SHOW NOTES

Measuring the Effect of Library Usage

Presenter
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We are joined in this webinar by Kirsten Kinsley, of Florida State University. She is an assessment librarian and a co-liaison for the university's Department of Psychology and the College of Social Work. She has experience working with various law and university libraries.

Her presentation discusses the Generalized Propensity Score (GPS) and the Propensity Score Method (PSM), and how they can be leveraged by library personnel to show the effects of that using the library has on their patrons.

Kinsley started this project to attempt to quantify the effects of the library on the academic success of the student body. She asked three research questions:

- Does the frequency of library visits and duration of library stay over the course of semester influence first-time-in-college (FTIC) students' success?
- Are these effects still observed after controlling for other input and environmental variables?
- Does using Generalized Propensity Scoring give librarians more rigorous research results?

NIC
National Institute of Corrections

There were 6,380 students who were part of the data set. Information was collected by comparing the students' ID card-based access to the library with the data from the university's Office of Institutional Research (OIR).

She encountered three challenges that are typical of any research:

- Randomization – It's impossible to create a truly random data set, as you can't control who uses the library.
- Multiple Variables – There's other significant factors (demographics, academic characteristics, environmental factors) beyond library use that affect how successful a student is.
- Self Selection Bias – How do you know that only academically successful students aren't self-selecting, or choosing to visit, the library?

Generalized Propensity Scoring helps eliminate self-selection bias and works to control variables by matching individuals with similar backgrounds and characteristics with each other. In this study, matching independent variables in this way allowed Kinsley to isolate library visits as the dependent variable.

Her research shows a direct correlation between academic performance and a student's hours spent in the university library. After using GPS to isolate library visits as the major contributing factor, the results of the research have 95% confidence. The conclusion is that "library usage has an average estimated positive effect on FTIC students' first-term GPAs and first-year retention rates past a certain threshold of frequency and duration."

There are limitations. GPS isn't infallible, as there may be select variables that aren't able to be measured. These can be due to ignorance, or simple limitations of the data set. Additionally, the study didn't take into account the specific library services that students were accessing, merely recording the fact that students were spending a certain amount of time in the library building. So we know that coming to the library helps, but we don't know why or how.

Studies have been done in correctional environments about offender use of libraries and educational programs (Gordon & Weldon, 2003). There were significant differences in recidivism between participants who attended vocational training, versus those who didn't. However, this was unable to be credited to the training programs, as other factors could have accounted for the differences.

In a correctional context, some factors that may affect the statistics are offender demographics, what a library offers, whether an individual changed locations during a study or while serving a sentence, pre-incarceration education, etc. Proper experimental controls will be needed to isolate variables that show causal links to recidivism and certain phenomena. Randomization may be impossible in a correctional context, so the Propensity Score Method (PSM) can help build accurate results from data.

Where Generalized Propensity Scores are what you get, the Propensity Score Method is how a researcher comes by them. The goal is to take a population and account for as many factors as possible in order to isolate the variables that are relevant to your research. Combing through your sample group, matching individuals who have similar demographics put different rates of library attendance will sort your population in a way that makes library attendance significant.

A sample data card that the presenter showed has three fields. The first one, "sample", lists the set of people being interviewed or researched. The second, "characteristics", lists some of the information about them (age, race, gender, education level, etc.). The final card, "data sources", shows where the information was sourced. This puts all the vital information about a data set in one place where it's easy to parse.

In conclusion, the benefits of using the Propensity Score Method framework center around its ability to create more appropriate data sets. By using it, researches can take data that isn't randomized and attempt to remove the influence of variables. This is an incredibly useful technique, especially in fields where randomization isn't possible, but accurate data is still important. The limitations of PSM are inherent in the problem it attempts to solve. There may sometimes be too many variables. Even though PSM can remove variables that are accounted for, there are too many factors at play to truly isolate the desired cause with 100% accuracy.

Resources
The following resources were referenced:

When in Doubt, Go to the Library: The Effect of a Library-Intensive Freshman Research and Writing Seminar on Academic Success, Hill, Maier-Katkin, Ladny, & Kinsley, 2018, https://doi.org/10.1080/10511253.2017.1372498

The Propensity Score with Continuous Treatments, Hirano & Imbens, 2004, http://onlinelibrary.wiley.com/doi/10.1002/0470090456.ch7/summary

Causal Inference With General Treatment Regimes, Imai & van Dyk, 2004, https://doi.org/10.1198/016214504000001187

Embracing the generalized propensity score method: Measuring the effect of library usage on first-time-incollege student academic success, Mao & Kinsley, 2018, https://doi.org/10.18438/B8BH35

Stacks, Serials, Search Engines, and Students' Success: First-Year Undergraduate Students' Library Use, Academic Achievement, and Retention, Soria, Fransen, & Nackerud, 2014, https://doi.org/10.1016/j.acalib.2013.12.002

Beyond Books: The Extended Academic Benefits of Library Use for First-Year College Students, Soria, Fransen, & Nackerud, 2017, https://doi.org/10.5860/crl.v78i1.16564

The Value of Academic Libraries: Library Services as a Predictor of Student Retention, Murray, Ireland, & Hackathorn, 2016 http://crl.acrl.org/index.php/crl/article/view/16541

The Impact of Career and Technical Education Programs on Adult Offenders: Learning Behind Bars, Gordon & Weldon, 2003, https://www.researchgate.net/publication/242136443_The_Impact_of_Career_and_Technical_Education_Programs_on_Adult_Offenders_Learning_Behind_Bars