DATA 118: Introduction to Data Science I

Analysis: The Physician Idols of America¹

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¹ Disclaimer: the use of the term "America" is purely for dramatization purposes. The CMS "Open Payments" dataset, the main dataset used for this analysis, is not representative of every physician in America. Anytime the analysis mentions "America" it is actually referencing the CMS "Open Payments" dataset with payments to recipients the United States.

Overview

The Open Payments database contains reports of payments to recipients like physicians and hospitals from industry manufactures for medical supplies such as drugs or medical equipment. Physicians may be paid by companies for many reasons, one of the most interesting being: "payments that a company makes to physicians for speaking, training, and education engagements that are not for continuing education."²

This analysis explores data on the U.S. based physicians who have been contracted the most and aims to answer some questions about the physicians and their work such as:

- What companies and entities are contracting these speakers?
- How substantial is the compensation for these speakers when compared to less contracted physician speakers?
- What subjects have these physicians spoken about?
- Who is 2020's American Physician Idol?

Methodology

All data on the physicians in the analysis is sourced from the dataset titled: "2020 General Payment Data" in the Open Payments Program, a national transparency initiative. The dataset was filtered to only include the following data:

- ONLY entries for "Covered Recipient Physicians"
- ONLY entries with "U.S. Recipients"
- ONLY entries with the "Payment Nature" of "Non-Consulting Services"

The corresponding data was then manipulated into a <u>new table</u> which gave summary information about the most contracted physician from each state (including Puerto Rico).

Results

Where Does the Money Come From?

Upon examination of which entities contracted each physician the most, the homogeneity among which contractors were enlisting top state physicians was astounding. In fact, 30 of the 50 physicians had the same top contracting entity: Eli Lilly and Company. The horizontal bar graph marked *Figure 1* below shows the distribution of which companies were listed as each physician's top contracting entity.

Eli Lilly and Company made almost 20,000 payments and doled out \$20,652,703 to all contracted physicians, including those outside the top physicians. These payments had a mean and median of \$1033 and \$800 respectively while having a standard deviation of \$1481.04.

² "Open Payments Natures of Payment." CMS, https://www.cms.gov/OpenPayments/Natures-of-Payment.

³ "2020 General Payment Data" was published by the Centers for Medicare and Medicaid Services in June 2021, last updated in updated January 21, 2022

⁴ See footnote #2

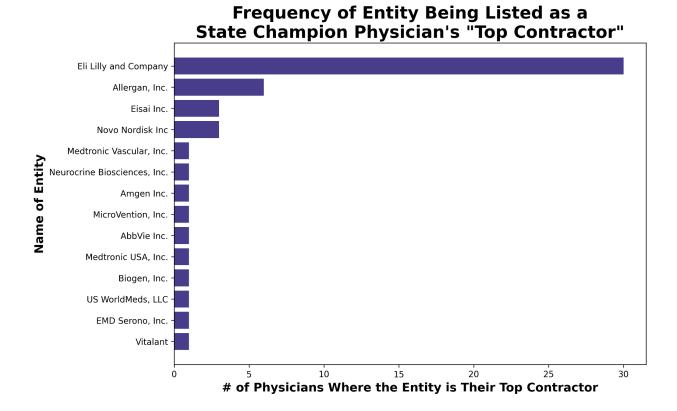


Figure 15

An interesting entity that makes just one appearance in the distribution is named MicroVention, Inc. Of all entities paying the State Champion Physician's (SCP), MicroVention made the single largest payment to a physician worth \$30,500. When compared to the statistics of the other SCP's, the mean and median of the max payments excluding the \$30,500 transaction made by MicroVention is \$5130 and \$4420 respectively with a standard deviation of \$3299.41. The payment made by MicroVention is almost 500% larger than the mean payment of the other maximum payments.

Where Does the Money Go?

MicroVention's intriguing story does not end there however. In *Figure 2* below, the 20 SCP's with the most payment entries are listed. In *Figure 3* below, the 20 SCP's who have earned the most money from their services are listed. Some physicians have moved up and down, but the anomaly is that the physician who is ranked first in earnings—Josser Delgado—cannot be found on the top 20 SCP's ranked by number of payments seen in *Figure 2*. Delgado holds just 94 payments to his second place competitor's 256 payments. Delgado boasted mean and median value payments of \$5294.26 and \$4000 respectively with a standard deviation of \$5058.05.

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⁵ A "State Champ Physician" is the most contracted physician from their respective state.

Top Physician and # of Payments From Each State in the Top 20

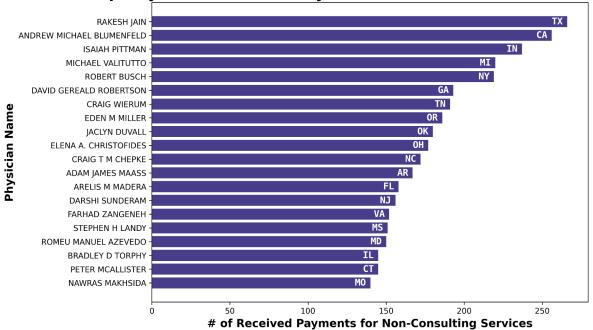


Figure 2

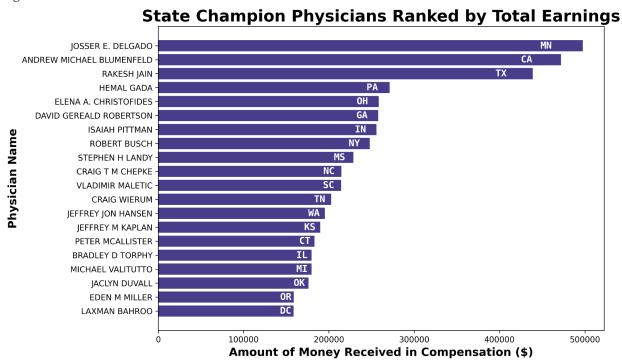


Figure 3 When compared to the SCP's mean and median value payments, of \$1425.16 and \$1314.52 respectively, Delgado has almost quadrupled their efficiency metrics. However their standard deviation has a much smaller range of just \$689.45—consistent with having a larger sample.

Context About MicroVention and Delgado

How does Josser Delgado have such a substantial lead over his peers? This is where MicroVention comes back into play. The \$30,500 payment that MicroVention made went to Delgado himself. Eli Lilly and Company may contract individuals more often like the CA representative, Andrew Blumenfield; but, MicroVention has a much higher average payout per payment and that is whom Delgado is contracted by the most.

The \$30,500 payment in particular was in relation to a Neurological Device labeled "WEB." Delgado is a skilled neuroradiologist who is an expert in treating cranial aneurysms. The WEB is a line of devices from MicroVention that claim to be "offering a single-device treatment alternative to endovascular coils and complex stinting procedure." A way to treat one of the most dangerous occurences, a brain aneursym, in an easier, safer, and more consistent way.

For someone who is as excellent in their practice as Delgado, this price can be argued to be very reasonable. Few people on the planet are able to call themselves a neuroradiologist and having the approval of someone with such a title may be well worth it for MicroVention and also beneficial for Delgado if promoting their product means saving more lives.

How Does the Data Change?

One point of transformation I analyzed was how region in the country plays a role. I expected the regions with more people and higher costs of living to dominate the physicians who were contracted the most. That is to say I expected the South to be the weakest region in the rankings, but the results were completely opposite. The South had the lowest average rank of 5.75, followed by the Midwest at 8.75, East at 11.5, and West at 13.5. In the end, because the South won it out, I crown Rakesh Jain as the 2020 American Physician Idol for being the top representative from Texas.

Another transformation I wanted to examine was how the sum of all the physicians who had been contracted at least once compared to the top physicians from each state. We already know the SCP's metrics to include a mean of \$1425.16, a median of \$1314.52, and a standard deviation of \$689.45. The mean, median and standard deviation of all the physicians in the raw filtered data is \$1803.22, \$1200, and \$15604.04. The mean and standard deviation are most likely very skewed by outliers like the largest single payment in the dataset: with a value of \$5,788,500. This value is more than ten times larger than the total Delgado earned in 2020: \$497,660—still not something to complain about. Regardless, it can be seen that the median payment for those physicians in the SCP group is slightly higher than the general group of physicians that are contracted, but probably not enough to have a substantial change from physician to physician.

⁶ Microvention, https://www.microvention.com/product/web-family.

Bibliography

Microvention, https://www.microvention.com/product/web-family.

"Open Payments Natures of Payment." CMS,

https://www.cms.gov/OpenPayments/Natures-of-Payment.