzed. Adobe has two different products in this category: Adobe Analytics ( $n=70$ ) and Adobe SiteCatalyst ( $n=9$ ).

Other products in this category include Webtrends ( $n=23$ ) and Coremetrics ( $n=15$ ), which have website analytics. Some tools offer additional features, such as advanced analysis of customer traffic or, in the case of Moat Analytics ( $n=11$ ), advertising validity monitoring. One resource, Kochava ( $n=3$ ), specifically focuses on mobile analytics.

### *Advertising intelligence, performance, and creatives*

Resources in the *advertising intelligence, performance, and creatives* category have information on advertising and media activity and advertising costs in order to provide justification for media buying decisions. There are 10 named resources and an additional 37 references to unspecified advertising intelligence resources.

The most mentioned resource in this category was Nielsen's Online AdRelevance ( $n=53$ ), a product that measures online advertisements as a way of estimating what competitors are spending on their advertisements. Kantar Media, which includes Kantar Strategy and Ad\$ponder, were found in 17 positions. Kantar Media tracks advertising creatives, spending, and the number of people advertisements reached. Four other products in this category provide advertising rates: CMR (Competitive Media Reporting) ( $n=10$ ), SRDS (Standard Rate and Data Service) ( $n=5$ ), SMI (Standard Media Index) ( $n=2$ ), and SQAD (Service Quality Analytics Data) ( $n=2$ ).

### *Consumer research*

*Consumer research* resources contain information on consumers' lifestyles, behaviors, psychographics, media use, and opinions. There are eight resources in this category. The top resource is Online @Plan, a profiling and targeting tool for online media planning, buying, and selling (The Nielsen Company 2017). Online @Plan was seen in 58 positions, or 14% of all jobs descriptions analyzed. The second most mentioned consumer research resource was Simmons Market Research ( $n=32$ ). Simmons is known for their National Consumer Survey that asks people about their attitudes, opinions, and products and brands use. They also create reports about consumers and have media and device use analytics (Simmons Market Research 2014; "Simmons Research" 2017). The six other resources in this category appear in four or fewer

positions and include Kantar's MARS Consumer Health Study ( $n=3$ ), Kantar's TGI ( $n=1$ ), and Yankelovich which might refer to Kantar's US Monitor reports ( $n=1$ ).

#### *News articles and news monitoring*

The eight resources in the *news articles and news monitoring* category have trade and news articles or help with news monitoring by covering publications and journalists' information. Cision ( $n=4$ ) and Factiva ( $n=4$ ) appeared in the most positions. Cision, along with CisionPoint ( $n=1$ ), is a news monitoring database that allows for searching news and trade articles, as well as researching publications' contact and circulation information and journalists' contact information. Other news monitoring resources are Carma ( $n=1$ ) and Meltwater ( $n=1$ ). Resources that contain trade or news articles include Nieman Lab ( $n=1$ ), which reports on journalism, Harvard Business Review ( $n=1$ ), and Fast Company ( $n=1$ ). There are a number of positions ( $n=34$ ) that mentioned using trade or news publications for research but did not specify any titles.

#### *Other*

One resource, Google Images ( $n=5$ ), does not fit into any categories. It is the only resource that searches for images. Additionally, there were some positions that mentioned using resources for research but did not specify a resource name or how they would be used. Over 30 job announcements described the positions using "syndicated resources", without identifying if the resource is about markets, consumers, or other types of information. Thus, the authors were unable to classify resources coded as syndicated resources ( $n=37$ ). Ten positions mentioned using an information resource but did not specify the type of resource.

#### **Libraries' advertising resources**

When comparing the resources advertising agency employees are expected to use to the databases subscribed by 158 libraries at universities with advertising programs, there were 19 advertising-related resources that matched. As seen in Table 5, 11 of the 19 resources were seen in the advertising positions, and an additional eight resources contained trade journals. The advertising agency resource observed the most, comScore ( $n=120$ ), was only found in one university library. GfK MRI was the third most mentioned advertising resource in agencies ( $n=82$ ), and 30 libraries subscribe to the academic version, MRI University Reporter (previously called MRI+). Simmons consumer data was found in 32 positions, and 36 libraries subscribe to Simmons OneView.

Table 5: Advertising Resources Offered by University Libraries

Advertising Resources	Number of University Subscribers	% of all University Libraries	Number of Advertising Positions	Resource Category
Mintel Reports	60	38%	3	Market Research
SRDS	60	38%	5	Advertising Intelligence, Performance, and Creatives
Passport/Euromonitor GMID	52	33%	1	Market Research
Factiva	40	25%	4	News Articles and News Monitoring
Simmons OneView	36	23%	32	Consumer Research
MRI University Reporter	30	19%	82	Reach/Frequency and Audience Measurement
AdSpender	23	15%	17†	Advertising Intelligence, Performance, and Creatives
eMarketer	16	10%	16	Market Research
WARC	16	10%	2	Market Research
Forrester	3	2%	13	Market Research
comScore	1	1%	120‡	Reach/Frequency and Audience Measurement
<b>resources</b>	<b>11</b>			
Alternative Trade Journal Resources	Number of University Subscribers	% of all University Libraries		Resource Category
Business Source Complete	148	94%		News Articles and News Monitoring
Communication and Mass Media	119	75%		News Articles and News Monitoring
ABI/INFORM	95	60%		News Articles and News Monitoring
Business Abstracts with Full Text	41	26%		News Articles and News Monitoring
Communication Source	28	18%		News Articles and News Monitoring
Business Collection (Gale)	21	13%		News Articles and News Monitoring
Communication and Mass Media Collection (Gale)	21	13%		News Articles and News Monitoring
Corporate ResourceNet	2	1%		News Articles and News Monitoring
<b>Total number of alternative trade articles resources</b>	<b>8</b>			
<b>libraries (n)</b>	<b>158</b>			

† Appeared in job descriptions as "Kantar Media"

‡ Refers to unspecified comScore products

Of the 11 resources available in universities, five are market research resources. These include Mintel ( $n=60$ ) and Passport/Euromonitor GMID ( $n=52$ ). Seen in 10% or less of the universities studied were eMarketer ( $n=16$ ), WARC ( $n=16$ ), and Forrester ( $n=3$ ). It should be

noted that Business Source Complete and ABI/INFORM Complete also contain market research reports, but they were categorized under the trade journal resources.

University libraries subscribe to two advertising intelligence, performance, and creatives resources, SRDS ( $n=60$ ) and Kantar's Ad\$ponder ( $n=23$ ). Libraries also subscribe to two reach/frequency and audience measurement resources, MRI University Reporter ( $n=30$ ) and comScore ( $n=1$ ). Simmons OneView ( $n=36$ ) was the only consumer research resource, although MRI University Reporter has similar information as Simmons OneView.

Thirty-four advertising positions described the need to use news and trade journals. In academic libraries, eight databases were identified to have advertising news and trade publications, like *Advertising Age* and *Media Post*. Business Source Complete ( $n=148$ ), Communication & Mass Media Complete ( $n=119$ ), and ABI/INFORM Collection ( $n=95$ ), are the three most subscribed databases in university libraries that have trade articles. Similar databases offered by universities are Business Abstracts with Full Text ( $n=41$ ), Communication Source ( $n=28$ ), Business Collection (Gale) ( $n=21$ ), and Communication & Mass Media Collection (Gale) ( $n=21$ ). Factiva, which also has news and trade articles, is available at 40 universities.

## **Discussion**

This study analyzed 407 early-career job postings in advertising agencies to learn what type of information resources this population is expected to use. The most frequently mentioned resources contained numerical data on reach/frequency metrics and audience measurement, web and mobile analytics, programmatic advertising, search engine optimization, and consumer behaviors and psychographics. Given that over half of the positions analyzed were in media planning ( $n=223$ ), and data and analytics ( $n=90$ ) and interactive marketing ( $n=79$ ) each made up another 20% of the positions, the data and analytics resources are probably skewed to these types

of positions. For example, two frequently mentioned resources, comScore ( $n=120$ ) and GfK MRI ( $n=82$ ), are both reach/frequency and audience measurement resources that are heavily used in media planning and they contain numerical data. The finding that data and analytics are used in advertising careers is supported by previous research that found Excel, Tableau, SAS, and Stata were used by marketers, especially data and analytic positions at advertising agencies (Gilbert 2017; Pefanis Schlee and Harich 2010).

Past studies mentioned comScore, DoubleClick for Publishers (formerly DART), Google Analytics, Nielsen, MRI, Social Studio (formerly Radian 6), SRDS, and Trade Desk are used by advertising agencies (Gilbert 2017; Herling and Merskin 1995; Neill and Schauster 2015). This study corroborates those findings, particularly unspecified comScore and Nielsen products, DoubleClick for Publishers, and Google Analytics were each mentioned in 62 positions or more. However, these studies discussed resources that do not appear not mentioned in the 407 positions analyzed, and this is explained by changes in the resources and industry over time. Herling and Merskin (1995) found LexisNexis, ProQuest's Dialog, and Arbitron were frequently used in advertising agencies in the 1990s. Arbitron was acquired by Nielsen in 2013 (Nielsen 2013), and LexisNexis and Dialog were not found in the positions analyzed. Rather, Factiva and Cision were the only article databases. Additionally, Neill and Schauster (2015) wrote interviewees who worked in advertising and public relations use Rubicon (also called Rubicon Project), a programmatic advertising software. Although this study found 27 different resources related to programmatic advertising, Rubicon was not one of them. Instead, Google's DoubleClick products dominated the list of programmatic resources. Furthermore, Google, Nielsen, and comScore's resources were some of the most frequently mentioned. The popularity of these

companies reflects the top research companies in American Marketing Association's Gold Top 50 Reports (Bowers and Brereton 2017, 2016).

Of the 186 resources advertisers are expected to use, libraries at universities with advertising programs only subscribed to 11. Both this study and previous research on academic library databases found that university libraries most commonly subscribe to AdSpender, eMarketer, Factiva, Forrester, MRI University Reporter, Mintel, Passport/Euromonitor GMID, Simmons OneView, and SRDS (Abels and Magi 2001; Gonzalez et al. 2009; Kim and Wyckoff 2016; Lenox 2009; Schnedeker 2003;). Advertising resources that were not mentioned in previous business collections research include WARC and comScore.

Since the use of unspecified trade journals was seen in 8% ( $n=34$ ) of all advertising positions, this study also tracked the number of databases with advertising trade journals. Like previous research, this paper found that numerous academic libraries subscribe to ABI/INFORM (Abels and Magi 2001; Gonzalez et al. 2009; Kim and Wyckoff 2016; Kim and DeCoster 2011; Lenox 2009; Schnedeker 2003). In addition to other business article databases (e.g. Business Source Complete and Business Abstracts with Full Text), 75% ( $n=119$ ) of the libraries examined provided access to Communication and Mass Media Complete, followed by Communication Source ( $n=28$ ) and Communication and Mass Media Collection ( $n=21$ )--databases that were not mentioned in previous business database collections research.

Few advertising agency resources contain articles, reports, and analyses. Unspecified Nielsen products is the only resource in the top 23 that may contain reports. Although seen in 16 or fewer positions, eMarketer ( $n=16$ ), Millward Brown ( $n=15$ ), and Forrester ( $n=13$ ) are some of the resources that produce written reports and analyses. However, 34 positions mentioned using trade journals and articles without providing specific sources. Perhaps positions do not list out

resources with written reports because these databases are considered easier to use and do not take specialized skills to understand.

### **Implications**

Overall, libraries at universities with advertising programs subscribe to a small number of resources advertising agency employees are expected to use. A major factor for this is that these resources are intended for the corporate market and are ill-equipped to support academia. These companies may not have the technological infrastructure and fee structure to provide seamless access with IP authentication or other preferred access methods; rather, they may prefer customers create and pay for individual user accounts. Search engine optimization and programmatic advertising software that purchases advertising space are unexpected information resources where gathering information from these platforms requires purchasing an advertisement. Additionally, many of the top resources used in advertising agencies would only be relevant to a few departments on campus, and if they do not have academic pricing, the resources are less cost effective than databases that are more interdisciplinary. Another issue is that resources may not meet the accessibility requirements of academic institutions.

An alternative to the corporate advertising resources are academic versions that have some, but not all, of the features of the corporate product. For example, Simmons data is available in the academic version, Simmons OneView. It has limited access to recent data and is less intuitive than the industry's frequently mentioned resource, Nielsen IMS, which is one way that advertisers access Simmons data. Librarians can also utilize existing academic databases to teach students their use and importance in other industry resources, as well as teach transferable data and information literacy skills. One example is using Simmons OneView to teach about Simmons data and other consumer data found in Nielsen IMS. Librarians can instruct on

quantitative methodologies, Simmons's data collection, and statistical analyses like crosstabulation tables and data manipulation. Another instance, Nielsen Monitor Plus has advertising spending data and uses SRDS data as part of its method for tracking competitor advertising (The Nielsen Company 2015). In addition to teaching how SRDS collects data, librarians can instruct on data dissemination and the value of SRDS's data.

Teaching transferable data and information literacy skills is advantageous because resources are constantly changing. Although students might not have access to most resources used in the industry, librarians can be instrumental in helping students identify and dissect the information they do have. This allows students to be more familiar with the types of information they will need in their future advertising careers.

### **Limitations and Directions for Future Research**

This article provides a general understanding of the types of information resources used in early-career positions at advertising agencies and the availability of these resources at university libraries. One limitation of this study is that despite looking for all types of advertising positions, the criteria used for selecting job descriptions--namely focusing on positions listing information resources--led to media planning careers comprising 55% of the sample. While the sample did not include duplicate positions that had the same title and exact word-for-word descriptions throughout, companies often used similar language in multiple positions. This may have increased the number of times a resource appeared.

One intent of this paper was to find how many advertising resources used in the industry are also offered by university libraries. The authors tried to find an exact match of databases from the industry and the libraries. They did not include databases that are not used by advertisers even if it might contain partial information or data used by the industry. Thus, many

useful advertising resources, such as Statista, DemographicsNow, REDBOOKS, and more, were not included.

Another limitation is libraries' websites' A-Z database page, which was used to see if libraries subscribe to the advertising industry's resources, may not be a complete list of resources. While it provided a consistent method for analyzing libraries' holdings, library consortiums, journalism or communication schools, and advertising competitions might provide additional resources for students.

As this paper deals with a previously unexplored research area, it raises multiple questions that can be answered in subsequent studies. This study only reviewed the library resources that were mentioned in the job postings. Future research might examine other resources libraries have to support advertising research or resources that advertising departments might purchase independently of the library. Secondly, it would be interesting to use qualitative methods to find what resources advertising agencies use, but do not mention in position descriptions. Another avenue for future research could explore advertising curriculums and which resources advertising faculty and instructors use in their classes. This can provide information on advertising departments' needs, helping establish partnerships between the libraries and advertising faculty and students to better deliver relevant tools and instruction. Fourth, future studies could analyze the benefits and challenges libraries face when supporting non-academic, industry databases from a variety of disciplines. This paper took a new approach to examining collection development in academic libraries by using position descriptions or workplaces where students might gain employment. It could be beneficial to continue the study and consider how academic libraries' collections can review workplaces to analyze and support their users' practical needs.

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## Appendix

### Appendix A: Codebook

Job Postings: One per Position	
Codes	Description
Account manager	Example positions include assistant account executive, account executive, account supervisor, account manager, team coordinator
Community manager	Example positions include social media coordinator, social media monitoring
Creative	Example positions include designer, producer, copywriter, art director, editor
Data and analytics	Finds, analyzes, and manages data related to advertising campaigns and consumers. Examples of job titles include data architect, analyst, digital analyst, data analyst, data insights and innovation, analytics associate, analyst marketing science
Interactive marketing	Creates and maintains search engine and online advertising campaigns. Examples of job titles include search analyst, search planner, digital producer, user experience designer, interactive designer, software engineer, and web developer.
Media Planning and Buying	Plans ad campaigns by determining relevant media properties and purchases advertising spots for the campaigns (Advertising Educational Foundation 2014, 5). Examples of job titles include media planner, buyer, local investment, and ad operations.
Strategy	Researches and brainstorms consumers' needs and wants (Advertising Educational Foundation 2014, 4). Examples of job titles include strategist and strategic planner.
Years of Experience: One per Position	
Codes	Description
0 year	0-11 months experience, usually assistant-level
1 year	1 year-1 year and 11 months experience, usually media planner, search planner, analyst, strategist
2 years	2 years-2 years and 11 months experience, generally supervisor, manager
3 years	3 years-3 years and 11 months experience, generally senior supervisor, manager
4 years	4 years-4 years and 11 months experience, generally manager, director
Does the position mention the following information resources?	
Code	Description or Other Known Names and Spelling

4C	
Ad*Views	AdViews
Adaptly	
Adgooroo	
Adobe - General	Unspecified Adobe products that refers to analytics, not design software
Adobe Analytics	Adobe Analytics Cloud, Omniture (web analytics context)
Adobe Audience Manager	
Adobe Campaign	
Adobe Media Optimizer	
Adobe SiteCatalyst	
Adobe Target	
Amazon Advertising Platform	
AppNexus	
Aprimo-Teradata	
Arbitron	
Atlas DMT	Atlas Digital Marketing Suite, Atlas Solutions, Atlas
BigQuery	
Bing	
Bing ads	Bing AdCenter, adCenter, Bing Ads Editor, Microsoft adCenter, MSN adCenter, Adcenter Analytics
Blue Kai	
Brainbox	
Brandwatch	
Brightedge	
Brightroll	
Carma	
CEB Iconoculture Consumer Insights	Iconoculture
Cision - General	Unspecified Cision products
CisionPoint	
ClickTracks	Lyris HQ, Lyris, Aurea Email Marketing, Aurea
CMR	
Compete	Compete Site Analytics, Compete Audit
comScore - General	Unspecified comScore products
Conductor	
Conversant	
Coremetrics	IBM Digital Analytics
Crimson Hexagon	
Dimestore	Knowledge Networks
DoubleClick - General	Unspecified DoubleClick products

DoubleClick Bid Manager	DBM
DoubleClick Campaign Manager	DCM
DoubleClick for Advertisers	DFA, Google DFA, DoubleClick DART for Advertisers, (If there's "DART/DFA", "DART" is DoubleClick for Publishers and "DFA" DoubleClick for Advertisers)
DoubleClick for Publishers	DoubleClick DART, DART, Google Ad Manager, DFP Small Business, NetGravity, NetGravity AdServer
DoubleClick Mediavisor	Mediavisor
DoubleClick Search	DS3, Performics, DART Search
DoubleVerify	DV
Drawbridge	
Dynamic Logic - General	Unspecified Dynamic Logic products
eMarketer	
eTelmar	e-Telmar
Evaliant	
Eztab	
Facebook - General	Unspecified Facebook products for finding information, not related to using Facebook for social media posting
Facebook Ads Manager	
Facebook Insights	Facebook Audience Insights
Factiva	
Fast co	
Flashtalking	Simplicity Marketing
Forrester	Forrester Research
Gemini	
GfK - General	Unspecified GfK products
GfK MRI	MRI+, MRI, MRI Plus, Mediamark Research and Intelligence, MRI University Reporter, GfK Mediamark Research & Intelligence, MediaMark Reporter
Google AdWords	AdWords Certification, Google Partners, Google Keyword Planner
Google Analytics	Google Analytics 360, Google Analytics Premium, Google Analytics for Mobile Apps, Urchin, Universal Analytics, Google Tag Manager
Google Audience Manager	
Google Images	
Google Keyword Planner	
Google Tag Manager	
Google Trends	
Google Webmaster Tools	

Harvard Business Review	
Hitwise	
Hootsuite	BrightKit, HootSuite Media
Ibope	Instituto Brasileiro de Opinião Pública e Estatística, Brazilian Institute of Public Opinion and Statistics
IgnitionOne	
IMS Clear Decisions	IMS, Clear Decisions, Nielsen IMS
IMS MarketMate TV	Nielsen IMS MarketMate TV, MarketMate
Infegy-Atlas	
Innovid	
Inside Vault	
Instagram	
Integral Ad Science	IAS, AdSafe Media
IPOS	
JupiterResearch	Jupiter
Kantar - General	Unspecified Kantar and TNS products
Kantar Media	Kantar Strategy, Strategy
Kenshoo	
Kochava	
Lotame	
Majestic SEO	Majestic-12, Majestic, Flow Metrics, Citation Flow, Trust Flow, Majestic-12
Manhattan	
Marin	Perfect Audience, SocialMoov, Marin Software
MARS Consumer Health Study	MARS
Matrix	
Mbox	
Media Landscape	
Media Metrix	Reach/Frequency
Media Tools	
Media360	Telmar Media 360
MediaMath	TerminalOne
MediaMind - General	Unspecified MediaMind and Eyeblaster products. For MediaMind Omniture, see MediaMind Omniture
MediaMind Omniture	MediaMind Omniture (as an integrated product)
Mediaocean - General	DDS, Donovan Data Services, MediaBank
MediaPlex	
Meltwater	
Millward Brown	Insight Express, Millward Brown Digital
Mintel	
Moat Analytics	Moat

Monitor Plus	Quick*Views, Print*Views, Creative*Views, Ad Hoc/Custom Reports, Place*Views, Place*Values
Moz	
Netbase	Unspecified NetBase and Accelovation products
NetRatings	
NetView	
Nielsen - General	Unspecified Nielsen products
Nielsen Buyer Insights	
Nielsen Catalina	
Nielsen Digital Ad Ratings	Nielsen DAR
Nielsen Twitter TV Ratings	
Nielsen XCR	
Nieman Lab	
NNTV	
NPower	
One by AOL	
Online @Plan	@Plan
Online AdRelevance	Ad Intel Digital
Oracle Siebel	
Other - media, consumer, competitive	Unspecified media, consumer, and competitive resources
Other - not specified	Unspecified information resources
Other - social listening tools	Unspecified social listening tools used for information resources
Other - syndicated	Unspecified syndicated resources
Other - third-party ad servers	Unspecified third-party ad servers used for information resources
Other - trade journals	Unspecified trade journals and articles
Other - web analytics	Unspecified web analytic resources
Other - with a resource name	Named resources that are not listed
Passport	Passport GMID, Euromonitor
Peanut Labs	
Percolate	
Pew Research Center	Pew
Pinterest	
Plan Metrix	AIM, Audience Insight Measures
Pointlogic	
PointRoll	
POW lite	
Prime Lingo	
Prisma	Prisma for Buyers, Prisma for Sellers

Rentrak	
Research Now	
Roper	
Salesforce Data Studio	
Salesforce DMP	Krux
Salesforce Marketing Cloud - General	Unspecified Salesforce Marketing Cloud, Exact Target, CoTweet, iGoDigital, and Keymail Marketing products
SAS	
Scarborough	
Screaming Frog	Screaming Frog SEO Spider
Search Console	
Searchlight	
SEMRush	
SEOMoz	
Shareablee	
Signal	
SimilarWeb	
Simmons Market Research	Simmons, Simmons OneView, Experian
SimplyMeasured	
Sizmek - General	Unspecified Sizmek products
SMI	Standard Media Index
Social Studio	Radian6, Radian 6
Sprinklr	
SproutSocial	
SpyFu	
SQAD	
SRDS	Standard Rate and Data Service
Sugar	
Sysomos	
T*View	TView
Tapad	
TGI	TGI survey data
The New Living Room	
TRA	
Trade Desk	
TrendWatching	
TrueView	Google TrueView, YouTube TrueView, True View
TubeMogul	
Tublar	
Tune	
Twitter Analytics	

Unica	
Unicast	
Vindico	
Visual IQ	
Vizu	
WARC	
Web R&F	
Webtrends	
Yahoo	
Yankelovich	

## Appendix B: Universities with advertising programs

<b>Institution</b>	<b>City</b>	<b>State</b>
Samford U.	Homewood	AL
U. of South Alabama	Mobile	AL
U. of Alabama	Tuscaloosa	AL
U. of Arkansas	Fayetteville	AR
Arkansas State U.	Jonesboro	AR
U. of Arkansas at Little Rock	Little Rock	AR
Harding U.	Searcy	AR
Northern Arizona U.	Flagstaff	AZ
California State U., Fresno	Fresno	CA
California State U., Fullerton	Fullerton	CA
U. of Southern California	Los Angeles	CA
San Diego State U.	San Diego	CA
San Jose State U.	San Jose	CA
U. of Colorado Boulder	Boulder	CO
U. of Northern Colorado	Greeley	CO
U. of Bridgeport	Bridgeport	CT
U. of Hartford	West Hartford	CT
Eastern Connecticut State U.	Willimantic	CT
Howard U.	Washington	DC
U. of Miami	Coral Gables	FL
Florida Gulf Coast U.	Fort Meyers	FL
U. of Florida	Gainesville	FL
U. of North Florida	Jacksonville	FL
Florida International U.	North Miami	FL
Central Florida U.	Orlando	FL
U. of West Florida	Pensacola	FL
Florida State U.	Tallahassee	FL
U. of Georgia	Athens	GA
Hawaii Pacific U.	Honolulu	HI
Iowa State U.	Ames	IA
U. of Northern Iowa	Cedar Falls	IA
Drake U.	Des Moines	IA
Morningside College	Sioux City	IA
U. of Idaho	Moscow	ID
Southern Illinois U.	Carbondale	IL
U. of Illinois Urbana-Champaign	Champaign	IL
Columbia College	Chicago	IL
DePaul U.	Chicago	IL
Loyola U.	Chicago	IL
Roosevelt U.	Chicago	IL
Northwestern U.	Evanston	IL
Western Illinois U.	Macomb	IL
Bradley U.	Peoria	IL

U. of Evansville	Evansville	IN
U. of Southern Indiana	Evansville	IN
Purdue U. Northwest	Hammond	IN
Butler U.	Indianapolis	IN
Ball State U.	Muncie	IN
Indiana U. Southeast	New Albany	IN
Purdue U.	West Lafayette	IN
Fort Hays State U.	Hays	KS
U. of Kansas	Lawrence	KS
Kansas State U.	Manhattan	KS
Pittsburg State U.	Pittsburg	KS
Washburn U.	Topeka	KS
Wichita State U.	Wichita	KS
Western Kentucky U.	Bowling Green	KY
U. of Kentucky	Lexington	KY
Murray State U.	Murray	KY
Eastern Kentucky U.	Richmond	KY
Louisiana State U.	Baton Rouge	LA
U. Louisiana at Lafayette	Lafayette	LA
Loyola U. New Orleans	New Orleans	LA
Boston U.	Boston	MA
Emerson College	Boston	MA
Suffolk U.	Boston	MA
Loyola U. Maryland	Baltimore	MD
Grand Valley State U.	Allendale	MI
Ferris State U.	Big Rapids	MI
Michigan State U.	East Lansing	MI
Western Michigan U.	Kalamazoo	MI
Central Michigan U.	Mt. Pleasant	MI
Oakland U.	Rochester	MI
Bemidji State U.	Bemidji	MN
U. of Minnesota Twin Cities	Minneapolis	MN
Minnesota State U. Moorhead	Moorhead	MN
St. Cloud State U.	St. Cloud	MN
U. of St. Thomas	St. Paul	MN
Winona State U.	Winona	MN
Southeast Missouri State U.	Cape Girardeau	MO
U. of Missouri	Columbia	MO
Missouri State U.	Springfield	MO
Saint Louis U.	St. Louis	MO
Webster U.	Webster Groves	MO
U. of Southern Mississippi	Hattiesburg	MS
Appalachian State U.	Boone	NC
U. of North Carolina at Chapel Hill	Chapel Hill	NC
Elon U.	Elon	NC
Midland U.	Fremont	NE

U. of Nebraska at Kearney	Kearney	NE
U. of Nebraska-Lincoln	Lincoln	NE
Creighton U.	Omaha	NE
U. of Nebraska Omaha	Omaha	NE
Rowan U.	Glassboro	NJ
U. of New Mexico	Albuquerque	NM
New Mexico State U.	Las Cruces	NM
U. of Nevada, Reno	Reno	NV
Manhattan College	Bronx	NY
LIU Post	Brookville	NY
State U. of New York at Buffalo	Buffalo	NY
Ithaca College	Ithaca	NY
Baruch College	New York	NY
Marist College	Poughkeepsie	NY
St. Bonaventure U.	St. Bonaventure	NY
Syracuse U.	Syracuse	NY
U. of Akron	Akron	OH
Ohio U.	Athens	OH
Xavier U.	Cincinnati	OH
Kent State U.	Kent	OH
Youngstown State U.	Youngstown	OH
Southeastern Oklahoma State U.	Durant	OK
U. of Central Oklahoma	Edmond	OK
U. of Oklahoma	Norman	OK
Oklahoma City U.	Oklahoma City	OK
Oklahoma State U.	Stillwater	OK
U. of Oregon	Eugene	OR
Portland State U.	Portland	OR
Thiel College	Greenville	PA
Lock Haven U.	Lock Haven	PA
Temple U.	Philadelphia	PA
Duquesne U.	Pittsburgh	PA
Point Park U.	Pittsburgh	PA
Susquehanna U.	Selinsgrove	PA
Pennsylvania State U.	State College	PA
U. of South Carolina	Columbia	SC
South Dakota State U.	Brookings	SD
U. of South Dakota	Vermillion	SD
E. Tennessee State U.	Johnson City	TN
U. of Tennessee, Knoxville	Knoxville	TN
U. of Memphis	Memphis	TN
Middle Tennessee State U.	Murfreesboro	TN
Abilene Christian U.	Abilene	TX
U. of Texas at Arlington	Arlington	TX
U. of Texas at Austin	Austin	TX
West Texas A&M U.	Canyon	TX

Southern Methodist U.	Dallas	TX
U. of North Texas	Denton	TX
U. of Texas Rio Grande Valley	Edinburg	TX
U. of Texas at El Paso	El Paso	TX
Texas Christian U.	Fort Worth	TX
Texas Wesleyan U.	Fort Worth	TX
U. of Houston	Houston	TX
Texas Tech U.	Lubbock	TX
Texas State U.	San Marcos	TX
Baylor U.	Waco	TX
Midwestern State U.	Wichita Falls	TX
Brigham Young U.	Provo	UT
Liberty U.	Lynchburg	VA
Radford U.	Radford	VA
Virginia Commonwealth U.	Richmond	VA
Washington State U.	Pullman	WA
U. of Wisconsin-Madison	Madison	WI
Marquette U.	Milwaukee	WI
U. of Wisconsin-Oshkosh	Oshkosh	WI
U. of Wisconsin-Whitewater	Whitewater	WI
Bethany College	Bethany	WV
Marshall U.	Huntington	WV
West Virginia U.	Morgantown	WV

## Appendix C: List of advertising agencies' resources

Resource	<i>n</i>	% of all jobs	Resource Category
comScore†	120	29%	Reach/Frequency and Audience Measurement
Google Analytics	109	27%	Web and Mobile Analytics
GfK MRI	82	20%	Reach/Frequency and Audience Measurement
Nielsen†	71	17%	Market Research
Adobe Analytics	70	17%	Web and Mobile Analytics
DoubleClick for Publishers	62	15%	Programmatic Advertising
Atlas DMT	58	14%	Programmatic Advertising
Online @Plan	58	14%	Consumer Research
Online AdRelevance	53	13%	Advertising Intelligence, Performance, and Creatives
DoubleClick for Advertisers	48	12%	Programmatic Advertising
Google AdWords	44	11%	Search Engine Marketing
DoubleClick†	42	10%	Programmatic Advertising
Media Metrix	42	10%	Reach/Frequency and Audience Measurement
Kenshoo	34	8%	Search Engine Marketing
NetRatings	32	8%	Reach/Frequency and Audience Measurement
Simmons Market Research	32	8%	Consumer Research
MediaMind†	30	7%	Programmatic Advertising
Marin	28	7%	Search Engine Marketing
DoubleClick Search	25	6%	Search Engine Marketing
DoubleClick Campaign Manager	23	6%	Programmatic Advertising
Webtrends†	23	6%	Web and Mobile Analytics
Scarborough	19	5%	Market Research
Sizmek†	19	5%	Programmatic Advertising
Prisma	18	4%	Advertising and Marketing Management
Bing ads	17	4%	Search Engine Marketing
IMS Clear Decisions	17	4%	Reach/Frequency and Audience Measurement
Kantar Media	17	4%	Advertising Intelligence, Performance, and Creatives
eMarketer	16	4%	Market Research

Coremetrics	15	4%	Web and Mobile Analytics
Integral Ad Science	15	4%	Advertising and Marketing Management
Millward Brown	15	4%	Market Research
DoubleClick Bid Manager	13	3%	Programmatic Advertising
Forrester	13	3%	Market Research
Kantar†	13	3%	Market Research
DoubleVerify	12	3%	Advertising and Marketing Management
Mediaocean†	12	3%	Advertising and Marketing Management
Social Studio	12	3%	Social Media Analytics, Marketing, and Listening
Ad*Views	11	3%	Advertising Intelligence, Performance, and Creatives
Moat Analytics	11	3%	Web and Mobile Analytics
PointRoll	11	3%	Programmatic Advertising
CMR	10	2%	Advertising Intelligence, Performance, and Creatives
Compete	10	2%	Web and Mobile Analytics
Dynamic Logic†	10	2%	Advertising and Marketing Management
Evaliant	10	2%	Web and Mobile Analytics
Adobe SiteCatalyst	9	2%	Web and Mobile Analytics
Dimestore	9	2%	Advertising and Marketing Management
MediaMath	9	2%	Programmatic Advertising
Plan Metrix	9	2%	Reach/Frequency and Audience Measurement
Sysomost†	9	2%	Social Media Analytics, Marketing, and Listening
Vizu	9	2%	Advertising Intelligence, Performance, and Creatives
Facebook Insights	8	2%	Social Media Analytics, Marketing, and Listening
MediaPlex	8	2%	Programmatic Advertising
NetBase Enterprise	8	2%	Social Media Analytics, Marketing, and Listening
Gfk†	7	2%	Market Research
Innovid	7	2%	Programmatic Advertising
Adgooroo	6	1%	Search Engine Marketing
Brainbox	6	1%	Market Research
eTelmar	6	1%	Reach/Frequency and Audience Measurement
Flashtalking	6	1%	Programmatic Advertising

Hitwise	6	1%	Reach/Frequency and Audience Measurement
Trade Desk	6	1%	Programmatic Advertising
Brandwatch†	5	1%	Social Media Analytics, Marketing, and Listening
Brightedge†	5	1%	Search Engine Marketing
Crimson Hexagont†	5	1%	Social Media Analytics, Marketing, and Listening
DoubleClick Mediavisor	5	1%	Programmatic Advertising
Google Images	5	1%	Other Research
MediaMind Omniture	5	1%	Reach/Frequency and Audience Measurement
Monitor Plus	5	1%	Advertising Intelligence, Performance, and Creatives
Research Now	5	1%	Market Research
Salesforce DMP	5	1%	Web and Mobile Analytics
Salesforce Marketing Cloud†	5	1%	Advertising and Marketing Management
SRDS	5	1%	Advertising Intelligence, Performance, and Creatives
Twitter Analytics	5	1%	Social Media Analytics, Marketing, and Listening
Adobe Audience Manager	4	1%	Consumer Research
Amazon Advertising Platform	4	1%	Programmatic Advertising
CEB Iconoculture Consumer Insights	4	1%	Consumer Research
Cision†	4	1%	News Articles and News Monitoring
Facebook†	4	1%	Social Media Analytics, Marketing, and Listening
Factiva	4	1%	News Articles and News Monitoring
Media360	4	1%	Reach/Frequency and Audience Measurement
NetView	4	1%	Reach/Frequency and Audience Measurement
Screaming Frog	4	1%	Search Engine Marketing
SEMRush	4	1%	Search Engine Marketing
TubeMogul	4	1%	Programmatic Advertising
IMS MarketMate TV	3	1%	Reach/Frequency and Audience Measurement
Kochava	3	1%	Web and Mobile Analytics
MARS Consumer Health Study	3	1%	Consumer Research
Mintel†	3	1%	Market Research

Nielsen Digital Ad Ratings	3	1%	Reach/Frequency and Audience Measurement
One by AOL	3	1%	Programmatic Advertising
TrueView	3	1%	Programmatic Advertising
Unica	3	1%	Advertising and Marketing Management
Aprimo-Teradata	2	0%	Advertising and Marketing Management
Blue Kai	2	0%	Programmatic Advertising
Eztab	2	0%	Reach/Frequency and Audience Measurement
Google Trends	2	0%	Web and Mobile Analytics
IgnitionOne	2	0%	Programmatic Advertising
Infegy-Atlas	2	0%	Social Media Analytics, Marketing, and Listening
JupiterResearch	2	0%	Market Research
Majestic SEO	2	0%	Search Engine Marketing
Media Tools	2	0%	Advertising and Marketing Management
Moz†	2	0%	Search Engine Marketing
NPower	2	0%	Reach/Frequency and Audience Measurement
POW lite	2	0%	Social Media Analytics, Marketing, and Listening
Roper	2	0%	Market Research
Search Console	2	0%	Search Engine Marketing
Signal	2	0%	Search Engine Marketing
SimplyMeasured	2	0%	Social Media Analytics, Marketing, and Listening
SMI	2	0%	Advertising Intelligence, Performance, and Creatives
SQAD†	2	0%	Advertising Intelligence, Performance, and Creatives
T*View	2	0%	Reach/Frequency and Audience Measurement
TrendWatching	2	0%	Consumer Research
Unicast	2	0%	Advertising and Marketing Management
WARC	2	0%	Market Research
Web R&F	2	0%	Reach/Frequency and Audience Measurement
4C	1	0%	Advertising and Marketing Management
Adaptly	1	0%	Search Engine Marketing
Adobe†	1	0%	Web and Mobile Analytics

Adobe Campaign	1	0%	Advertising and Marketing Management
Adobe Media Optimizer	1	0%	Search Engine Marketing
Adobe Target	1	0%	Advertising and Marketing Management
AppNexus	1	0%	Programmatic Advertising
Arbitron	1	0%	Reach/Frequency and Audience Measurement
BigQuery	1	0%	Search Engine Marketing
Bing	1	0%	Search Engine Marketing
Brightroll	1	0%	Programmatic Advertising
Carma	1	0%	News Articles and News Monitoring
CisionPoint	1	0%	News Articles and News Monitoring
ClickTracks	1	0%	Web and Mobile Analytics
Conductor	1	0%	Search Engine Marketing
Conversant†	1	0%	Programmatic Advertising
Drawbridge	1	0%	Programmatic Advertising
Facebook Ads Manager	1	0%	Social Media Analytics, Marketing, and Listening
Fast Co	1	0%	News Articles and News Monitoring
Gemini	1	0%	Search Engine Marketing
Google Audience Manager	1	0%	Programmatic Advertising
Google Keyword Planner	1	0%	Search Engine Marketing
Google Tag Manager	1	0%	Search Engine Marketing
Google Webmaster Tools	1	0%	Search Engine Marketing
Harvard Business Review	1	0%	News Articles and News Monitoring
Hootsuite	1	0%	Social Media Analytics, Marketing, and Listening
Ibope	1	0%	Reach/Frequency and Audience Measurement
Inside Vault	1	0%	Search Engine Marketing
Instagram	1	0%	Social Media Analytics, Marketing, and Listening
IPOS	1	0%	Market Research
Lotame	1	0%	Programmatic Advertising
Manhattan	1	0%	Market Research
Matrix	1	0%	Advertising and Marketing Management
Mbox	1	0%	Advertising and Marketing Management
Media Landscape	1	0%	Market Research
Meltwater	1	0%	News Articles and News Monitoring

Nielsen Buyer Insights	1	0%	Reach/Frequency and Audience Measurement
Nielsen Catalina	1	0%	Reach/Frequency and Audience Measurement
Nielsen Twitter TV Ratings	1	0%	Social Media Analytics, Marketing, and Listening
Nielsen XCR	1	0%	Advertising and Marketing Management
Nieman Lab	1	0%	News Articles and News Monitoring
NNTV	1	0%	Reach/Frequency and Audience Measurement
Oracle Siebel	1	0%	Advertising and Marketing Management
Passport	1	0%	Market Research
Peanut Labs	1	0%	Market Research
Percolate	1	0%	Social Media Analytics, Marketing, and Listening
Pew Research Center	1	0%	Market Research
Pinterest	1	0%	Social Media Analytics, Marketing, and Listening
Pointlogic	1	0%	Advertising and Marketing Management
Prime Lingo	1	0%	Reach/Frequency and Audience Measurement
Rentrak	1	0%	Reach/Frequency and Audience Measurement
Salesforce Data Studio	1	0%	Web and Mobile Analytics
SAS	1	0%	Advertising and Marketing Management
Searchlight	1	0%	Search Engine Marketing
SEOMoz	1	0%	Search Engine Marketing
Shareablee	1	0%	Social Media Analytics, Marketing, and Listening
SimilarWeb	1	0%	Advertising Intelligence, Performance, and Creatives
Sprinklr	1	0%	Social Media Analytics, Marketing, and Listening
SproutSocial	1	0%	Social Media Analytics, Marketing, and Listening
SpyFu	1	0%	Search Engine Marketing
Sugar	1	0%	Advertising and Marketing Management
Tapad	1	0%	Advertising and Marketing Management
TGI	1	0%	Consumer Research
The New Living Room	1	0%	Market Research

TRA	1	0%	Reach/Frequency and Audience Measurement
Tubular†	1	0%	Social Media Analytics, Marketing, and Listening
Tune	1	0%	Advertising and Marketing Management
Vindico	1	0%	Advertising and Marketing Management
Visual IQ	1	0%	Market Research
Yahoo	1	0%	Search Engine Marketing
Yankelovich†	1	0%	Consumer Research
Total number of resources appeared in 5% or more of jobs	23		
Total number of named resources	186		
Unspecified media, consumer, and competitive resources	37	9%	
Unspecified syndicated resources	37	9%	
Unspecified third-party advertising servers and programmatic resources	36	9%	
Unspecified trade journals	34	8%	
Unspecified information resources (such as use internet for research)	10	2%	
adUnspecified web analytics resources	7	2%	
Unspecified social listening tools	4	1%	
Total number of jobs ( <i>n</i> )	407		

†Jobs that mentioned the research company but did not specify the which product(s) within the company the position uses.