

# Academic Productivity of Hand Surgery Fellowships is Positively Correlated with Sunshine Act Supplemental Income as Reported on the Open Payments Database

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**INTRODUCTION:** There is little doubt that a orthopaedic surgeon's career is highly influenced by their fellowship training as well as by their faculty mentors at those fellowships. One factor that has the potential to influence orthopaedic surgeon's outlook and career is a fellowship's relationship with industry, as represented by supplemental income listed on the Open Payments database created after the "Sunshine Act" of 2010. To date, no study has examined the fellowship-specific factors that impact the level of Sunshine Act supplemental income in hand surgery fellowships in the United States in order to understand the possible influences in a surgeon's training environment.

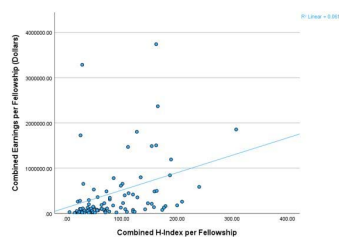
## METHODS:

This study is an analysis of the Open Payments database created by the Centers for Medicare and Medicaid Services (CMS) for the purposes of reporting Sunshine Act supplemental income paid to faculty physicians of hand surgery fellowships in the United States as of April 2023. This study examined both lifetime individual physician Sunshine Act supplemental income and aggregated fellowship Sunshine Act supplemental income, defined as all supplemental income between all years reported on the Open Payments website (2015-2021). Sunshine Act supplemental income only reflects money given to the physician in the form of royalties, consulting fees, or food and does not include research grants or funding. Other data collected included physician H-Index as a proxy for academic productivity (found on the Scopus website), fellowship information such as fellowship type and region of the United States (found on the American Society for Surgery of the Hand website), and presence or absence of a fellowship-affiliated Master of Business Administration (MBA) program (found on Wikipedia).

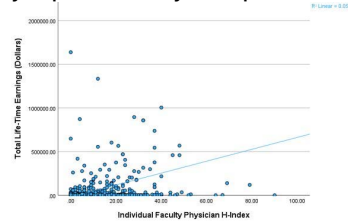
## RESULTS:

The current study analyzed the complete data for 634 faculty physicians (90.8% of faculty physicians) from 94 hand surgery fellowships (100% of fellowships). The mean individual physician (n=634 faculty physicians) lifetime Sunshine Act supplemental income was \$67,272.64 ± \$341,861.54 (range, \$9.48 - \$6,780,838.18) whereas the mean individual physician (n=634 faculty physicians) H-Index was 12.52 ± 12.01 (range, 0 – 90). There was a significant and weak positive correlation between individual physician H-Index and individual physician lifetime Sunshine Act supplemental income (p<0.001; Spearman's rho = 0.141). However, this association was stronger as there was also a significant and moderately positive correlation between combined fellowship H-index and total lifetime Sunshine Act supplemental income per fellowship (p<0.001, Spearman's rho = 0.524). The mean combined physician lifetime Sunshine Act Supplemental Income per hand surgery fellowship was \$453,732.48 ± \$934,084.73 (range, \$127.44 - \$6,783,053.99). Finally, there was no significant association between fellowship lifetime Sunshine Act supplemental income and region of the fellowship (p=0.592), type of fellowship program (p=0.842), and presence of a fellowship-affiliated MBA program (p=0.859).

**DISCUSSION AND CONCLUSION:** Academic productivity, as defined by H-Index, has a weak positive correlation with Sunshine Act supplemental income level for individual faculty physicians at hand surgery fellowship in the United States. However, this correlation has increased strength at the fellowship level with a moderate positive correlation between fellowship academic productivity and fellowship Sunshine Act supplemental income earned by all the physicians at their respective fellowships. Sunshine Act supplemental income is not associated with region of the fellowship, type of fellowship program or presence of a fellowship-affiliated MBA program. More research is needed to determine how these levels of academic and industry productivity impact fellows in the future after their surgical training.



**Figure 2:** Significant and moderately positive correlation between the combined H-index per hand orthopedic surgery fellowship and the combined total life-time earnings reported on CMS website. Line represents best-fit line for the correlation. Y-axis was set to \$4,000,000 for a better representation of the relationship between combined H-index and earnings per fellowship.



**Figure 1:** Significant but weak positive correlation between individual faculty H-index and individual physician life-time earnings associated with hand orthopedic surgery fellowships in the United States. Line represents best-fit line for correlation. Y-axis was set to \$2,000,000 to exclude several outliers for a better visualization of the relationship between H-index and total life-time earnings of individual physicians at hand orthopedic fellowships.

Fellowship Ranking	Combined Fellowship H-Index	Combined Fellowship Supplemental Income (Dollars)	Combined Fellowship Payments	Average Total Life-Time Sunshine Act Supplemental Income per Fellowship per Physician (Dollars)
1	147	\$ 4,281,023.90	207	\$ 2,040,511.97
2	162	\$ 3,795,238.03	2158	\$ 1,758,281.87
3	28	\$ 3,324,028.15	811	\$ 3,324,028.15
4	100	\$ 2,858,648.82	1708	\$ 1,673,248.16
5	387	\$ 1,854,248.48	1464	\$ 1,243,32.79
6	127	\$ 1,802,868.91	1168	\$ 1,551,367.36
7	45	\$ 1,523,838.37	535	\$ 2,817,968.86
8	162	\$ 1,502,548.36	651	\$ 1,663,948.55
9	154	\$ 1,468,677.70	617	\$ 2,123,282.53
10	111	\$ 1,407,468.53	588	\$ 1,818,834.84

**Table 1:** Information on the top 10 hand surgery fellowships in the United States by high Sunshine Act supplemental income. Information includes combined H-index per fellowship, combined life-time Sunshine Act supplemental income for all physician faculty per fellowship, combined total life-time payments, and average total life-time Sunshine Act supplemental income per faculty physician per fellowship.