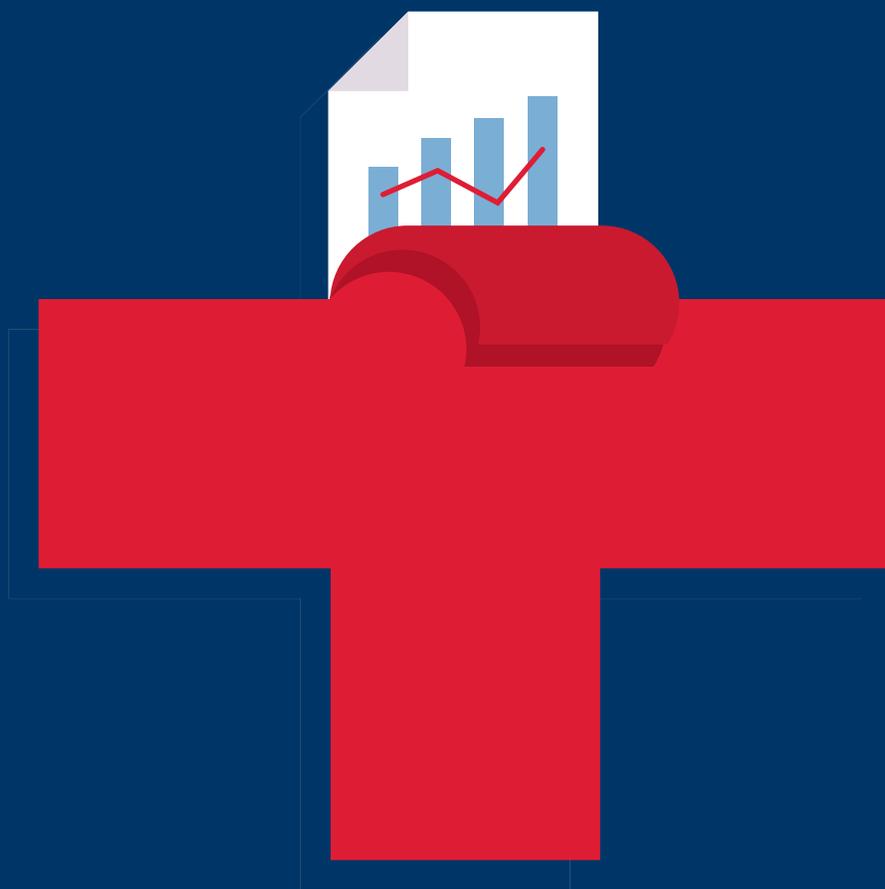


Report:
Cardiovascular
Provider Compensation
& Production Survey[®]

2017





Joel Sauer
VICE PRESIDENT
MEDAXIOM CONSULTING

This is the 5th anniversary of MedAxiom publishing its annual Cardiovascular Provider Compensation & Production Survey! The intent behind this document is to provide poignant and rich peer data to help advance the cardiovascular community. From market data on compensation to detailed slices of production and markers for utilization, MedAxiom continues its legacy of peer learning and as a CV connector—linking providers, industry and other key constituents to improve health care delivery through knowledge sharing.

New in 2017 is the addition of an Advanced Heart Failure subspecialty designation. A growing field within cardiology, this added designation will allow a plethora of national comparisons in compensation and production measures in the years to come.

In response to health care's greater focus—aka reimbursement—on populations and value (quality, cost, experience), MedAxiom too has evolved over the years by adding cardiology panel size and non-clinical compensation metrics. These latter data will help our industry better align the economics of providers and health systems around what really matters to patients and families. And that's what it's all about!

If you have any questions regarding the data in this survey, or just general comments, please contact me directly at jsauer@medaxiom.com or (260) 245-1015.

Thank you and enjoy!

Joel Sauer

Vice President, MedAxiom Consulting

Contents

1. Overview	6
2. Does Your Internal Distribution Plan Promote Value?	9
3. A Detailed Review of Compensation per wRVU	14
4. Survey Results – Cardiology	17
Compensation	17
Production	19
Integration of Cardiology	20
Compensation per wRVU	21
Role of Part-Time Physicians	22
Impact of Gender in Cardiology.....	23
Key Cardiology Volumes & Ratios.....	24
5. Survey Results – Surgery	27
6. Survey Results – Advanced Practice Providers	30
7. Survey Results – Non-Clinical Compensation.....	33
Cardiology Tables	35
Surgery Tables.....	37
APP Tables	39
Non-Clinical Compensation Tables	40
About the Author.....	41

The 2017 Cardiovascular Provider Compensation & Production Survey[®]
 is produced by MedAxiom and protected under copyright law.
 It is available at: medaxiom.com/CompSurvey

1. Overview

Methodology

Each year beginning in early spring MedAxiom surveys its membership on financial, staffing, productivity, compensation, and a number of demographic measures such as location, size of practice, ownership model, physician subspecialties, and so on. Data are submitted through online entry and via direct exports from practice management systems, along with other means.

Submissions are processed in MedAxiom's data warehouse and compiled into over 800 measures for analyses. Our members can then use MedAxiom's proprietary Business Intelligence tool, called MedAcess, to perform many different types of analyses. MedAxiom also extracts its own data to create reports for the membership, partnering organizations and the public.

The physician compensation and production data provided in this report were collected over the 2008-2016 time frame. The published tables have been filtered to only include full-time physicians, unless otherwise indicated in the report.

MedAxiom Data Integrity: The Vetting Process

MedAxiom realized long ago the importance of well-vetted data and how errant information can destroy the value of a data set. With this recognition, MedAxiom now goes above and beyond in its pursuit of data integrity. The fact-checking process begins with an automated comparison of self-reported Work Relative Value Units (wRVUs) to those calculated by MedAxiom based on the CPT upload provided by our data submitters. If there is a discrepancy of 1 percent or greater, a more thorough review of the data is triggered. Additionally, data manually entered online immediately shows the operator a trend for comparison to the previous year. This provides an instant check if there are large differences from year to year, an indication of a keying error.

Once data are loaded into our MedAcess database, some of the critical measures relating to Full Time Equivalent (FTE) physicians and Advanced Practice Providers (APPs), as well as some elements of financial information, are verified to make sure that they are in alignment with the statistical norms of the rest of the database. A set of limits defined by a team of cardiovascular administration experts is the key to this step. All data points are examined against their own same-practice historical trend and against the practice's peer set to determine if the data point is outside a reasonable range. If a data point is determined to be an outlier, it is excluded from the data set until the practice is contacted and the data point can be verified. Once confirmed or corrected, the data point is allowed back into the data set where it can be viewed by other members in a de-identified fashion.

Data verified in this way are included in the overall calculations such as percentile, mean, median, and standard deviation. All submitted data go through a rigorous process that relies on cross-checking, computer-automated vetting and review by human eyes, with follow-up phone calls and emails to data submitters when there are questionable results.

Having the right measures and high data integrity are what makes MedAxiom's data the most trusted in the cardiology industry.

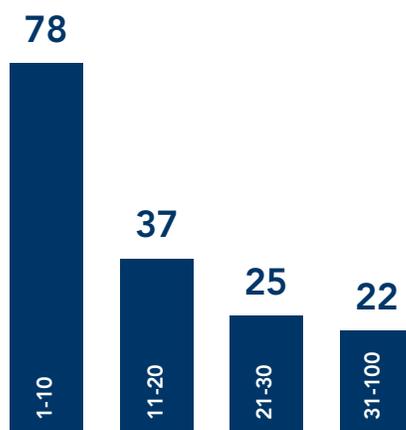
Demographics

A total of 162 groups, representing **2,337** full-time cardiovascular physicians, completed this year's survey (providing 2016 data). In addition there were 151 part-time physicians whose data were used in some of the findings, particularly the section on volume trends. The median size of the responding groups to this year's survey was 15 FTE physicians.

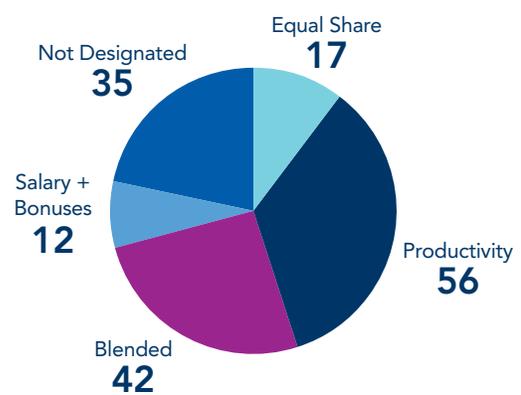
Respondents:

162 total groups
2,337 physicians

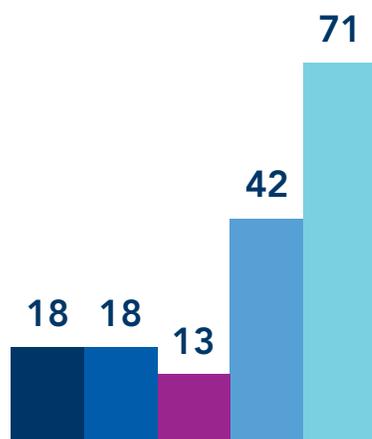
NUMBER OF PHYSICIANS PER GROUP



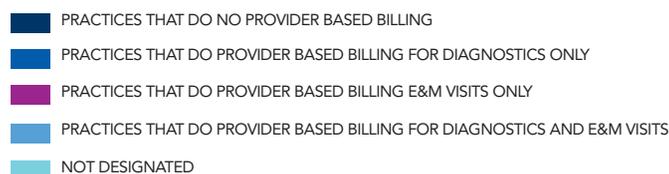
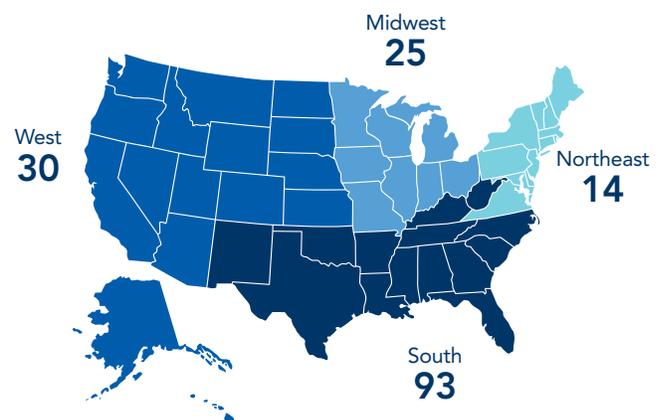
COMPENSATION METHODOLOGY



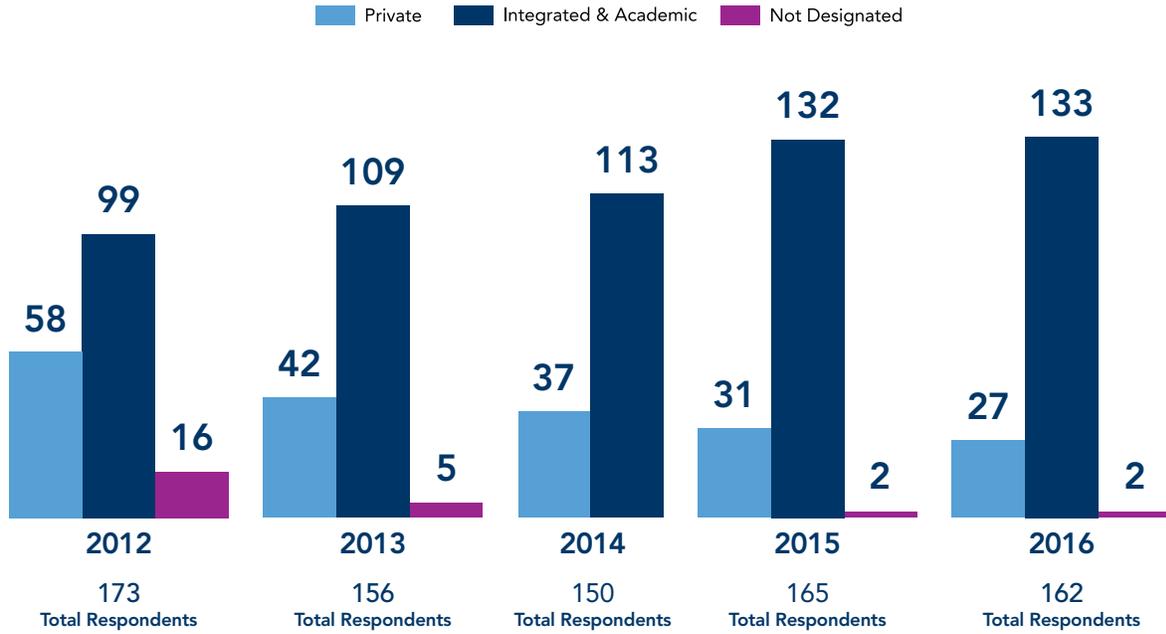
PROVIDER BASED BILLING



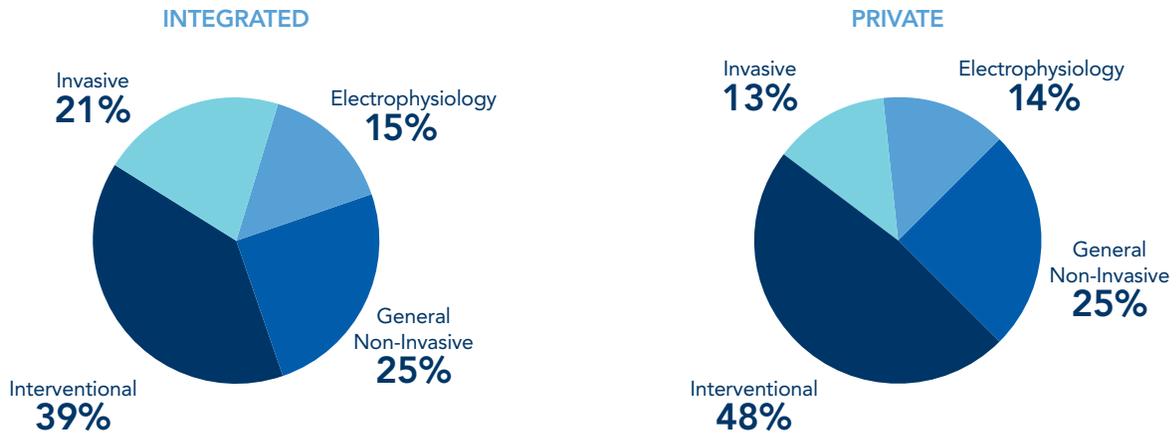
GEOGRAPHIC MIX



OWNERSHIP MODEL 2012-2016



TYPE OF PHYSICIAN BY OWNERSHIP MODEL



2. Does Your Internal Distribution Plan Promote Value?

BY JOEL SAUER

Back in the 1990s, there was a lot of energy expended around reducing health care costs mainly through the vehicles of primary care gatekeepers and capitated provider payments, which shifted most of the risk from insurers to providers. Except for a scant few geographies, the movement fizzled before it gained any traction.

Fast forward 20-plus years and the health care industry is again focused on reducing overall costs. This time, however, the movement has not only found traction, it is lurching forward at breakneck speed. Within just the Medicare plan alone, the past few years have seen the introduction of value-based purchasing incentives and penalties (Readmission Reduction Program, quality measures, HCAHPS, etc.), the Medicare Access & CHIP Reauthorization Act (MACRA), Bundled Payment for Care Initiative (BPCI) and recently, the Episode Payment Model (EPM). All of these have significant if not total focus on cardiovascular care domains; EPMs are centered on acute myocardial infarction (AMI) and coronary artery bypass graft (CABG) populations. Commercial insurers are following suit, albeit slower than the governmental payers.

The foundation for all of these programs is that payment for volume alone does not result in high-value health care. In order to achieve value, reimbursement must be tied in meaningful ways to non-production value-oriented measures. If this is the direction that overall cardiovascular reimbursement (a.k.a. revenue) is moving, is your physician reward system doing the same and does it appropriately reward value?

Statistics Around Internal Distribution Plans (IDPs)

Here are some things we know from survey data. The 2013 MedAxiom Annual Integration Report found that nearly 60 percent of hospital/health system integration models (employment or professional services agreement) for cardiovascular groups were based entirely on wRVUs, a raw production measure, to establish the compensation pool. This same survey found that nearly two thirds of these

integrated groups allowed the physicians to choose the internal distribution plan.

For private groups, the physician compensation pool is created by revenue minus expenses. The majority of physician reimbursement still comes directly from the volume of CPT activity, or production, although this is changing with MACRA and commercial insurer initiatives.

Based on 2017 MedAxiom survey data, nearly half of cardiology groups (Figure 1a) rely exclusively on production for their IDP, while that ratio is only 38 percent for surgical groups (Figure 1b). Digging into the cardiology subset more deeply, we see that integrated groups are much more likely than private (Figures 2a & 2b respectively) to rely solely on production measures for their respective IDPs. In fact, there were no equal split IDPs reported in the integrated cohort, while nearly 75 percent of private groups choose an equal IDP.

FIGURE 1A – Ratio of IDPs – Cardiology

©MedAxiom

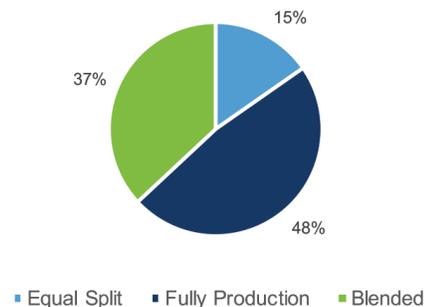
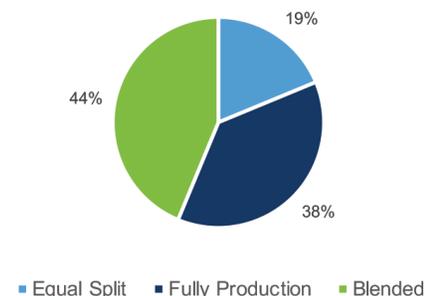


FIGURE 1B – Ratio of IDPs – CV Surgery

©MedAxiom



What may be surprising to some is that total emphasis on production measures did not translate into either median top production or top compensation in either cardiology or CV surgery populations (see Figures 3 & 4). For cardiology, a blended IDP yielded both top median wRVU production and median total compensation. For surgery, like cardiology, a blended IDP produced the highest median wRVUs. However, it was a fully production based IDP that led to the highest median total compensation for surgeons.

There are likely many explanations for this disconnect, but part of the answer is in the number of low volume CV centers that still have to accommodate call. According to the Society for Thoracic Surgery (STS) data, nearly 80 percent of open heart programs in the US perform less than 200 cases annually, with a significant portion of these performing less than 100 cases. These smaller programs likely have fewer surgeons— perhaps just two—which makes equal split unlikely, while the additional call burden may push compensation upward.

Things to Consider When Establishing an IDP

Cardiovascular medicine is both unique and complex in its breadth and scope. In almost equal parts, a CV physician practices in the ambulatory/office, procedure/testing and inpatient settings. Few other medical specialties cross these three areas and to the degree seen in cardiovascular care delivery. Because of this, cardiology in particular has become deeply subspecialized and team oriented, with physicians fellowship trained in interventional procedures, diagnostic imaging and now heart failure.

In addition, the cardiovascular specialties have more quality data than any other and have truly focused on and pushed quality over the years – often to the direct detriment of volumes. These data provide an excellent and empirical source for value-based compensation plans. Last, cardiovascular medicine is both a national high-cost, high-demand clinical area and a high-margin contributor to health systems’ bottom lines. All of these factors put particular focus on getting our IDPs right.

The sub-specialization noted above creates differences among the cardiology physicians particularly when looking at wRVUs. In Figure 5 we see the distribution of wRVUs for each of the cardiology subspecialties, with a spread from 8,826 to 12,902 per FTE. With the advent of heart failure specialists focused on that particular patient population, this spread will undoubtedly grow once these data are available. Yet each of these subspecialties rely on the other for the overall care of the cardiovascular patient, a mutual dependence that needs to be recognized.

FIGURE 2A – Ratio of IDPs – Integrated Organizations ©MedAxiom

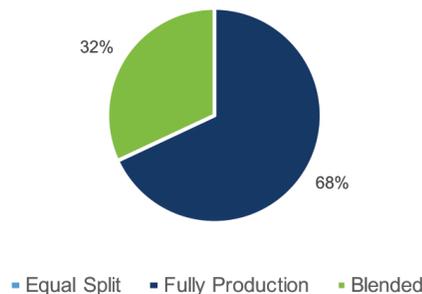


FIGURE 2B – Ratio of IDPs – Private Organizations ©MedAxiom

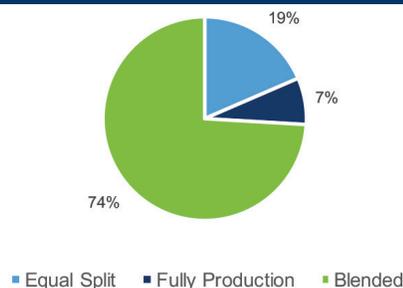


FIGURE 3 – Median wRVU per FTE Physician by IDP ©MedAxiom

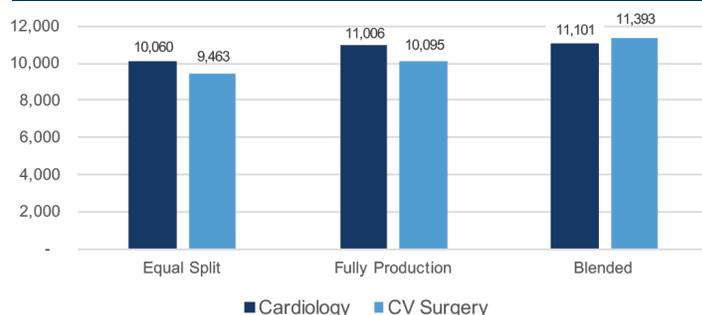


FIGURE 4 – Median Total Comp per FTE Physician by IDP ©MedAxiom

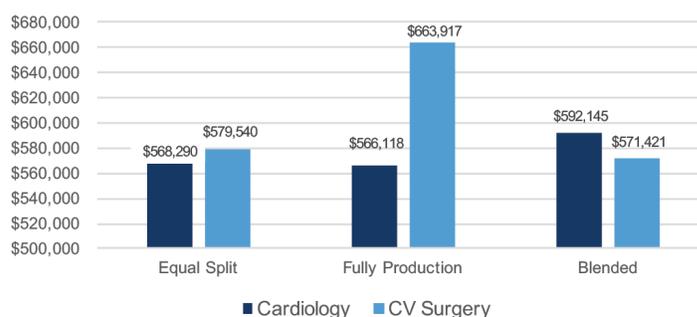
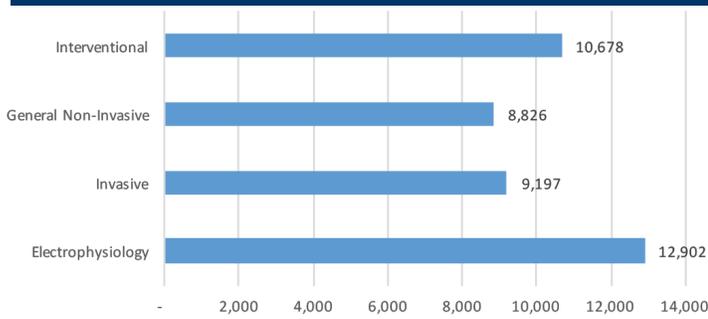


FIGURE 5 – 2016 Median wRVUs per FTE

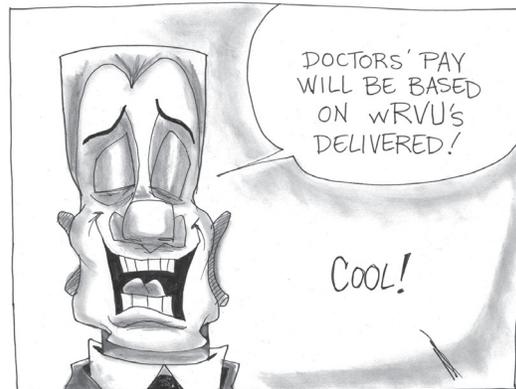
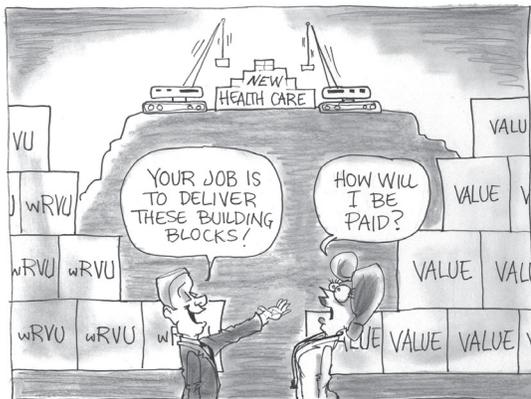
©MedAxiom



Every group is made up of individual physicians, each with his or her own values, needs and wants. Collectively this forms the group’s culture, which may favor work/life balance over compensation, or compensation over time off, and so on. This culture should be appropriately reflected in the IDP. Other considerations that are impacted by the IDP include: personal autonomy; need for production (wRVU or otherwise); sub-specialization; team vs. individual; effective utilization of Advanced Practice Providers (APPs) and other clinical staff; and governance and leadership needs.

It is too often the case that IDPs fail to appropriately consider these last two items, utilization of APPs and leadership roles, when trying to align physician economics. Many IDPs—particularly those with heavy emphasis on production measures—will actually create competition between the physicians and APPs. An example of this is a plan that provides credit for wRVUs performed by the physician while nothing for work by an APP. We can predict with high certainty that in this environment the physician production will win out over the efficient use of the APP. This conflict can exist in either private or integrated ownership models.

Similarly we often find that leadership is either expected to be donated or under-compensated in the trade for clinical time. In this case we should not be surprised these duties are avoided or given a secondary prioritization (see illustration). Obviously fair market considerations come into play when leadership compensation is coming from a hospital or health system, but an IDP can provide a vehicle for syncing internal value and compensation.



LATER....



Illustration: Lee Sauer

There are two final elements critical to an effective IDP: it must be understandable and reproducible. If an IDP is so complex that only a minority of doctors or a single administrator can explain how it works, it has lost the ability to motivate and align compensation with group value. Confusion around an IDP will inevitably lead to mistrust, which can quickly rip a group apart. Likewise, the inability to reproduce the inputs to an IDP and come out with the same numbers will lead to suspicion and problems.

Examples of IDPs

To illustrate the impact of various IDPs let us consider a fictional group of 10 cardiologists. This group has the full complement of subspecialties and in similar ratios to national peer data. The total compensation pool available for the IDP is \$6.0 million and the group produced 100,000 wRVUs in total. The two extreme choices for an IDP are 100 percent equal and 100 percent production based. Presuming production to be based on wRVUs, you can see how these two models would pay down to the individual physicians in [Table 1](#).

As can be seen, the models yield very different results with swings at the individual level of nearly 30 percent from highest to lowest when based solely on production. In addition, one

would have to wonder if the production-based group would be able to find and retain a low wRVU producing subspecialty like heart failure, given the compensation that would result. It is likely that some other accommodation would need to be made that then creates different economic incentives for a faction of the group. Disparate economic models inside a CV team inevitably lead to behaviors contrary to group cohesion and are therefore best avoided.

Using this same group, we will now consider a hybrid IDP with 30 percent equal and 70 percent production based. In addition, this group has 15 percent of the pool coming from value incentives (these could be from a hospital employment model for an

TABLE 1 – IDP Illustration

©MedAxiom

	SPECIALITY	wRVUs	100% EQUAL	100% PRODUCTION	% DIFFERENCE
Physician 1	Electrophysiology	12,900	\$600,000	\$774,000	120%
Physician 2	Invasive	9,500	\$600,000	\$570,000	95%
Physician 3	General Non-Invasive	9,800	\$600,000	\$588,000	98%
Physician 4	General Non-Invasive	10,400	\$600,000	\$624,000	104%
Physician 5	General Non-Invasive	8,600	\$600,000	\$516,000	86%
Physician 6	General Non-Invasive	9,700	\$600,000	\$582,000	97%
Physician 7	Heart Failure	6,500	\$600,000	\$390,000	65%
Physician 8	Interventional	11,500	\$600,000	\$690,000	115%
Physician 9	Interventional	10,200	\$600,000	\$612,000	102%
Physician 10	Interventional	10,900	\$600,000	\$654,000	109%
		100,000	\$6,000,000	\$6,000,000	

TABLE 2 – Hybrid IDP Illustration

©MedAxiom

	SPECIALITY	wRVUs	CLINICAL POOL		VALUE INCENTIVES	LEADERSHIP	TOTAL
			EQUAL	PRODUCTION			
Physician 1	Electrophysiology	12,900	\$151,500	\$456,015	\$90,000	\$10,000	\$707,515
Physician 2	Invasive	9,500	\$151,500	\$335,825	\$90,000	\$10,000	\$587,325
Physician 3	General Non-Invasive	9,800	\$151,500	\$346,430	\$90,000		\$587,930
Physician 4	General Non-Invasive	10,400	\$151,500	\$367,640	\$90,000	\$10,000	\$619,140
Physician 5	General Non-Invasive	8,600	\$151,500	\$304,010	\$90,000		\$545,510
Physician 6	General Non-Invasive	9,700	\$151,500	\$342,895	\$90,000		\$584,395
Physician 7	Heart Failure	6,500	\$151,500	\$229,775	\$90,000	\$10,000	\$481,275
Physician 8	Interventional	11,500	\$151,500	\$406,525	\$90,000		\$648,025
Physician 9	Interventional	10,200	\$151,500	\$360,570	\$90,000	\$10,000	\$612,070
Physician 10	Interventional	10,900	\$151,500	\$385,315	\$90,000		\$626,815
		100,000	\$1,515,000	\$3,535,000	\$900,000	\$50,000	\$6,000,000

integrated group, or co-management or commercial incentives for a private group). The physicians have decided this value pool will be split equally as well, recognizing the team aspect of value. Last, the group determined that those serving on its leadership committee should be paid an annual stipend for the effort. An illustration of this can be found in [Table 2](#).

Here are a couple of things to note. Because an IDP is by definition a distribution model, it can only distribute what is available in the total pool. Since in this example the group carved off \$50,000 for leadership roles and had \$900,000 tied to value incentives, these amounts reduce the available clinical pool in order to stay within the available \$6.0 million total.

The impact of this is that when looked at in total, the equal distribution accounts for over 40 percent ($\$1,515,000 + \$900,000 / \$6.0 \text{ million}$), not the 30 percent ascribed by the group. Conversely, production accounts for less than 60 percent of total compensation ($\$3,535,000 / \6.0 million), not the 70 percent ascribed. This mathematical outcome may be perfectly in sync with expectations, but needs to be considered when determining an IDP to match group culture and value.

Conclusion

Based on the data above it is clear there is no “one size fits all” solution for internal distribution plans. Therefore, considerable effort must go into choosing an appropriate IDP to match a group’s culture and values, and also line up with overall organizational objectives. These objectives may be the strategic direction of a private group, or those of a much larger health system for integrated practices. Either way, aligning economics between providers and the organization is critical given that what gets rewarded gets done. Conversely, what is not rewarded should be expected to be left undone.

Although the IDP certainly matters, it should not be the only focus in an organization, nor should leaders be fooled into thinking it can solve all problems. Compensation is just one important element in a multi-dimensional environment and cannot be a surrogate for strong governance and leadership.

It is further interesting to note the findings of Daniel Pink in his 2011 book “Drive: The Surprising Truth of What Motivates Us,” which was based on myriad studies around motivation and compensation. He reasons that professions like medicine – and specifically the work performed by physicians – are ill-suited for production-based compensation plans. He reasons that production reward systems in highly complex, high stakes (think life and death) environments will ultimately and inevitably lead to bad behaviors and outcomes, and dissatisfied physicians.

...aligning economics between providers and the organization is critical given that what gets rewarded gets done.

Cardiovascular medicine, perhaps more than any other area of health care, is deeply subspecialized, which creates the need for frequent, careful and coordinated transitions of patients. In such a complex ecosystem it is doubtful that a one dimensional IDP—or funding model for that matter—can appropriately reward its physician workforce. The challenge then is to balance value, individual and team needs, culture and organization with a resulting IDP that is understandable. No small task to be sure.

3. A Detailed Review of Compensation per wRVU

BY JOEL SAUER

Peer surveys, like the MedAxiom Cardiovascular Provider Compensation & Production Survey, publish a measure showing compensation per Work Relative Value Unit (wRVU).

Table 1 shows this data from the 2017 MedAxiom survey report for cardiology. This statistic is perhaps the most misunderstood of the published compensation data and is often given more weight than it deserves in compensation discussions. The below details exactly what this measure is and is not, along with some ways it can be influenced by different circumstances.

This metric is the product of total actual physician compensation divided by wRVU production. In other words, it is a calculated rate. Each of these calculated amounts is then compared to all the others to arrive at a bell curve distribution (25th percentile, median, 75th percentile, etc.). Most surveys, including MedAxiom's, consider compensation from all sources for the "Physician Actual Compensation." Looking again at **Table 1** for the 2016 data, the median for cardiology was \$55.77 per wRVU; half of the cardiologists earned more than \$55.77 per year, half earned less.

Using an illustration for clarity, in 2015 Dr. Jones earned \$515,000 from all sources (clinical comp, incentives, directorships, administrative time, etc.) and produced 8,500 wRVUs in that same time period. Her compensation per wRVU then calculates to \$60.59 ($\$515,000/8,500$). Based on the data from **Table 1** (and more specifically within the MedAccess database) she would be around the 65th percentile nationally for compensation per wRVU.

This does not mean that Dr. Jones, who happens to be employed by a health system, was contractually paid \$61 per wRVU for her production. She may have an employment agreement that includes multiple income sources. **Table 2** shows an example of how this might look from a math standpoint. In fact, Dr. Jones' employment contract specifies that she is paid \$55 for each clinical wRVU she performs. In addition, she is eligible for a value incentive (quality, cost, service) and performs a medical directorship and is compensated for that time. This then pushes her overall compensation per wRVU to \$60.59. It is this latter number, not her contracted rate, that is published in our survey.

TABLE 1 – Compensation per wRVU by Cardiology Subspecialty

©MedAxiom

	2012	2013	2014	2015	2016
Electrophysiology	\$46.32	\$47.00	\$47.60	\$50.20	\$50.34
Invasive	\$56.81	\$56.00	\$55.06	\$59.14	\$58.58
General Non-Invasive	\$55.16	\$57.00	\$57.11	\$59.92	\$58.88
Interventional	\$53.76	\$55.00	\$52.30	\$55.86	\$55.70
Overall	\$53.96	\$54.00	\$53.47	\$56.55	\$55.77

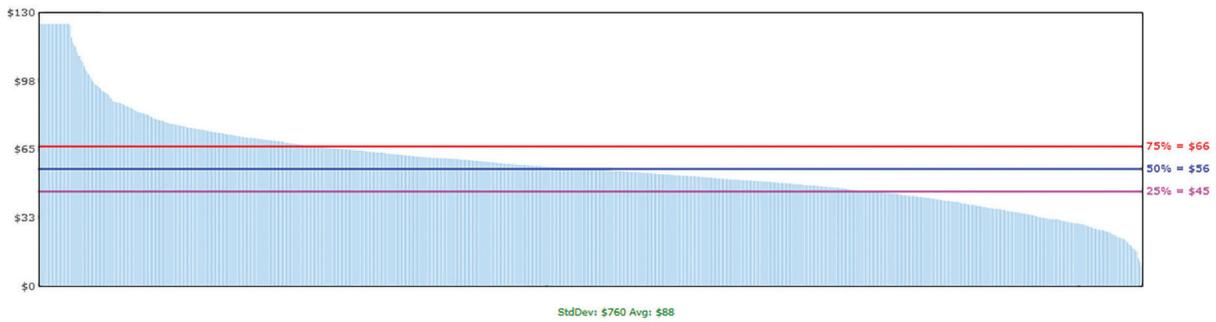
TABLE 2 – Dr. Jones Compensation Illustration

©MedAxiom

Production Compensation (\$55 x 8,500)	\$467,500
Value Incentives Earned	\$35,000
Medical Directorship	\$12,500
TOTAL COMPENSATION ALL SOURCES	\$515,000
wRVU Production	8,500
PHYSICIAN ACTUAL COMPENSATION PER wRVU	\$60.59

FIGURE 1 – Physician Actual Compensation per wRVU

©MedAxiom



There is also the notion that the published median (\$55.77 in Table 1) is really what most physicians are being paid per wRVU. As can be seen in Figure 1, there is huge variability in this calculated rate, ranging from \$17 to \$200 per wRVU. How can this be?

Consider a physician hired to work predominantly in a heart failure clinic environment. For the most part this doctor will bill within the Evaluation and Management (E&M) spectrum of the CPT codes—not a wRVU-intense ecosystem. In order to be market competitive, our hypothetical organization contracted him at \$550,000 per year (or perhaps was part of an equal split IDP) and he was able to generate 4,500 wRVUs in the deeply subspecialized heart failure domain. This calculates out to \$122 per wRVU in compensation.

In this same practice there is a non-invasive physician who has been predominantly assigned by the group to read imaging studies. She is also paid a base of \$550,000, but is able to generate nearly 20,000 wRVUs because of the type of

work performed. Her compensation per wRVU calculates out at \$27.50.

Clearly these are extreme examples to illustrate the point, but these scenarios do exist and—when considered with other variabilities—force us to pause when putting too much weight on the compensation rate per wRVU.

Another significant factor impacting compensation per wRVU is pooling. Many cardiology groups, including those integrated with a hospital or health system, pool compensation and distribute it to the individual doctors using myriad formulas. Even under identical individual production circumstances and an identical total compensation pool amount, different distribution methods will result in different compensation per wRVU.

Table 3 shows an example of this in an integrated group where the physicians are all contractually paid \$60 per wRVU. In this example the compensation creates a pool that the cardiologists then determine (with appropriate oversight)

TABLE 3 – Sample Integrated Hybrid Internal Distribution Plan

©MedAxiom

	wRVU	CONTRACTED RATE/ wRVUs	COMP POOL GENERATED	50% EQUAL DIST.	50% PROD DIST.	ACTUAL COMP	ACTUAL COMP/ wRVU
Physician 1	13,462	\$60.00	\$807,720	\$350,179	\$403,860	\$754,039	\$56.01
Physician 2	8,622	\$60.00	\$517,320	\$350,179	\$258,660	\$608,839	\$70.61
Physician 3	8,830	\$60.00	\$529,800	\$350,179	\$264,900	\$615,079	\$69.66
Physician 4	11,742	\$60.00	\$704,580	\$350,179	\$352,290	\$702,469	\$59.82
Physician 5	13,541	\$60.00	\$812,460	\$350,179	\$406,230	\$756,409	\$55.86
Physician 6	10,655	\$60.00	\$639,300	\$350,179	\$319,650	\$669,829	\$62.87
Physician 7	11,644	\$60.00	\$698,640	\$350,179	\$349,320	\$699,499	\$60.07
Physician 8	10,439	\$60.00	\$626,340	\$350,179	\$313,170	\$663,349	\$63.55
Physician 9	13,472	\$60.00	\$808,320	\$350,179	\$404,160	\$754,339	\$55.99
Physician 10	11,024	\$60.00	\$661,440	\$350,179	\$330,720	\$680,899	\$61.77
Physician 11	14,967	\$60.00	\$898,020	\$350,179	\$449,010	\$799,189	\$53.40
TOTALS	128,399		\$7,703,940	\$3,851,970	\$3,851,970	\$7,703,940	\$60.00

▲ Actual Comp/wRVUs

how to distribute individually. This group has chosen to split compensation 50 percent equally and 50 percent based on individual wRVU production—a very common phenomenon in cardiology practices. As can be seen, there is wide variability on compensation per wRVU at the individual physician level even though contractually all are paid a consistent rate. The distribution process can cause widespread variability on compensation per wRVU in private groups as well.

Here are some other interesting data. When you look at the top performers in terms of generating wRVUs, there is a direct correlation with these physicians also being top total earners (top box of Table 4). However, these same top producers are in the bottom of the heap in terms of compensation per wRVU (last column of that same box); there is an inverse relationship between high wRVU production and compensation per wRVU. Not surprisingly, in these same data we find that the lowest producers in terms of wRVUs are also the lowest earners (Table 4).

In the second box of Table 4, where we sort by Total Compensation (the independent variable), the top earners are

also the highest in terms of compensation per wRVU. However, this correlation is not nearly as strong as with the comparison above. Further, you can see that the correlation between being in the top earning quartile and top production in terms of wRVUs is very strong.

It is safe to conclude with cardiovascular physicians that high (as compared to peers) productivity leads to high compensation, but that high compensation does not also mean high compensation per wRVU.

Conclusion

The compensation per wRVU is a **calculated rate** (total compensation/wRVU production), whereas both wRVUs and total compensation are reported. Further, myriad circumstances—including clinical role, internal distribution method contract terms, etc.—impact the resulting individual physician compensation per wRVU. It is extremely important for all these variables to be considered—both by administrators and physicians—when using this singular point from survey data to guide physician compensation.

TABLE 4 – Median Values by Quartiles

©MedAxiom

QUARTILE	wRVUs	TOTAL COMP	COMP/ wRVU
Q4	15,130	\$726,023	\$47.91
Q3	11,040	\$594,645	\$53.33
Q3	8,647	\$528,197	\$61.39
Q1	5,385	\$350,000	\$67.49
QUARTILE	TOTAL COMP	COMP/ wRVU	wRVUs
Q4	\$795,257	\$60.42	13,507
Q3	\$614,963	\$58.70	10,408
Q2	\$492,099	\$54.25	8,931
Q1	\$300,000	\$47.45	6,097
QUARTILE	COMP/ wRVU	TOTAL COMP	wRVUs
Q4	\$79.39	\$599,974	7,311
Q3	\$61.01	\$587,090	9,706
Q2	\$50.99	\$565,585	11,147
Q1	\$36.91	\$426,105	12,107

Independent variable shaded in ■
 (Q4 = top 25%, Q3 = 51-75%, Q2 = 26-50%, Q1 = bottom 25%)

4. Survey Results - Cardiology

Compensation

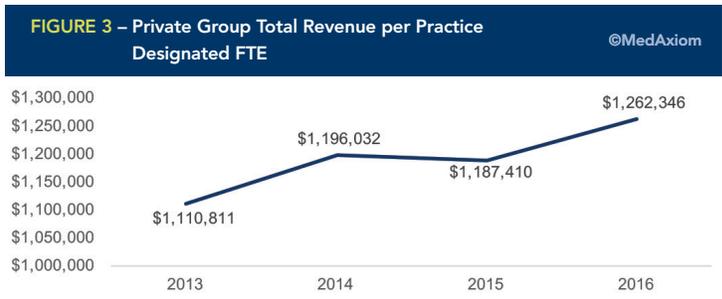
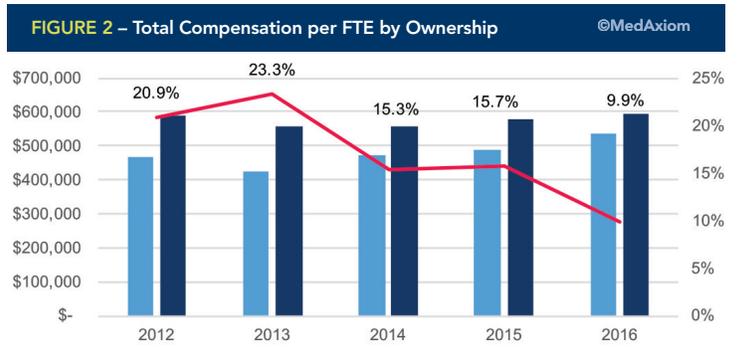
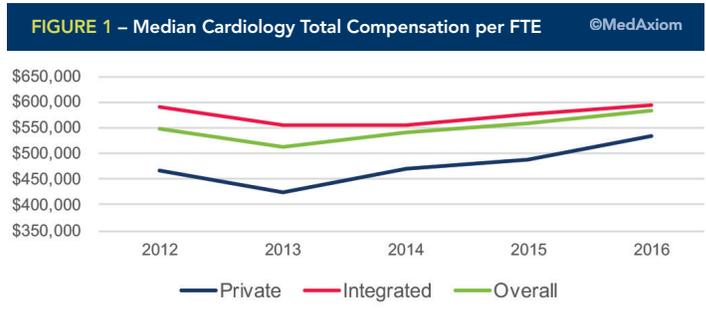
Despite what many in the industry were expecting, overall cardiology compensation continued to increase in 2016.

Figure 1 shows the median compensation for cardiologists overall, along with a breakdown between those in private groups and those integrated (via employment or other vehicle) with a hospital or health system. For the third straight year median compensation has risen in both ownership cohorts. Mathematically then, this is the third straight year for overall cardiology compensation expansion as well.

Perhaps the biggest story of 2017 is that overall compensation for private cardiologists is increasing faster than that of their integrated counterparts. In fact, the differential in compensation between private and integrated physicians is at its lowest point in the past 5 years (**Figure 2**), now having less than 10 percent separation. The differential reached its apex in 2013 when integrated cardiologists out-earned private physicians (median to median) by nearly \$130,000 per year, or just over 23 percent. By 2016 this dollar spread dropped by half to just under \$60,000 in median total compensation difference.

It appears that the private cohort has been able to close this gap so significantly due, in large part, to their ability to generate more revenue per physician than in past years.

Figure 3 shows the four-year trend of total revenue per designated private physician. Remarkably, the median amount of revenue per FTE physician in 2016 is over \$150,000 higher than it was in 2013. Not coincidentally, the differential in overall compensation for private physicians in 2016 is nearly \$110,000 more per FTE than in 2013, demonstrating that some of this new revenue is consumed by overhead, but the majority is falling straight to the bottom line. Given the apparent low overhead nature of this revenue, it is likely that at least some of this new money comes from hospital incentive programs (such as co-management). This will be explored in more detail in the Non-Clinical Compensation section of this survey.



...overall compensation for private cardiologists is increasing faster than that of their integrated counterparts.

Turning now to the subspecialty breakdown, we find that the positive trend in overall compensation was enjoyed by all cardiologists in 2016 (Figure 4). Electrophysiologists (EP) have grabbed the top earnings spot – albeit barely – from interventional physicians coming in at \$607,336 and \$606,681 per FTE respectively. General non-invasive cardiologists earn the least at \$531,204 per FTE, but enjoyed the largest increase from 2015, seeing an 8 percent jump in median compensation.

Table 1 shows the breakdown of subspecialty mix within the survey data set and how those ratios have changed over time. What is worth noting is the decline in invasive physician prevalence in cardiology groups; at one time these physicians represented a quarter of the total cardiology population and now are below 20 percent. The reason behind this decline is primarily due to: 1) Senior physicians who discontinue cath lab activities to prolong their careers, but continue to practice within other areas of cardiology; and 2) Role-based provider deployment strategies to improve overall workforce efficiencies. This latter trend favors interventional physicians in the cath lab who can perform not only the diagnostic study, but any necessary interventions; nearly half of catheterizations now include a percutaneous coronary intervention (PCI) shown in Figure 32 in Key Cardiology Volumes & Ratios.

Keeping its eyes on industry trends, MedAxiom added a new Heart Failure specialty designation in 2016 (for the 2017 survey). Our sample size was too low for publishing data this year, but we expect responses to climb next year and beyond given the emphasis on this difficult patient population in CV programs across the country. In the current survey, heart

failure physicians are included within the “General Non-Invasive” subspecialty designation.

The Northeast region has emerged as the top earning geography with median compensation of \$606,681 per FTE (Figure 5). This is up nearly \$100,000 per FTE from 2012, when the Northeast was the second lowest region in terms of total compensation. With the 2017 survey, the West region holds the dubious distinction as the lowest paid geography for the 5th straight year (Table 2).

FIGURE 4 – Median Total Compensation per FTE by Subspecialty ©MedAxiom

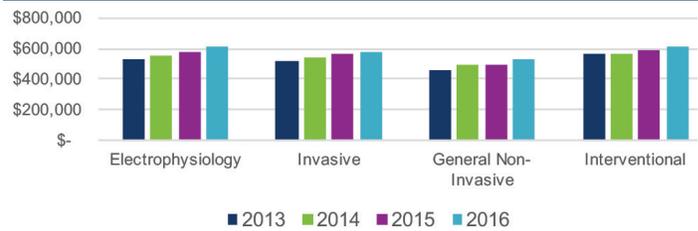


FIGURE 5 – Median Total Comp per FTE by Region ©MedAxiom

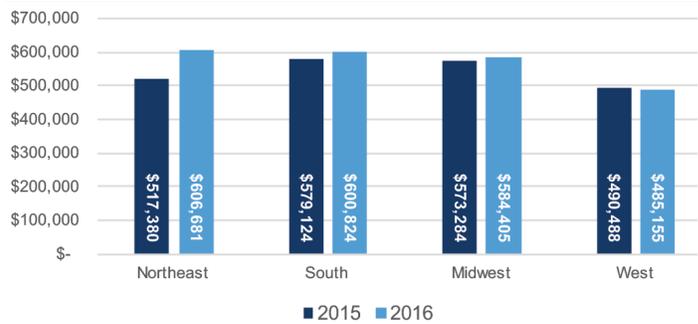


TABLE 1 – Percentage Breakdown by Subspecialty Type ©MedAxiom

	2012	2013	2014	2015	2016
Electrophysiology	14%	14%	14%	15%	15%
Invasive	25%	23%	19%	17%	19%
General Non-Invasive	24%	28%	27%	28%	26%
Interventional	38%	35%	41%	41%	41%

TABLE 2 – Total Cardiology Compensation per FTE ©MedAxiom

	2012	2013	2014	2015	2016
Northeast	\$511,746	\$464,326	\$542,000	\$517,380	\$606,681
South	\$550,000	\$528,010	\$556,819	\$579,124	\$600,824
Midwest	\$593,670	\$565,720	\$546,466	\$573,284	\$584,405
West	\$461,657	\$477,825	\$451,816	\$490,488	\$485,155

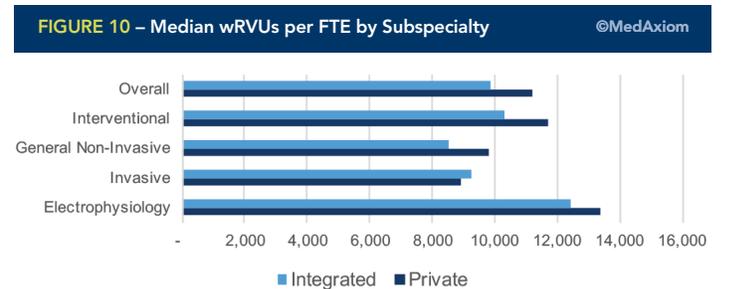
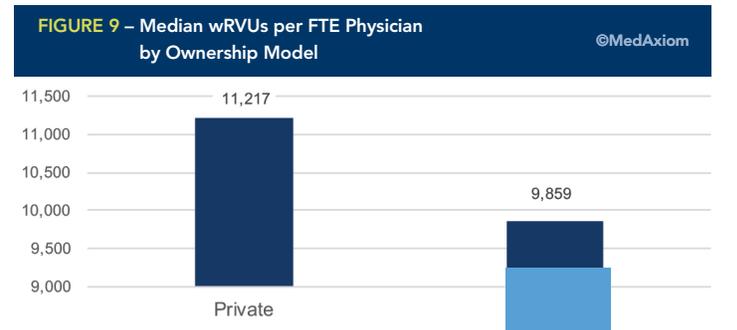
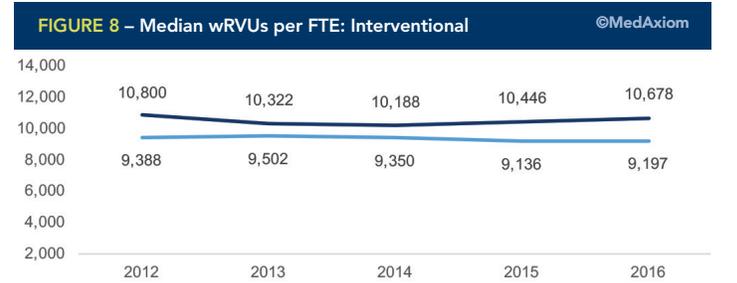
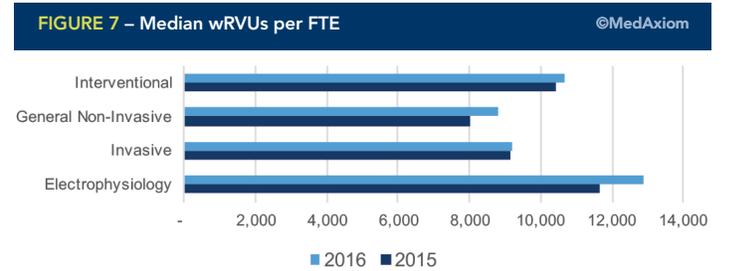
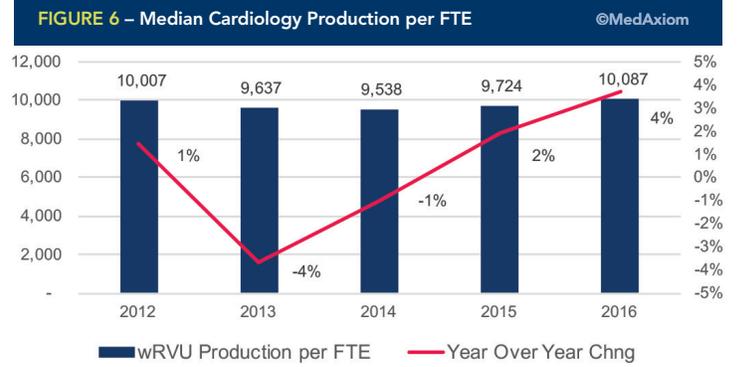
Production

Overall cardiology production has remained very constant over the past five years as is illustrated in [Figure 6](#). This despite the near constant tinkering with the individual CPT values by the Centers for Medicare & Medicaid Services (CMS). For several years now there has been the prediction by CV leaders that cardiology wRVU production will decline in the burgeoning value economy. As these data show, the anticipated wane has not started yet.

EP continues to be the leader in terms of wRVUs among the subspecialties with median production of 12,902 per FTE ([Figure 7](#)). In addition, EP saw the largest year-over-year increase in wRVU production, jumping over 10 percent from 2015 to 2016. General non-invasive doctors had a similar spike in production in 2016, but continue to be the lowest wRVU producing subspecialty at a median of 8,826 wRVUs per FTE.

By contrast, both invasive and interventional production have been very flat over the last five years ([Figure 8](#)). It will be interesting to watch over time the impact of the advanced heart failure physician population on production within cardiology, particularly as that population is pulled out of the current general non-invasive category.

As in years past, cardiologists in the private group setting outproduced those in integrated models, with 2016 data reporting a differential of nearly 14 percent ([Figure 9](#)). Breaking these numbers down further into the subspecialty categories, except for the invasive cohort this production advantage for private physicians holds true ([Figure 10](#)). General Non-Invasive physicians in private groups outproduce their integrated colleagues by nearly 15 percent, the largest differential within the subspecialties.



What is of note when comparing private and integrated groups is the subspecialty makeup of each (Figure 11a & 11b). Private groups have a significantly larger interventional ratio of their overall physician workforce, with nearly half (47%) of the average private group falling into this category. This compares to 38 percent for the median integrated practice. Private groups then tend to have fewer invasive and general non-invasive physicians as a percent of total than groups in an integrated model. Given that these latter two subspecialties are at the lower end of the production pyramid and interventional physicians are nearly at the top, these ratio differences go a long way to explain the production differential overall between private and integrated practices.

The South region remains the top producer in terms of wRVUs (Table 3) followed by the Midwest. When looking at demographics more closely, the South as a region tends to be understaffed from a physician perspective and has population characteristics that skew toward cardiovascular disease, which explain in part the higher cardiology production. It is most likely these factors—not the ownership model—that explain the South’s greater production, given that the South tends to be as integrated as the country overall (Figure 12).

Integration of Cardiology

After nearly a decade of advancement, the ratio of integrated groups to the total has stalled (Figure 13). MedAxiom considers “integrated” to be those physicians who are either employed or in a contractual relationship covering the entire practice (such as a professional services agreement or PSA) with a hospital or health system. The curve on this trend slowed in recent years, so this leveling off is not unexpected. Whether we actually see a reversal in this ratio—in other words, integrated physicians moving back into private groups—remains to be seen. There have been a few very rare instances where this has happened, but nothing significant enough to call a trend.

As was shown earlier, private physicians have been able to find new sources of revenue to bolster income, closing the gap with integrated doctors to just 10 percent. Coupled with the transition of so many previously inpatient CV procedures to the outpatient—and even office—environment, it is not beyond comprehension to consider a wave of cardiologists going back into private groups. This said, the daunting start-up investment such an exit would require, along with the fact that many contractual relationships include restrictive covenants, create significant hurdles to a large-scale exodus.

FIGURE 11a – Subspecialty Composition: Private Groups

©MedAxiom

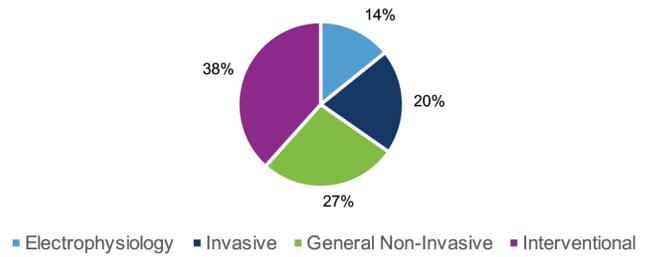


FIGURE 11b – Subspecialty Composition: Integrated Groups

©MedAxiom

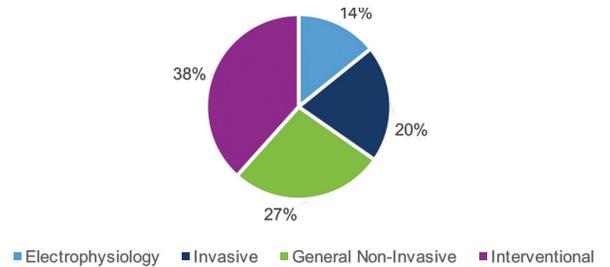


TABLE 3 – Total wRVUs per FTE Cardiologist

©MedAxiom

	2015	2016
Northeast	8,195	9,288
South	10,679	11,211
Midwest	9,198	9,655
West	8,580	8,831

FIGURE 12 – Cardiologists Integrated with a Hospital or Health System

©MedAxiom

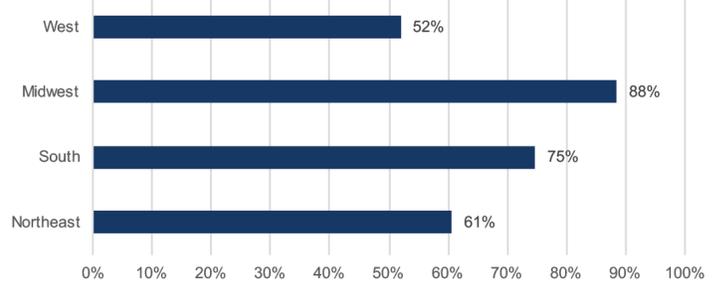
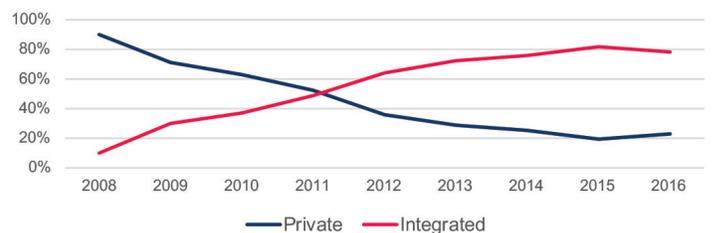


FIGURE 13 – Private vs Integrated Ownership Ratio

©MedAxiom



It is also interesting to see the penetration of integrated cardiologists based on geography. Figure 13 shows that the Midwest has the greatest percentage of integration (88%) with the West having the least (52%). Somewhat paradoxically, the West is also the lowest producing region in terms of wRVUs, even though overall private groups significantly outproduce their integrated counterparts.

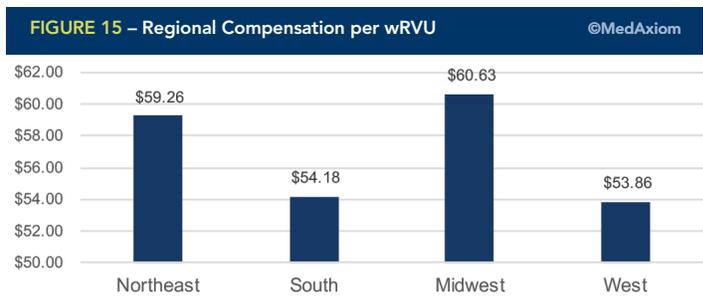
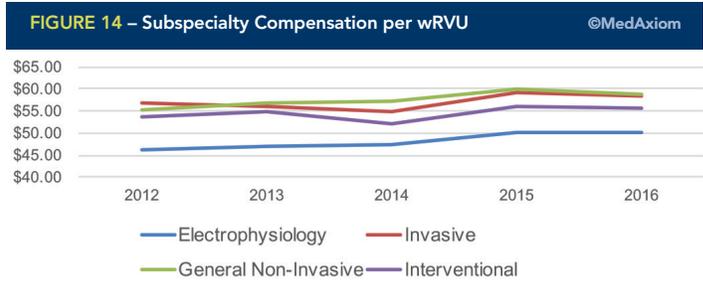
Compensation per wRVU

Like compensation overall, Figure 14 shows that compensation per wRVU is also trending up—although it may have plateaued with the 2017 survey (based on 2016 data). Table 4 shows the subspecialty breakdown along with the overall results; calculated compensation per wRVU gave back 1.4 percent in 2016 as compared to 2015 (\$55.77 vs \$56.55).

The highest subspecialty earners in compensation per wRVU are general non-invasive physicians (\$58.88 per wRVU). These physicians, as was shown earlier, are also the lowest producing subspecialty in terms of wRVUs. As stated in the article, “A Detailed Review of Compensation per wRVU,” these data would suggest that other factors are at play beyond non-invasive physicians being paid the highest rate per wRVU.

EP is the lowest earner in terms of compensation per wRVU at \$50.34. This is in contrast to EP being both the top earner in total compensation and the top producer in wRVUs. Again, individual distribution methodologies and non-clinical compensation (medical directorships, hospital incentives), as articulated previously, are impacting this calculated number.

The South and West regions earn significantly less per wRVU as a factor of total compensation divided by wRVUs than the other two regions Figure 15. In the case of the South, this is due in



part to this region being the top producer of wRVUs (11,211 per FTE), which has been shown to have an inverse relationship with compensation per wRVU. This calculated rate is more perplexing with the West region, which is both the lowest wRVU producing region (8,831 per FTE) and the lowest total earner (\$485,155 per FTE). What is perhaps striking about the West, as was shown back in Figure 13, is that this region hosts the largest concentration of private cardiology groups at nearly half the total. This is likely the largest driver of the low calculated compensation per wRVU, given the lower overall earnings of private groups (see Figure 1).

	2012	2013	2014	2015	2016
Electrophysiology	\$46.32	\$47.00	\$47.60	\$50.20	\$50.34
Invasive	\$56.81	\$56.00	\$55.06	\$59.14	\$58.58
General Non-Invasive	\$55.16	\$57.00	\$57.11	\$59.92	\$58.88
Interventional	\$53.76	\$55.00	\$52.30	\$55.86	\$55.70
Overall	\$53.96	\$54.00	\$53.47	\$56.55	\$55.77

The Role of Part-Time Physicians in the Cardiology Workforce

Something else interesting that emerged from this year’s data is the declining presence of part-time physicians (cardiologists). **Figure 16** shows that percentage dropping each year over the past five from 13 percent to now just 7 percent. There are undoubtedly many factors that influence this, but based on the voices of the MedAxiom community through our meetings, listservs and consulting engagements, it is becoming more and more difficult for groups to absorb part-time physicians.

Part of that challenge lies in the data shown in **Figure 17**. Production drops precipitously once a physician moves to a part-time status. This may be quite intuitive and we have to consider that not all part-time is the same; some may be considered part-time while working just below a full-time status, while others could be at the other end of the work spectrum. Regardless, a 40 percent decline in production may be challenging to absorb depending on group size.

Another aspect of a physician slowing down is call participation and, within the cardiology community, call is a very significant burden, particularly for interventional coverage. Drilling into these data we see that both production and compensation are significantly impacted by both work status and call participation. **Table 5** provides a detailed breakdown.

What is attention-grabbing to see, and does highlight the challenge of physician slow-down, is the status labeled “Part-Time, Partial-Call.” This category of physician produces 51 percent of the wRVUs compared to a “Full-Time, Full-Call” cardiologist, yet is compensated at 60 percent that full-time level. In both a private group setting and an integrated pooled model, this differential must be absorbed by the remaining doctors. Herein lies the tension.

An additional driver of this workforce challenge is age. As shown in **Figure 18**, one in five cardiologists is over the age of 60, so more and more are reaching an age where slow-down is inevitable. Nearly half (45 percent) of all cardiologists are age 56 or greater.

For any cardiologist age 60+, but particularly for those who have worked in cath labs their entire careers, the ravages of wearing lead (and radiation) and STEMI call are legitimate reasons to request a reduced burden. Looking specifically at the interventional population (**Figure 19**), we see that this cohort is older than the overall cardiology population with nearly one in four having achieved age 61 or older. EP physicians, who also perform a high level of lab work, are the youngest cohort, with just 4 percent being age 61 and older.

FIGURE 16 – Percentage of Part-Time Cardiologists ©MedAxiom

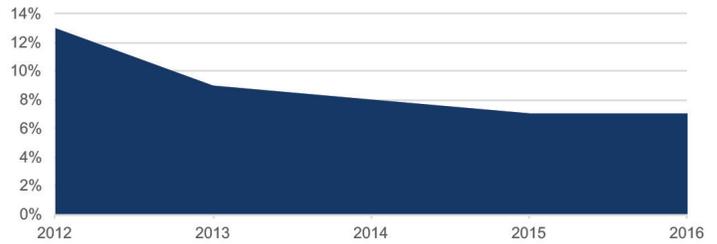


FIGURE 17 – Compensation per FTE: Full-Time vs. Part-Time ©MedAxiom

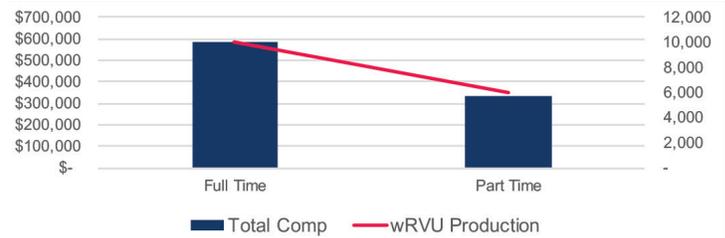


TABLE 5 – Comp and Production Difference by Work Status ©MedAxiom

	TOTAL COMP PER FTE	wRVU PER FTE
Full Time, Full Call	\$602,671	10,279
Part Time, Full Call	\$506,650	9,117
Full Time, Partial Call	\$604,602	10,591
Part Time, Partial Call	\$364,000	5,278
Full Time, No Call	\$326,963	5,689
Part Time, No Call	\$175,000	3,378

FIGURE 18 – Cardiologist Age Distribution ©MedAxiom

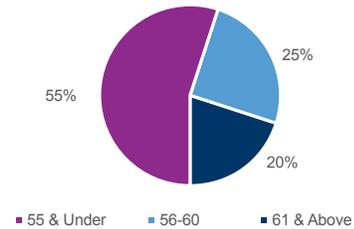
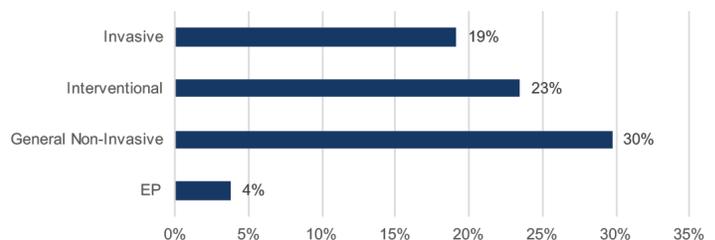


FIGURE 19 – Percentage of Cardiologists Age 61 & Over ©MedAxiom



Somewhat alarming is the fact that a full 30 percent of general non-invasive physicians are age 61 and older (Figure 19). This would suggest that there is a significant shortage of this subspecialty looming in the next 5-10 years. Some of this older-skewed distribution may be impacted by interventional or invasive cardiologists who, toward the end of their careers, come out of the labs and are therefore reclassified as general non-invasive. How much of the 30 percent fits this description is impossible to tell. Regardless, these physicians are in the workforce today and that work will presumably need to be replaced or absorbed as they leave practice. The question then becomes, will there be the capacity—through new or existing resources—to get the job done?

Table 6 provides a detailed breakdown of the cardiology workforce by age.

TABLE 6 – Cardiology Age Distribution

©MedAxiom

BREAKDOWN	
Age 35 & Under	4%
Age 36 - 40	11%
Age 41 - 45	13%
Age 46 - 50	12%
Age 51 - 55	15%
Age 56 -60	25%
Age 61 - 65	12%
Age 66 - 70	6%
Age 71 & Up	3%
Total	100%*

*Does not equal 100 because of rounding

Impact of Gender in Cardiology

Female physicians now account for nearly 10 percent of the total cardiology workforce (Figure 20). As shown in Figure 21, these providers tend to be full-time less frequently than their male counterparts (85% vs 94% respectively) and take a full-call rotation less frequently (75% vs 84%).

Gender also appears to play a role in subspecialty choice (Figure 22), with female cardiologists choosing general non-invasive at more than twice the rate of male physicians. Male physicians are more than three times as likely as their female counterparts to be interventional. Last, the ratio of female physicians who choose EP as a subspecialty is half that as male physicians.

When comparing gender differences in compensation and wRVU production, filtering to include just full-time and full-call physicians, we find that male physicians outearn and outproduce female physicians (Figure 22) with similar ratios.

FIGURE 20 – Cardiologist Gender Distribution

©MedAxiom

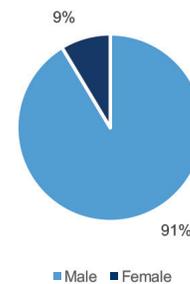


FIGURE 21 – Workforce Status by Gender Distribution

©MedAxiom

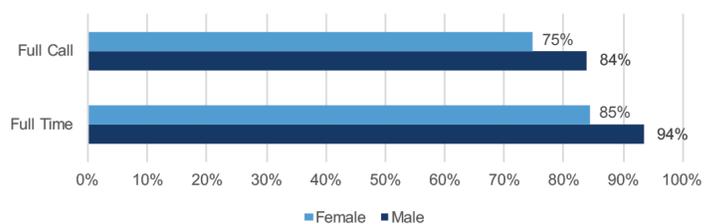
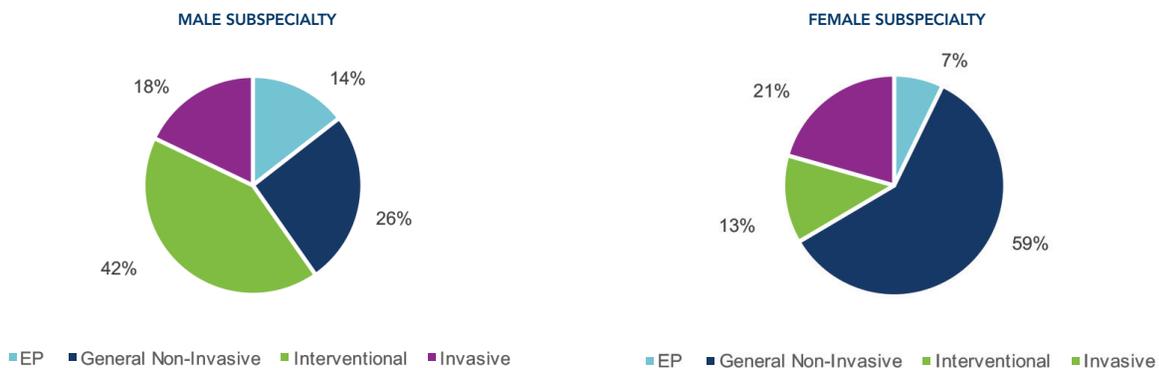


FIGURE 22 – Cardiologist Subspecialty Mix by Gender

©MedAxiom



At least part of the explanation between these deltas are the differences in subspecialty mix. General non-invasive physicians overall, regardless of gender, are the lowest of the cardiology subspecialties in terms of both total compensation and wRVU production.

Both gender cohorts earn the same per wRVU (\$57), which is not surprising given the very strong relationship between total compensation and wRVU production, as was shown in the article, "A Detailed Review of Compensation per wRVU."

Key Cardiology Volumes & Ratios

In cardiology, new patient volumes are often used as a major indicator of practice vibrancy. The theory is that new patient volumes will drive nearly every other indicator in the cardiovascular realm. What we see in **Figure 23** is that this indicator has remained quite flat over the past five years, hovering around 350 new patients per full-time cardiologist per year.

The same illustration shows the active cardiology patients, or panel size¹, per FTE cardiologist. This metric too is relatively stable, although both new patient volumes and panel size did trend up from 2015 to 2016. It is not unexpected to see these two indexes follow in lock step, since one effectively drives the other. **Figure 24** highlights the quartiles for the Patient Panel Size measurement.

MedAxiom believes that panel size is the best indicator of a cardiology practice's patient population and therefore will be used as a denominator for peer comparisons. The historical denominator on these measures has been the physician FTE count. However, the data show that there is tremendous variability from one practice to the next in terms of what is considered a "full-time" (1.0 FTE) physician, both in terms of time off (vacation, etc.) and days worked (e.g., half-days off per week, post call day, etc.). These reasons make panel size a better choice for volume comparisons.

The median cardiology practice performed 1,150 return office visits for each 1,000 patients in its active panel (**Figure 25**). This means that the median cardiology practice saw each active patient just over one time per year (1.15 to be exact) in 2016. This same median cardiology group performed 380 inpatient visits per 1,000 patients, a number that has held very constant over a five-year period.

FIGURE 23 – Panel Size and New Patients per FTE Cardiologists ©MedAxiom

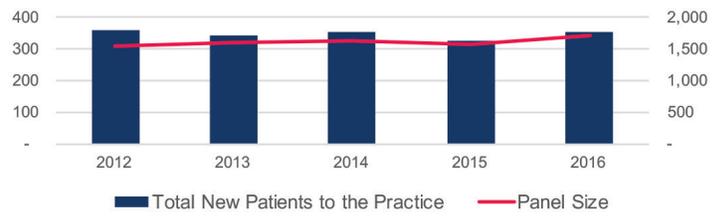


FIGURE 24 – Patient Panel Size per FTE Cardiologist ©MedAxiom

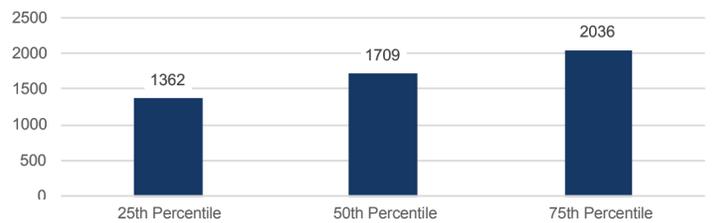
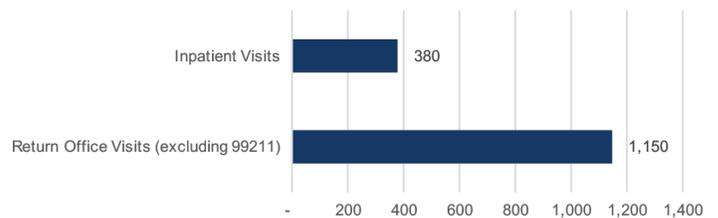


FIGURE 25 – Median Encounters per 1,000 Active Patients ©MedAxiom



¹The number of unique patients seen face-to-face, by a physician or mid-level, either inpatient or outpatient using E&M codes, during the last 18 months (i.e., the calendar year for this survey plus the last six months of the prior calendar year). This is NOT just NEW patients, NOR is it the TOTAL number of patient visits. This is the actual number of patients (e.g., count of patient identifiers, social security numbers seen, etc.).

With the proliferation of value-based reimbursement and with increasing emphasis by insurers on rule-out low-cost testing, there were some in the industry who predicted a rise in the utilization of the standard treadmill test. **Figure 26** shows that, at least within cardiology practices, the volume of these tests has declined over the past five years. Whether the uptick in 2016 is an aberration or a trend remains to be seen.

After years of decline, the median volume of nuclear SPECT per 1,000 patient panel seems to have leveled off (**Figure 27**). Echo and stress echo volumes appear to be on opposite trajectories with echo volumes trending up and stress echo down (**Figure 28**).

Turning now to invasive procedure volumes, we see that the catheterization volumes have remained relatively stable over a five-year period (**Figure 29**). In 2016, interventional physicians performed nearly two and a half more catheterizations than invasive physicians, measured at the median (**Figure 30**). Even within the interventional physician population there is significant volume variability, as shown in **Figure 31** where annual percutaneous coronary intervention (PCI) volumes per physician range from 31 (10th percentile) up to 240 (90th percentile). The median annual PCI volume in 2016 was 117 per interventional physician, well above current societal recommendations.

FIGURE 26 – Median Total Treadmills per 1,000 Active Patients ©MedAxiom

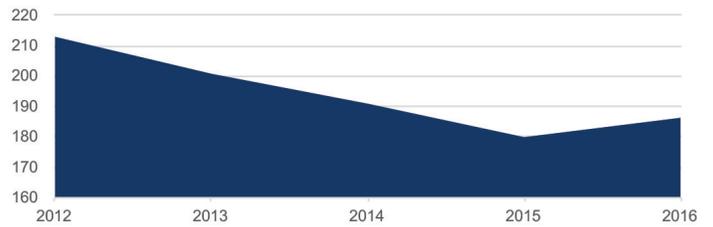


FIGURE 27 – Median Total Nuclear SPECT per 1,000 Active Patients ©MedAxiom

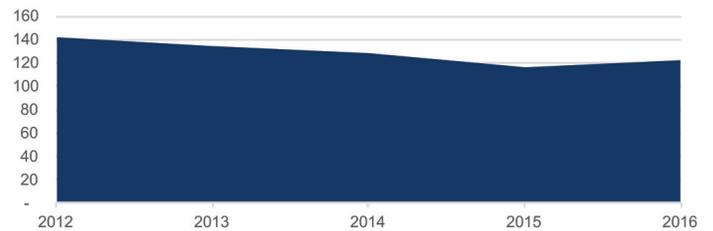


FIGURE 28 – Median Echo & Stress Echo per 1,000 Active Patients ©MedAxiom

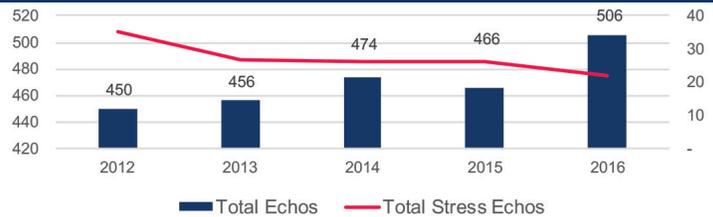


FIGURE 29 – Median Total Caths per 1,000 Active Patients ©MedAxiom

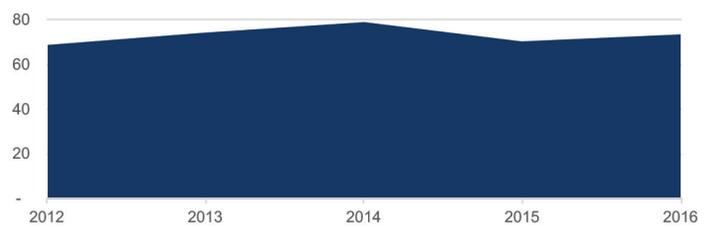
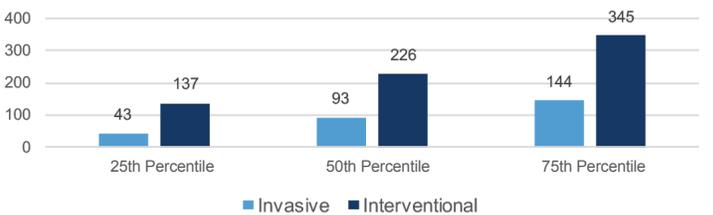


FIGURE 30 – Cath Volumes per FTE Cardiologists ©MedAxiom

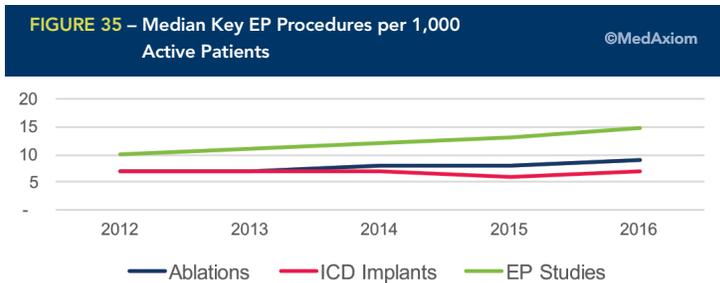
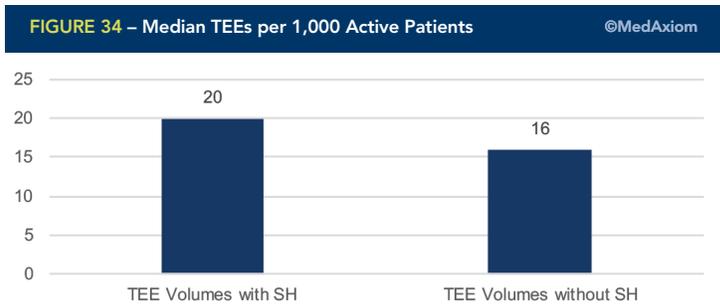
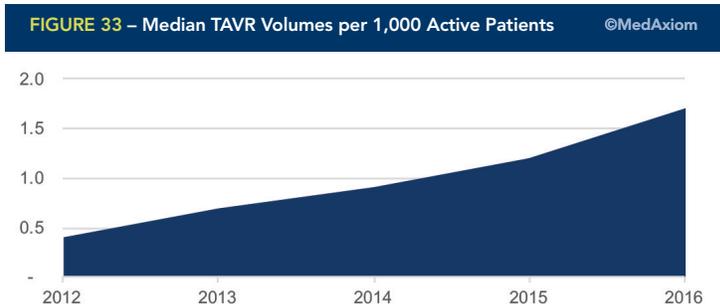
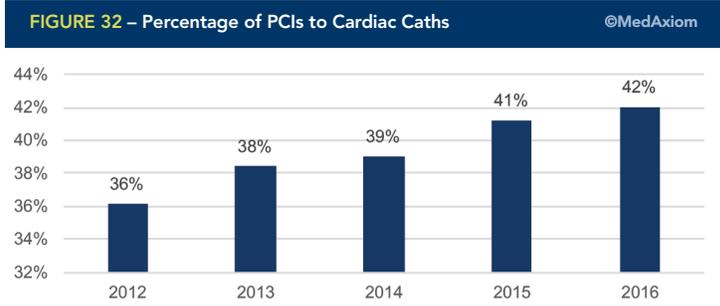
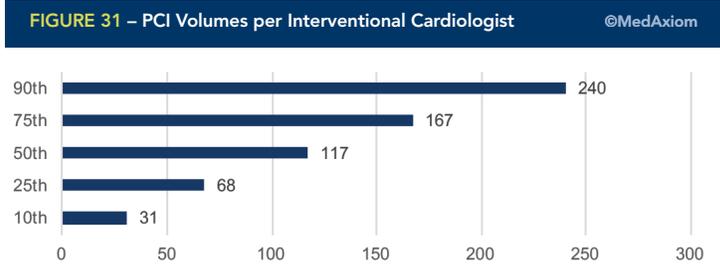


The percentage of catheterization patients who also receive a PCI has been on a steady increase (Figure 32). In 2016 the median total PCI volume was nearly half that of the total catheterization median. There are most likely multiple reasons for this upward trend, but Appropriate Use Criteria, focus on fractional flow reserve (FFR) and current efficacy literature are all playing roles.

A relative newcomer to the interventional arena is transcatheter aortic valve replacement or TAVR. As seen in Figure 33, the median volume per 1,000 cardiology patients for this procedure has increased year over year from less than one TAVR per 2,000 patients to now nearly two procedures per 1,000. The presence of a structural heart program has an impact on other volumes, in particular transesophageal echo (TEE). In Figure 34 we find that programs with structural heart perform 25 percent more TEEs than those without.

Looking at three key EP procedure movements, both ablation volumes and general EP studies are trending upward (Figure 35). By contrast, implantable cardiac defibrillators (ICD) implants remain flat.

Fully detailed tables for cardiology can be found on page 35.



5. Survey Results - Surgery

Compensation

Since MedAxiom began publishing surgical data the total median compensation has been trending upward (Figure 1). Cardiac surgeons outearn vascular surgeons by a margin of just over \$45,000 per FTE per year, or around 7 percent (Figure 2).

Like cardiology, but even to a greater extent at 83 percent (Figure 3), surgeons tend to be in an integrated hospital or health system model. This ownership model makes a significant difference in total compensation with integrated surgeons earning over 30 percent more than their counterparts in private practice (Figure 4). This differential holds up whether a cardiac or vascular surgeon (Table 1), but is much more pronounced for cardiac surgeons where the differential is more than 1.6 times. Private vascular physicians earn nearly as much (96 percent) as their integrated colleagues. This may be due in part to the availability of office-based vascular procedures, vein treatments, laser procedures and the like.

Geography also plays a role in compensation with the Midwest leading the pack at median total compensation of \$607,336 per FTE and the West at the other end of the spectrum at \$461,574 per FTE (Figure 5).

Cardiac surgeons outearn vascular surgeons by a margin of just over \$45,000 per FTE per year...

FIGURE 1 – Median Total Compensation per FTE ©MedAxiom

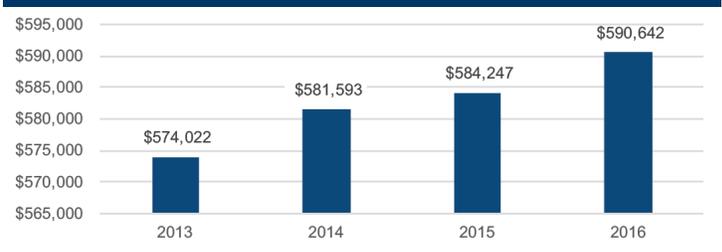


FIGURE 2 – Median Total Compensation per FTE ©MedAxiom

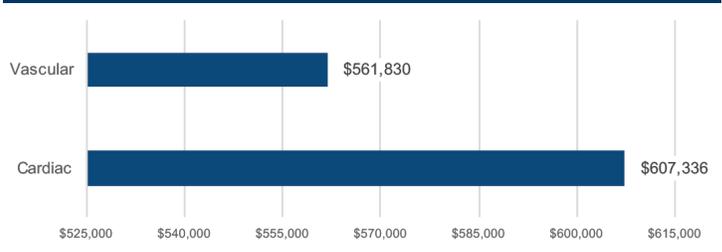


FIGURE 3 – Surgeon Ownership Mix ©MedAxiom

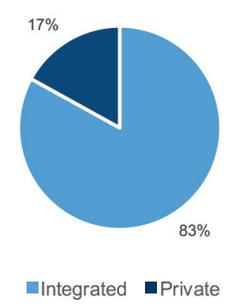


FIGURE 4 – Median Total Compensation per FTE Surgeon ©MedAxiom

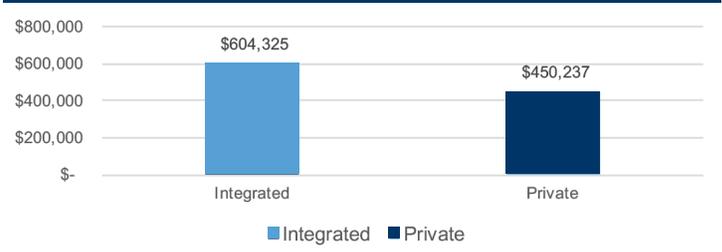


TABLE 1 – Total Compensation per FTE Surgeon ©MedAxiom

	CARDIAC	VASCULAR
Integrated	\$616,377	\$561,830
Private	\$381,279	\$538,155

Production

Overall, vascular and cardiac surgeons produce nearly an equal number of wRVUs per annum, with less than a tenth of a percentage point separation (Figure 6). Both cohorts have been trending downward (Figure 7) over the four years surveyed. For cardiac and vascular surgeons, those in the private group setting out-produce those in an integrated environment by nearly 40 percent overall (Figure 8).

Differences in median production levels by geographic region for surgeons are quite profound. The Midwest is producing median wRVUs of 11,600 per FTE, while surgeons

in the Northeast barely crest 7,000 per FTE (Figure 9). This could be a matter of survey bias, market saturation or countless other factors.

What we do know from the data is that the surgical workforce does not tend to accommodate part-time doctors. In stark contrast to cardiology, where 8 percent of the workforce was reported as part-time, surgeons reported less than 1 percent of its ranks as part-time. It would appear that for the CV surgeon population, work status is binary: either full-time or not working at all.

FIGURE 5 – Total Compensation per FTE Surgeon

©MedAxiom

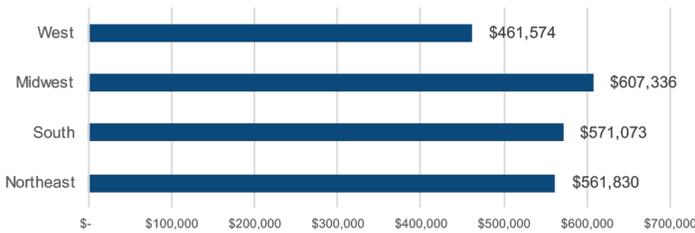


FIGURE 7 – Median wRVUs per FTE Surgeon by Type

©MedAxiom

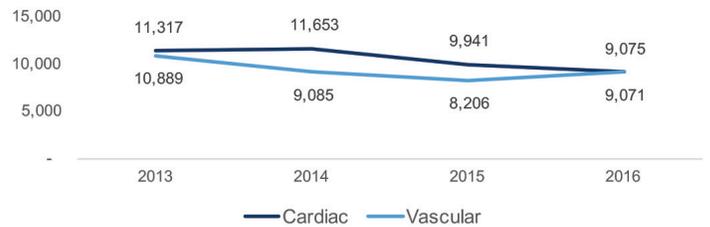


FIGURE 6 – Median wRVUs per FTE Surgeon

©MedAxiom

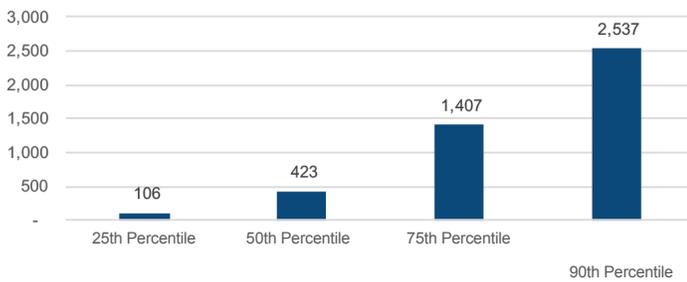


FIGURE 8 – Median wRVUs per FTE Surgeon by Ownership Model

©MedAxiom

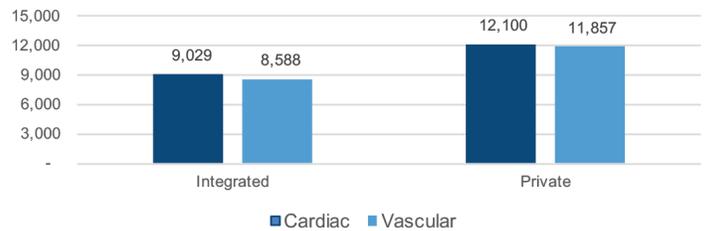
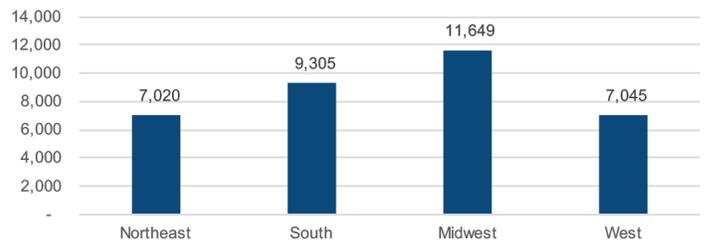


FIGURE 9 – Median wRVUs per FTE Surgeon by Region

©MedAxiom



Compensation per wRVU

Similar to total compensation, surgeons in an integrated model earn significantly more per wRVU than those surgeons in private practice (Figure 10). In fact, the differential in compensation per wRVU (47 percent) is much wider than that for total compensation (25 percent), as highlighted in Figure 11.

The most plausible reason for this is call coverage and the prevalence of low-volume surgical programs. According to the Society for Thoracic Surgeons (STS) registry data, nearly 80 percent of US CABG programs are considered “low volume,” defined as 200 cases or less per year (Table 2) with a large percentage of these having 100 cases or fewer. These 80 percent of programs account for just 54 percent of total CABG volumes. It is extremely burdensome for a single surgeon to cover an open heart program, so there is likely to be a second, even though the volumes alone would not support this second physician. To attract and retain competent surgeons, a low-volume program will have to pay market competitive compensation, while their available production will most likely be low compared to peers. The resulting math is a higher compensation per wRVU.

Looking at the overall compensation per wRVU for the two surgical specialties, we find very tight alignment in the past two years with little movement in any direction (Figure 12).

The complete detailed surgical tables can be found on [page 37](#).

FIGURE 10 – Total Median Compensation per wRVU ©MedAxiom

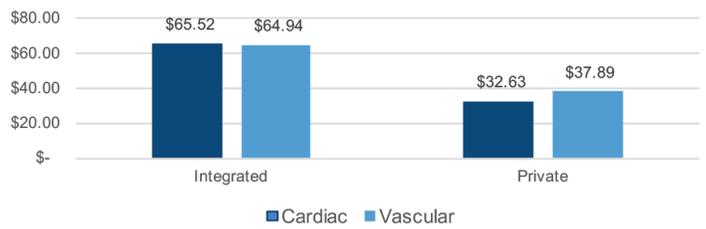


FIGURE 11 – Median Compensation by Ownership ©MedAxiom

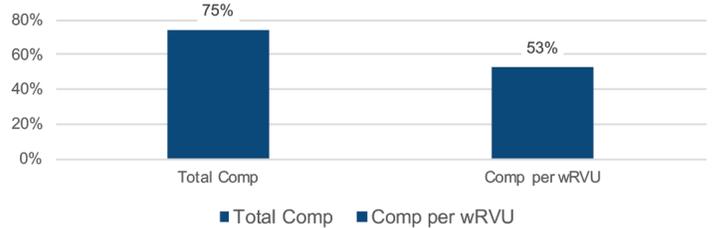


FIGURE 12 – Median Compensation per wRVU ©MedAxiom

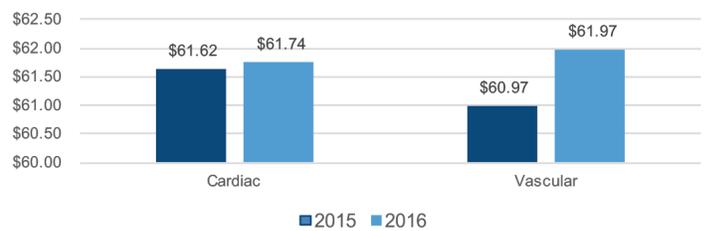


TABLE 2 – STS Registry Data for CABG Volumes ©MedAxiom

©MedAxiom

DEFINITIONS	# OF PROGRAMS	% OF TOTAL	TOTAL CABG VOLUME	% OF TOTAL	ANNUAL PROCEDURES
Low Volume	916	79%	85,478	54%	0 - 199
Medium Volume	204	18%	53,941	34%	200 - 399
High Volume	36	3%	18,730	12%	400
Totals	1,156		158,149		

6. Survey Results - Advanced Practice Providers (APPs)

Role within Cardiovascular

What is noteworthy with APPs is that there is no standard yet in cardiovascular medicine on how to utilize them. **Figure 1** shows the number of APP FTEs per cardiologist and CV surgeon FTE. As this illustrates, the range is tremendous, from nearly no APPs per FTE CV physician to a ratio greater than one-to-one. Based on feedback from the MedAxiom community and consulting work around provider deployment strategies, this variability suggests a significant opportunity for CV practices.

From the physician standpoint, there is good motivation to consider solid utilization of APP resources. In **Figure 2** we see a relatively strong relationship between high ratios of APP FTEs to physicians and total physician compensation—of the 27 reporting groups with the highest APP ratios, 18 also had total compensation above median and 12 above the 75th percentile. These data suggest that APP resources create additional income opportunities that are less or not present when the ratio is lower.

In part driving the higher physician compensation is a relationship—albeit not as strong—between the APP FTE ratio and wRVU production (**Figure 2**). Interestingly, any relationship to APP deployment disappears when looking at both new patients and overall patient panel size, but then reemerges with return office visits. This would suggest that absent the APP resources, patients are not seen as often most likely due to physician access. For those who work in the cardiovascular

world, this would also make intuitive sense. It is not the scope of this survey, but it would be fascinating to see if this expanded access has an impact on readmissions or other quality indicators.

Because of the variability in the penetration of APPs in groups, it is probably worth considering these differences when running peer comparisons. Note in **Table 1** how significant the impact of APP FTEs are on some key cardiology data points. A group could conceivably perform at the median for total new patients per physician FTE, and fall to the 25th percentile when considering all providers. This may identify an opportunity around access or for market building.

FIGURE 1 – APP FTEs per Physician FTE

©MedAxiom

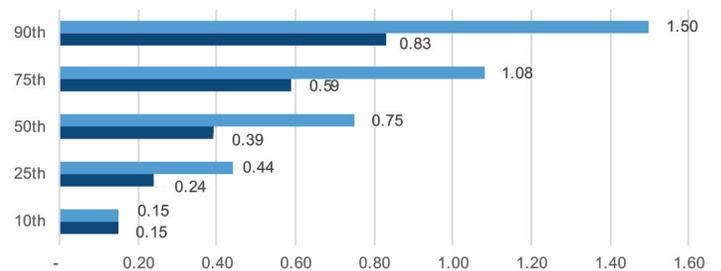


FIGURE 2 – APP FTE Ratio and wRVU Production

©MedAxiom

2-4-0600 TOTAL APP FTEs



3-1-01000 PHYSICIAN ACTUAL COMPENSATION (NO BENEFITS)



3-4-0100 WORK RVUs



1-1-1400 OUTPATIENT - TOTAL NEW PATIENTS TO THE PRACTICE



Compensation

APP compensation in 2017 has remained nearly identical to the amount reported in 2016 (Figure 3), at just under \$100,000 per FTE. The ownership model makes just a slight difference in compensation for APPs, with those in integrated practices earning 3 percent more than those in a private setting (Figure 4).

There are geographic differences in total compensation for APPs, as seen in Figure 5, with the West region paying nearly 10 percent more than any other at \$108,174 per FTE. The Northeast, by contrast, pays the least at \$95,000 per FTE.

Production

Similar to the utilization of APP FTEs, we see widespread variability in APP production of wRVUs (Figure 6). At the 25th percentile, APPs are producing barely 100 annual wRVUs per FTE, whereas at the top decile that number jumps to over 2,500.

It is important to note that these data will show only those wRVUs that were billed under an APPs' provider number. If, for instance, an APP conducted an incident-to office visit with a physician, the associated wRVUs would be credited to the physician and not the APP. It is this billing aspect that in part explains the illustrated variability, although there are many other forces at work. What is clear is that the value of an APP cannot be singularly measured by wRVU production.

When considering geographic differences, it would appear that the West generally uses APPs in a more effective way than the other regions, with median wRVU production of over 1,100 – nearly twice as many as the next closest geographic quadrant (Figure 7). Not surprisingly the West tops production in each of the quartile rankings (Table 2) and produces over 3,000 wRVU per APP FTE at the 90th percentile.

The complete detailed APP tables can be found on [page 39](#).

FIGURE 3 – Median Total Compensation per FTE APP

©MedAxiom

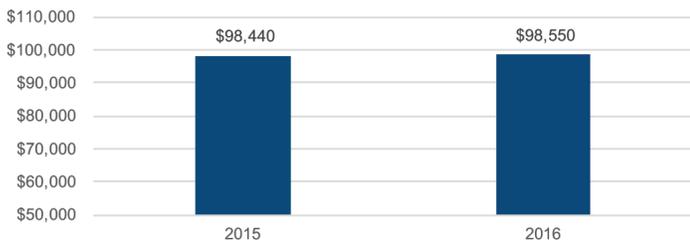


FIGURE 5 – Total Compensation per FTE APP by Region

©MedAxiom



FIGURE 4 – Total Compensation per FTE APP by Ownership Model

©MedAxiom

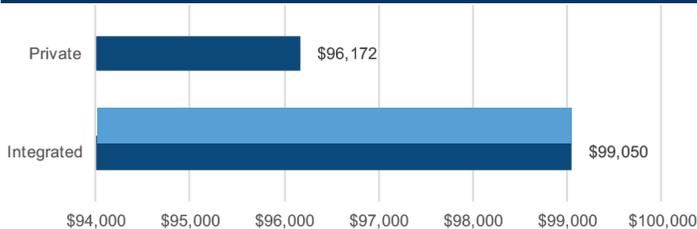


FIGURE 6 – wRVUs per FTE APP

©MedAxiom

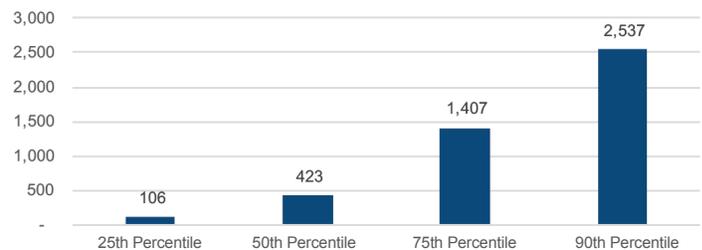


TABLE 1 – Annual Key Indicators

©MedAxiom

	PER PHYSICIAN	PER PHYSICIAN + APPs
wRVUs	10,087	6,653
Total New Patients	564	351
New Patients Office Visits & Consults	1,881	1,150
IP Initial Care & Consults	643	380

FIGURE 7 – Median wRVUs per FTE APP

©MedAxiom

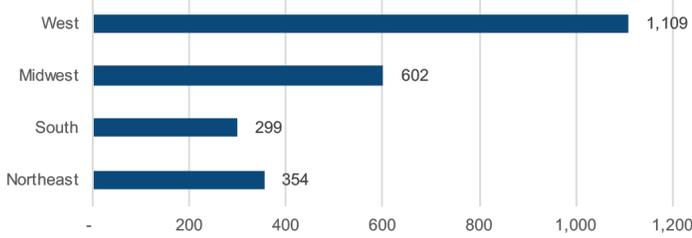


TABLE 2 – wRVUs per FTE APP

©MedAxiom

	25 TH %ile	50 TH %ile	75 TH %ile	90 TH %ile
Northeast	134	354	913	1,552
South	74	299	1,086	2,404
Midwest	130	602	1,666	2,781
West	477	1,109	1,982	3,119

We see a relatively strong relationship between high ratios of APP FTEs to physicians and total physician compensation—of the 27 reporting groups with the highest APP ratios, 18 also had total compensation above median and 12 above the 75th percentile.

7. Survey Results – Non-Clinical Compensation

Medicare and other third party payers are rapidly moving significant portions of reimbursement to be at risk for value performance, where value is defined as better outcomes, lower costs and better patient experiences. In these early years, much of this risk is centered on hospital activities. Because the historical reimbursement paradigm was built exclusively around volume, MedAxiom’s collecting and reporting of peer data focused on volume indicators, such as wRVUs, testing volumes and the like. While these measures are still important, they are no longer exclusively so.

Further, CV physician compensation models in a volume world were pretty straightforward; pay predominantly using volume indicators (wRVUs, cash receipts/net revenue, etc.) and you tended to get the financial performance desired. In the value economy financial performance is much more complex and physician compensation arrangements will need to keep pace. While there are a plethora of data on compensation and volume, there is scant data on value-oriented compensation such as those found in co-management arrangements, gain

sharing and other useful provider economic alignment vehicles. Without these published data to provide standing for legal and fair market approval, innovative models will languish—and ultimately that will be bad for patients.

For these reasons several years ago MedAxiom began collecting non-clinical compensation measures for publication to push the evolution of value within the CV community. **Table 1** shows the percentile results for the 2017 survey while **Table 2** provides trending information. After dipping in 2015, the median Total Non-Clinical Compensation Earned rebounded in 2016 to just under \$48,000 per FTE CV physician. This represents 8 percent of total compensation for the groups that reported, up slightly from 2015. Based on feedback from its membership, MedAxiom predicts that this percentage will continue to inch upward as time goes on.

TABLE 1 – Non-Clinical Compensation per Physician FTE

©MedAxiom

	25 TH %ile	50 TH %ile	75 TH %ile	90 TH %ile
Leadership Positions	\$3,080	\$5,401	\$12,969	\$28,736
Medical Directorships	\$3,200	\$8,877	\$16,713	\$21,344
Call Coverage	\$10,967	\$20,561	\$47,151	\$63,167
Hospital/Health System Incentive Earned	\$14,279	\$23,579	\$47,831	\$65,856
Hospital/Health System Incentive Available	\$33,094	\$37,697	\$64,909	\$75,630
Percent of Available Hosp Incentive Earned	71%	84%	99%	100%
Non-Governmental Payer Incentives Earned	\$965	\$2,353	\$7,647	\$10,711
Non-Governmental Payer Incentives Available	n/a	n/a	n/a	n/a
Total Non-Clinical Compensation Earned	\$29,338	\$47,831	\$83,259	\$106,115
Percent of Non-Clinical Compensation to Total Compensation	4%	8%	14%	20%

TABLE 2 – Non-Clinical Compensation per FTE Physician by Year

©MedAxiom

	2014	2015	2016
Leadership Positions	\$6,667	\$9,632	\$5,401
Medical Directorships	\$11,869	\$8,481	\$8,877
Call Coverage	\$22,853	\$22,856	\$20,561
Hospital/Health System Incentive Earned	\$22,046	\$22,463	\$23,579
Hospital/Health System Incentive Available	\$30,000	\$41,667	\$37,697
Percent of Available Hosp Incentive Earned	80%	88%	84%
Total Non-Clinical Compensation Earned	\$45,457	\$37,685	\$47,831
Percent of Non-Clinical Compensation to Total Compensation	8%	7%	8%

Nearly half of the total non-clinical compensation earned comes from hospital incentives. This demonstrates that hospitals are keenly aware of the need to economically align their physician workforce, regardless of whether those physicians are in private groups or employed. Median hospital incentives available in 2016 for CV physicians were nearly \$40,000 per FTE.

Also of note is the “Percent of Available Hosp Incentive Earned,” which finds the median dropped back in 2016 to 84 percent, down from 88 percent the previous year. A quarter of groups earned 71 percent or less of the available pool. This metric demonstrates the complexity of these incentives and that they are not guaranteed money for the physicians.

Nearly half of the total non-clinical compensation earned comes from hospital incentives. This demonstrates that hospitals are keenly aware of the need to economically align their physician workforce, regardless of whether those physicians are in private groups or employed.

TABLE 1: PHYSICIAN COMPENSATION

3-1-0100 Actual Compensation per Cardiologist	2014										2015										2016									
	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile										
	Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure								
Geographic Breakdown	2,282	\$403,005	\$542,000	\$661,925	\$774,536	2,278	\$415,383	\$557,915	\$671,899	\$835,532	2,044	\$431,223	\$582,636	\$692,641	\$848,759	2,044	\$431,223	\$582,636	\$692,641	\$848,759	2,044	\$431,223	\$582,636	\$692,641	\$848,759					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	589	\$346,132	\$470,160	\$600,000	\$711,082	503	\$318,380	\$486,777	\$624,370	\$766,060	541	\$339,357	\$534,000	\$642,298	\$778,513	541	\$339,357	\$534,000	\$642,298	\$778,513	541	\$339,357	\$534,000	\$642,298	\$778,513					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	85	\$349,262	\$460,621	\$557,162	\$704,867	76	\$382,856	\$498,208	\$604,072	\$767,879	75	\$375,150	\$575,610	\$650,000	\$785,206	75	\$375,150	\$575,610	\$650,000	\$785,206	75	\$375,150	\$575,610	\$650,000	\$785,206					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	81	\$336,568	\$428,378	\$560,330	\$679,723	66	\$294,880	\$467,455	\$587,500	\$773,887	69	\$333,191	\$530,222	\$606,681	\$763,903	69	\$333,191	\$530,222	\$606,681	\$763,903	69	\$333,191	\$530,222	\$606,681	\$763,903					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	126	\$325,509	\$411,667	\$570,479	\$678,458	102	\$268,658	\$413,660	\$544,276	\$674,021	136	\$274,197	\$456,626	\$624,248	\$680,766	136	\$274,197	\$456,626	\$624,248	\$680,766	136	\$274,197	\$456,626	\$624,248	\$680,766					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	297	\$376,661	\$497,840	\$622,910	\$756,181	259	\$339,684	\$510,000	\$660,457	\$834,099	260	\$371,392	\$534,444	\$673,981	\$815,290	260	\$371,392	\$534,444	\$673,981	\$815,290	260	\$371,392	\$534,444	\$673,981	\$815,290					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	1,693	\$433,863	\$555,411	\$672,952	\$796,537	1,775	\$441,984	\$577,756	\$680,948	\$848,751	1,503	\$455,180	\$592,418	\$719,205	\$871,812	1,503	\$455,180	\$592,418	\$719,205	\$871,812	1,503	\$455,180	\$592,418	\$719,205	\$871,812					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	225	\$481,930	\$574,459	\$699,095	\$857,126	256	\$495,961	\$597,353	\$730,979	\$959,412	220	\$502,416	\$619,479	\$788,750	\$1,064,330	220	\$502,416	\$619,479	\$788,750	\$1,064,330	220	\$502,416	\$619,479	\$788,750	\$1,064,330					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	346	\$451,816	\$554,157	\$668,304	\$776,434	322	\$468,243	\$577,756	\$684,800	\$848,550	309	\$461,913	\$579,958	\$729,765	\$832,074	309	\$461,913	\$579,958	\$729,765	\$832,074	309	\$461,913	\$579,958	\$729,765	\$832,074					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	486	\$373,595	\$500,000	\$586,983	\$713,540	525	\$358,408	\$503,353	\$614,441	\$707,252	387	\$376,835	\$541,933	\$628,977	\$758,276	387	\$376,835	\$541,933	\$628,977	\$758,276	387	\$376,835	\$541,933	\$628,977	\$758,276					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	636	\$487,500	\$595,056	\$698,724	\$834,945	672	\$500,000	\$620,288	\$734,758	\$867,271	578	\$500,000	\$617,691	\$741,899	\$880,033	578	\$500,000	\$617,691	\$741,899	\$880,033	578	\$500,000	\$617,691	\$741,899	\$880,033					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	389	\$405,018	\$542,000	\$600,000	\$694,574	289	\$362,947	\$517,380	\$618,072	\$674,270	186	\$520,913	\$606,681	\$631,177	\$691,947	186	\$520,913	\$606,681	\$631,177	\$691,947	186	\$520,913	\$606,681	\$631,177	\$691,947					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	1,182	\$391,102	\$556,819	\$698,211	\$857,642	1,176	\$423,479	\$579,124	\$724,843	\$880,915	1,062	\$431,223	\$600,824	\$744,767	\$916,145	1,062	\$431,223	\$600,824	\$744,767	\$916,145	1,062	\$431,223	\$600,824	\$744,767	\$916,145					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	488	\$455,410	\$546,466	\$615,460	\$746,439	521	\$466,024	\$573,284	\$659,117	\$788,137	479	\$457,692	\$584,405	\$679,780	\$805,002	479	\$457,692	\$584,405	\$679,780	\$805,002	479	\$457,692	\$584,405	\$679,780	\$805,002					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	223	\$379,995	\$451,816	\$574,459	\$676,016	292	\$372,615	\$490,488	\$624,370	\$818,596	317	\$359,163	\$485,155	\$593,489	\$740,375	317	\$359,163	\$485,155	\$593,489	\$740,375	317	\$359,163	\$485,155	\$593,489	\$740,375					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	310	\$429,667	\$554,958	\$670,959	\$839,707	332	\$458,000	\$572,066	\$693,925	\$926,392	295	\$483,132	\$607,336	\$748,474	\$1,019,627	295	\$483,132	\$607,336	\$748,474	\$1,019,627	295	\$483,132	\$607,336	\$748,474	\$1,019,627					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	427	\$424,438	\$542,000	\$653,974	\$750,817	388	\$435,265	\$560,604	\$670,517	\$847,082	378	\$443,321	\$571,010	\$717,476	\$815,980	378	\$443,321	\$571,010	\$717,476	\$815,980	378	\$443,321	\$571,010	\$717,476	\$815,980					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	612	\$361,399	\$489,776	\$586,338	\$695,966	627	\$350,037	\$489,701	\$614,018	\$698,716	523	\$350,733	\$531,204	\$627,949	\$744,871	523	\$350,733	\$531,204	\$627,949	\$744,871	523	\$350,733	\$531,204	\$627,949	\$744,871					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	933	\$431,588	\$563,485	\$693,285	\$821,245	931	\$460,110	\$587,500	\$720,624	\$865,015	838	\$461,012	\$606,681	\$724,751	\$868,999	838	\$461,012	\$606,681	\$724,751	\$868,999	838	\$461,012	\$606,681	\$724,751	\$868,999					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	2,226	\$43,87	\$53,47	\$66,22	\$84,50	2,088	\$47,48	\$56,55	\$67,57	\$83,27	1,965	\$45,84	\$55,77	\$66,59	\$80,02	1,965	\$45,84	\$55,77	\$66,59	\$80,02	1,965	\$45,84	\$55,77	\$66,59	\$80,02					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	576	\$34,53	\$42,63	\$51,98	\$69,29	480	\$35,80	\$44,88	\$62,85	\$83,11	534	\$33,72	\$42,81	\$57,76	\$75,95	534	\$33,72	\$42,81	\$57,76	\$75,95	534	\$33,72	\$42,81	\$57,76	\$75,95					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	85	\$30,47	\$36,89	\$45,93	\$51,77	70	\$33,11	\$38,53	\$50,67	\$64,04	75	\$30,38	\$38,14	\$50,34	\$69,97	75	\$30,38	\$38,14	\$50,34	\$69,97	75	\$30,38	\$38,14	\$50,34	\$69,97					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	77	\$36,61	\$47,94	\$64,98	\$109,72	65	\$44,52	\$60,88	\$93,55	\$114,57	68	\$37,80	\$48,22	\$66,02	\$93,81	68	\$37,80	\$48,22	\$66,02	\$93,81	68	\$37,80	\$48,22	\$66,02	\$93,81					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure									
Geographic Breakdown	124	\$33,63	\$42,20	\$50,89	\$69,29	95	\$32,79	\$40,18	\$58,65	\$82,82	134	\$30,65	\$43,11	\$57,64	\$78,71	134	\$30,65	\$43,11	\$57,64	\$78,71	134	\$30,65	\$43,11	\$57,64	\$78,71					
Ownership Model	Private	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Integrated	Electrophysiology	Invasive	General Non-Invasive	Interventional	Advanced Heart Failure	Northeast	South	Midwest	West	Electrophysiology	In												

TABLE 2: PHYSICIAN PRODUCTIVITY

	2014					2015					2016				
	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile
3-4-0100 Work RVUs per Cardiologist	2,403	6,965	9,538	12,283	15,602	2,250	7,048	9,724	12,402	15,442	2,059	7,512	10,087	\$13,141	16,657
Ownership Model															
Private	577	8,280	10,438	13,359	16,943	532	7,298	10,494	13,739	17,225	561	7,774	11,217	\$14,964	17,724
Electrophysiology	85	9,481	12,135	15,361	18,678	77	9,957	12,366	15,567	21,184	80	9,615	13,374	\$17,143	19,906
Invasive	78	6,092	8,915	11,084	14,890	72	4,475	7,360	9,540	11,670	77	6,349	8,937	\$13,087	16,137
General Non-Invasive	124	7,734	9,562	12,418	15,253	116	6,367	10,003	13,041	15,434	138	7,196	9,795	\$13,517	15,400
Interventional	290	8,766	10,936	13,779	17,536	267	7,963	10,971	14,624	17,667	265	8,141	11,726	\$15,277	18,789
Advanced Heart Failure											1	10,762	10,762	\$10,762	10,762
Integrated	1,826	6,701	9,210	11,935	15,003	1,718	6,997	9,498	11,964	14,848	1,498	7,417	9,859	\$12,470	15,941
Electrophysiology	247	8,752	11,482	14,491	17,879	240	9,119	11,535	15,012	18,843	212	9,547	12,420	\$15,981	19,690
Invasive	367	7,335	9,417	11,847	14,367	317	7,329	9,446	11,784	14,295	305	7,355	9,261	\$11,972	14,604
General Non-Invasive	546	5,547	7,488	9,867	12,601	526	5,739	7,793	9,867	12,024	402	6,441	8,548	\$10,672	13,143
Interventional	666	7,412	9,831	12,386	15,364	635	7,886	10,240	12,718	15,255	572	8,209	10,323	\$12,654	15,956
Advanced Heart Failure											7	511	3,073	\$4,235	5,446
Geographic Breakdown															
Northeast	422	6,808	8,731	10,662	12,841	311	6,269	8,195	10,494	12,470	225	7,755	9,288	\$11,575	13,535
South	1,178	7,594	10,586	13,454	17,098	1,140	7,752	10,679	13,533	16,997	1,028	8,086	11,211	\$14,729	18,054
Midwest	562	6,753	9,147	11,404	14,395	475	6,933	9,198	11,306	14,058	472	6,951	9,655	\$11,800	14,137
West	241	5,923	8,276	10,600	13,829	324	6,745	8,580	11,128	14,351	334	6,566	8,831	\$11,530	15,081
Electrophysiology	332	9,107	11,624	14,621	18,127	317	9,498	11,637	15,125	19,750	292	9,560	12,902	\$16,402	19,906
Invasive	445	7,232	9,350	11,764	14,522	389	7,021	9,136	11,441	14,140	382	7,195	9,197	\$12,220	15,047
General Non-Invasive	670	5,702	7,858	10,352	13,127	642	5,797	8,013	10,339	12,700	540	6,528	8,826	\$11,367	13,911
Interventional	956	7,902	10,188	12,878	16,305	902	7,959	10,446	12,954	16,392	837	8,183	10,678	\$13,387	17,100
Advanced Heart Failure											8	511	3,073	\$4,235	10,762

TABLE 1: PHYSICIAN COMPENSATION

	2015					2016				
	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile
3-1-0100 Actual Compensation per Surgeon	188	\$426,167	\$584,247	\$750,000	\$1,010,896	204	\$411,714	\$590,642	\$769,643	\$957,070
Ownership Model										
Private	26	\$235,177	\$402,839	\$551,473	\$795,691	35	\$342,510	\$450,237	\$800,000	\$890,431
Cardiac	16	\$235,656	\$402,839	\$468,534	\$759,090	21	\$342,510	\$381,279	\$700,000	\$869,467
Vascular	10	\$211,629	\$252,000	\$626,274	\$795,691	14	\$370,815	\$538,155	\$802,576	\$1,003,027
Integrated	162	\$461,575	\$611,468	\$759,486	\$1,053,284	169	\$450,008	\$604,325	\$769,643	\$965,476
Cardiac	96	\$544,107	\$647,796	\$802,197	\$1,134,846	102	\$477,910	\$616,377	\$797,165	\$890,431
Vascular	66	\$382,819	\$483,013	\$648,713	\$771,973	67	\$377,061	\$561,830	\$703,852	\$835,643
Geographic Breakdown										
Northeast	18	\$369,637	\$519,018	\$599,784	\$744,826	20	\$542,964	\$561,830	\$595,197	\$735,264
South	83	\$439,062	\$618,056	\$850,000	\$1,189,318	98	\$405,946	\$571,073	\$786,586	\$1,075,160
Midwest	59	\$528,362	\$636,078	\$750,000	\$879,729	50	\$511,854	\$607,336	\$779,250	\$965,476
West	28	\$301,923	\$452,300	\$531,775	\$795,691	36	\$335,598	\$461,574	\$703,198	\$890,431
Overall										
Cardiac	112	\$468,534	\$627,030	\$763,136	\$1,080,037	123	\$445,468	\$607,336	\$797,165	\$994,942
Vascular	76	\$369,637	\$478,079	\$647,301	\$795,257	81	\$377,061	\$561,830	\$703,852	\$837,262
3-1-0400 Individual Surgeon Salaries (no benefits) per Work RVU	155	\$48.74	\$61.62	\$74.86	\$100.40	195	\$48.75	\$61.80	\$81.31	\$124.08
Ownership Model										
Private	26	\$33.52	\$40.72	\$60.55	\$93.87	31	\$30.08	\$34.61	\$46.50	\$62.77
Cardiac	16	\$32.41	\$37.43	\$45.22	\$50.17	18	\$30.08	\$32.63	\$39.63	\$50.34
Vascular	10	\$49	\$61	\$94	\$100	13	\$31	\$38	\$53	\$106
Integrated	129	\$52.46	\$62.80	\$77.31	\$102.62	164	\$53.92	\$65.25	\$82.90	\$129.18
Cardiac	74	\$54.55	\$63.15	\$74.86	\$85.80	97	\$54.48	\$65.52	\$82.90	\$124.08
Vascular	55	\$47.41	\$60.97	\$82.78	\$117.01	67	\$52.99	\$64.94	\$83.23	\$141.16
Geographic Breakdown										
Northeast	18	\$62.29	\$66.88	\$88.92	\$146.91	20	\$65.42	\$83.23	\$129.18	\$241.24
South	70	\$48.89	\$59.71	\$69.58	\$83.19	97	\$49.56	\$61.06	\$76.33	\$107.46
Midwest	39	\$45.55	\$60.26	\$69.66	\$101.52	48	\$48.76	\$60.33	\$76.24	\$118.01
West	28	\$42.72	\$61.79	\$74.13	\$100.35	30	\$35.28	\$50.34	\$75.57	\$104.97
Overall										
Cardiac	90	\$48.74	\$61.62	\$69.66	\$82.54	115	\$48.37	\$61.74	\$80.61	\$119.46
Vascular	65	\$49.03	\$60.97	\$83.19	\$117.01	80	\$48.76	\$61.97	\$82.13	\$129.18

TABLE 2: PHYSICIAN PRODUCTIVITY

	2015					2016				
	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile
3-4-0100 Work RVUs per Surgeon										
Ownership Model										
Private	161	6,612	9,164	13,411	16,970	196	6,407	9,075	13,133	17,077
Cardiac	35	4,405	9,317	14,153	18,678	37	7,340	12,100	16,513	26,471
Vascular	20	5,212	10,045	13,979	18,678	21	7,340	12,100	18,895	24,759
Integrated	15	2,973	7,429	14,153	15,349	16	7,170	11,857	15,608	26,471
Cardiac	126	6,820	9,143	12,746	16,970	159	6,066	8,788	12,494	16,103
Vascular	71	7,043	9,835	14,604	18,960	93	6,657	9,029	13,459	17,077
Geographic Breakdown										
Northeast	55	5,386	8,291	11,061	15,528	66	4,988	8,588	11,768	13,628
South	18	6,034	7,339	8,486	10,164	20	2,329	7,020	8,612	10,609
Midwest	66	6,976	9,941	13,638	18,960	93	6,657	9,305	13,513	19,516
West	45	7,846	10,324	14,414	15,879	53	8,094	11,649	13,985	16,598
Cardiac	32	4,405	7,043	10,598	16,152	30	5,669	7,045	11,857	13,390
Vascular	91	6,976	9,941	14,604	18,960	114	6,660	9,075	13,690	18,620
Overall										
	70	4,405	8,206	11,473	15,349	82	5,669	9,071	12,494	15,887

TABLE 1: APP COMPENSATION

	2016				
	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile
3-1-0500 Actual Compensation per APP	1,210	\$73,343	\$98,550	\$115,000	\$135,000
Ownership Model					
Private	257	\$63,889	\$96,172	\$114,497	\$132,418
Integrated	696	\$72,703	\$91,375	\$103,475	\$118,450
Geographic Breakdown					
Northeast	114	\$59,564	\$95,000	\$111,351	\$148,289
South	681	\$70,671	\$97,000	\$111,974	\$133,280
Midwest	270	\$80,398	\$99,112	\$117,541	\$135,000
West	1,145	\$93,500	\$108,174	\$123,000	\$145,000

TABLE 2: APP PRODUCTIVITY

	2016				
	N	25 th %ile	50 th %ile	75 th %ile	90 th %ile
3-4-0100 Work RVUs per APP	1,038	106	423	1,407	2,537
Ownership Model					
Private	191	142	820	1,802	2,805
Integrated	847	100	380	1,254	2,387
Geographic Breakdown					
Northeast	125	134	354	913	1,552
South	545	74	299	1,086	2,404
Midwest	250	130	602	1,666	2,781
West	118	477	1,109	1,982	3,119

Non-Clinical Compensation per FTE		25 th %ile	50 th %ile	75 th %ile	90 th %ile
Leadership Positions		\$3,080	\$5,401	\$12,969	\$28,736
Medical Directorships		\$3,200	\$8,877	\$16,713	\$21,344
Call Coverage		\$10,967	\$20,561	\$47,151	\$63,167
Hospital/Health System Incentive Earned		\$14,279	\$23,579	\$47,831	\$65,856
Hospital/Health System Incentive Available		\$33,094	\$37,697	\$64,909	\$75,630
Percent of Available Hosp Incentive Earned		71%	84%	99%	100%
Non-Governmental Payor Incentives Earned		\$965	\$2,353	\$7,647	\$10,711
Non-Governmental Payor Incentives Available		n/a	n/a	n/a	n/a
Total Non-Clinical Compensation Earned		\$29,338	\$47,831	\$83,259	\$106,115
Percent of Non-Clinical Compensation to Total Compensation		4%	8%	14%	20%
Non-Clinical Compensation per FTE by Year		2014	2015	2016	
Leadership Positions		\$6,667	\$9,632	\$5,401	
Medical Directorships		\$11,869	\$8,481	\$8,877	
Call Coverage		\$22,853	\$22,856	\$20,561	
Hospital/Health System Incentive Earned		\$22,046	\$22,463	\$23,579	
Hospital/Health System Incentive Available		\$30,000	\$41,667	\$37,697	
Percent of Available Hosp Incentive Earned		80%	88%	84%	
Total Non-Clinical Compensation Earned		\$45,457	\$37,685	\$47,831	
Percent of Non-Clinical Compensation to Total Compensation		8%	7%	8%	



Joel Sauer
VICE PRESIDENT
MEDAXIOM CONSULTING

Joel Sauer is a recognized expert in cardiovascular compensation design and author of MedAxiom’s annual Cardiovascular Provider Compensation & Production Survey Report.

For over 14 years, Joel was Chief Executive Officer of a large Midwestern multi-specialty physician group that included 23 cardiologists. While there he led the acquisition of the practice by a major health system and became CEO of the physician enterprise, which included over 250 providers and 700 employees in nearly every medical specialty.

Since 2010, Joel has been consulting around the country in the area of value-oriented physician/hospital partnerships preparing health organizations for the value economy. His work includes vision and strategy setting, creating and implementing effective governance and leadership structures, co-management development, joint venture and other innovative partnerships, and provider compensation plan design.

Joel has a wealth of experience in service line development, clinical strategy development, provider workforce planning—including care team creation and physician slow-down policies, MACRA and EPM planning, and operational assessments. He is often published in health care industry magazines, blogs and trade journals.



Corporate Office

2050 Kings Circle South
Neptune Beach, FL 32266
904.249.1880
Fax 904.249.1604

Membership

Lori Walsh
VP- Membership
lwalsh@medaxiom.com
870.500.5404



Joel Sauer

Vice President
jsauer@medaxiom.com
260.245.1015

Vickie Moon

Executive Assistant
vmoon@medaxiom.com
616.309.4022

JOIN US AT MEDAXIOM.COM