Commercials for college? Advertising in higher education

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May 2020

Appendix A: Data Description and Estimation

The Kantar Media "Ad$pender" data contain the universe of unique network TV, cable television, spot television, national magazine, newspaper, outdoor, and Internet display ads, as well as estimates of dollars paid by each firm for advertising in the one hundred largest media markets in the United States. The data identify and disaggregate advertising by parent company (e.g., Apollo Group) subsidiary (e.g., University of Phoenix) and reported at the national level and for "Designated Market Areas" (DMAs) in the United States. DMAs, a trademark term used by Nielsen Media Research, are advertising media markets, similar to metropolitan statistical areas albeit larger. While there are 210 DMAs in the United States, the data on the smaller DMAs are not considered accurate. Therefore, Kantar only reports data on the top 100 DMAs by population. These 100 DMAs account for 86 percent of the U.S. population of 2015.

While these data are rich, they have several shortcomings. When we began this project we were able to access data from 2001, but Kantar later pulled down data for earlier years, so we have only aggregate measures available for years before 2014. We therefore rely on data from 2014 to 2017 for our main analyses.

Second, Kantar estimates the dollars spend on advertising based on the type of ad (TV, Internet display, print, etc.), length of ad, and time of ad, and the price of ads in the DMA. This task is straightforward for television, but the algorithm for Internet ads is not clear.

Third, there are reporting problems in the Kantar database. For example, total advertising for a particular brand may be reported as zero or missing even though some DMAs report positive advertising dollars. To address this problem, we adopted the following rules. We manually summed the dollars spent on advertising across the 100 reported DMAs and compared it to the recorded total dollars. We replaced the total advertising dollars with the manually constructed total if total dollars were reported as missing, if total dollars were reported as zero, or if the total dollars were less than the manually constructed total.

To measure ad spending in higher education, we used the main postsecondary education category enumerated by Kantar namely "Colleges and Universities".[1] Kantar tracks advertising on many different media platforms. We collapsed these individual platforms into five categories: television (cable TV, network TV, spot TV and syndication), internet (Internet display), print (magazines, Sunday magazines, national and other newspapers), and radio (national and network).[2] We dropped the small category of B-to-B (business-to-business) advertising because it is not consistently reported.

[1] We did not include Kantar's category of "vocational and technical schools" because our focus here is on degree-granting colleges and universities. We also disregarded "schools, summer camps, lectures and seminars" because they are unlikely to capture degree-granting institutions.

[2] Kantar reports information on outdoor advertising from 2005 to 2014, but we omit outdoor in the advertising totals below because we do not observe a complete time series for this category. It accounts for less than 1 percent of total advertising spending in the years it is reported.

To construct consistent patterns on ad spending by sector we matched advertising colleges and universities in the Kantar data to postsecondary institutions reported in the Integrated Postsecondary Education Data System (IPEDS) maintained by the U.S. Department of Education.

Using a standard record linking algorithm we matched college names using the brand reported in Kantar to institution names in the IPEDs. After retaining the perfect matches, we supplemented the algorithm with a manual review of unmatched colleges in Kantar. In our manual review, we identified and deleted 550 foreign colleges and universities that account for 0.5% of total ad spending in Kantar. Out of the remaining unique brands in Kantar (colleges and universities), we matched 84% (3,906) to postsecondary institutions in the IPEDS. We were unable to match 746 unique reported brands in Kantar to the IPEDS. Although these unmatched colleges represent 16% of unique brands in Kantar, their total ad spending averages only 1.3% between 2013 and 2017.[3] We believe these unmatched brands are small colleges that do not participate in Title IV federal student aid programs, have changed their name or reporting status over time. Hence, they are not reported in the IPEDS.

We also made changes to multi-campus chain institutions such as University of Phoenix that have many campuses across the country. Since the Kantar data does not record spending by a specific chain campus, we aggregated the enrollment and financial information in the IPEDS

[3] Some unmatched brands are consortiums of colleges that advertise together and websites that advertise postsecondary education more generally.

data for such for-profit and nonprofit multi-chain institutions. We did not do the same for public colleges such as the University of California system where Kantar records spending by the different campuses.[4] Finally, we also deleted any non-degree granting institutions in our matched analysis below because our focus is on advertising by degree-granting colleges and universities.[5] After dropping these institutions, we find 55% of degree-granting institutions in the IPEDS are present in the Kantar database. Others that are not in Kantar either do not advertise or not on the platforms enumerated by Kantar. The IPEDS matching allows us to identify the sector of each institution (for-profit, nonprofit, or public) as well as institutional characteristics such as enrollment, level (2-year, 4-year), chain status, and various categories of expenditures. To identify institutions that are predominantly online, we used the 2014 IPEDS data that identified the number of students "enrolled exclusively in distance education courses." Institutions with 50% or more students enrolled exclusively in distance education were coded as "online" institutions.

To generate Table 4, we run a simple OLS regression of the following form:

$$Ad\ Spending_{it} = \beta_0 + \beta_1 ForProft_i + \beta_2 NonProfit_i + \beta_3 Chain_i + \beta_4 Online_i + \beta_5 FourYear_i + \beta_6 HighEnroll_i + \delta_t + \varepsilon_{it}$$

All independent variables are defined as 0/1 indicator variables as defined above. We include year fixed effects (δ_t) and cluster standard errors at the institution-level.

[4] In a few cases of public colleges where the Kantar brand name was not specific about the public campus, we assigned the spending to the main campus.

[5] Kantar also records some spending by sub-baccalaureate institutions in the category "Vocational & Training Schools" rather than "Colleges and Universities".