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The Dawn of Transparency: Insights from the Physician Payment Sunshine Act in Plastic Surgery

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Abstract

Background—The Physician Payments Sunshine Act (PSSA) is a government initiative that requires all biomedical companies to publicly disclose payments to physicians through the Open Payments Program (OPP). The goal of this study was to utilize the OPP database and evaluate all non-research related financial transactions between plastic surgeons and biomedical companies.

Methods—Using the first wave of OPP data published on September 30, 2014, we studied the national distribution of industry payments made to plastic surgeons during a five month period. We explored whether a plastic surgeon's scientific productivity, (as determined by their h-index), practice setting (private versus academic), geographic location, and subspecialty were associated with payment amount.

Results—Plastic surgeons (N=4,195) received a total of \$5,278,613. The median (IQR) payment to a plastic surgeon was \$115(\$35–298); mean \$1,258. The largest payment to an individual was \$341,384. The largest payment category was non-CEP speaker fees (\$1,709,930) followed by consulting fees (\$1,403,770). Plastic surgeons in private practice received higher payments per surgeon compared to surgeons in academic practice (median [IQR] \$165[\$81 – \$441] vs. median [IQR] \$112 [\$33–\$291], rank-sum $p < 0.001$). Among academic plastic surgeons, a higher h-index was associated with 77% greater chance of receiving at least \$1000 in total payments (RR/10 unit h-index increase = 1.47 1.77 2.11, $p < 0.001$). This association was not seen among plastic surgeons in private practice (RR = 0.89 1.09 1.32, $p < 0.4$).

Conclusion—Plastic surgeons in private practice receive higher payments from industry. Among academic plastic surgeons, higher payments were associated with higher h-indices.

Keywords

Open Payments Program; Physician Payments Sunshine Act; Industry Physician Conflicts-of-Interest; Academic Productivity; h-index; Bibliometrics; Plastic Surgery

INTRODUCTION

As part of the Physician Payments Sunshine Act (PPSA), the Centers for Medicare and Medicaid Services (CMS) implemented The Open Payments Program (OPP) to create transparency regarding the financial relationships between physicians and the biomedical industry (1). Manufacturers of drugs, medical devices and supplies are now mandated to submit their payment records and other “transfers of value” made to physicians and teaching hospitals to CMS. The database does not report industry payments to resident physicians and trainees. On September 30, 2014, five months of payment data were made publically available (2). The stated rationale is to allow patients to identify potential conflicts-of-interest (COI), and to enable them to make more informed decisions when choosing a health care provider (HCP) (3).

Financial interactions between the pharmaceutical and the biomedical industry and physicians are pervasive (4, 5). In 2004, market research companies estimated that U.S. pharmaceutical companies spent \$57.5 billion, or 24.4% of their revenue, on marketing (6). During this time frame a national survey of 3,167 U.S. physicians reported that 83% of physicians received gifts and 28% received payments for consulting, lecturing, or enrolling patients in trials (7). These findings (4–7) have received much speculation, but national statistics on financial transactions between industry and healthcare providers are sparse. The OPP represents the first nationwide report of financial relationships that have been confirmed by both parties.

Plastic surgery, as a field, thrives on innovation. It is well accepted that collaboration between industry and surgeons is essential for the evolution of new products that will improve patient care (8, 9). Recently, several surgical specialties have published their results from the OPP database (10–12). However, the scope and nature of these collaborations have never been explored within the field of plastic surgery. The purpose of this study was to utilize the newly-released OPP database and comprehensively evaluate all non-research-related financial transactions between plastic surgeons and biomedical companies. We hypothesized that plastic surgeons, due to the technical and innovative aspects of the field, would have more extensive relationships with industry when compared to other healthcare providers, and that industry payment amounts would differ by subspecialty, practice settings, and scientific productivity. The specific aims of the study were the following: 1) to identify a cohort of plastic surgeons who received non-research payments by industry 2) compare payments to plastic surgeons to other healthcare providers, 3) compare payments of plastic surgeons by subspecialty, geographic distribution, practice setting (private versus academic), and payment category, and 4) examine the association between payments received and a plastic surgeon’s H-index, a measure of scientific productivity (10).

METHODS

Study Population

All physicians whose reported professions in the OPP database were either: Plastic Surgery, Plastic Surgery-Hand, Plastic Surgery of the Head and Neck (Craniofacial), Otolaryngologists specializing in Facial Plastic Surgery (Oto) and Plastic and Reconstructive Surgery. To study whether industry payments differed among academic versus non-academic plastic surgeons, we identified all plastic surgery residency training programs approved by the American Council of Graduate Medical Education, via the “American Council of Academic Plastic Surgeons” website (<http://www.acaplasticssurgeons.org/program-lists>). We visited each program’s website and collected data for each listed fulltime faculty member, and labeled these plastic surgeons as “academic.” Part time or affiliated faculty members were characterized as private practice plastic surgeons as were any plastic surgeons with no residency program affiliation.

Data Sources and Linkages

Payments made to plastic surgeons between August 1, 2013 and December 31, 2013 were obtained from the OPP dataset, available on the CMS website (<http://www.cms.gov/openpayments>; accessed September 30, 2014). Company and/or stock ownership data were not included in this study. Physician-level payments were aggregated using a unique physician identification number.

Payments Made to All Health Care Providers and Plastic Surgeons

The OPP dataset was used to ascertain the total amount of payments made by industry to all Health Care Providers (HCP). HCP consisted of physicians, dentists, podiatrist and nurse practitioners. This was then compared to the total amount of payments made to plastic surgeons.

Distribution of Payments Made to Plastic Surgeons

The total amount of money that each plastic surgeon received was categorized as follows: less than \$100, \$100–\$999, \$1,000–\$9,999, \$10,000–\$99,999, and > \$100,000 and presented as bar graphs. All companies and their sum of payments made to plastic surgeons were identified (Appendix 1). Payments of the ten highest paying companies and their distribution by categories were shown. Heat maps were used to show the geographic distribution of industry payments collectively by state, as well as the average payments per plastic surgeon in each state.

Distribution of Payments made to Plastic Surgery by Subspecialty

In the OPP data, a physician’s specialty is reported by the paying company and a physician is given the opportunity to verify the description of their specialty. As a result, if a physician was trained in a sub-specialty or has multiple specializations, he or she could have been reported as either specialty. For example, if a physician was trained as plastic surgeon and also completed a hand fellowship and a craniofacial fellowship, he or she could be reported as either: a plastic surgeon, a hand plastic surgeon or a craniofacial plastic surgeon. For this

study, the largest payment that an individual was reported to receive in a particular specialty determined their specialty.

Payment Categories

OPP payments were reported under the following categories: consulting fees; food and beverage; honoraria; education; travel and lodging; entertainment; gifts; services other than consulting, including speaking at a venue other than a continuing education program (abbreviated as 'speaker non-CEP'); and speaking for a non-accredited and non-certified, continuing education program (abbreviated as 'speaker CEP'). The number of plastic surgeons that received payments for each payment category was quantified. Payment categories were also evaluated by non-academic versus academic plastic surgeons.

Association between H-index and industry payments

To explore whether plastic surgeons' academic productivity was associated with the amount of payments received, we ascertained each plastics surgeon's h-index by an automated Scopus search on December 15, 2014, which included publications since 1995. Introduced by Hirsh in 2005, the h-index is calculated by determining the number of papers, h, from a researcher with citation counts of h or greater for each paper (13). In order for a plastics surgeon's h-index to be included in this study, the first name, last name, city and state as published in Scopus needed to be identical to that published in the OPP. There were a total of 1,286 h-indices of plastic surgeons which met these criteria. We calculated the total amount received by each physician and modeled the relative risk of a physician's receiving \$1000 or more in total payments using Poisson regression with a robust variance estimator (14).

Statistical Analysis

Analyses were performed with Stata 14.0/MP for Linux (College Station, Texas). We used the Wilcoxon rank-sum test to study payment differences among the various plastic surgery subspecialties as well among private practice and academic plastic surgeons. 95% Confidence intervals are reported as per the methods of Louis and Zeger (15).

RESULTS

Payments Made to All Healthcare Providers

During this first OPP reporting period, industry made payments totaling \$508,215,270 to 359,402 HCPs. Total payments per HCP were: median (IQR) of \$95 (\$29–\$258), with a mean of \$1,414; the top 4 received \$7,356,000, \$3,994,022, \$3,921,410 and \$3,849,711 during the 5 month OPP study period.

Payments to Plastic Surgeons

Our query of the OPP database identified a total of 4,195 plastic surgeons that received a total of \$5,278,613. Plastic surgeons represent 1.17% of the all HCPs listed in the OPP and received 1% of the total payment amount in the OPP. Median (IQR) payment per plastic surgeon was \$115 (\$35–\$298) with a mean of \$1,258; the 4 highest payments were

\$341,384, \$103,237, \$96,541, and \$81,659. Of plastic surgeons who received industry payments, 45.8% received <\$100, 40.6% received payments between \$100 and \$999, 11% received between \$1,000 and \$9,999, 2.5% received between \$10,000–\$99,999, and 0.05% in excess of \$100,000 (Figure 1A).

Payments between Academic versus Non-Academic Plastic Surgeons

In the OPP database there were 3,959 non-academic and 236 academic plastics surgeons. The median (IQR) of payments to non-academic plastic surgeons was \$165(\$81–\$ 441) compared to \$112(\$33–\$291) for academic plastic surgeons ($p<0.001$). Among non-academic ($N=3,959$) plastic surgeons who received industry payments, 47% ($N=1,846$) received <\$100, 40% ($N=1,584$) received payments between \$100 and \$999, 11% ($N=439$) received between \$1,000 and \$9,999, 2% ($N=89$) received between \$10,000 and \$99,999, and <0.1% ($N=1$) received more than \$100,000. Among academic plastic surgeons ($N=236$) who received industry payments, 32% ($N=77$) received <\$100, 51% ($N=121$) received payments between \$100 and \$999, 9% ($N=21$) received between \$1,000 and \$9,999, 7% ($N=16$) received between \$10,000 and \$99,999, and 0.4% received more than \$100,000 (Figure 1B).

Payments to Plastic Surgery by Subspecialty

Of the 4,195 plastic surgeons, general plastic surgeons ($N=3,261$) received a total of \$4,728,614, median (IQR) \$128 (\$37–\$345), plastic surgeons specializing in craniofacial surgery ($N=112$) received a total of \$108,437, median (IQR) \$93 (\$32–\$218), plastics surgeons specializing in hand surgery ($N=129$) received a total of \$102,721, median (IQR) \$100 (\$33–\$331), and otolaryngologists specializing on in facial plastic surgery (Oto) ($N=693$) received a total of \$338,839, median (IQR) \$75 (23–\$152, Table 1, Figure 2).

Payment Categories

The \$5,278,613 total payments made to plastic surgeons were categorized by the OPP as follows: \$1,709,930 (32%) for speaker non-CEP; \$ 1,403,770 (27%) for consulting fees; \$ 767,003(15%) for travel and lodging; \$702,340 (13%) for food and beverage; \$305,030 (5.6%) for gifts; \$215,651 (4%) for royalty; \$96,806 (1.8%) for honoraria; \$50,211 (0.9%) for education; 23,950 (0.4%) for speaker CEP; \$2,131 (0.04%) for grants; and \$1,792 (0.03%) for entertainment (Table 2).

The median (IQR) for each payment made to an individual plastic surgeon and the percentage of plastic surgeons paid by expense category were: speaker non-CEP \$5,847 (\$3,000–\$18,728) to 3% ($N=131$); \$3,000 (\$625–\$7,033) consulting fees to 4% ($N=181$); travel and lodging \$ 892 (\$546–\$1,407) to 10% ($N=490$); food and beverage \$ 100 (\$31–\$211) to 95% ($N=4011$); gifts \$750 (\$308–\$1,500)to 7% ($N=273$); royalty fees \$8,918 (\$916–\$50,825) to <1% ($N=9$); honoraria \$ 1,500(\$550–\$4,000) to <1% ($N=30$); education \$24 (\$14–\$75) to 5% ($N=191$); speaker CEP \$ 1,750 (\$550–\$2,500) to <1% ($N=12$); grants \$1065 (\$131–\$2,000) to <1% ($N=2$); and entertainment expenses \$ 99 (\$89–\$143)to <1% ($N=9$, Table 2).

When comparing the percentage of non-academic versus academic plastic surgeons by payment categories, there were a greater percentage of academic surgeons that received payments for consulting (8.5% versus 4%) and honoraria (2.1% versus 0.6%). These results were not statistically significant. The results are shown in Table 3.

Distributions of Payments made by Companies

The total payment made by a single company to plastic surgeons ranged from \$10.32 to \$1,792,491. Of 216 companies that made payments to plastic surgeons (Appendix 1), the 10 highest paying companies accounted for \$4,505,331 (85.4%) of the total payments. The three highest paying companies were: Allergan Inc., Mentor Worldwide, and LifeCell Corporation; they collectively contributed \$3,507,157 (66.4%) of all payments. The distribution of payments by category from these 10 companies is shown in Figure 3.

Geographic Distribution

In terms of total payments to plastic surgeons in a given state, the top 5 states were California (\$669,739), Michigan (\$576,992), Texas (\$491,750), Florida (\$478,849), and New York (\$386,779). The 5 lowest states were: Wyoming (\$161), Virginia (\$314), Alabama (\$644), Arkansas (\$755) and South Dakota (\$849). In terms of average payment-per-surgeon, the highest 5 states were Indiana (\$3,701/surgeon), Michigan (\$2,958/surgeon), Minnesota (\$2,927/surgeon), Maryland (\$2,531/surgeon) and Washington DC (\$2,475/surgeon). The lowest 5 states were: Alabama (\$46/surgeon), South Dakota (\$84), Wisconsin (\$121/surgeon), Colorado (\$136/surgeon) and North Dakota (\$138/surgeon, Figure 4A and B).

Payments by H-index

We were able to ascertain h-indices for 1286 plastic surgeons who published articles that would qualify for h-index calculation. The median (IQR) h-index was 4 (2–8). Of these, 1,053 plastic surgeons had a h-index of less than 10; 171 had a h-index between 11 and 20; 43 had a h-index between 21 to 30; and 19 had a h-index above 30. An increase of ten units of h-index was associated with a 29% higher chance of at least \$1000 in total payments (RR = 1.13_{1.29}^{1.48}, p<0.001). In other words, if plastic surgeons with a h-index of 16 had a 29% higher chance of receiving at least \$1,000 compared to a plastic surgeon with an h-index of 6. Among academic plastic surgeons, an increase in ten units of h-index was associated with a 77% higher chance of an academic plastic surgeon receiving at least \$1000 in total payments (RR=_{1.47}^{1.77}_{2.11}, p<0.001). Among non-academic plastic surgeons this association was not statistically significant (RR=_{0.89}^{1.09}_{1.32}, p=0.4, Figure 5).

DISCUSSION

The recent implementation of the Physician Payment Sunshine Act allows, for the first time, the characterization of current physician-industry relationships at a national level. The results from this study demonstrate that a total of \$5,278,613 was paid to 4,195 plastic surgeons over a five month period. The median payment to plastic surgeons was \$115 which in comparison, is within the range of other medical specialties in the OPP: \$102 to dermatologists; \$88 to neurosurgeons; and \$173 to urologists (11). Amongst payment

categories, the largest amount was paid for serving as a member of a non-CEP speaker bureau (32%) followed by consulting fees (27%). Additionally, industry payments to surgeons in private practice were higher than payments to academic plastic surgeons (median \$165 versus median \$112, $p < 0.001$). Among academic plastic surgeons, an increase of 10 units of h-index was associated with a 77% higher chance of receiving at least \$1000 in total payments ($RR = 1.47$, 1.77_{2.11}, $p < 0.001$). This association was not seen among plastic surgeons in private practice ($RR = 0.89$, 1.09_{1.32}, $p = 0.4$).

Under the Affordable Care Act (section 6002), the PPSA now mandates public reporting of payments to physicians by biomedical companies. Intended to bring greater transparency to the industry-physician landscape, the PPSA constitutes the first nationwide effort to shed light on the financial interactions between physicians and industry (1–3). The PPSA now requires all biomedical companies to report all “transfers of value” to physicians or teachings hospitals, including but not limited to, speaking and consulting fees, non-research grants, gifts, royalties, and investment interests. Given the recognized importance of biomedical industry’s support for research and innovation, CMS has designated a different track for disclosures of research funding and these transactions were not analyzed in this study (16).

A large body of literature has previously explored the effects of financial COIs on clinical care, research outcomes, and patient behavior (17–23). These studies suggest that although industry’s support for research, clinical care, and innovation is essential, its financial support brings the potential for undue influence (24–26). A recent study from our institution reported that financial COIs in breast reconstruction were associated with under-reporting of surgical complications when an industry-marketed product, Acellular Dermal Matrix (ADM), was utilized by the surgeon-researchers (27). DeGeorge et al made similar observations in abdominal wall reconstruction (28). In light of such findings, the OPP data is a means to provide healthcare consumers information on the types of financial relationships that may exist between biomedical companies and their physicians, in hopes of deterring potentially detrimental relationships between industry and physicians.

In our study, we demonstrate that scientific productivity, in increments of 10 units of h-index, was strongly associated with higher industry payments for academic plastic surgeons. A 10 unit increase, on average, was shown to be the difference between full professors and assistant professors in plastic surgery residency training programs (29–32). The driver behind the strong association between having a higher h-index and receiving greater payments from industry is unknown. However, it may suggest that biomedical companies preferentially recruit and pay scientifically productive academic surgeons for their expertise, reputation and knowledge. Future studies should examine this association more closely and account for other factors that may be driving this potentially important association.

The lack of an association between h-index and payment amount among private-practice plastic surgeons suggests that in private practice, industry may value other factors than academic productivity when establishing financial relationships. These factors may include seniority, years in practice, surgical volume, or good entrepreneurship skills. Future studies will be needed to explore these associations further. Furthermore, our analysis shows that

private-practice plastic surgeons were on average paid greater amounts by industry compared to academic-practice plastic surgeons. Although our study did not explore the drivers behind this specific finding, future studies are needed to determine what variables are associated with higher payments in private-practice plastic surgeons. Lastly, our analysis demonstrated that consulting and non-CEP speaker fees, commonly known as “Speaker Bureaus membership fees” made up the largest category of expenditures. Although it is still unclear whether all types of COI have similar effects on clinical care or research outcomes, recent studies in the literature suggest that patients view consultancy fees more favorably than other financial relationships with industry since they consider consultant-physicians as experts and “key opinion leaders” (KOLs) in their field (33, 34).

Our study has several limitations which merit consideration. Many have raised concerns with the implementation and documentation of the OPP database since the OPP data was subjected to limited pre-release vetting (1). However, this limitation will be partially addressed as the PPSA evolves over time and it improves on previous deficiencies. Additionally, academic productivity was measured by utilizing the h-index. Although the efficacy of the h-index in assessing academic productivity has been validated in several medical specialties, including plastic surgery (30, 32, 35), it has several limitations which are beyond the discussion of this paper. Moreover, the availability of OPP data is limited to a 5-month reporting period, which may not give a true picture of the entire physician-industry financial landscape. However, this limitation will be further addressed as future iterations of the database release annual data, and similar studies to ours continue to report on preliminary OPP database findings (11, 36, 37).

A free market is most efficient when consumers make informed decisions. The primary goal of the PPSA is to “permit patients to make better informed decision when choosing healthcare professionals and making treatment decisions” (34). Although the true value of the OPP database remains unclear, CMS projects that the OPP will undoubtedly drive physicians and industry to better self-regulation. As our federal government embraces disclosures, it is yet to be determined how full transparency will change the physician-industry complex.

Abbreviations

ADM	Acellular Dermal Matrix
CEP	Continuing Education Program
CME	Continuing Medical Education
CMS	Centers for Medicare and Medicaid Services
COI	Conflicts of Interest
OTO	Otolaryngologist specializing in facial plastic surgery
HCP	Health Care Provider
HRSA	Health Resources and Services Administration

IQR	Interquartile Range
KOL	Key Opinion Leaders
OPP	Open Payments Program
PPSA	Physician Payment Sunshine Act

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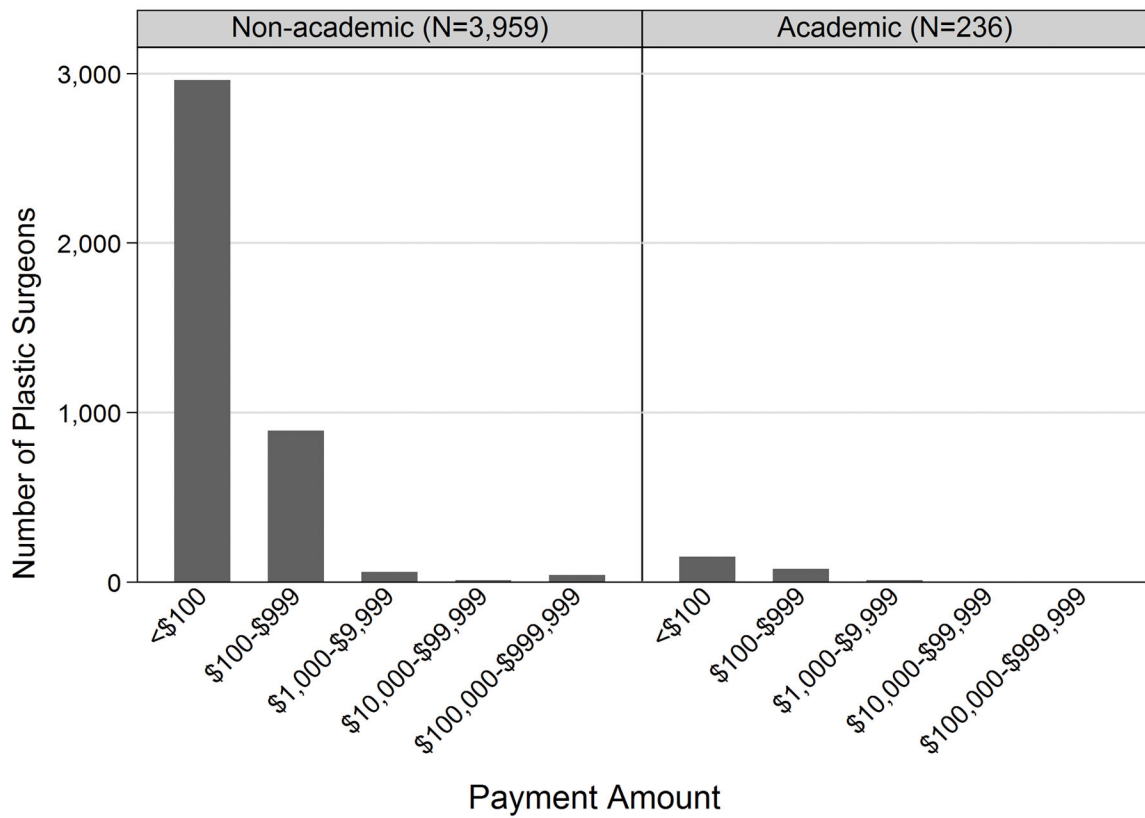
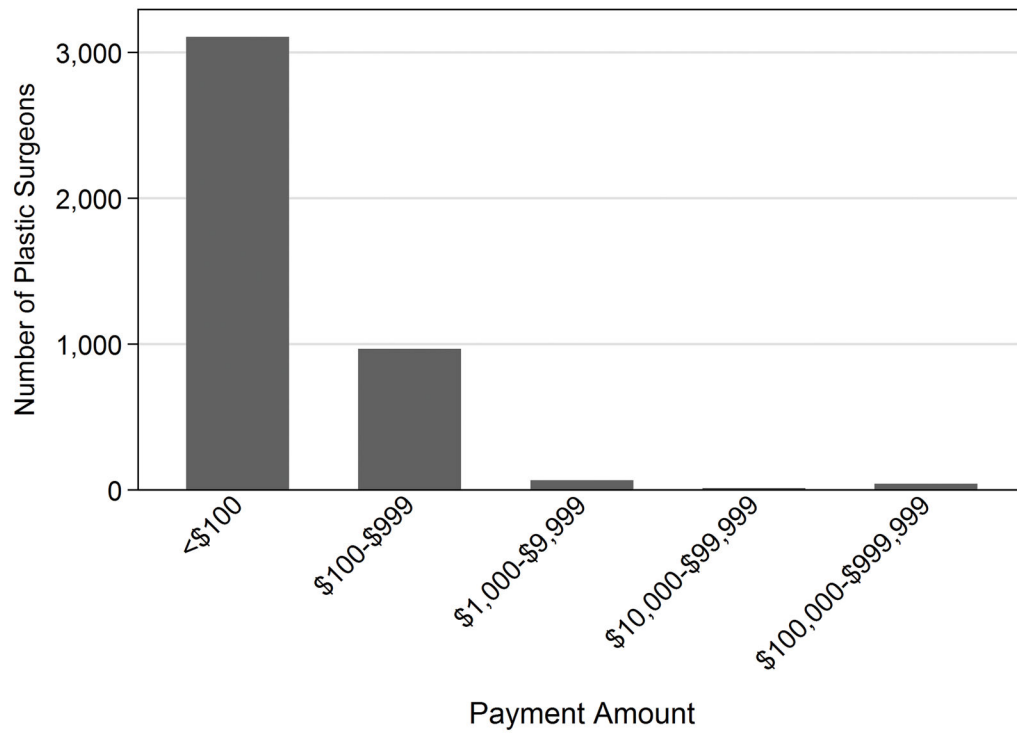


Figure 1.

Figure 1A: Payments Received per Plastic Surgeon by Amount Category

Among plastic surgeons, who received industry payments in the OPP, 45.8% received payments below \$100, 40.6% received payments between \$100 and \$999, 11% received payments between \$1,000 and \$9,999, and 2.5% received payments between \$10,000–\$99,999, and 0.05% in excess of \$100,000.

Figure 1B: Payments Received by Academic versus Non-Academic Plastic Surgeons

Non-academic plastic surgeons were paid more than academic plastic surgeons. The median (IQR) of payments to non-academic plastic surgeons was \$165 (\$81–\$ 441) compared to \$112 (\$33–\$291) for academic plastic surgeons ($p < 0.001$). Among non-academic ($N = 3,959$) plastic surgeons who received industry payments, 47% ($N = 1,846$) received $< \$100$, 40% ($N = 1,584$) received payments between \$100 and \$999, 11% ($N = 439$) received between \$1,000 and \$9,999, 2% ($N = 89$) received between \$10,000 and \$99,999, and $< 0.1\%$ ($N = 1$) received more than \$100,000. Among academic plastic surgeons ($N = 236$) who received industry payments, 32% ($N = 77$) received $< \$100$, 51% ($N = 121$) received payments between \$100 and \$999, 9% ($N = 21$) received between \$1,000 and \$9,999, 7% ($N = 16$) received between \$10,000 and \$99,999, and 0.4% received more than \$100,000.

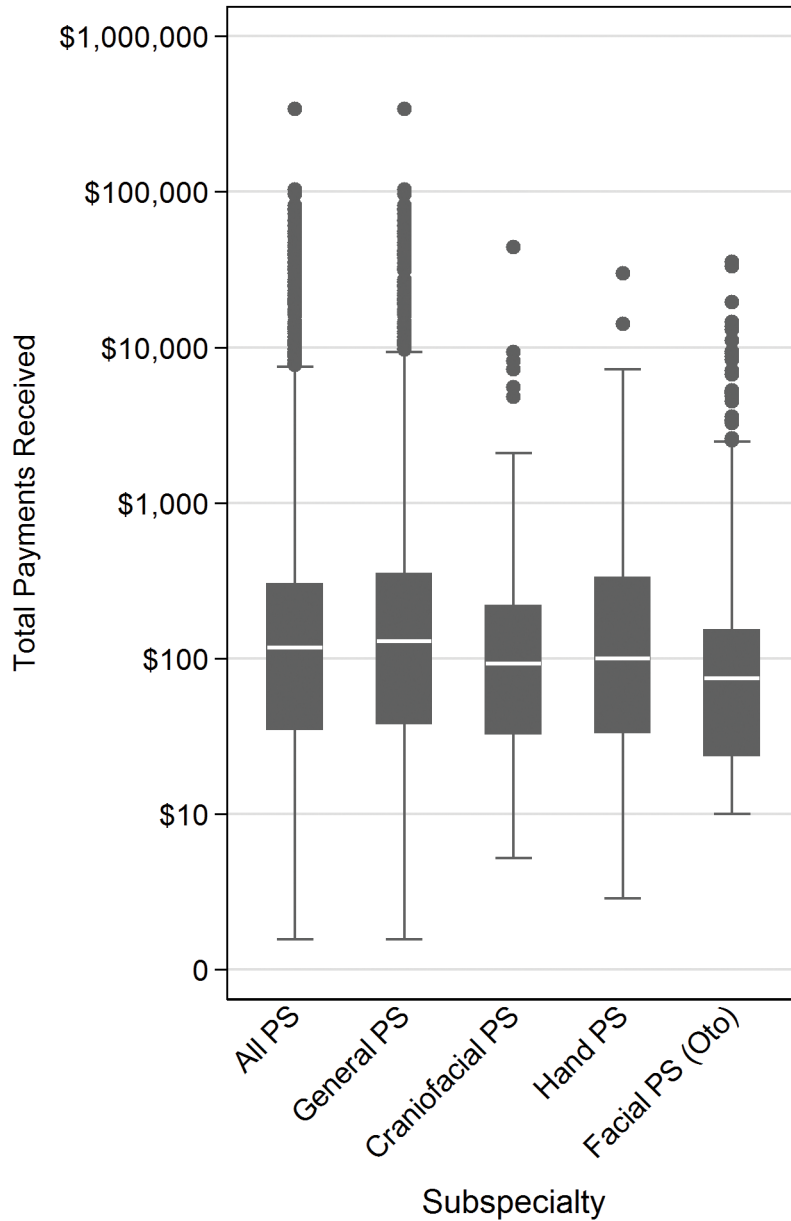


Figure 2. Payments by Plastic Surgery Subspecialty

Of the 4,195 plastic surgeons, general plastic surgeons (N=3,261) received a total of \$4,728,614, median (IQR) \$128 (37–345), plastic surgeons specializing in craniofacial (N=112) received a total of \$108,437, median (IQR) \$93 (32–218), plastics surgeons specializing in hand (N=129) received a total of \$102,721, median (IQR) \$100 (33–331), and otolaryngologists specializing on in facial plastic surgery (N=693) received a total of \$338,839, median (IQR) \$75 (23–152). Among all specialties Otolaryngologist specializing in facial plastic surgery received lower payments than any on the other specialties ($p<0.01$). There was no statistically significant difference among the general plastic surgery and other plastic surgery subspecialties.

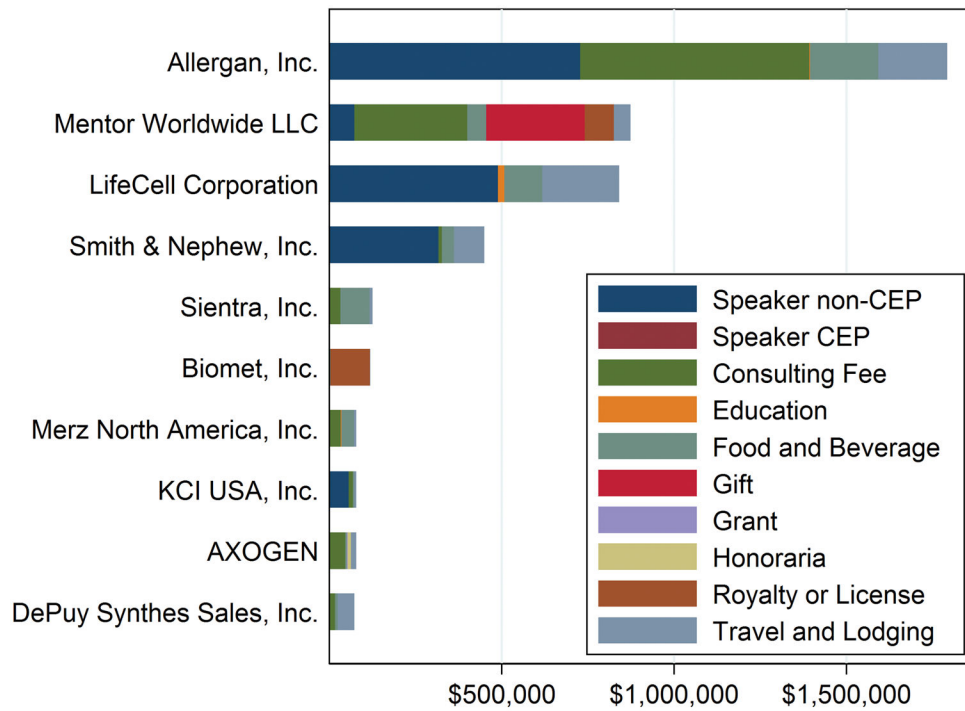


Figure 3. Category Payments of the Top 10 Companies

These are the 10 companies that were identified to have the highest total amount payments made to plastic surgeons.

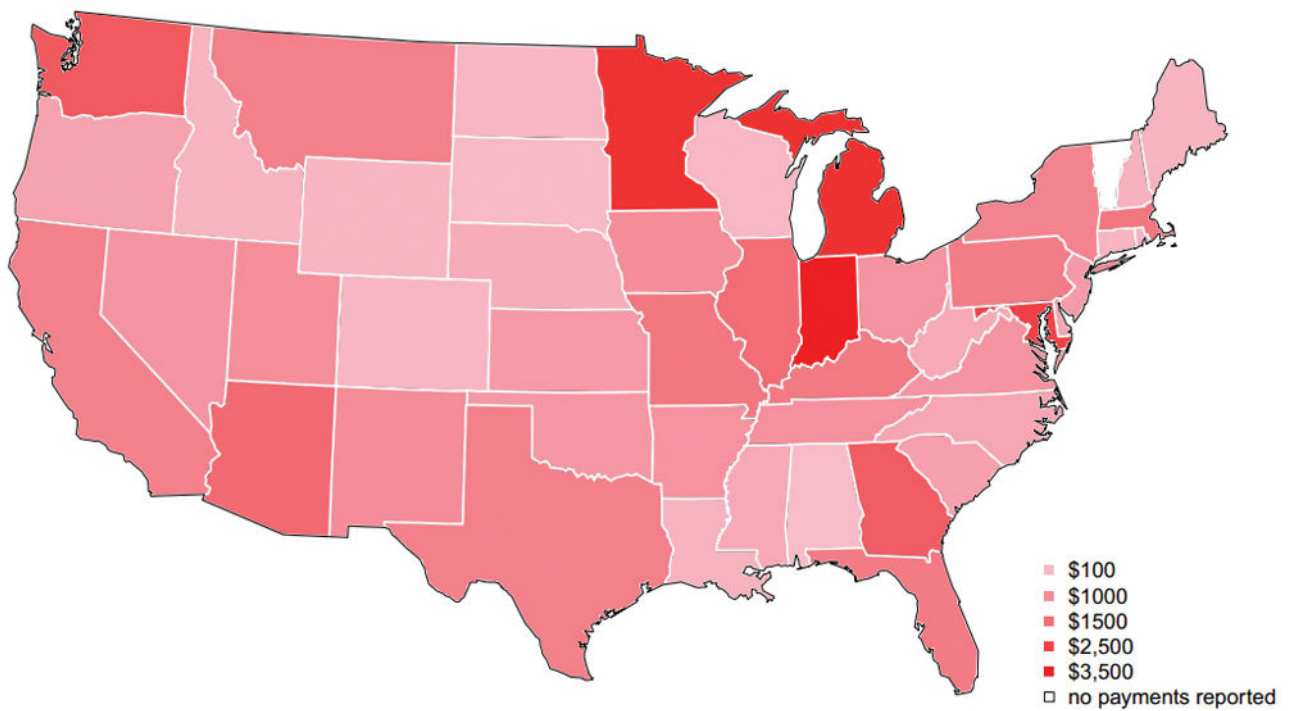
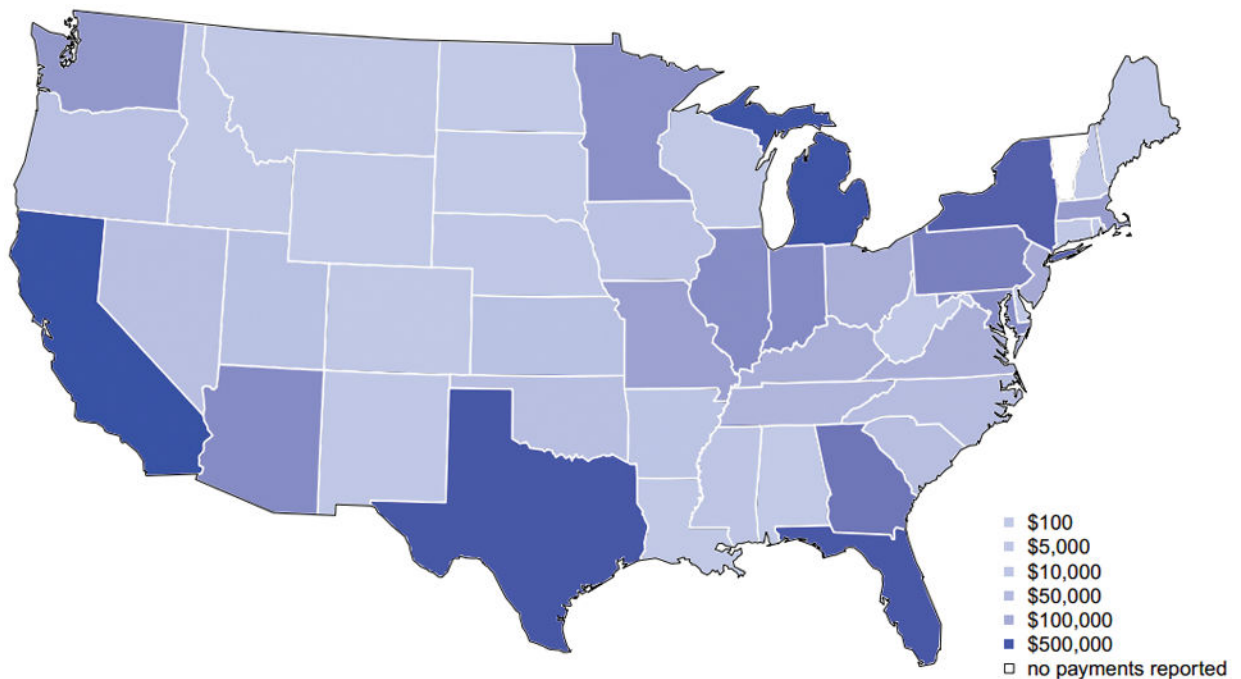


Figure 4.

Figure 4A: Total Payments made to Plastic Surgeons by State

The highest 5 states were California (\$669,739), Michigan (\$576,992), Texas (\$491,750), Florida (\$478,849), and New York (\$386,779). The 5 lowest states were: Wyoming (\$161), Virginia (\$314), Alabama (\$644), Arkansas (\$755) and South Dakota (\$849).

Figure 4B: Average Payments/Surgeon by State

In terms of average payment-per-surgeon, the highest 5 states were Indiana (\$3,701/surgeon), Michigan (\$2,958/surgeon), Minnesota (\$2,927/surgeon), Maryland (\$2,531/surgeon) and Washington DC (\$2,475/surgeon). The lowest 5 states were: Alabama (\$46/surgeon), South Dakota (\$84), Wisconsin (\$121/surgeon), Colorado (\$136/surgeon) and North Dakota (\$138/surgeon).

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Percentage of Plastic Surgeons receiving >\$1000 By category of h-index

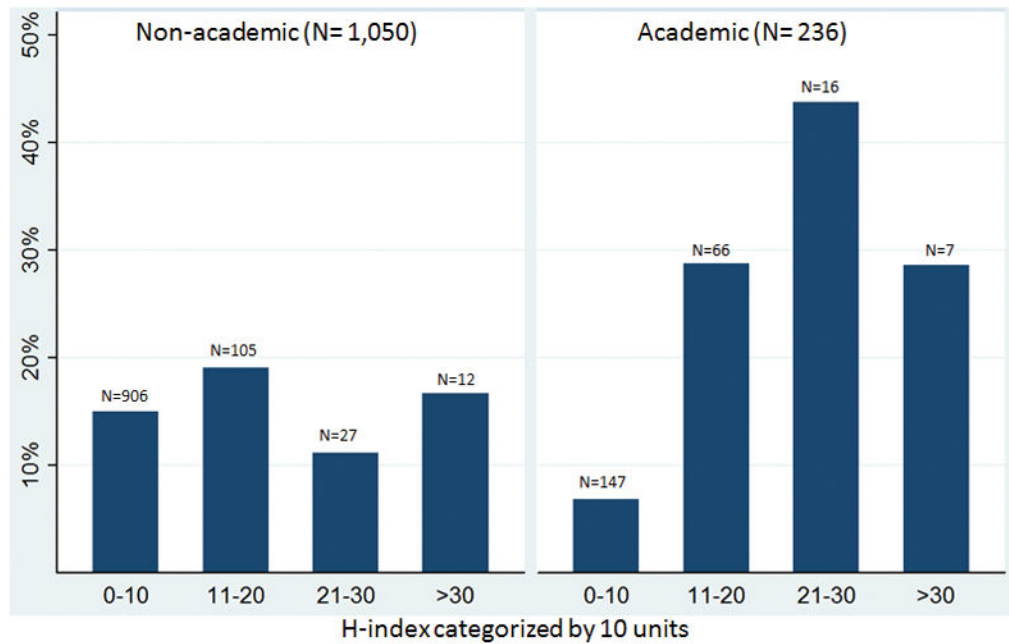


Figure 5. The Association of Payments made to Plastic Surgeons and their h-index

An increase of ten units of h-index was associated with 77% higher chance of an academic plastic surgeon receiving at least \$1000 in total payments ($RR=1.47$ $1.77_{2.11}$, $p<0.001$). For non-academic plastic surgeons this association was not statistically significant ($RR=0.89$ $1.09_{1.32}$, $p<0.39$).

Table 1

Payments by Plastic Surgery Subspecialty

Plastics Surgery Sub-specialty	Total Payment	Median (IQR)	Mean	Number of Surgeons
Plastic Surgery(General)	\$4,728,614	\$128(37–345)	\$1,450	3,261
Craniofacial	\$108,437	\$93 (32–218)	\$968	112
Hand	\$102,721	\$100 (33–331)	\$762	129
Oto	\$338,839	\$74 (23–152)	\$488	693
All Plastic Surgeons	\$5,278,613	\$115 (34–298)	\$1,258	4,195

Of the 4,195 plastic surgeons, general plastic surgeons (N=3,261) received a total of \$4,728,614, median (IQR) \$128 (37–345), plastic surgeons specializing in craniofacial surgery (N=112) received a total of \$108,437, median (IQR) \$93 (32–218), plastics surgeons specializing in hand surgery (N=129) received a total of \$102,721, median (IQR) \$100 (33–331), and otolaryngologists specializing in facial plastic surgery (Oto, N=693) received a total of \$338,839, median (IQR) \$75 (23–152).

Table 2

Industry Payments by Category

Payment Category	Total Payment (%)	Median (IQR) of Payments by category event	Number of payments by category	Median (IQR) of Payments by Surgeon	Number of Surgeons Paid
Speaker non-CEP	\$1,709,930(32%)	\$5,847 (\$3000-\$21,427)	378	\$5,847 (\$3,000-\$18,728)	131
Consulting	\$1,403,770(27%)	\$2,100 (\$750-\$4,400)	382	\$3,000 (\$625-\$7,033)	181
Travel & Lodging	\$767,003(15%)	\$ 228(\$109-\$475)	1,863	\$892 (\$546-\$1,407)	490
Food & Beverage	\$702,340 (13%)	\$ 102 (\$31-\$114\$)	14,270	\$100 (\$31-\$211)	4011
Gift	\$305,030(5.6%)	\$575 (\$275-\$700)	558	\$750 (\$308-\$1,500)	273
Royalty	\$215,651(4%)	\$3,588 (\$693-\$ 21,280)	17	\$8,918 (\$916-\$50,825)	9
Honoraria	\$96,806(1.8%)	\$1,350(\$500-\$3,000)	46	\$1,500(\$550-\$4,000)	30
Education	\$50,211(0.9%)	\$20 (\$14-\$79)	215	\$24 (\$14-\$75)	191
Speaker CEP	\$23,950(0.4%)	\$900 (\$500-\$2,000)	18	\$1,750 (\$550-\$2,500)	12
Grant	\$2,131(0.04%)	\$1065 (\$131-\$200)	2	\$1065 (\$131-\$2,000)	2
Entertainment	\$1,792(0.03%)	\$99 (\$94-\$143)	9	\$99 (\$89-\$143)	9
Total	\$5,278,613	\$27 (\$14-\$122)	17,758	\$131(\$38-\$418)	5,339

This table describes the amount paid to all plastic surgeons by payment category, the median (IQR) of each payments, the number of payments made by category. The median payments made to an individual plastic surgeon and the number of plastic surgeons that received payments in that category.

Table 3

Industry Payments by Non-Academic vs Academic Plastic Surgeons

Payment Category	Non Academic Plastic Surgeons (N=3,959)			Academic Plastic Surgeons (N=236)		
	Total Payment (%)	Median (IQR) of Payments by Surgeon	Number of Surgeons Paid	Total Payment (%)	Median (IQR) of Payments by Surgeon	Number of Surgeons Paid
Speaker non-CEP	\$1,432,713 (32%)	\$5,100 (3,000–18,728)	119 (3%)	\$277,217 (36.3%)	\$21,919 (5,616–26,975)	12 (5%)
Consulting	1208692 (26.8%)	\$3,000 (500–7,000)	161 (4%)	\$195,078 (25.6%)	\$4,100 (646–9,098)	20 (8.5%)
Travel & Lodging	\$625731 (13.9%)	\$884 (544–1,373)	447 (11.3%)	\$141,271 (18.5%)	\$971 (\$546–\$5,026)	43 (18.2%)
Food & Beverage	\$645,554 (14.3%)	\$97 (30–204)	3,781 (95.5%)	\$56,785 (7.44%)	\$150 (75–272)	230 (97.5%)
Gift	\$305,030 (5.6%)	\$750 (308–1,500)	273 (6.9%)	-	-	-
Royalty	\$ 145387 (4%)	\$8244 (219–50,825)	7 (0.2%)	\$70,264 (9.2%)	\$35,132 (14,894–55,370)	2 (0.8%)
Honoraria	\$76,441 (1.7%)	\$1500 (550–3,688)	25 (0.6%)	\$20,366 (2.6%)	\$1,000 (1,000–7,866)	5 (2.1%)
Education	\$49,878 (0.1%)	\$23 (14–75)	187 (4.7%)	\$333 (0.04%)	\$65 (27–139)	4 (1.7%)
Speaker CEP	\$ 23,400 (0.5%)	\$1,750 (550–2,500)	11 (0.3%)	\$550 (0.07%)	\$550	1 (0.4%)
Grant	\$2,131 (0.4%)	\$1065 (131–2,000)	2 (0.05%)	-	-	-
Entertainment	\$815 (0.02%)	\$99 (83–124)	8 (0.002%)	\$971 (0.13%)	\$971	1 (0.4%)

This table describes the amount paid to non-academic versus academic plastic surgeons by payment category, the total payment, the median (IQR) of payments received per surgeon and the number of surgeons paid in each category.

Appendix 1

Payments Made to Plastic Surgeons by Company

Company	Total Amount (\$)	Mean Payment (\$)	Median Payment (\$)
Allergan Inc.	1,792,491.00	309.00	20.35
Mentor Worldwide	873,833.30	453.70	42.10
LifeCell Corpora	840,832.30	372.38	84.09
Smith & Nephew, Inc.	448,881.60	361.42	33.38
Sientra, Inc.	124,870.20	175.38	93.73
Biomet, Inc.	118,293.50	1,171.22	27.07
Merz North Ameri	78,342.70	113.54	21.50
KCI USA, Inc.	77,934.60	537.48	47.26
AXOGEN	77,499.26	610.23	80.11
DePuy Synthes	72,352.43	338.10	34.98
Integra LifeScience	67,483.70	312.42	51.10
C. R. Bard, Inc.	63,107.22	202.27	38.40
Musculoskeletal	58,487.38	255.40	47.47
Stryker Corp.	57,053.72	372.90	64.82
Entellus Medical	51,303.00	123.03	13.24
Pacira Pharmaceutial.	27,597.10	191.65	28.71
Valeant Pharmaceuticals	25,411.77	770.05	500.00
Ethicon Inc.	21,485.20	130.21	31.16
Intersect ENT, Inc.	20,750.95	159.62	105.13
Intuitive Surgical	20,732.86	329.09	27.00
DJO Global, Inc.	20,397.41	2,266.38	28.99
MicroAire Surgical	19,343.66	1,018.09	600.00
Novadaq	19,273.60	1,927.36	240.90
SI-Bone, Inc.	19,200.00	4,800.00	4,800.00
Auxilium Pharmaceutical	19,004.36	126.70	66.24
Ellman International	18,010.83	1,385.45	200.00
Merz Pharmaceutical	15,161.05	2,526.84	1,173.32
Molnlycke Health	14,171.68	708.58	99.16
Phadia US Inc.	13,356.94	392.85	19.65
Bacterin Interna	11,240.72	624.48	70.71
CSL Behring	10,280.00	642.50	765.00
Molnlycke Health	9,219.18	2,304.80	2,042.03
KLS Martin L.P.	8,997.81	230.71	94.00
Meda Pharmaceutical	8,867.93	59.52	16.05
Megadyne Medical	8,393.45	1,398.91	185.20
Pfizer Inc.	7,407.70	108.94	16.33
Midmark Corporat	7,159.74	2,386.58	2,413.59
Medtronic Xomed,	7,061.83	53.10	25.89
Medline	6,122.45	437.32	35.45

Company	Total Amount (\$)	Mean Payment (\$)	Median Payment (\$)
Acclarent, Inc	5,952.61	35.43	20.31
Harvest Technolo	5,941.05	990.18	669.28
Cardiovascular S	5,556.32	555.63	58.82
Forest Laboratory	4,975.97	276.44	65.82
Boston Scientific	4,912.66	350.90	124.97
ACUMED LLC	4,668.08	186.72	63.25
Teva Pharmaceuticals	4,344.36	98.74	12.79
Merck Sharp & Do	4,097.58	31.04	14.25
Henry Schein, Inc.	3,864.35	94.25	64.28
Medical Modeling	3,142.14	314.21	176.01
Applied Medical	3,116.10	207.74	50.00
Alcon Laboratories	3,000.80	30.31	14.48
Janssen Pharmace	2,836.75	37.33	17.84
Ascension Orthop	2,791.47	139.57	38.00
Kensey Nash	2,697.52	385.36	400.00
Anika Therapeutic	2,614.91	1,307.46	1,307.46
Shire US Holding	2,556.25	21.85	12.95
Vioptix Inc	2,480.53	310.07	143.25
Covidien Sales L	2,367.87	59.20	21.95
Cook Incorporated	2,329.44	36.40	17.13
Arthrex, Inc.	2,037.70	1,018.85	1,018.85
W. L. Gore & Ass	1,488.87	135.35	37.14
Takeda Pharmaceutical	1,473.12	37.77	17.14
Toshiba America	1,431.05	1,431.05	1,431.05
Osteomed LLC	1,430.98	40.89	16.67
Mylan Inc.	1,358.63	19.98	13.95
Sunovion	1,328.13	21.42	13.21
Baxter Healthcar	1,310.68	29.79	18.07
AstraZeneca	1,271.03	24.92	16.68
Olympus America	1,158.22	44.55	21.56
Integra LifeSci	1,104.11	44.16	22.97
Mallinckrodt LLC	1,046.43	26.16	15.56
Onyx	1,029.64	343.21	18.88
Cochlear Ltd	1,019.59	42.48	21.05
Genentech, Inc.	987.13	30.85	15.57
Abeon Medical	915.85	915.85	915.85
ArthroCare Corpo	874.06	38.00	20.75
DUSA	779.76	41.04	14.09
Sanofi and Genzy	737.63	28.37	15.85
Boehringer Ingel	724.89	51.78	40.32
Wound Care Techn	700.48	100.07	88.80
BIOVENTUS LLC	619.53	68.84	24.24

Company	Total Amount (\$)	Mean Payment (\$)	Median Payment (\$)
Reckitt Benckise	603.36	54.85	61.56
Horizon Pharma	598.93	12.74	5.93
Santarus, Inc.	587.59	53.42	18.06
Covidien LP	587.47	117.49	140.00
Bristol-Myers Sq	573.01	28.65	17.38
Cubist	543.28	45.27	15.96
Extremity Medical	535.61	178.54	106.67
St. Jude Medical	510.31	170.10	166.41
AngioDynamics, Inc.	502.65	251.33	251.33
Hollister Incorp	465.95	42.36	23.25
Medtronic Vascul	445.13	111.28	132.84
Karlstorz Endosc	425.89	35.49	23.27
Novartis Pharmac	389.96	35.45	22.23
Taro Pharmaceuti	388.09	97.02	62.08
Small Bone Innov	356.78	356.78	356.78
Pacific Medical, Inc.	355.73	118.58	42.84
Medtronic USA, Inc.	276.10	69.03	76.73
The Medicines Co	268.36	38.34	12.98
Applied Medical	268.00	134.00	134.00
Convatec Inc.	266.27	33.28	26.55
Apollo Surgical	250.00	250.00	250.00
Cyberonics, Inc.	244.90	81.63	82.84
Regeneron Pharma	242.29	60.57	64.85
LEO Pharma AS	239.34	19.95	13.99
Cumberland Pharm	233.92	29.24	15.09
OmniGuide, Inc.	229.13	19.09	19.57
ABL Medical, LLC	210.05	105.03	105.03
Vansen Pharma, Inc.	208.86	69.62	96.20
Abiomed	201.83	201.83	201.83
diaDexus, Inc.	201.65	100.83	100.83
Salix Pharmaceut	199.02	33.17	16.03
Spiracur Inc.	193.58	32.26	16.66
Systagenix Wound	182.02	15.17	13.43
Amgen Inc.	179.55	25.65	14.93
Carl Zeiss Medit	169.62	84.81	84.81
Dendreon Corpora	163.54	14.87	14.58
Avinger Inc.	154.73	77.37	77.37
Otsuka America P	149.66	21.38	19.08
AbbVie, Inc.	147.71	14.77	15.48
RTI Surgical, In	145.58	29.12	12.27
Vertex	144.83	36.21	17.38
Eisai Inc.	143.47	23.91	21.93

Company	Total Amount (\$)	Mean Payment (\$)	Median Payment (\$)
Alk-Abello, Inc	136.45	27.29	13.40
Grifols USA, LLC	131.25	43.75	15.59
Daiichi Sankyo I	131.07	131.07	131.07
Optimer	130.35	65.18	65.18
American Medical	130.00	130.00	130.00
Luitpold Pharmac	125.24	6.26	7.35
Insys Therapeuti	125.00	125.00	125.00
Sandoz Inc.	123.35	41.12	16.58
Depomed, Inc.	122.52	20.42	14.05
Purdue Pharma L.	121.20	15.15	15.34
Novo Nordisk Inc	119.21	39.74	13.90
Alexion Pharmace	110.62	110.62	110.62
Endogastric Solu	107.91	35.97	18.62
Acorda Therapeut	107.90	35.97	14.36
Novartis Vaccine	102.70	102.70	102.70
Team 1 Orthopaed	99.72	99.72	99.72
Gilead Sciences	97.66	97.66	97.66
Astellas Pharma	95.82	47.91	47.91
ResMed Corp	94.63	31.54	32.30
NDI Medical, LLC	90.73	22.68	19.49
Coopervision Inc	88.65	88.65	88.65
Jazz Pharmaceuti	88.55	44.28	44.28
Janssen Research	86.52	86.52	86.52
Wright Medical T	85.08	42.54	42.54
Actavis Pharma I	84.16	84.16	84.16
Aptalis Pharma U	80.69	20.17	19.95
Medtronic Sofamo	77.03	38.52	38.52
Lupin Pharmaceut	77.02	19.26	12.88
Coloplast Corp	74.78	37.39	37.39
Johnson & Johnso	74.61	37.31	37.31
Atos Medical Inc	74.42	37.21	37.21
MED-EL Corporati	71.74	71.74	71.74
Par Pharmaceutical	65.78	32.89	32.89
Promius Pharma L	63.22	21.07	19.81
Brainlab, Inc.	61.56	20.52	27.06
Cytori Therapeut	61.29	61.29	61.29
Atrium Medical C	59.54	29.77	29.77
Reliance Medical	58.94	58.94	58.94
BTG Internationa	58.24	58.24	58.24
Shionogi Inc	51.62	25.81	25.81
Maquet Cardiovas	50.79	50.79	50.79
Warner Chilcott	50.08	16.69	14.16

Company	Total Amount (\$)	Mean Payment (\$)	Median Payment (\$)
Sensus Healthcar	50.00	50.00	50.00
Hospira Worldwid	45.57	15.19	14.22
Spectrum Pharmac	41.67	20.84	20.84
Celgene Corporat	41.58	20.79	20.79
Bayer HealthCare	38.59	12.86	11.32
Noven Pharmaceut	34.16	17.08	17.08
Globus Medical,	33.49	16.75	16.75
Abbott Laborator	33.35	33.35	33.35
AlloSource	32.00	16.00	16.00
Terumo Cardiovas	31.91	31.91	31.91
Ranbaxy Inc.	29.97	14.99	14.99
UCB, Inc.	27.06	13.53	13.53
Cordis Corporati	26.97	26.97	26.97
Tenex Health Inc	26.33	26.33	26.33
Tactile Systems	25.96	12.98	12.98
Ironwood Pharmac	25.41	25.41	25.41
ViroPharma Incor	25.20	12.60	12.60
Aesculap Implant	24.00	24.00	24.00
HILL-ROM HOLDING	23.63	23.63	23.63
AMAG Pharmaceuti	22.57	11.29	11.29
BIOTRONIK INC.	22.47	22.47	22.47
UHS Surgical Ser	21.30	21.30	21.30
Integra York PA,	19.88	19.88	19.88
Milliken Healthc	19.42	19.42	19.42
Braemar Manufact	18.51	18.51	18.51
LifeScan, Inc.	18.13	9.07	9.07
American Medical	16.83	16.83	16.83
Duchesnay USA In	16.29	16.29	16.29
Ferring Pharmace	16.07	16.07	16.07
DENTSPLY IH Inc.	16.06	16.06	16.06
Celleration_Inc	16.04	16.04	16.04
Exelixis Inc.	16.01	16.01	16.01
Supernus Pharmac	15.78	15.78	15.78
EMD Serono, Inc.	15.30	15.30	15.30
Halozyme Inc	14.48	14.48	14.48
IsoTis OrthoBiol	14.46	14.46	14.46
Dentsply Interna	13.92	13.92	13.92
Endo Pharmaceuti	13.55	13.55	13.55
Medartis Inc.	13.52	13.52	13.52
Amarin Pharma In	13.37	13.37	13.37
Implant Direct I	13.36	13.36	13.36
Arbor Pharmaceut	12.78	12.78	12.78

Company	Total Amount (\$)	Mean Payment (\$)	Median Payment (\$)
Actelion Pharmac	12.51	12.51	12.51
Millennium Pharm	12.45	12.45	12.45
Orthofix Interna	12.38	12.38	12.38
Cornerstone Ther	12.31	12.31	12.31
Aerocrine, Inc	12.27	12.27	12.27
Universal Hospit	12.03	12.03	12.03
LeMaitre Vascula	11.35	11.35	11.35
Lundbeck LLC	10.32	10.32	10.32

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