



**MEDAXIOM**  
AN ACC COMPANY

# 2023

## CARDIOVASCULAR PROVIDER COMPENSATION & PRODUCTION SURVEY



REPORT

POWERED BY **MEDAXIOM**  
**MEDAXCESS**

## FOREWORD

The story of the 11th annual *MedAxiom Cardiovascular Provider Compensation and Production Survey Report* is consistency with 2021 trends after several unprecedented years of change in the cardiology industry. While the healthcare field continues to evolve, the consistency of year-over-year data may reflect a turning tide, bringing renewed hope for stability and growth in the future.

The data and resulting analyses in this report are powered by MedAxxess, the cardiovascular industry's leading business intelligence application and proprietary database. Our analyses are only as strong as the data being submitted by the MedAxiom community, and we encourage all members to submit their information. Important work is being done to enhance the MedAxxess user experience in the upcoming year. Changes will be focused on simplifying data submission and enhancing report options for our members.

We would also like to expand and diversify the survey sample by program-type and subspecialty to provide a more inclusive story in future reports. We are close to being able to provide details for adult congenital heart disease and academic cardiology programs to further advance these fields.

### 2023 Report Highlights:



Compensation and production across all of cardiology are relatively stable.



The median total compensation gap between private and integrated cardiologists, which narrowed in 2021, widened in 2022 with compensation increasing for integrated cardiologists and decreasing for cardiologists in private practices.



The ratio of advanced practice providers (APPs) to physicians, as well as production and compensation for APPs, all continued their year-over-year increases with 92% of participating programs now including APPs in their care teams.



MedAxiom data through 2022 does not show any meaningful reversion of integrated practices back to private practice despite the impact of private equity on cardiology ownership.



Median total new patient volumes inched up again in 2022 to the highest level recorded, while imaging and procedural volumes across the board saw no significant increases on a per patient panel basis.



After peaking in 2021, cardiac surgeon total compensation decreased in 2022 while vascular surgery went the opposite direction to its highest level recorded.

Cardiovascular care transformation starts with data. We are thankful to our members for continuing to trust and support us with their data submissions and hope you are able to use this report to build a bright future for your practice.

Best Regards,



Gerald Blackwell, MD, MBA, FACC  
MedAxiom President and CEO



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## DATA DRIVING CARE TRANSFORMATION

### PUTTING DATA INTO PRACTICE

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- ✓ **Explore** multiple measures to benchmark your program's performance in key areas such as: access and patient encounters, non-invasive diagnostic imaging, invasive testing and procedures, provider compensation and wRVU production, and staffing levels.
- ✓ **Drill** down into the data using number of physicians and patient panel as denominators and compare data by program size, ownership type, subspecialty and individual physician performance.
- ✓ **Understand** current trends to identify improvement opportunities and set goals for upcoming years.

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## 2022 SURVEY DEMOGRAPHICS

In total, 198 programs representing 5,806 cardiovascular providers completed the 2023 MedAccess survey (providing 2022 data). This is the same number of programs participating in the 2022 survey and a slight increase (2.3%) in the number of providers represented year-over-year. Of these providers, 2,894 were full-time (FT) cardiovascular physicians and 1,836 were FT cardiovascular APPs.

The provider split between cardiovascular services – cardiology, cardiac surgery and vascular surgery – is shown in **Figure 1**.

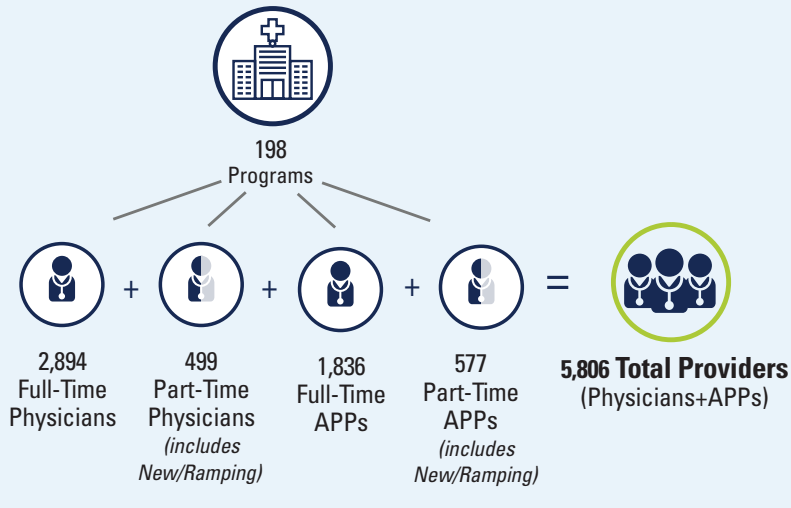
The median size of programs responding to this year’s survey was 11.6 full-time equivalency (FTE) physicians for cardiology, an increase of nearly one FT physician year-over-year. For private programs, the median was 19.1, a slight decrease from the report high of 20.2 FTEs last year. The median size for integrated cardiology groups was 9.3 FTEs, another slight increase year-over-year. Cardiac surgery and vascular surgery groups are comparatively smaller with medians of 2.2 and 2.0 surgeons, respectively (nearly identical to the median program sizes reported last year).

**Figure 2** shows survey participant program size defined by the number of cardiovascular physicians.

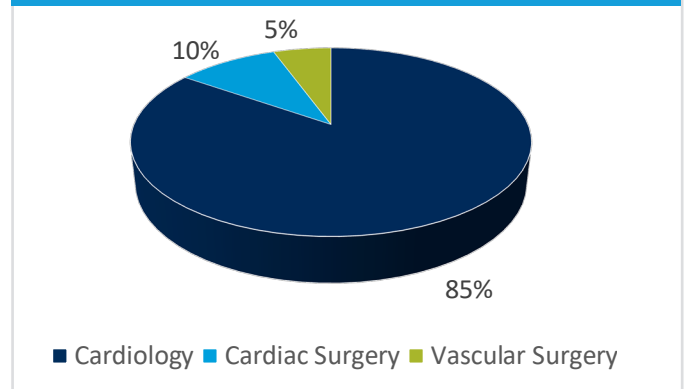
Mirroring national data on cardiology practice size, there is a higher percentage of smaller programs, especially those with one to 10 physicians, represented in the survey (**Table 1**). Fifty-seven percent of MedAxiom’s overall membership of more than 475 programs nationally have >10 physicians.

**Table 1: MedAxiom Membership - Program Size by Number of CV Physicians**

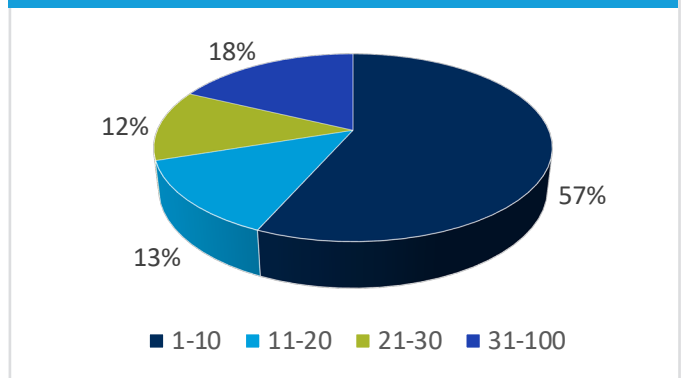
1 to 10	43%
11 to 20	22%
21 to 30	13%
31 to 50	12%
51+	10%



**Figure 1: Providers by CV Service**



**Figure 2: Program Size by Number of CV Physicians**



Definitions for each of the published measures can be found in the Glossary at the end of this publication on page 56.

As reported in previous years, there has been a steady decline in the number of private cardiology programs across the country, reflected in the number of private practices in MedAxiom’s membership and thus the number of private providers represented in the survey (**Figures 3 and 4**). Despite this trend, the number of private cardiology providers represented in this year’s report increased slightly from 16% to 18%. While still a relatively small percentage, the percentage of private surgery providers represented in the report increased from 2% to 7% this year.

The South is well represented in the survey with more than 50% of providers practicing in southern states (**Figure 5**). This is not surprising given that 47% of MedAxiom members are in the southern region (**Table 2; see the Glossary for a breakdown of regions by state**). Of note, the West region has the lowest representation in the survey as compared to MedAxiom membership.

The compensation model is another important demographic for understanding cardiovascular physician compensation and productivity. Percentage splits for compensation models in participating cardiology and surgery programs are shown in **Figures 6 and 7**, respectively. For both cardiology and surgery programs reporting, there was a shift. The productivity percentage (the long-time leader) dropped to below 50% for both cardiology and surgery shifting to a higher percentage in salary plus bonus. As has been mentioned every year, this shift is likely more due to survey bias resulting from a voluntary survey than it is a major shift in compensation models.

Table 2: MedAxiom Membership by Region

Northeast	17%	Midwest	23%
South	47%	West	13%

Figure 3: Cardiology Providers by Ownership Model

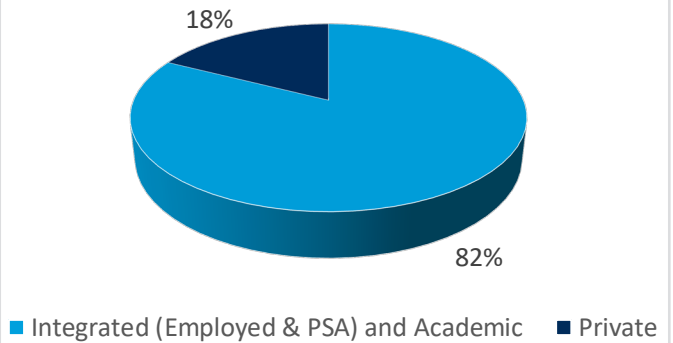


Figure 4: Surgery Providers by Ownership Model

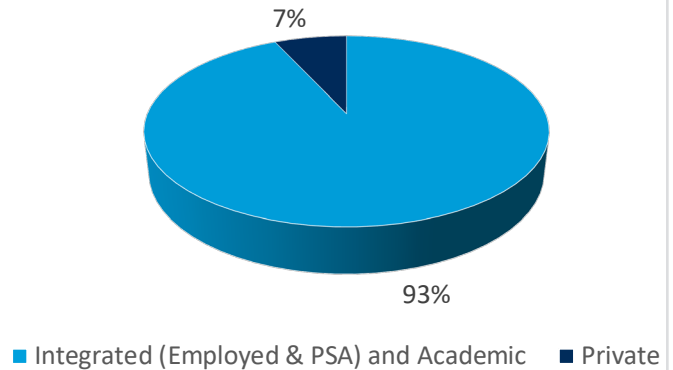


Figure 5: CV Providers by Region

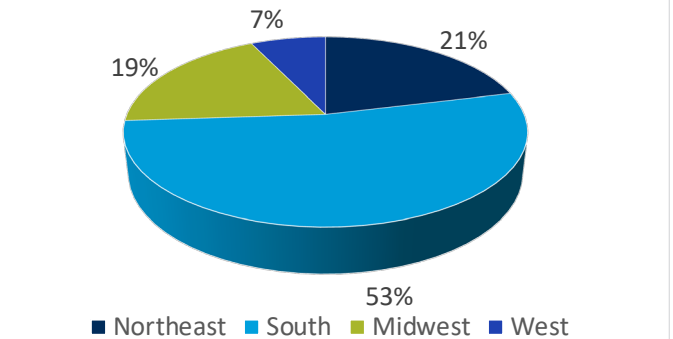


Figure 6: Cardiology Programs by Compensation Model

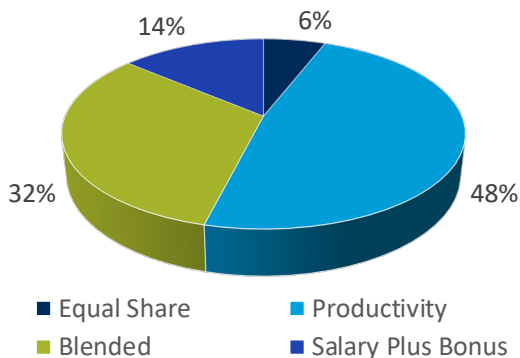
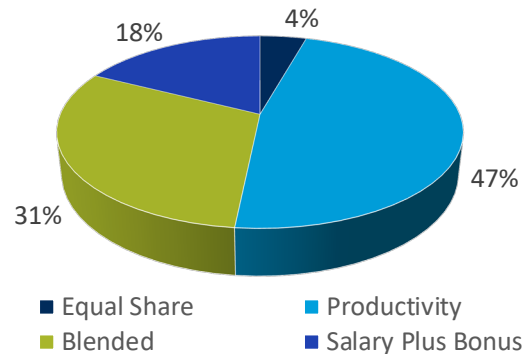


Figure 7: Surgery Programs by Compensation Model

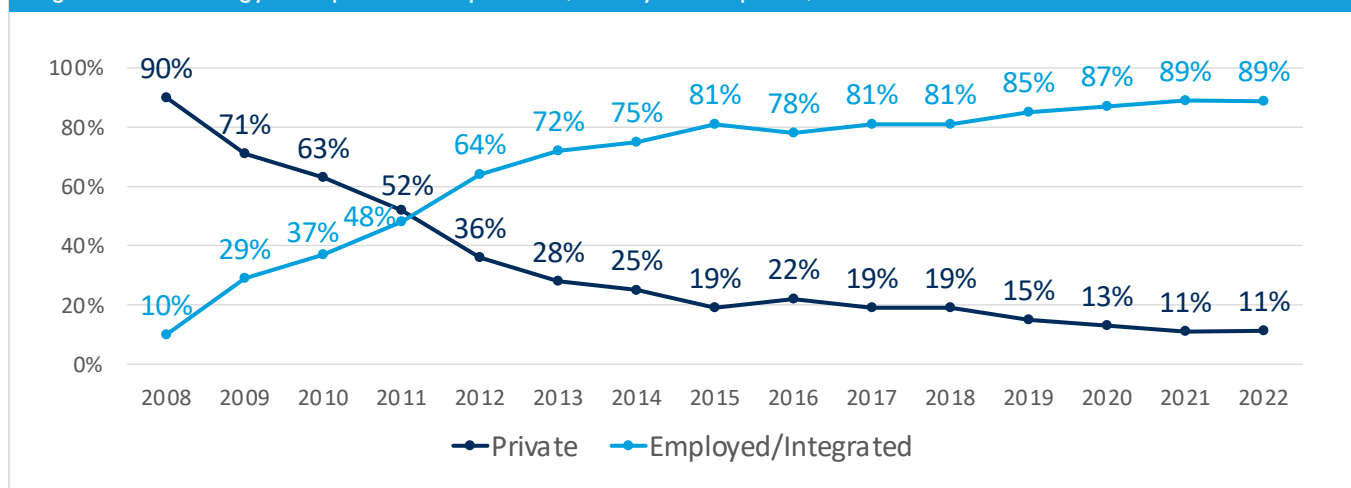


# SURVEY RESULTS – CARDIOLOGY

## RESPONDENT CHARACTERISTICS

The impact of private equity on cardiology ownership, particularly as it relates to groups employed by a hospital or health system, continues to be a hot topic at MedAxiom meetings, on listservs and in healthcare news. There has certainly been activity in this space amongst MedAxiom members. However, the MedAxiom data through 2022 does not show any meaningful reversion of integrated practices back to private practice – where private-equity-owned practices currently reside in the data – as the percentages in each bucket held steady (**Figure 8**).

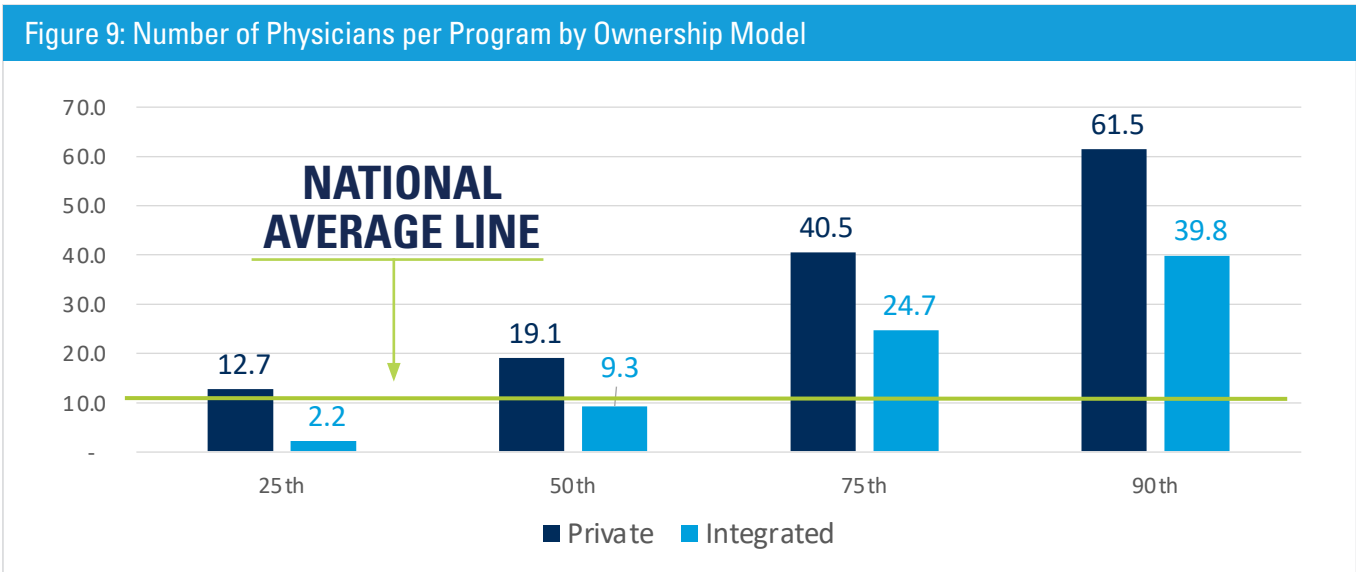
Figure 8: Cardiology Group Ownership Trend (Survey Participants)



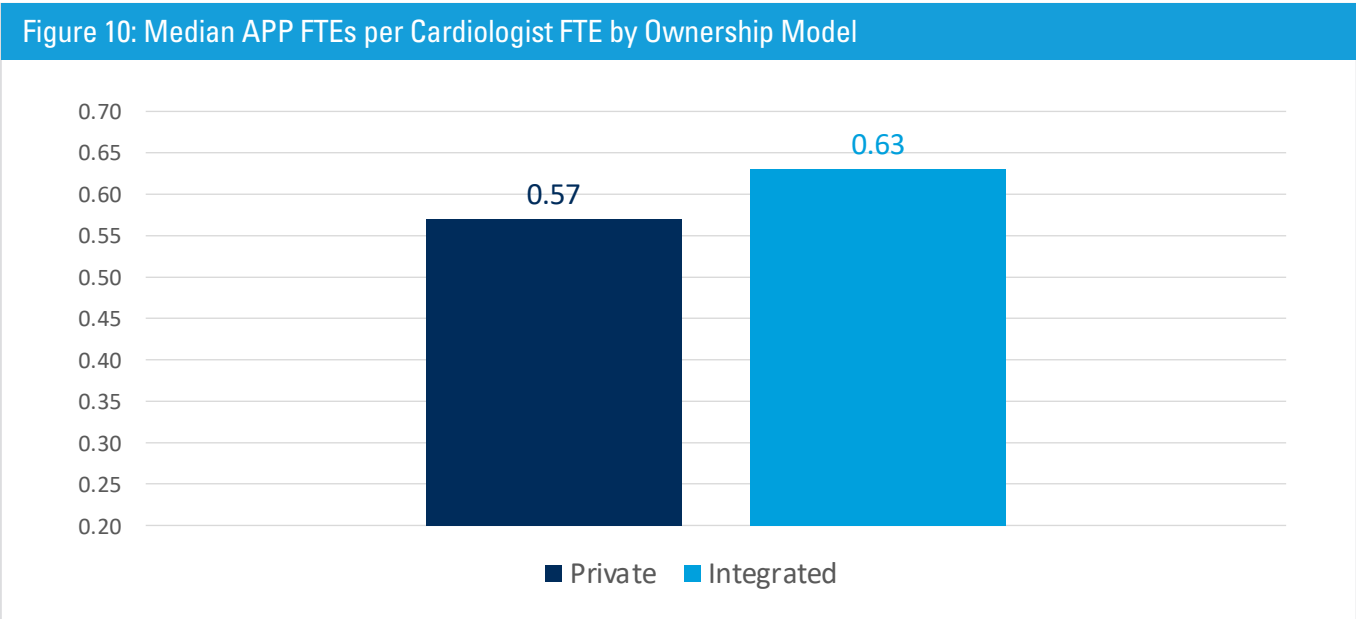
As pointed out in last year’s report, a 2020 analysis by KPMG Corporate Finance LLC, “[Cardiology M&A updated: U.S. Cardiology market at a glance](#)” found that there are over 3,000 active cardiology practices in the U.S. Of this total, 1,159 (38%) are solo practices with another 945 being in groups of two to five physicians. Combined nearly 70% of all cardiologists thus practice in groups of five or less.

Triangulating membership data from the American College of Cardiology and 2022 Medicare claims data, MedAxiom estimates that there are approximately 32,000 practicing cardiologists in the U.S. Using the KPMG total number of practices, this would mean the average cardiology group size is just under 11 physicians – very close to MedAxiom’s overall median of 11.6 physicians.

For private groups, MedAxiom’s data are skewed heavily to much larger groups as demonstrated in **Figure 9**. The median group size of the private respondents for 2022 was more than twice as large as those reporting for integrated practices (19.1 vs. 9.3, respectively). A full quarter of private groups in the survey have 40 providers or more. It is logical to presume that compensation and perhaps production performance may be different for the 70% of cardiology practices with less than five doctors.



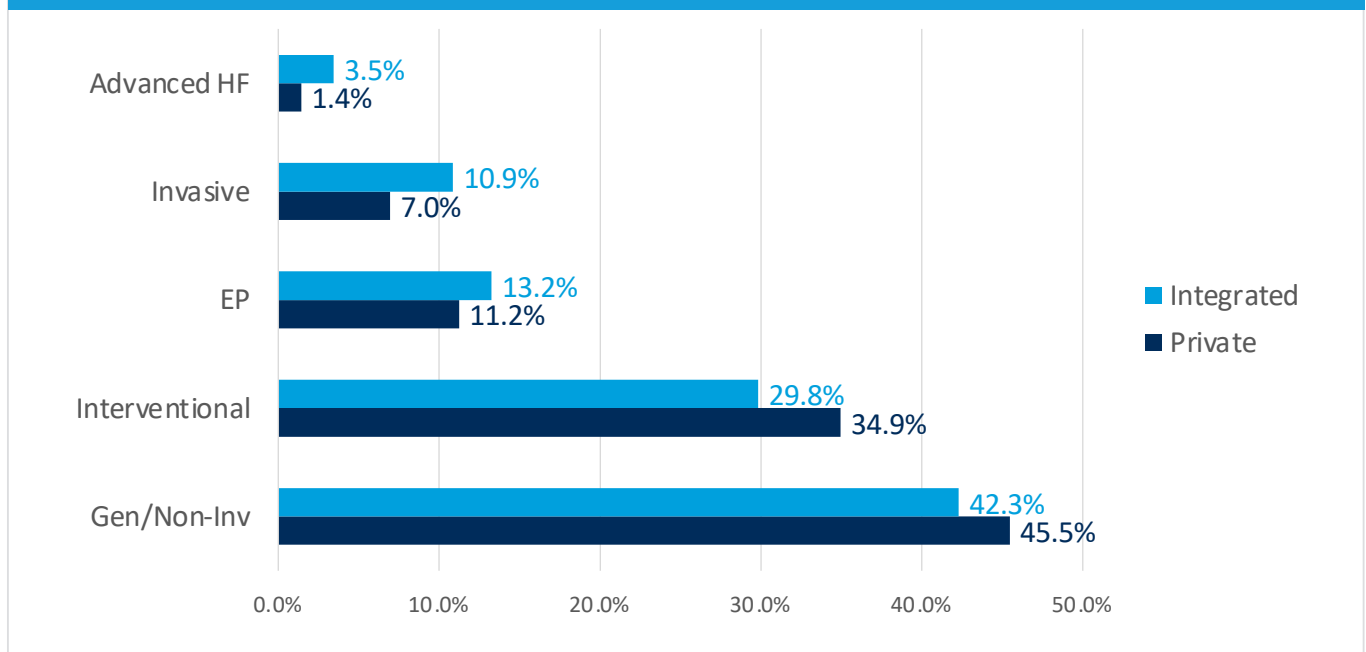
Both ownership categories utilize advanced practice providers (APPs) in nearly identical ratios, as shown in **Figure 10**. The prevalence of APPs in cardiology practices overall (not considering ownership model) has ticked up each of the past five years, growing from 0.50 APP FTEs in 2018 to 0.62 in 2022.





From a subspecialty composition perspective (**Figure 11**), the two main differences between private and integrated programs in the past have been the proportion of advanced heart failure (HF) and interventional cardiologists. This year, there were enough private advanced HF cardiologist responses to be reported; this subspecialty represents nearly 4% of integrated programs’ total physician count. The percentage gap for interventional cardiologists narrowed to just five percentage points between the two ownership models with the private number dropping from 39% to 35% this year. The resulting shift was a higher percentage of private general/non-invasive cardiologists, now approaching 50%. Also noteworthy, cardiologists who are invasive/non-interventional now comprise less than 11% of both integrated and private groups’ full physician complement. As noted in previous reports, this subspecialty cohort has been shrinking as a percentage of the total for years now.

Figure 11: Cardiology Subspecialty Mix by Ownership Model



## REGIONAL INFORMATION

A study by KFF polling used state licensing information to count physicians by state. The results for cardiology are shown in **Table 3**. It makes sense that licensing data may yield a higher result than MedAxiom’s count, which relies on Medicare claims data and only includes physicians with at least 11 Medicare claims during the year. That being said, the two numbers are close – just a 5% difference.

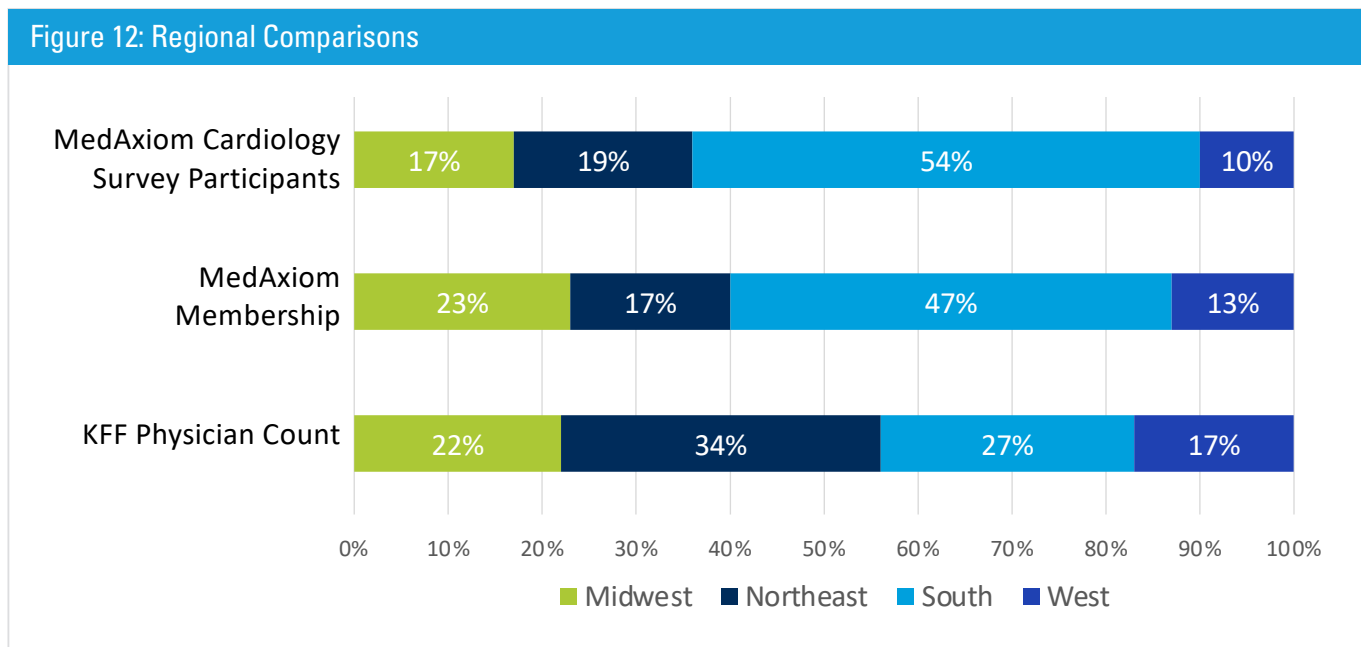
Table 3: Professionally Active Specialist Physician by Field | KFF

Timeframe: May 2023					
State	Cardiology	Region	State	Cardiology	Region
Alabama	412	South	Montana	57	West
Alaska	39	West	Nebraska	162	Midwest
Arizona	537	West	Nevada	182	West
Arkansas	212	South	New Hampshire	153	Northeast
California	3,351	West	New Jersey	1,252	Northeast
Colorado	344	West	New Mexico	147	West
Connecticut	642	Northeast	New York	3,326	Northeast
Delaware	106	Northeast	North Carolina	973	South
District of Columbia	321	Northeast	North Dakota	37	Midwest
Florida	2,166	South	Ohio	1,569	Midwest
Georgia	868	South	Oklahoma	233	South
Hawaii	74	West	Oregon	288	West
Idaho	47	West	Pennsylvania	2,052	Northeast
Illinois	1,489	Midwest	Rhode Island	212	Northeast
Indiana	555	Midwest	South Carolina	360	South
Iowa	295	Midwest	South Dakota	45	Midwest
Kansas	212	Midwest	Tennessee	680	South
Kentucky	377	South	Texas	2,111	South
Louisiana	468	South	Utah	198	West
Maine	128	Northeast	Vermont	72	Northeast
Maryland	867	Northeast	Virginia	708	Northeast
Massachusetts	1,779	Northeast	Washington	524	West
Michigan	1,197	Midwest	West Virginia	138	South
Minnesota	727	Midwest	Wisconsin	469	Midwest
Mississippi	187	South	Wyoming	18	West
Missouri	732	Midwest			
<b>Total Cardiology</b>	<b>34,098</b>				

Source: *Professionally Active Physicians by Field, (KFF, May 2023)* (Accessed on Aug. 25, 2023).

When the KFF data are organized by the MedAxiom region categories, it is interesting to consider the totals. The Northeast has the largest concentration of physicians with 34% and the West has the smallest by far at just 17%, half that of the Northeast. Zeroing in on the West, California alone is home to nearly 60% of the cardiologists in that entire region. The next largest contingencies are at 9% each in both Arizona and Washington. Thus, those three states comprise more than 75% of all cardiologists in the western region.

When cross-referencing these data with the MedAxiom survey participation distribution (**Figure 12**), we find several significant outliers from the overall allocation of U.S. cardiologists. The MedAxiom membership and survey are overrepresented in the southern region, but underrepresented in the Northeast, even with an uptick in participants from Northeast members this year. Thus, to the extent that those regions have differences in compensation and production performance – which will be explored in the coming pages – those idiosyncrasies will be expressed in the combined results.



## CONSULT WITH THE EXPERTS



KAREN WILSON, MHA

MEDAXIOM'S VICE PRESIDENT, MEMBER SERVICES

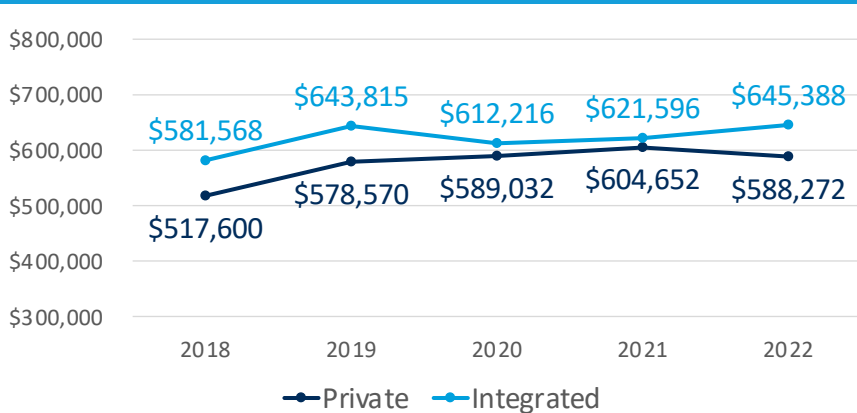
### HOW CAN THE DATA IN THIS REPORT BE PUT INTO PRACTICE?

After analyzing the data from the last several years, we are hopefully optimistic that important operational data points in cardiology are beginning to normalize after the instability caused by the pandemic and resulting staffing crises. This message of hope is shown in the MedAxiom data. The true power of MedAxiom is realized when programs use the interactive tool to filter and drill down into the data to understand trends, evaluate performance, and identify improvement opportunities – thus, telling the program's "data story" and providing insight to transform and improve patient care.

## CARDIOLOGY COMPENSATION

After narrowing in 2020 and 2021, the gap between private and integrated cardiologists widened in 2022, with integrated physicians earning over \$57,000 more per FT cardiologist than their private analogs (**Figure 13**). Private physicians fell back to a median of \$588,272 compared to over \$600,000 in 2021. The reported median of \$645,388 per FT integrated cardiologist is the highest ever in the history of the MedAxiom survey, although very close to the median reported in 2019 (\$643,815).

Figure 13: Median Total Compensation Trends per FT Cardiologist by Ownership Model

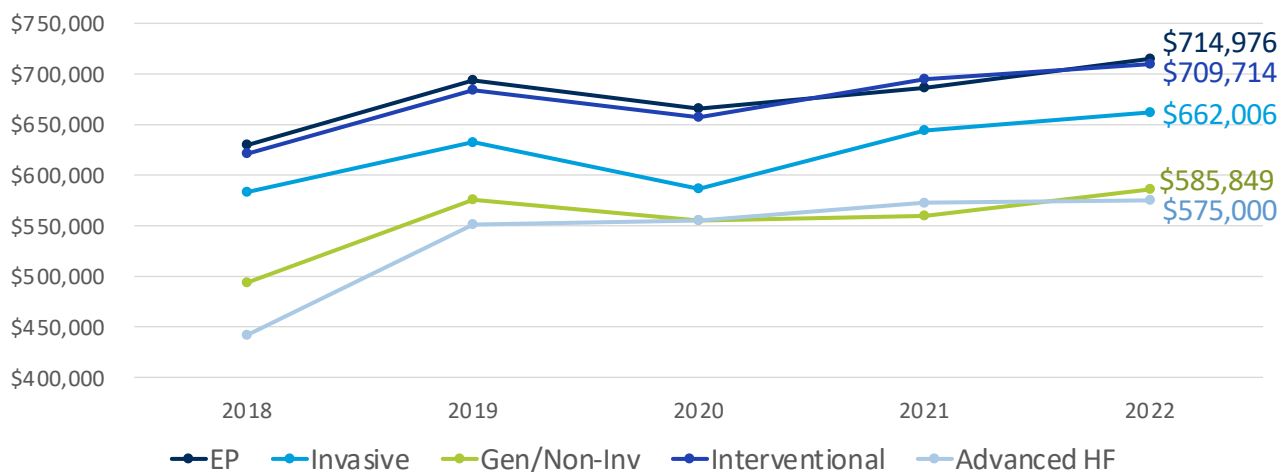


## THE GAP BETWEEN PRIVATE AND INTEGRATED CARDIOLOGISTS WIDENED IN 2022

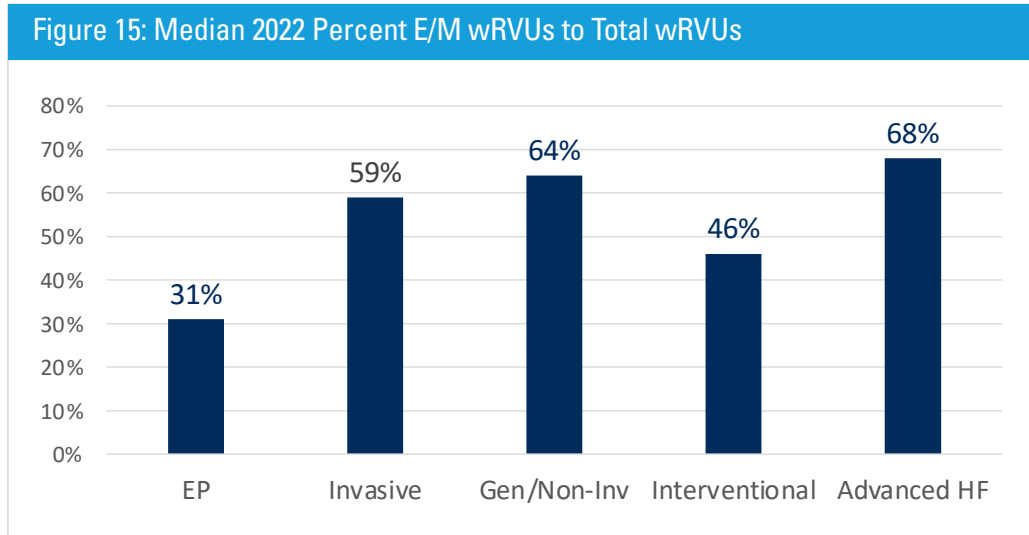
FT INTEGRATED PHYSICIANS EARNED **\$57,000 MORE** THAN THEIR PRIVATE ANALOGS

When considering subspecialty differences on compensation in cardiology (**Figure 14**), electrophysiology (EP) and interventional cardiologists are at the top of the earnings heap with FT 2022 medians of \$714,976 and \$709,714, respectively, with a less than 1% separation between the two. At the lower end of the spectrum, advanced HF and general/non-invasive cardiologists have a FT median total compensation that is less than 2% apart at \$575,000 and \$585,849, respectively. Sitting in the middle is the hybrid subspecialty of invasive (non-interventional) with a median total compensation of \$662,006.

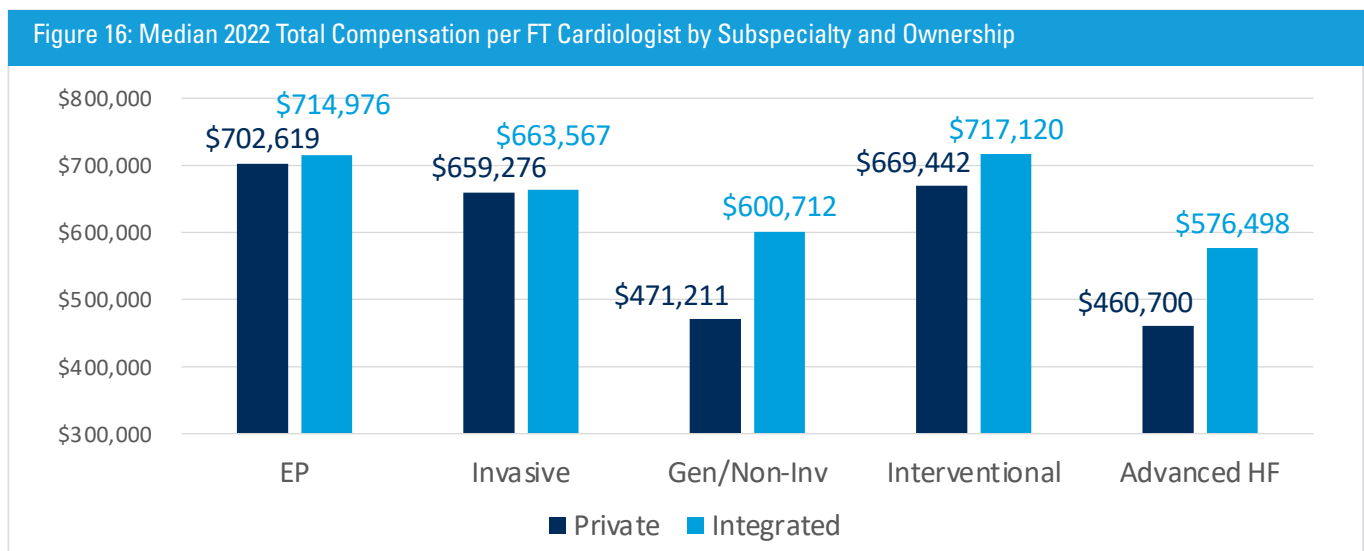
Figure 14: Median Total Compensation Trends per FT Cardiologist by Subspecialty



Interestingly, but not surprisingly, the total income pecking order is in exact reverse order of the percentage of work relative value units (wRVUs) from evaluation and management (E/M) activities where advanced HF cardiologists have the highest percentage (68%) and EP the lowest percentage (31%). The percentage for all subspecialties can be found in **Figure 15**. This ratio of E/M activities also impacts wRVU production, which will be covered in the “Cardiology Productivity” section of this report.



Ownership model has the greatest impact on the lowest paid subspecialties as shown in **Figure 16**, which reveals that private advanced HF and general/non-invasive physicians had median earnings at rates 20% and 22% less, respectively, than those in an integrated environment. Differences for all three other cardiology subspecialties were less than 10% between the ownership categories with EP and invasive a scant 2% apart. This suggests that proceduralists fare better for compensation in private groups than do the more office-based physicians.



### PRIVATE PROGRAM COMPENSATION BY SUBSPECIALTY

1. EP
2. INTERVENTIONAL
3. INVASIVE
4. GENERAL/NON-INVASIVE
5. HEART FAILURE

### INTEGRATED PROGRAM COMPENSATION BY SUBSPECIALTY

1. INTERVENTIONAL
2. EP
3. INVASIVE
4. GENERAL/NON-INVASIVE
5. HEART FAILURE

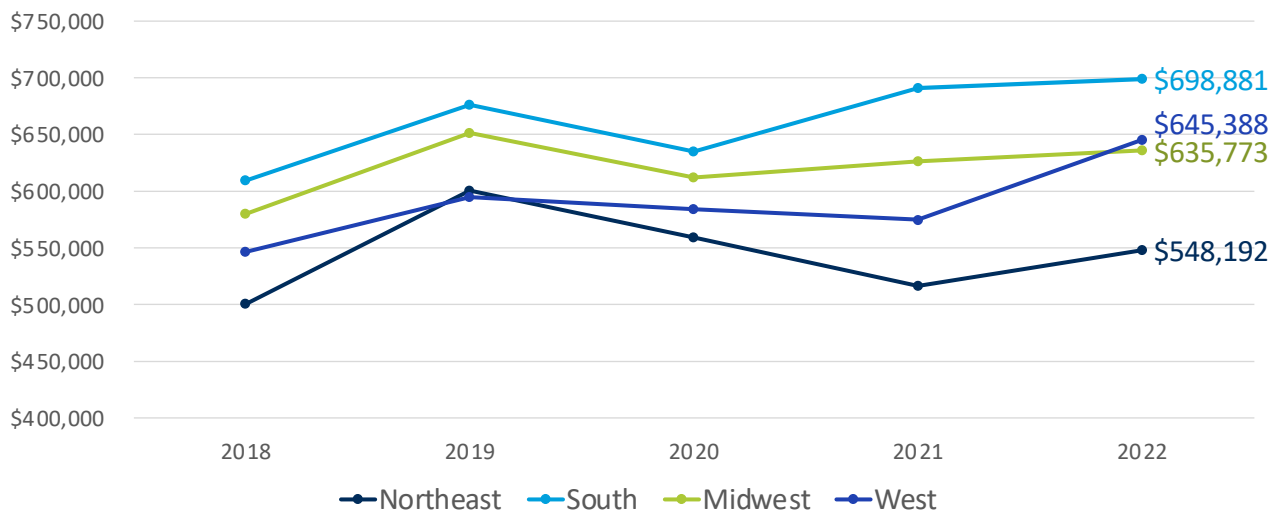
Looking regionally at compensation, the perennial leader, the South, tops the charts in 2022 with median earnings more than \$50,000 higher than the second-place finisher, the West (Figure 17). For the third year in a row the Northeast anchors the lowest paid region with median compensation of \$548,192 per FT physician – more than \$150,000 less than the South median. As detailed above, these regional differences are magnified in the overall or blended results, given the regional distribution of survey respondents where the South is over-represented and Northeast under-represented.

## COMPENSATION BY REGION

1. SOUTH
2. WEST
3. MIDWEST
4. NORTHEAST



Figure 17: Median Total Compensation Trends per FT Cardiologist by Region



**THE SOUTH  
TOPS THE CHARTS IN 2022  
WITH MEDIAN EARNINGS MORE  
THAN \$50,000 HIGHER THAN  
THE SECOND-PLACE FINISHER**

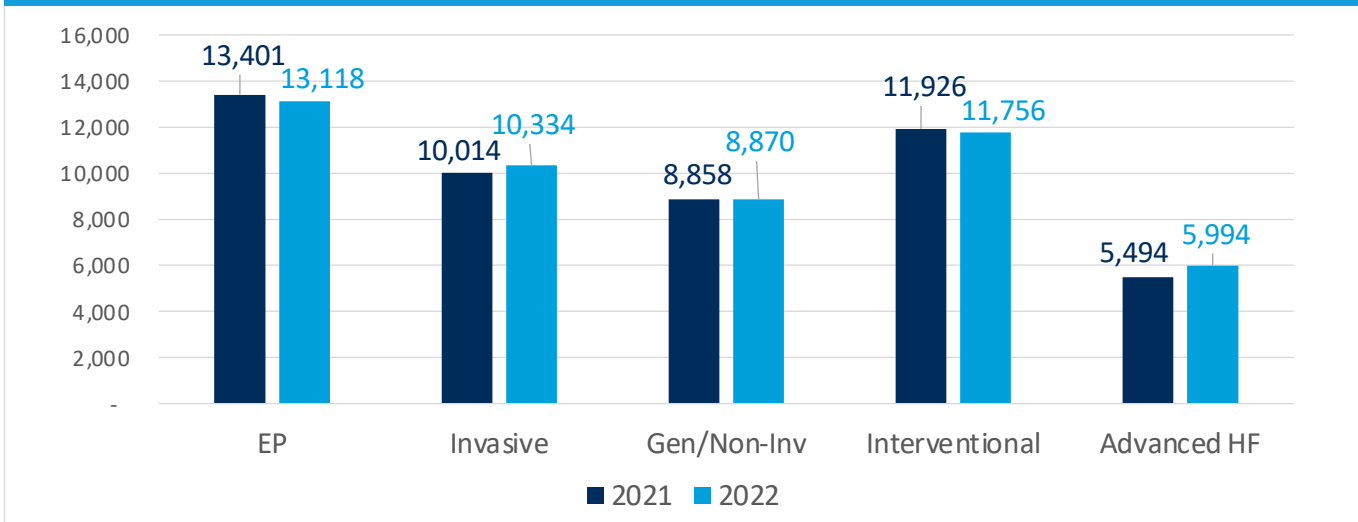


## CARDIOLOGY PRODUCTION

Despite annual changes to the relative value system from the Centers for Medicare and Medicaid Services (CMS), production across all of cardiology was relatively stable for each subspecialty – all within plus or minus 3% when compared to the prior year (**Figure 18**). The exception in 2022 was advanced HF, which saw wRVU production jump 9% from 5,494 wRVUs per FT cardiologist to 5,994. Despite this leap, advanced HF physicians remain at the bottom of the production barrel, well below the next lowest subspecialty of general/non-invasive physicians.

In 2022, CMS significantly reduced the wRVUs and total RVUs for ablations, a staple procedure of EP physicians. While EP did see an overall decline in wRVU production, as shown previously in **Figure 11**, it was quite nominal at just 2.1% or 283 wRVUs per FT EP.

Figure 18: Median wRVUs per FT Cardiologist by Subspecialty



**PRODUCTION**  
**RELATIVELY STABLE**  
**ACROSS SUBSPECIALTIES,**  
**WITH NOMINAL**  
**CHANGES IN EP**

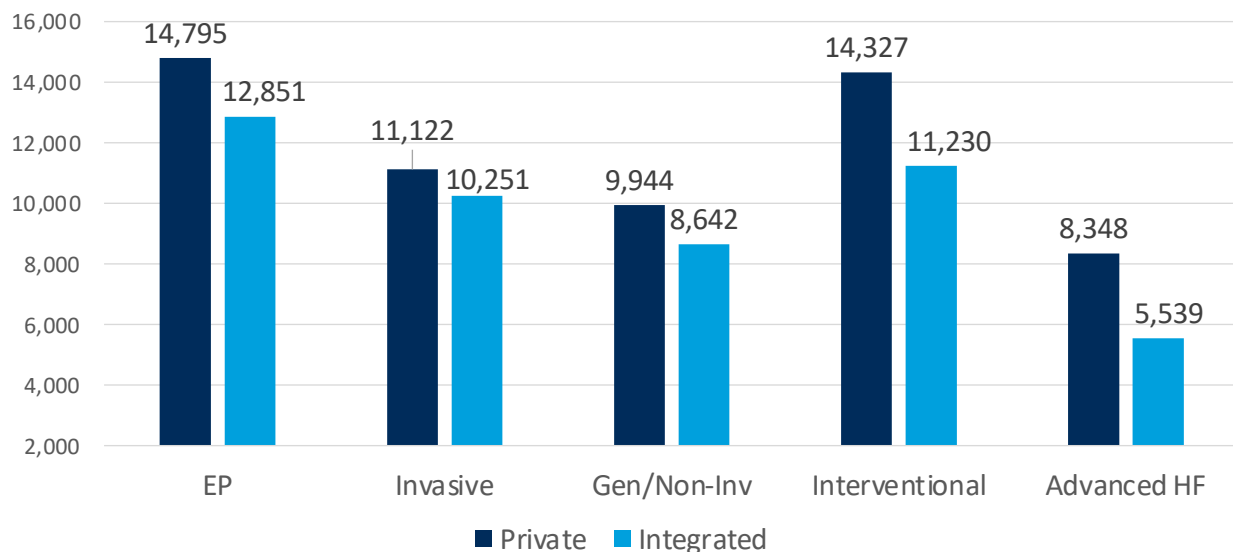


wRVUs AND RVUs  
FOR ABLATIONS



wRVU  
PRODUCTION

Figure 19: Median 2022 wRVUs per FT Cardiologist by Subspecialty and Ownership



Again in 2022, private physicians outproduced their integrated counterparts in each subspecialty (Figure 19). The largest disparities appeared in advanced HF (51% delta) and amongst interventional physicians (28%). It should be noted that the 2022 sample size for private advanced HF physicians was small, making those data more susceptible to extremes at either end.

In many respects, the 2022 data repeated the 2021 data, which is also the case for regional median production differences for which the hierarchy remained the same as in years past (Figure 20). When looking at the median wRVU production per FT cardiologist, the reigning champion South repeated in 2022 and was 19% more productive than the Midwest in second place. There was a healthy 36% spread between the South and the Northeast, the lowest-producing region.

**PRIVATE  
CARDIOLOGISTS  
OUTPRODUCE  
INTEGRATED  
CARDIOLOGISTS  
IN MEDIAN wRVUs PER FTE**

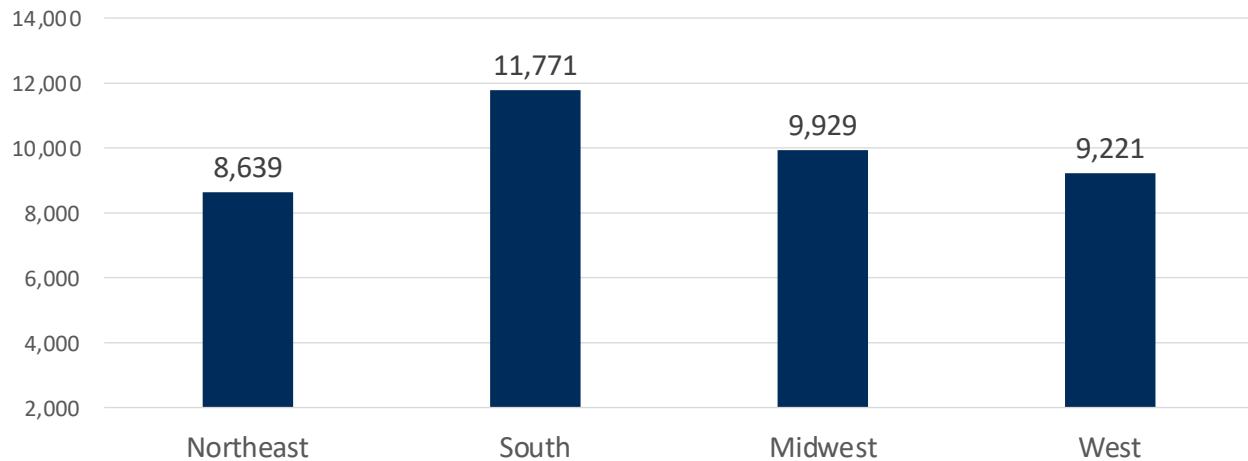
**ADVANCED HF IN  
PRIVATE PROGRAMS  
GENERATE 51% MORE  
wRVUs THAN  
INTEGRATED COHORT**







Figure 20: Median 2022 wRVUs per FT Cardiologist by Region

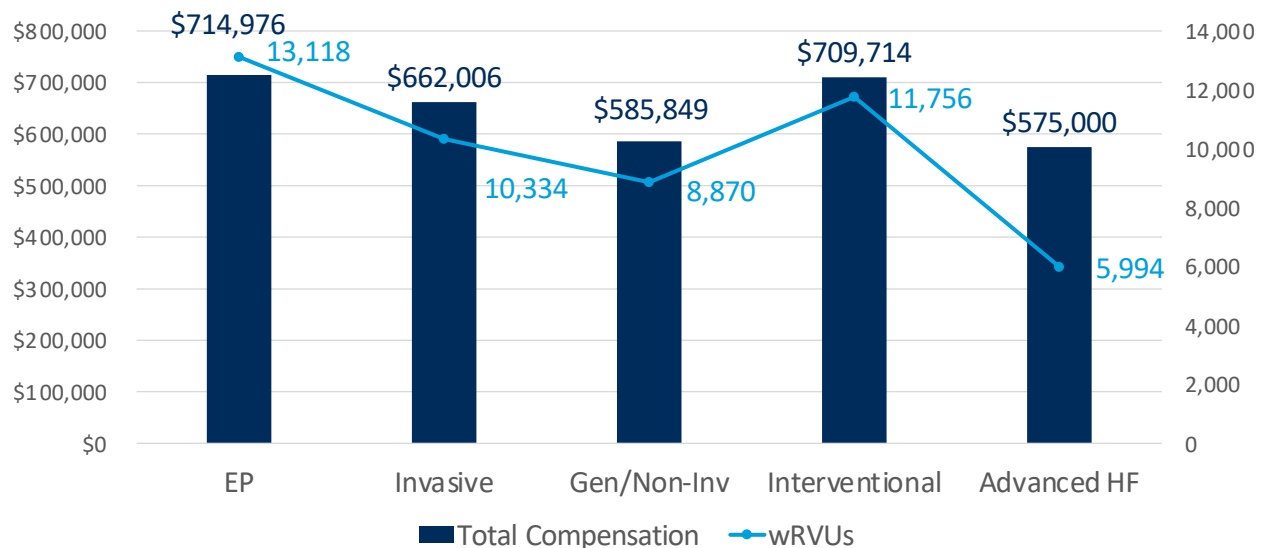


It is also noteworthy that 44% of all private groups that responded to the survey are in the South. The higher production levels reported by private groups and the fact that they are concentrated in the South partially explain this region's larger median production totals.

A comparison of median production levels by subspecialty to their respective total compensation (Figure 21) once again reveals a tight relationship between these two key metrics. At each subspecialty level, the rank of median total compensation per FT physician is the same order as median wRVU production. Advanced HF physicians deviated the most from this relationship, earning within 2% of general/non-invasive cardiologists despite having 32% lower median wRVU production per FT physician.

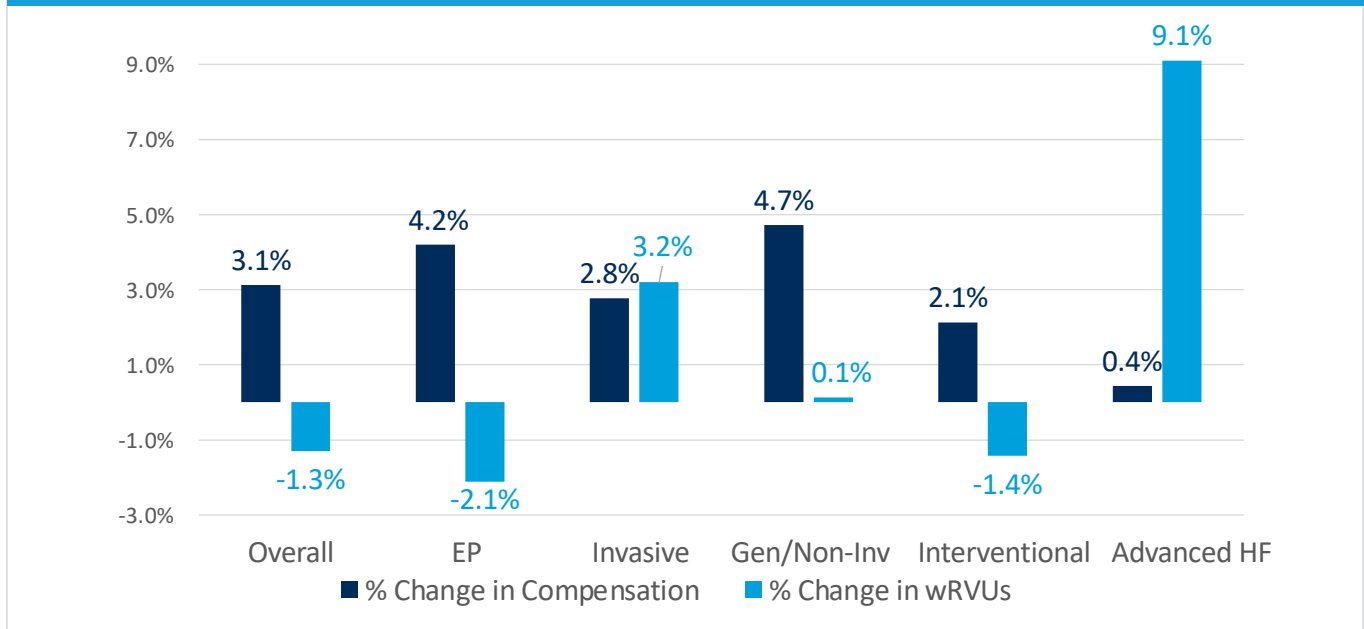
**MEDIAN wRVU PRODUCTION DID NOT PREDICT COMPENSATION CHANGES IN 2022**

Figure 21: Median 2022 Total Compensation and wRVUs per FT Cardiologist by Subspecialty



What was not a predictor of compensation changes in 2022 was whether median wRVU production increased or decreased in 2022. As shown in **Figure 22**, three of the subspecialties reported lower median wRVU production per FT cardiologist in 2022. A fourth essentially showed no change yet all four reported higher median total compensation. In this comparison, advanced HF fared the worst, reporting median wRVU production gains of nearly 10% while effectively showing no change in median total compensation.

Figure 22: Median 2022 % Change in Total Compensation and wRVUs per FT Cardiologist by Subspecialty



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ACCESS YOUR DASHBOARD



BENCHMARK YOUR DATA



COMPARE YOUR DATA



DOWNLOAD CUSTOM REPORTS



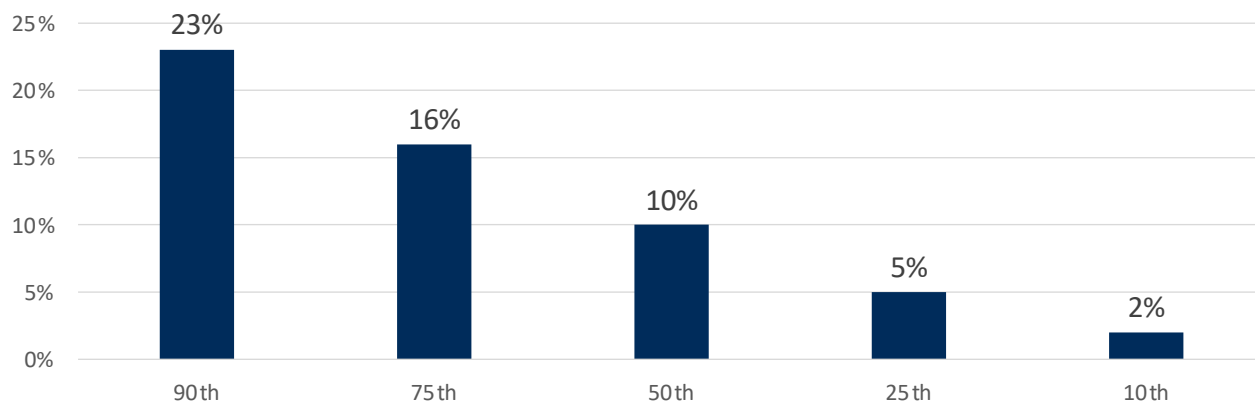
## SUPER SUBSPECIALTIES

A subset of interventional cardiology, sometimes referred to as a “super subspecialty,” is structural heart. MedAxiom is frequently asked for data specific to this subset and has therefore polled its membership community for information. The results showed that the structural heart physician community is extremely heterogenous. Some spend most of their time performing structural heart work while others spend the majority performing cardiac interventions and providing some structural heart services. Thus, it’s hard to find a common definition for a structural heart physician. This can be important for peer comparisons and compliance valuations related to compensation.

**A SUBSET OF INTERVENTIONAL CARDIOLOGY, SOMETIMES REFERRED TO AS A “SUPER SUBSPECIALTY,” IS STRUCTURAL HEART**



Figure 23: 2022 Percent of Structural Heart wRVUs to Total wRVUs



MedAxiom can track wRVUs at the physician level and calculate the percentage of a physician’s total that comes from certain services, such as structural heart procedures. For those physicians performing structural heart procedures, **Figure 23** shows the percentile rankings for the percent of structural heart wRVUs to total wRVUs.

As an imperfect surrogate for a common structural heart definition, the top quartile in **Figure 23** was considered. The data show a median compensation of \$716,000 for these top quartile physicians (16% or more of wRVUs coming from structural heart procedures). This median was effectively no different (less than 1% greater) than that of interventional cardiologists as a whole, who earned a median compensation of \$709,714.

**THE RESULTS SHOWED THAT THE STRUCTURAL HEART PHYSICIAN COMMUNITY IS EXTREMELY HETEROGENOUS**



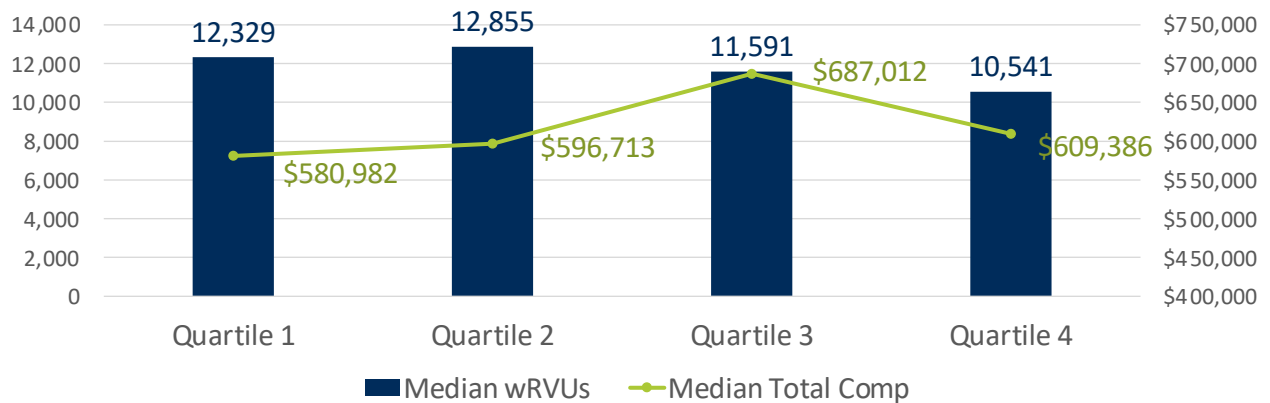
On the production side, these same top-quartile structural heart physicians generated a median of 10,581 total wRVUs. This compares to the overall interventional median of 11,756, an 11% delta. So, these “structural heart” physicians have earnings similar to their interventional colleagues but generate fewer wRVUs.

The way that all interventional cardiologists practice and manage their time varies greatly. Some will spend equal amounts of time in the lab, reading imaging and completing office duties. Others will do very little office and perhaps no imaging, spending all of their time performing procedures. Digging into these differences, there is a wide range in the proportion of wRVU production generated by imaging and by E/M services. **Table 4** shows the range in the proportion of wRVUs from imaging and imaging plus E/M for the interventional workforce separated into total wRVU quartiles. Then **Figure 24** shows corresponding total wRVUs and total compensation for each of those quartiles. As the data show, the proportion of time spent in the lab versus time spent performing imaging and/or E/M services does not accurately predict total wRVU generation or total compensation for interventionalists. In fact, it is difficult to draw any conclusions from these data – an observation that is perhaps valuable on its own.

Table 4: Interventional Cardiologists - 2022 Percent of Total wRVUs

	Imaging		Imaging + E/M	
	Low	High	Low	High
Quartile 1: 76th percentile & above	18%	39%	72%	96%
Quartile 2: 51st percentile - 75th	13%	17%	60%	71%
Quartile 3: 26th percentile - 50th	6%	12%	45%	59%
Quartile 4: 25th percentile & below	0%	5%	0%	44%

Figure 24: 2022 Median wRVUs and Total Compensation per Interventional Cardiologist by Quartile



Likewise, programs regularly request information for another growing “super subspecialty” that defies definition – advanced imaging cardiologists (cardiac PET, cardiac CTA and cardiac MRI). The results in **Table 5** are generated by using the same logic as above but focusing only on cardiologists who interpret advanced imaging studies and then ranking the percentage of advanced imaging wRVUs to total wRVUs.

The data show that a physician generating just 9% of his/her total wRVUs from advanced imaging interpretations lands in the top decile of all doctors who perform advanced imaging procedures. Within that decile however are physicians with more than half of their wRVUs coming from these services. Again, the data paints a portrait of an eclectic group that includes many very low-volume advanced imaging readers.

Interestingly, those in the top half of advanced imaging production have a median total wRVU production of 9,742 per FT physician while those in the bottom half generate a median of 11,312 total wRVUs per FT physician. Thus, there seems to be an inverse relationship between focus on advanced imaging and total wRVU production. This is evident for physicians in the upper half of advanced imaging production who had a median total compensation of \$478,001 per FT cardiologist while those in the lower half had a median compensation of \$638,577.

**Table 5: Percent of Advanced Imaging wRVUs to Total wRVUs - 2022 Percentiles**

Percentile	Advanced Imaging %
90th	9%
75th	4%
50th	1%
25th	0%
10th	0%

## CONSULT WITH THE EXPERTS



**JOEL SAUER, MBA**

MEDAXIOM'S EXECUTIVE VICE PRESIDENT  
OF CONSULTING

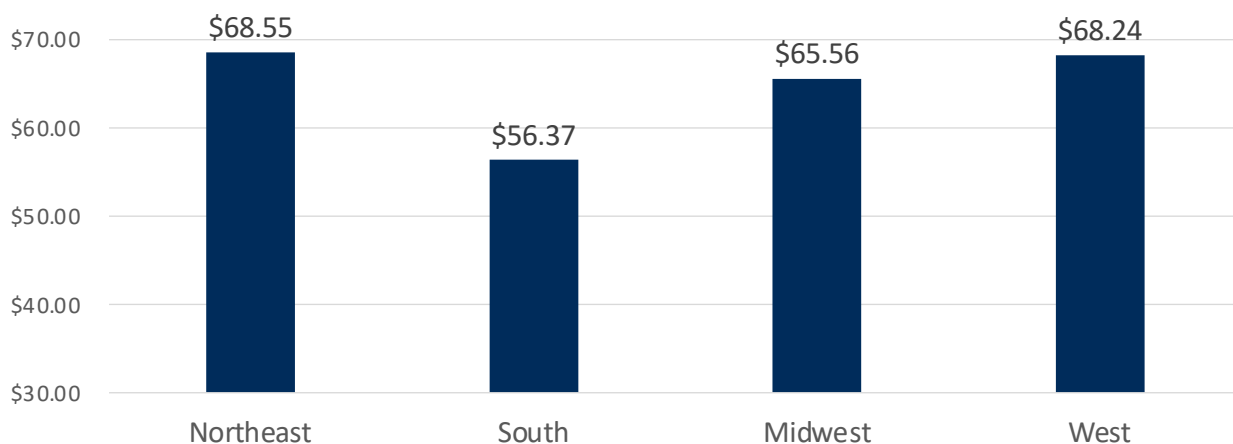
### HOW CAN THE DATA IN THIS REPORT BE PUT INTO PRACTICE?

“ Data have practical implications for practice improvement. The data in this year’s report show the growth of structural heart as a ‘super subspecialty’ with great heterogeneity of the physicians in time spent on structural work versus office versus other activities, such as reading images. Structural heart compensation is similar to interventional cardiologists but these physicians generate fewer wRVUs. Leaders can use this information not only to benchmark structural heart physicians in their own practices but also to help evolve the profession with the goal of better patient care. ”

## COMPENSATION PER wRVU

At the individual physician level, dividing total compensation by total wRVU production yields the metric compensation per wRVU. So, this measure is a calculation, not a physician’s contractual production rate or a production incentive amount. **Figure 25** shows this calculation for each of the four regions.

Figure 25: Median 2022 Total Compensation per wRVU by Region



With this understanding it then makes sense that the South would land at the bottom of the scale, given its high median wRVU production and disproportionate share of private cardiology groups. At a median of \$56.37 the South was nearly \$10 per wRVU lower than the next lowest region and \$12 lower than the leader, the Northeast. The three other regions were all tightly grouped, with less than 5% separation between them.

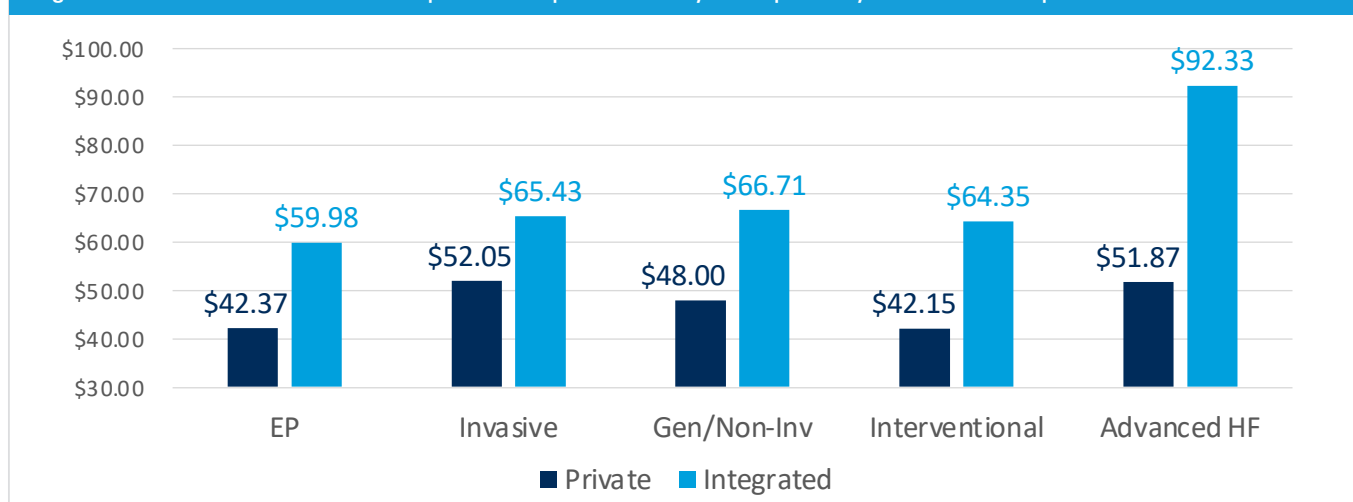
Like total compensation, cardiologists in an integrated environment earn substantially more per wRVU at the median than private cardiologists (Figure 26). This is true across all subspecialty types. The delta is widest for advanced HF at 78% and narrowest for invasive physicians at 26%. As previously noted, private physicians outproduce their integrated counterparts in each subspecialty yet earn less, which results in lower compensation per wRVU.

## SPECIALTY COMPENSATION PER wRVU

HEART FAILURE PHYSICIANS EARN THE MOST PER wRVU

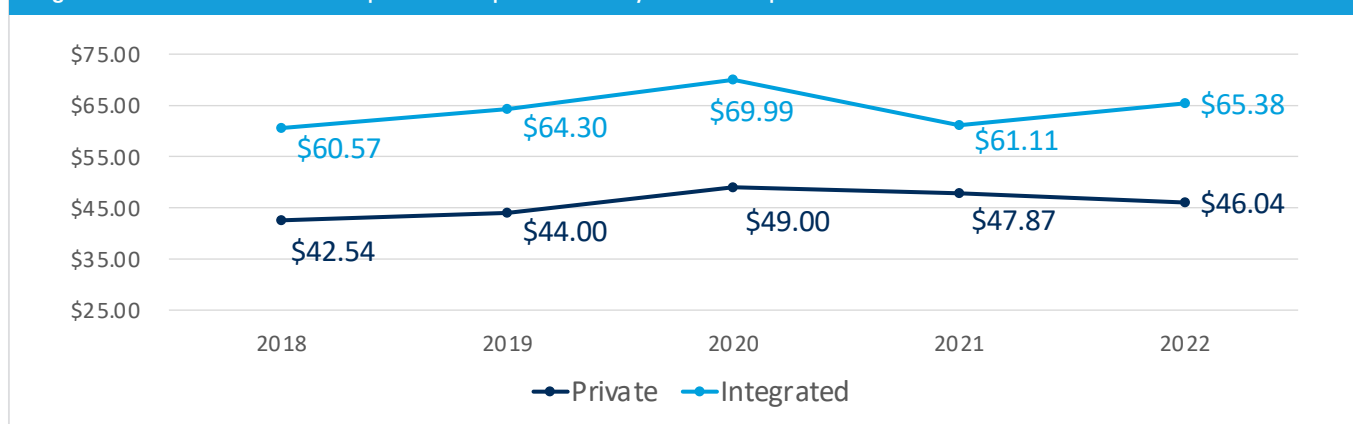


Figure 26: Median 2022 Total Compensation per wRVU by Subspecialty and Ownership



The delta in total compensation per wRVU between private and integrated physicians has remained relatively unchanged over time, as found in Figure 27. This same illustration shows the relative stability of this metric despite significant changes to the wRVU values of E/M services that began in 2021.

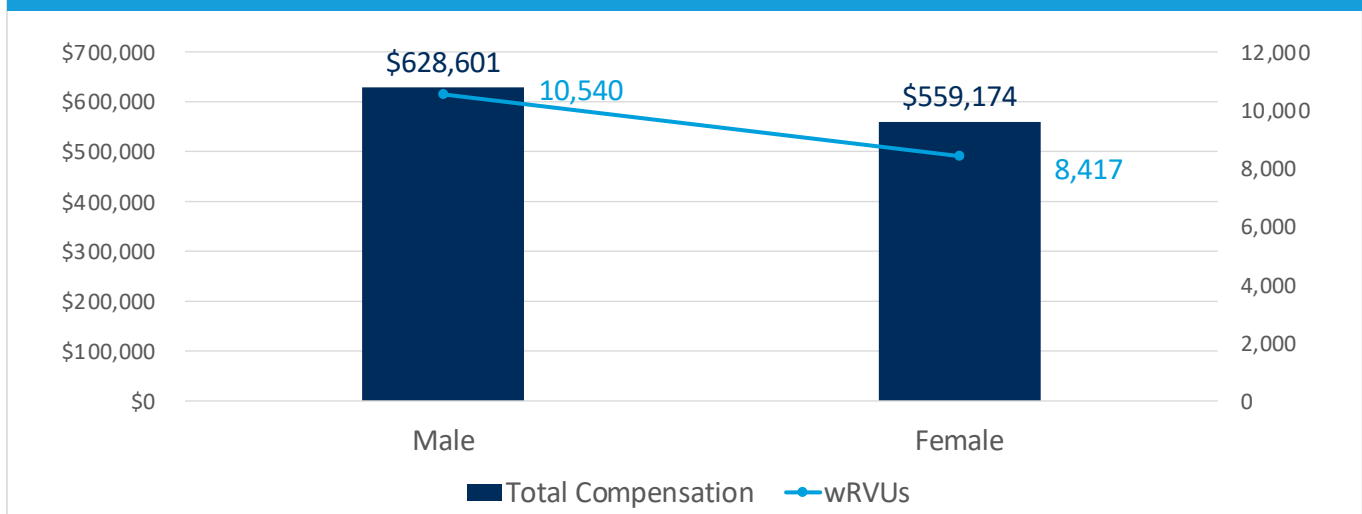
Figure 27: Median Total Compensation per wRVU by Ownership



## THE ROLE OF AGE, STATUS AND GENDER IN THE CARDIOLOGY WORKFORCE

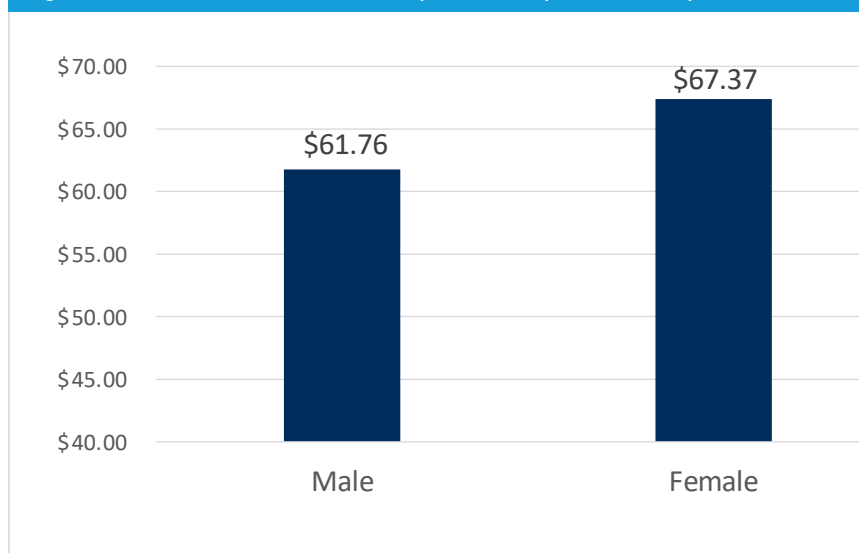
The 2022 gender split for cardiologists was consistent with last year's ratios with 87% of respondents being male and 13% being female. Also a repeat of last year, male cardiologists both outearned and outproduced female physicians at the median for both measures (**Figure 28**). Female cardiologists earned 89% that of males at the median for total compensation and produced 80% of the median wRVUs per FT physician when compared to their male analogs.

Figure 28: Median 2022 Total Compensation and wRVUs per FT Cardiologist by Gender



At the same time, female physicians earned nearly 10% more in median total compensation per wRVU than the male physicians (**Figure 29**).

Figure 29: Median 2022 Total Compensation per wRVU by Gender



**MALE** CARDIOLOGISTS  
CONTINUE TO OUT EARN AND  
OUT PRODUCE  
**FEMALE** CARDIOLOGISTS

MEDIAN TOTAL  
COMPENSATION:

**FEMALE** CARDIOLOGISTS  
EARN 89% VS.

**MALE** COUNTERPARTS



**FEMALE** CARDIOLOGISTS  
MEDIAN wRVUs: PRODUCED 80% VS.  
**MALE** FT CARDIOLOGISTS



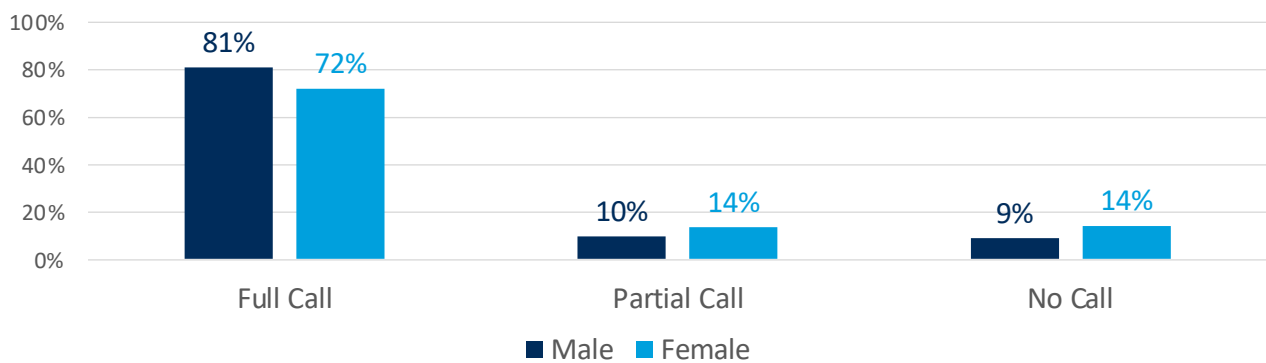
Call participation, shown in **Figure 30**, is nearly unchanged from 2021. Results show that female cardiologists are more apt to have reduced or no call responsibilities in comparison to male physicians, with 28% of female respondents taking less than full call compared to 19% for males. Given the nearly straight-line relationship that call participation has on both total compensation and wRVU production, call differences are likely in part driving the discrepancies by gender for both metrics (**Figure 31**).

**REGARDLESS OF AGE OR GENDER, MEDIAN INCOME**

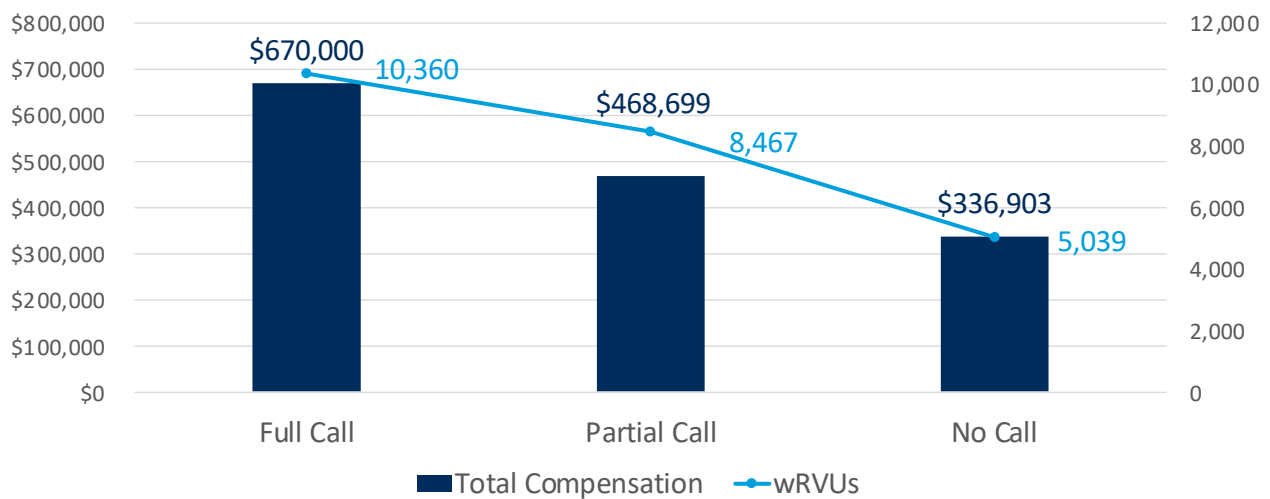
**DECREASES BY ABOUT 30% FOR PARTIAL CALL AND 50% FOR NO CALL**



**Figure 30: 2022 Call Participation by Gender**



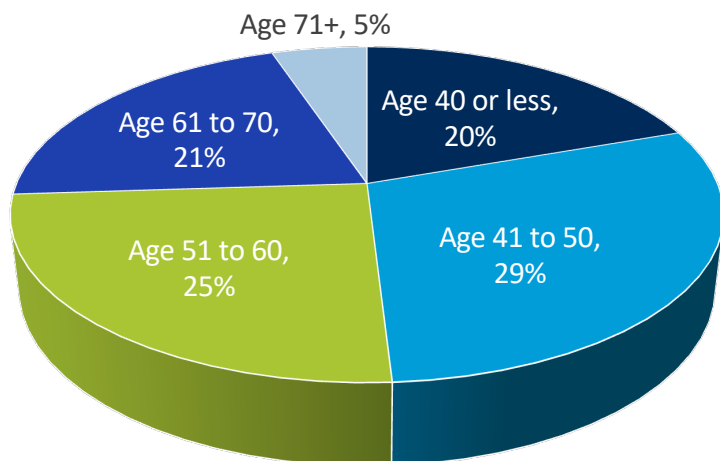
**Figure 31: Median 2022 Total Compensation and wRVUs per FT Cardiologist by Call Participation**



This chart also shows the high value that is ascribed to call burden by cardiologists. Median total compensation drops by 30% for those taking partial call and by a full half for those with no call responsibilities. Granted some of this income decline is due to other factors, such as production drops, but these percentages are in line with data from a call survey MedAxiom conducted in 2022.

The bulk of cardiologists who participated in the 2022 survey are between 41 and 50 years old, as shown in **Figure 32**. More than a quarter of practicing physicians (26%) are aged 61 years and up with 5% aged 71 years and older. As can be seen in the following illustration (**Figure 33**), age also plays a significant role in call participation with 72% of those 61 to 70 years old taking full call, dropping to less than half (44%) for those aged 71 years and up.

Figure 32: 2022 Cardiologist Age Distribution



**1 IN 4**  **CARDIOLOGISTS IS AGED 61+**


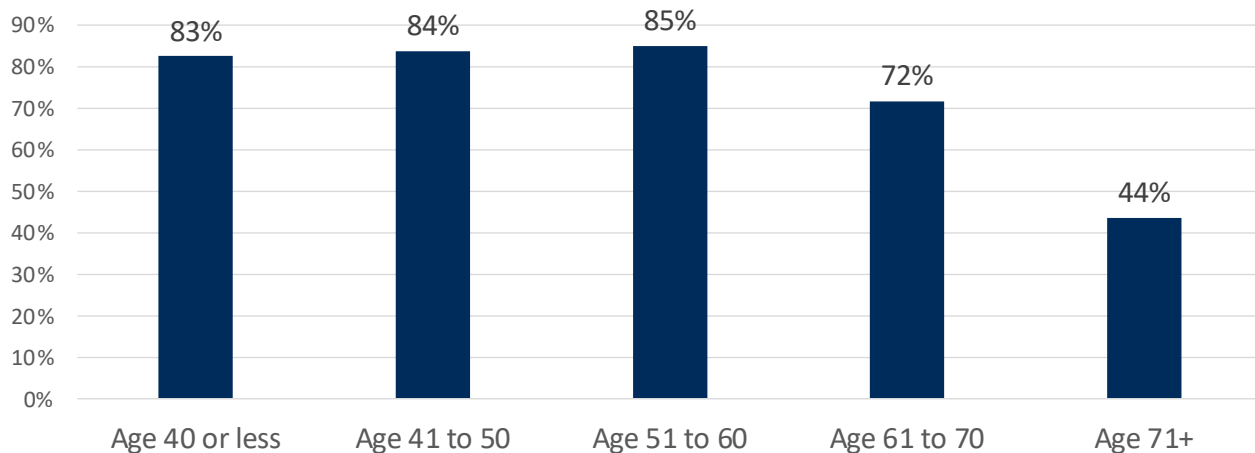
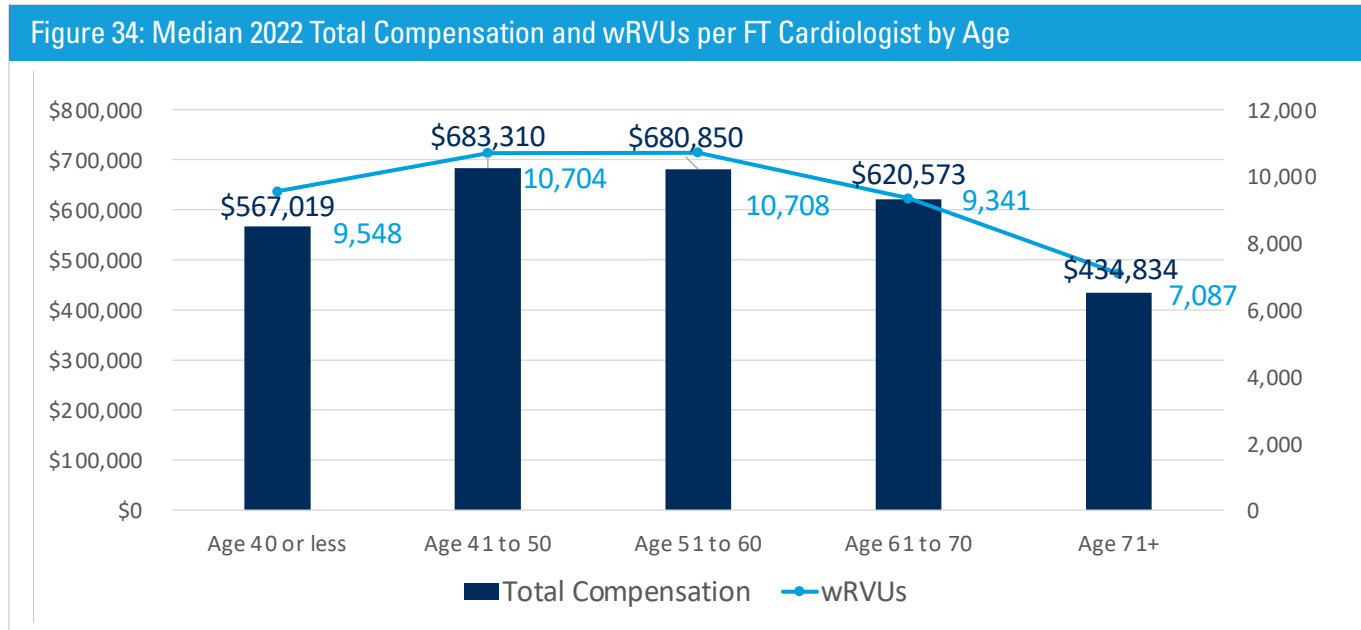
**3 IN 4**  **CARDIOLOGISTS AGED 61 TO 70 TAKE FULL CALL**

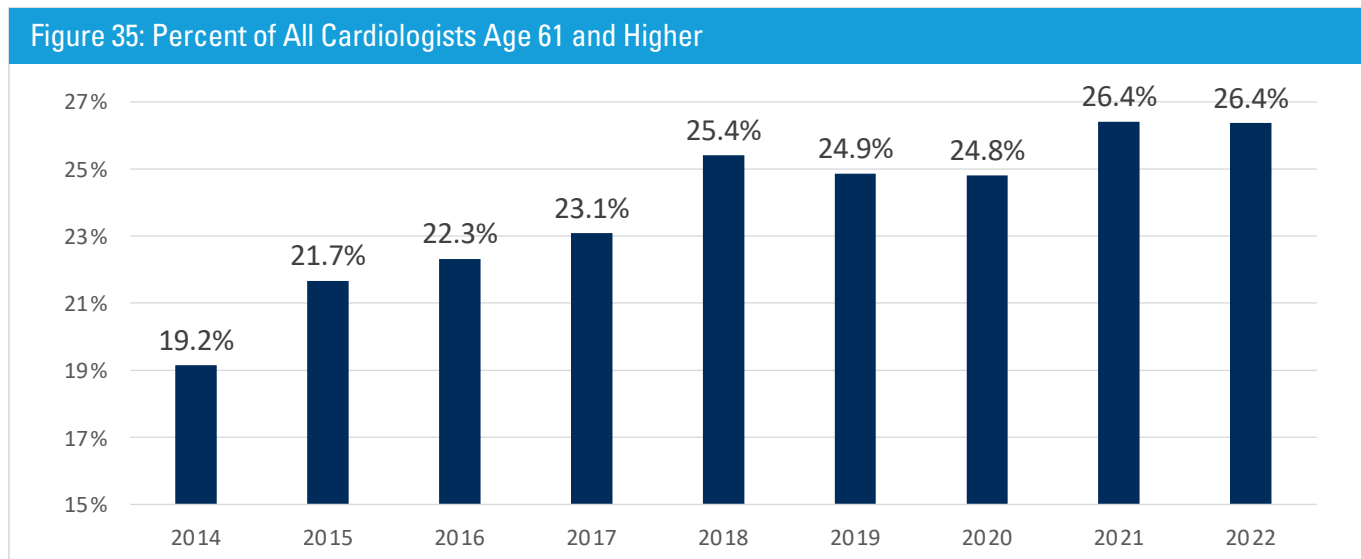
Figure 33: 2022 Full Call Participation by Age



Cardiology production and income peak when physicians are in their 40s and 50s (**Figure 34**). Physicians aged 61 years and up produce 84% of the wRVUs per FT cardiologist – or 1,730 wRVUs less per FT physician at the median – compared to those in the decade preceding them.

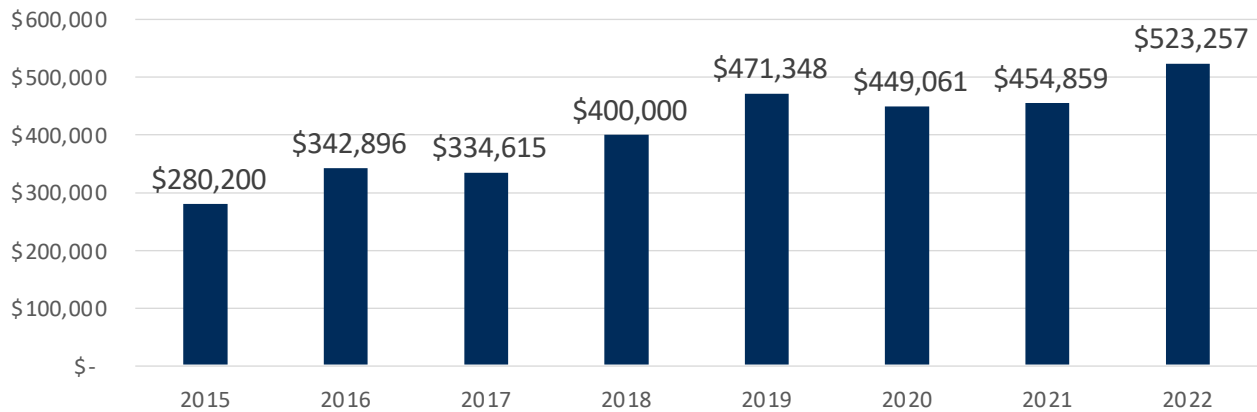


For years, MedAxiom has been closely following the age distribution of cardiologists in its membership as part of broader concern for an adequate workforce. These numbers are used as one of many data points to predict the net number of physicians entering the profession through fellowships versus those either slowing down or leaving practice. This calculation has shown a deficit for years now as the number slowing down or leaving practice exceeds the number of new fellows entering the field. While age is just one factor in a complicated calculus, it can be a key predictor of a physician’s participation in call and in overall production. With more than a quarter of cardiologists in the 61 years and above bucket, the upward trend shown in **Figure 35** is a harbinger of continued pressure on cardiology staffing.



When demand exceeds supply in an open market, one expects to see a price increase. This has certainly been the case for cardiologists. **Figure 36** demonstrates that the annual income for cardiologists aged 35 years and under increased again in 2022 to \$523,257 per FT cardiologist. This is not to be confused with a starting salary offer. Since it is a measure of total compensation, it would include any incentives, bonuses or other payments in addition to the base salary. MedAxiom is preparing a survey to capture these other relevant data points soon.

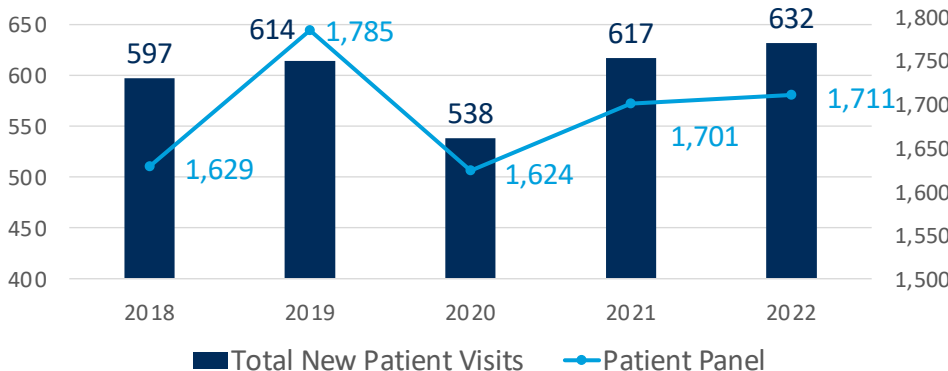
Figure 36: Median Total Compensation per FT Cardiologist Age 35 and Under




### KEY CARDIOLOGY VOLUMES AND RATIOS

Median total new patient volumes inched up again in 2022 to 632 per FT cardiologist, the highest ever recorded in the history of the survey (**Figure 37**). Recall that this number plummeted during the peak of the pandemic in 2020 but quickly rebounded in 2021. Patient panel volume recorded its second highest total ever in 2022 with a median of 1,711 unique, active cardiology patients per FT cardiologist. This total was only slightly higher than last year’s median of 1,701.

Figure 37: Median New Patient and Panel Volumes per Cardiologist FTE

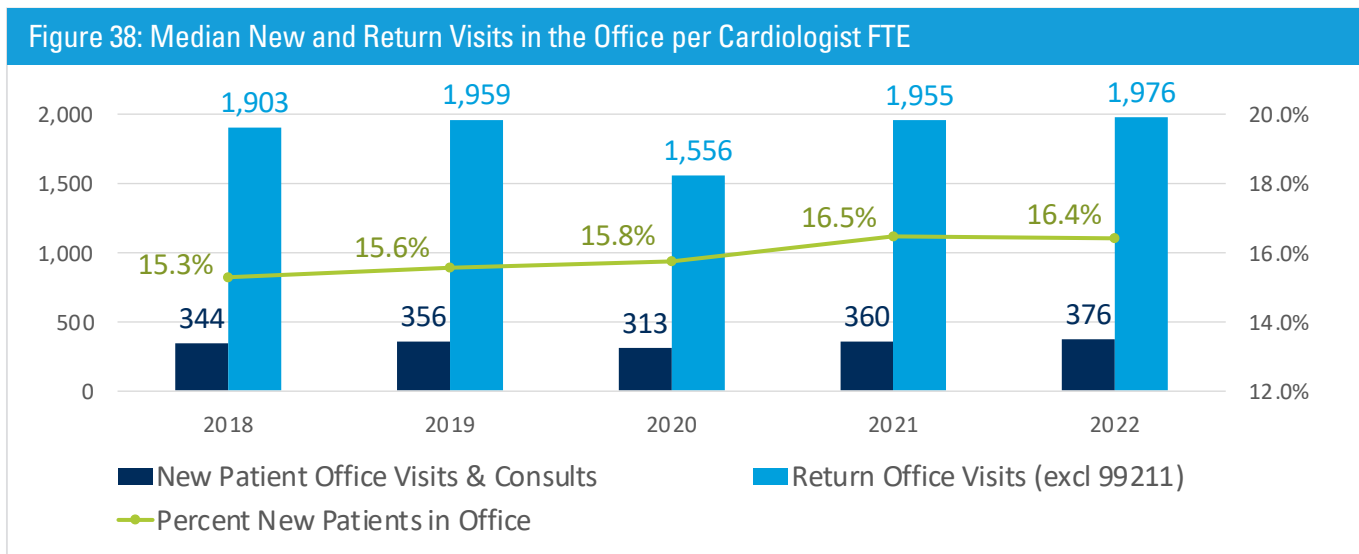


**MEDIAN TOTAL NEW PATIENT VOLUMES REACHED HIGHEST LEVELS RECORDED IN THE HISTORY OF THE SURVEY**

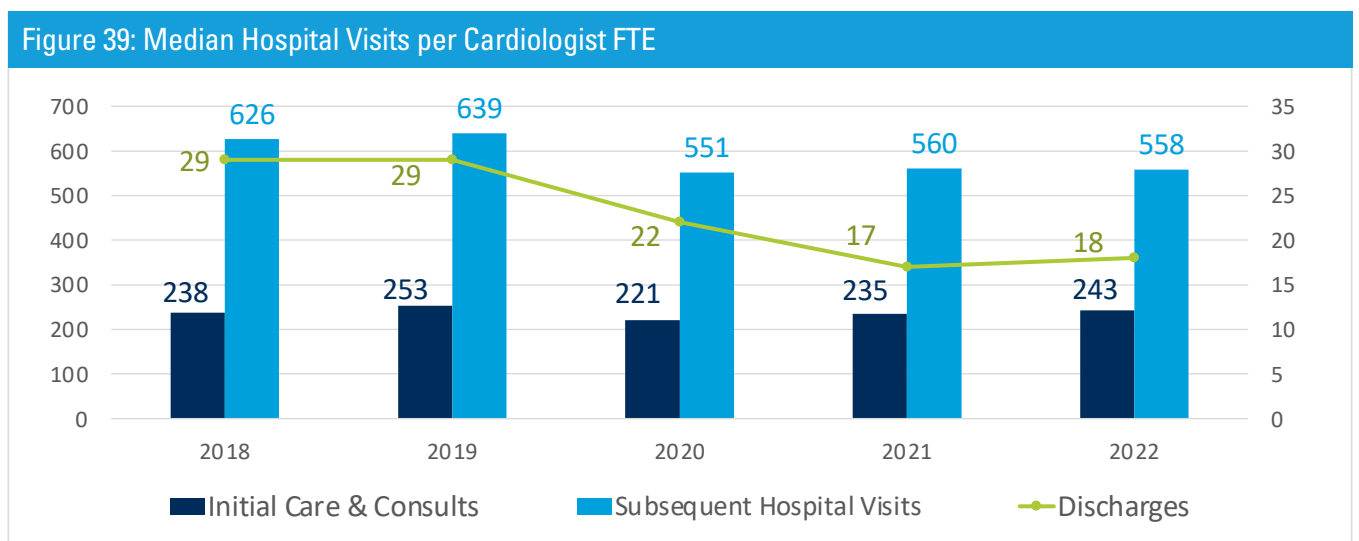


Concentrating on the ambulatory (office) care setting, the median total of new patient office visits and consults was also up to its highest point at 376 per FT cardiologist (**Figure 38**). While this represents a less than 5% increase from 2021, the metric is up over 30% since 2014 when the median was 287 new office patients per cardiologist. Return office visits also hit their highest level ever in 2022 at 1,976 visits per FT cardiologist, a scant 1% increase over 2021. Between 2014 and 2022, return office visits increased at about half the rate of new patient visits, expanding by 14% during that timeframe.

Also shown in **Figure 38** is the percent of new patients in the office setting (the righthand axis), compared to total new and repeat office visits. Through consulting experiences, MedAxiom believes that 20% is a healthy rate for this metric, making enough appointment slots available for solid new patient access.




Moving over to the hospital setting, **Figure 39** shows three distinct metrics: initial care and consults, subsequent hospital visits, and discharges. Unlike the corollary ambulatory data, no historical records were achieved for hospital visits, where median initial care and consults were up just slightly while median subsequent visits dropped a fraction. Meanwhile, median discharges inched up from 17 per FT cardiology to 18.

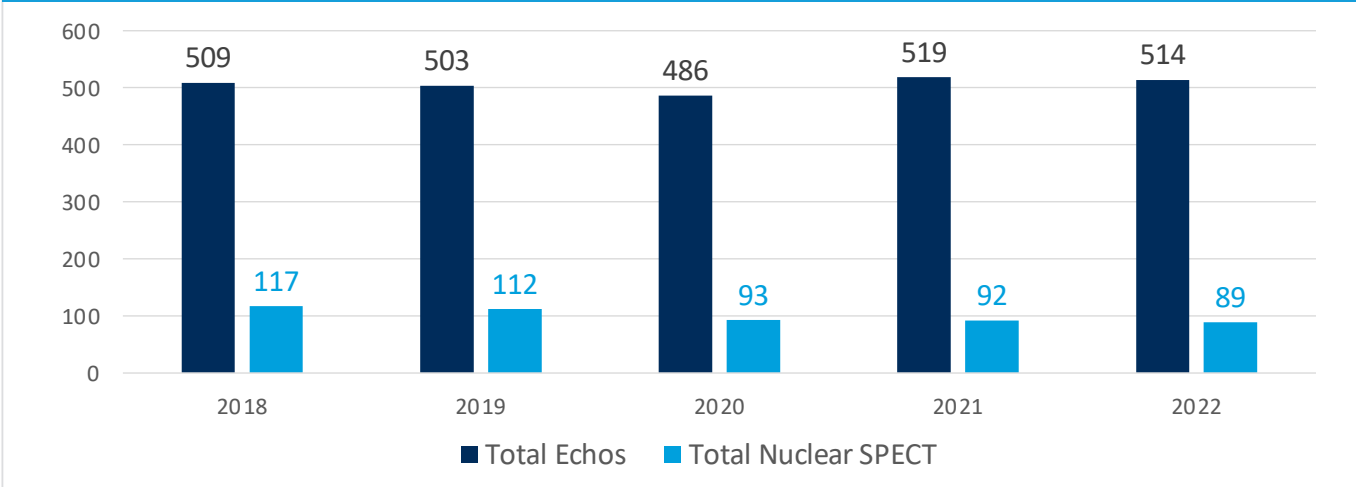


Discharges may have finally bottomed out after more than a decade of decline with the median moving up ever so slightly from 17 to 18 per FT cardiologist in 2022. Subsequent hospital visits were also up to a median of 558 visits per FT cardiologist in 2022 but remained well below prior years during which they exceeded 600 per physician. Initial care and consultations also notched up to a median of 243 per FT cardiologist.

**DISCHARGES PER  
CARDIOLOGIST**  
MAY HAVE HIT  
BOTTOM



**Figure 40: Median Echos and Nuclear SPECT per 1,000 Active Patients**



Staple cardiology imaging studies, echocardiography and nuclear SPECT, held relatively firm in 2022 (**Figure 40**). The reported median for nuclear SPECT continued a multi-year downward trend with a slight drop of 3.3%; such a small decrease would fall within the margin of error for statistical relevance.

Technological advances and societal guideline changes have promoted the value of advanced imaging for cardiology patient populations. **Figure 41** shows the four-year trend for median cardiac PET, CTA and cardiac MR per 1,000 patient panel. Cardiac PET shows the largest volume, remaining consistent over this time period, while CTA has inched up each year. Cardiac MR has been flat and remains the least utilized modality of the three for cardiology. **Figure 42** shows the percentage of reporting programs that offer each diagnostic type. Despite bouncing back and forth, all appear to be fairly stable over time.

**Figure 41: Median Advanced Imaging Studies per 1,000 Active Patients**

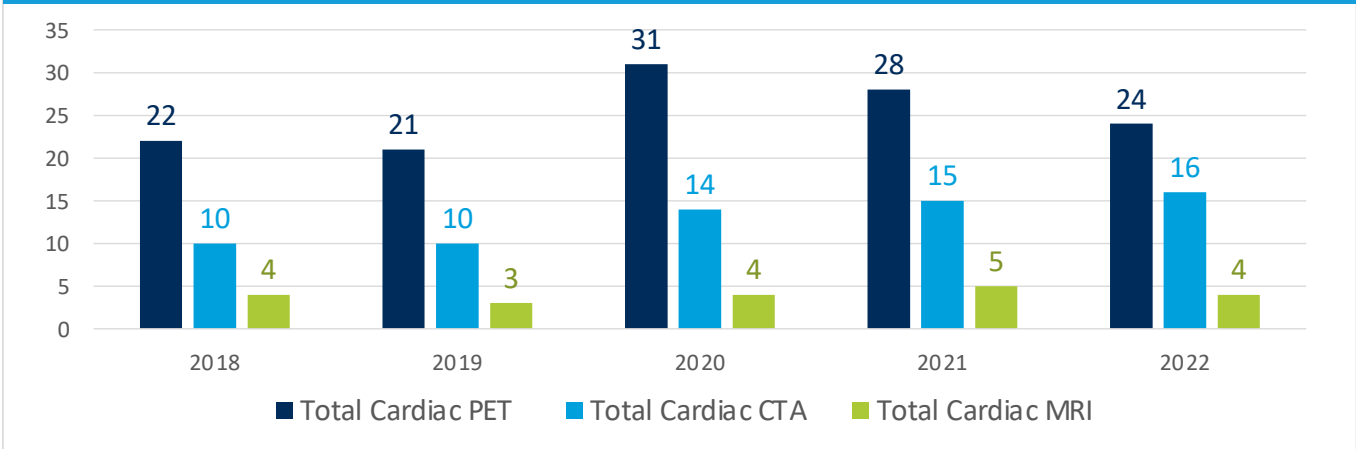
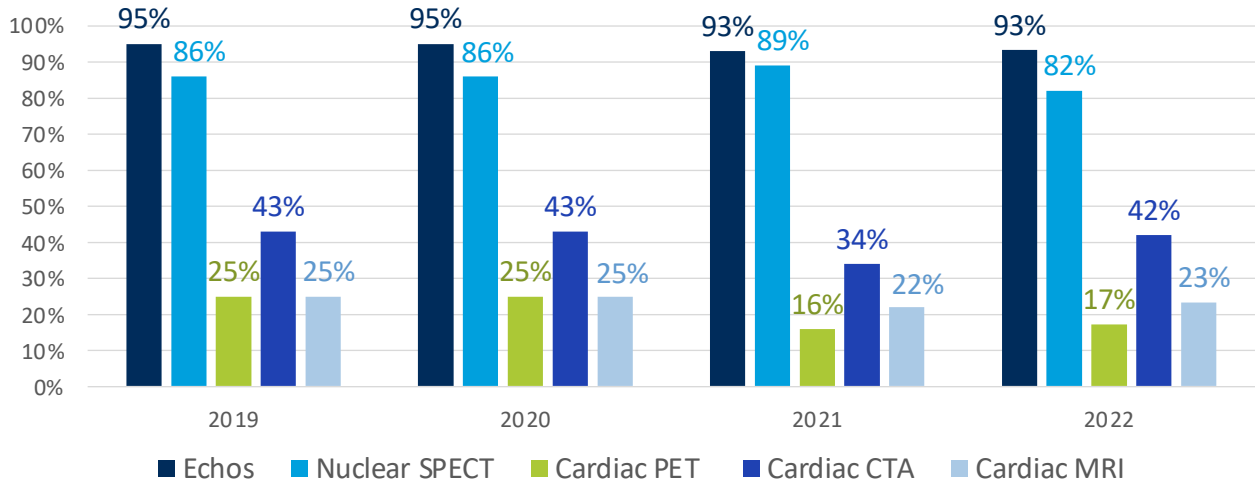
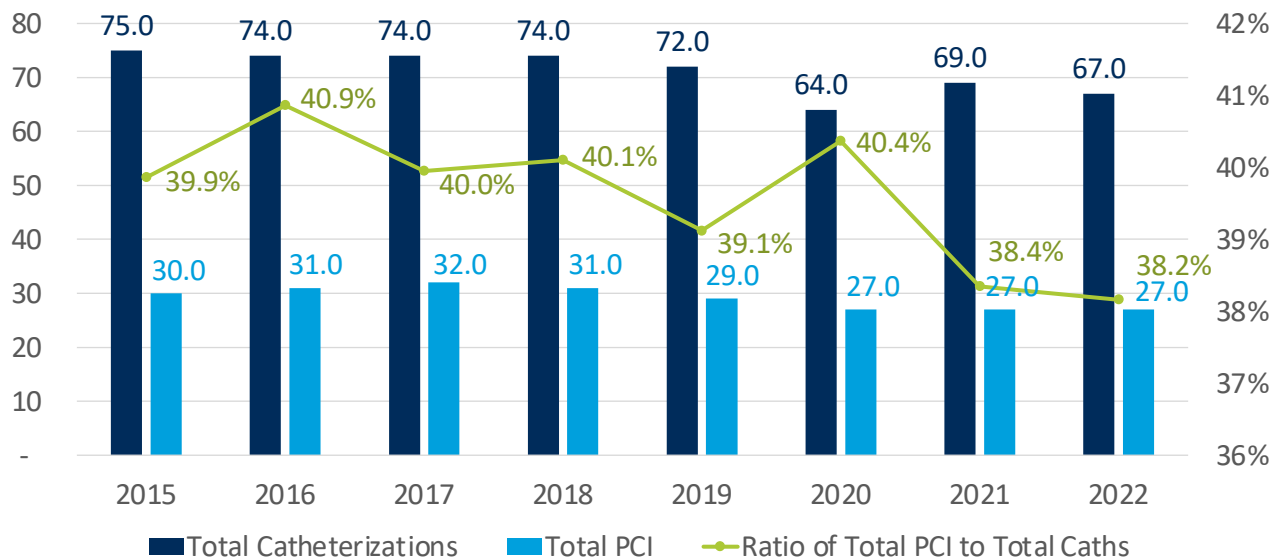


Figure 42: Percent of Programs Offering Imaging Modality

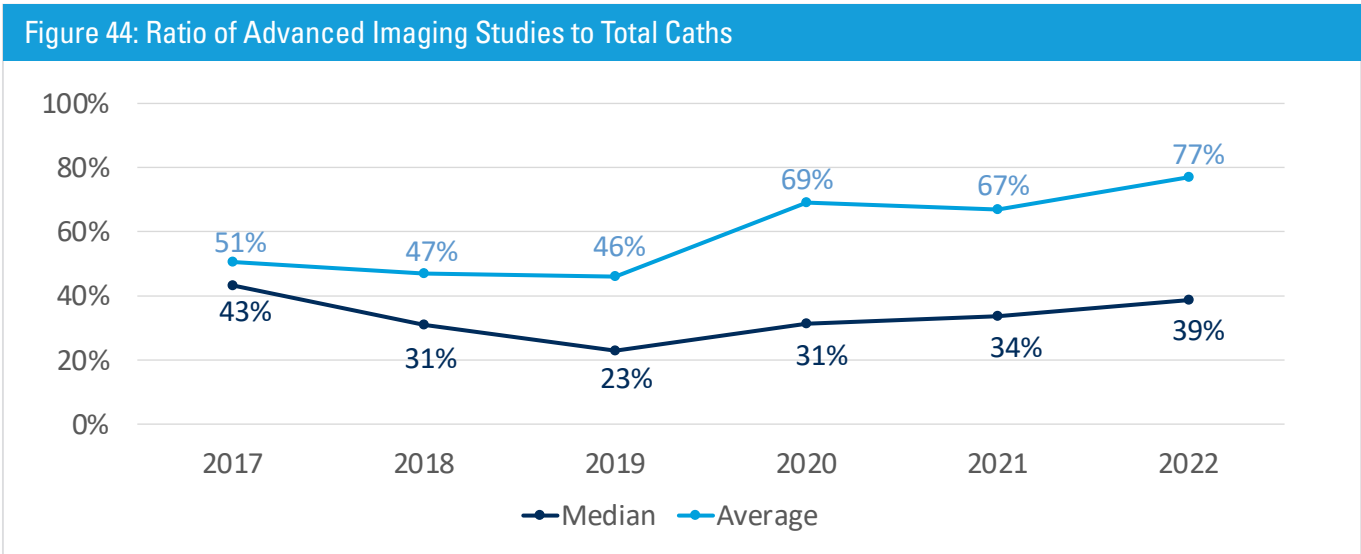


Turning to cath lab volumes, **Figure 43** shows that invasive procedures have not fully reverted to pre-pandemic levels after dropping significantly during the primary COVID year of 2020. This may simply be the “new normal” for these invasive procedures. Interestingly, despite the increased utilization of advanced imaging procedures, particularly CTA (as documented previously), the ratio of percutaneous coronary intervention (PCI) to catheterizations has remained right around 40% (righthand axis of **Figure 43**). The longer-term expectation is that these new technologies will reduce the number of “normal” patients taken to the cath lab who, upon angiogram, do not require an intervention.

Figure 43: Median Cath Lab Volumes per 1,000 Active Patients



**Figure 44** presents the ratio of advanced imaging studies to total catheterization volumes. Given some previous years’ results, it is difficult to determine whether that ratio is trending up or down at the median. Notice though how the average separates from and is much higher than the median. This delta results from “outlier” programs reporting very high percentages of advanced imaging utilization. It may be that these “outliers” represent the future state of the cardiovascular community and might impact the ratio of PCI to catheterizations in the future. In support of this, MedAxiom reviewed the raw data for these higher-volume advanced imaging programs – particularly those with high CTA utilization – and found that this subset had a 10% higher PCI-to-cath ratio at the median than that of the entire database.



As in years past, interventional cardiologists continue to perform the majority of invasive services, with median total catheterizations at 262 per FT interventionalist (**Figure 45**). This median has been largely unchanged for a decade. By comparison, the median for an FT invasive cardiologist is 97 catheterizations – just 37% of the interventional median. The 2022 percentiles for PCI volumes for interventional physicians can be found in **Figure 46**. This volume at the median has also been flat for 10 years.

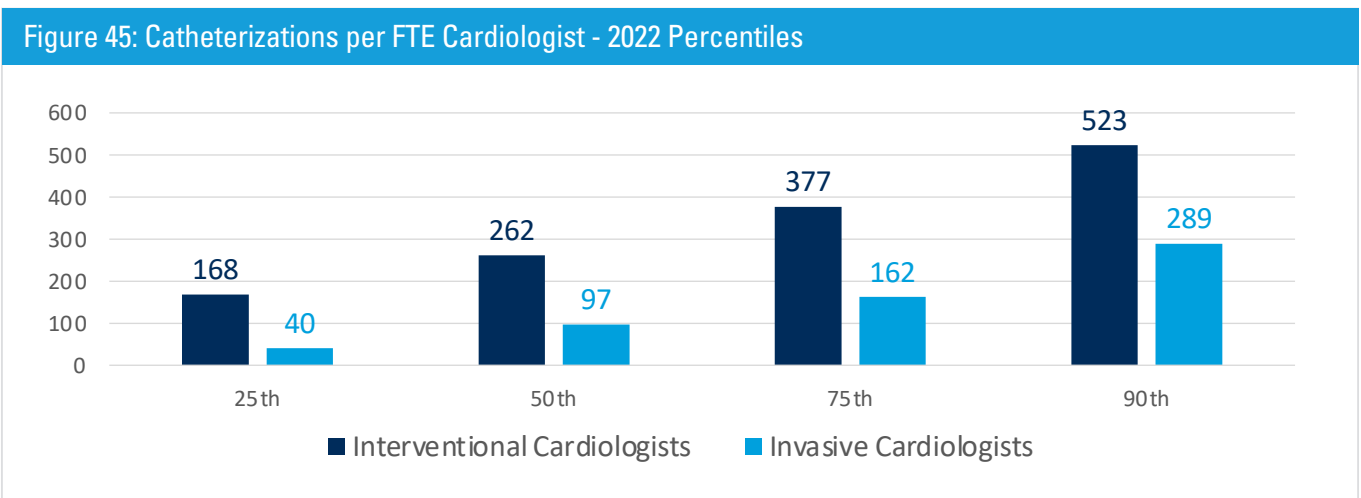
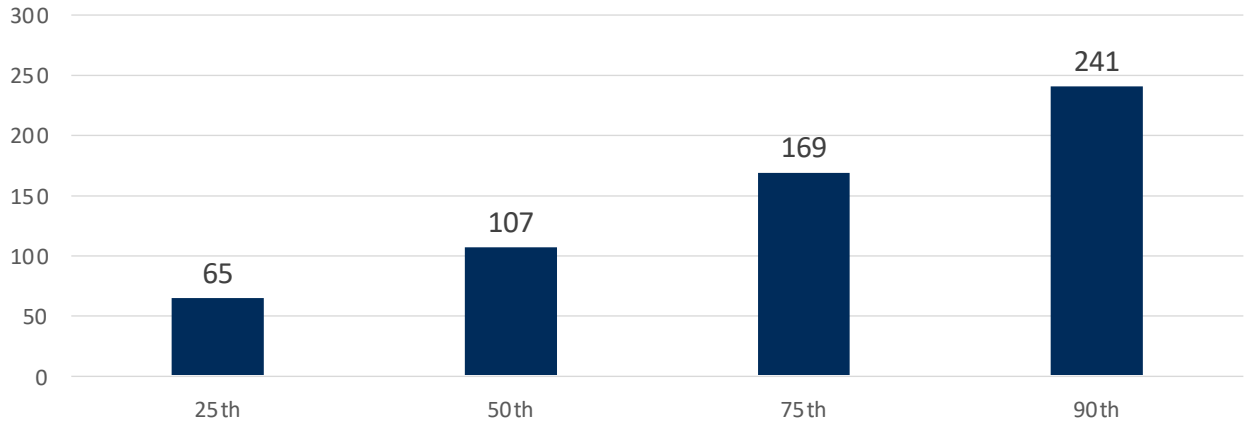


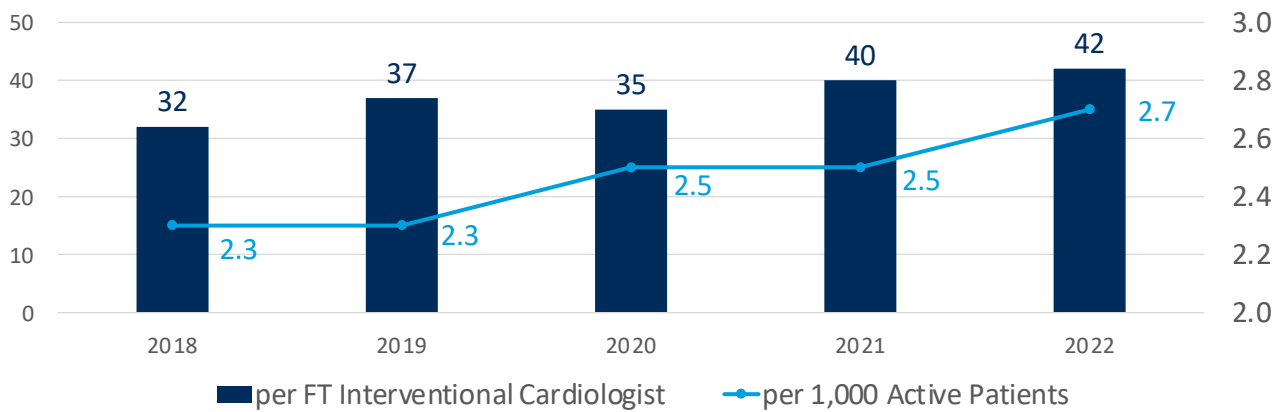


Figure 46: PCIs per FT Interventional Cardiologist - 2022 Percentiles

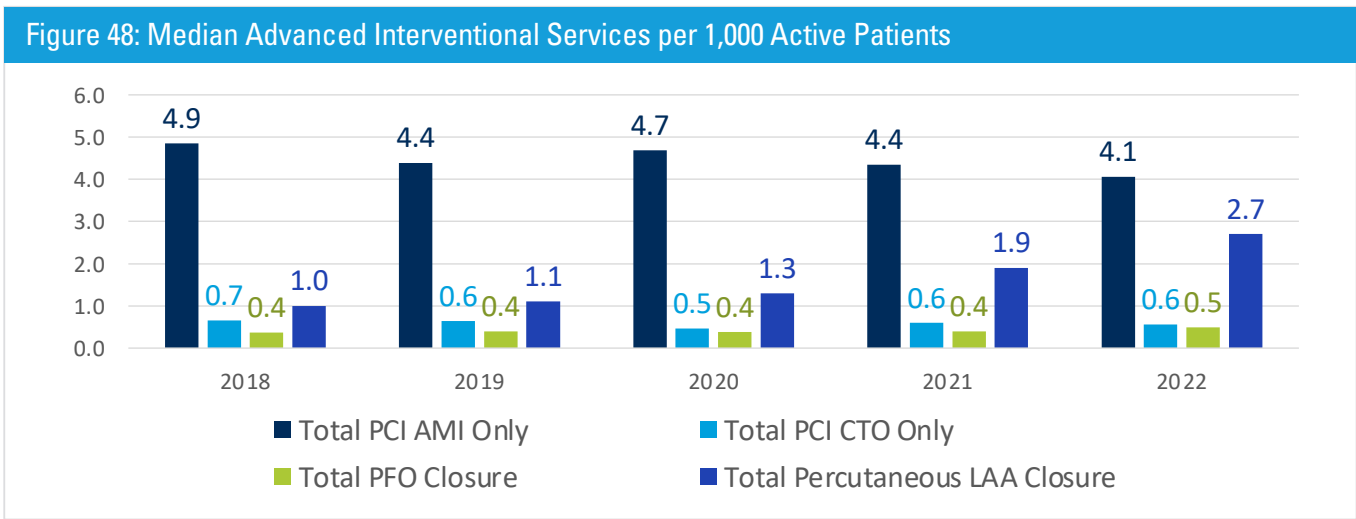


Turning now to advanced interventional procedures, median transcatheter aortic valve replacement (TAVR) volumes notched up again in 2022, both at the patient panel level (per 1,000 active patients) and at the per FT interventionalist level (**Figure 47**). At the median in 2022, there were just under three (2.7) TAVRs for every 1,000 active cardiology patients. This same illustration shows that the number of TAVRs performed by each interventional cardiologist also increased to a median of 42 per FT physician.

Figure 47: Median TAVR Volume per FT Interventional Cardiologist and Patient Panel



Amongst other advanced interventional procedures, the trends have been a mixed bag (**Figure 48**). Median total PCI acute myocardial infarction (AMI) only volumes have shown a decline since 2018, while median total left atrial appendage closure (LAAO) procedures have increased. Median total PCI chronic total occlusion (CTO) volumes and patent foramen ovale (PFO) closures have been flat.



**Table 6** shows volumes by percentile for each of these procedures per FT interventionalist. Not all interventionalists perform each of these procedures, with groups choosing to centralize volumes with a smaller number of operators. Of all the interventional physicians performing PCI procedures, 93% will also perform PCI AMI only but just 58% complete PCI CTO cases. Less than a quarter (23%) of interventionalists perform TAVR and just 22 percent PFO closures.

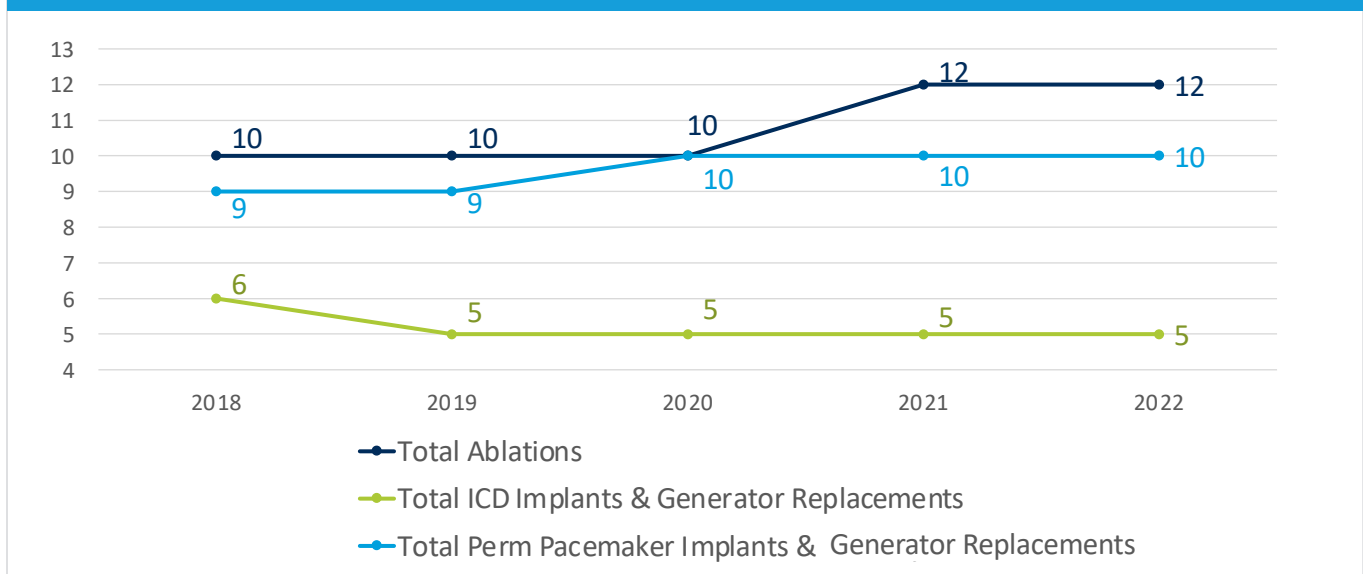
**Table 6: Interventional Services per FT Interventional Cardiologist - 2022 Percentiles**

	25th	50th	75th	90th
PCIs	65	107	169	241
PCI AMI Only	10	17	27	41
PCI CTO Only	1	3	6	12
TAVR	21	42	68	98
Total PFO Closure	3	7	13	20



EP procedures remained flat from 2021 to 2022. For both implantable cardioverter-defibrillator (ICD) and pacemaker implants, volumes have been steady for five straight years when measured by patient panel per 1,000 active cardiology patients, as the denominator (**Figure 49**).

Figure 49: Median EP Procedures per 1,000 Active Patients



## CONSULT WITH THE EXPERTS



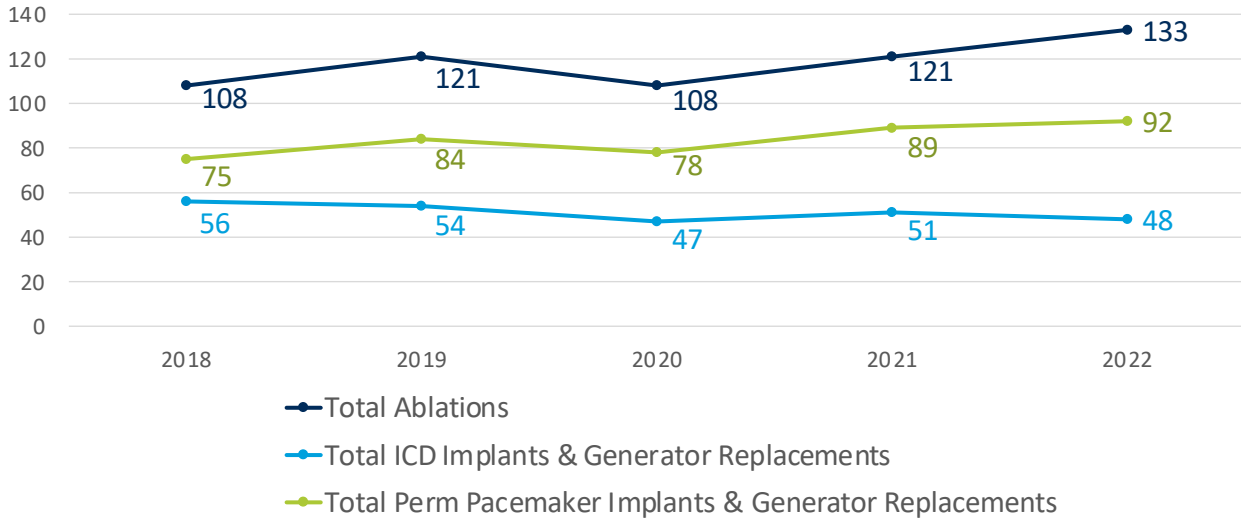
KEVIN MAIR, MBA

MEDAXIOM'S VICE PRESIDENT OF CARE TRANSFORMATION SERVICES

### HOW CAN THE DATA IN THIS REPORT BE PUT INTO PRACTICE?

“ This report is an incredibly valuable tool for leaders who can use the data to develop plans and budget sensibly for recognized market trends, provider recruitment and retention strategies. As highlighted, the ratio of APPs to physicians has increased significantly over the years, so it will be necessary for leaders to focus on care team tactics, compensation and production trends for this critical role in the care team. Since new patient volumes continue to increase, along with patient acuity and the median cardiologist age, leaders should ensure that their provider workforce plan is reviewed, revised and substantiated with the data from the annual Cardiovascular Provider Compensation and Production Survey Report. ”

Figure 50: 2022 Median EP Procedures per FT Cardiologist

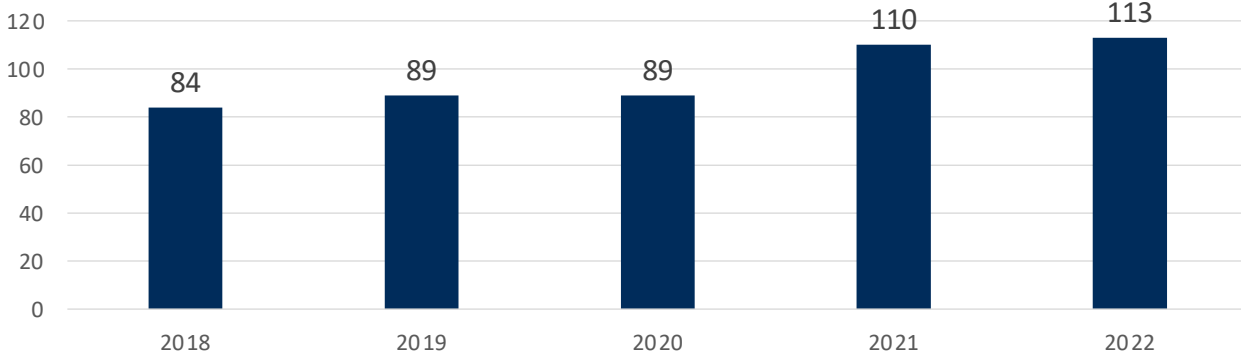


When measuring EP procedural volumes per FT cardiologist (Figure 50), ICD implants have been flat to declining over the past five years while both pacemakers and ablations have increased.

As reported in previous surveys, not all EP procedures are performed by electrophysiologists. In 2022, non-EP physicians performed nearly a third of ICD implants and nearly half (47%) of pacemaker implants.

Beginning in 2021, several new monitoring technologies were approved for reimbursement by Medicare and assigned CPT codes. You can see these new additions in the data where volumes were flat leading into 2021 and then spiked significantly that year (Figure 51). Another more modest increase is seen in 2022 when looking at volume per 1,000 active cardiology patients.

Figure 51: Median Event and Holter Monitors per 1,000 Active Patients



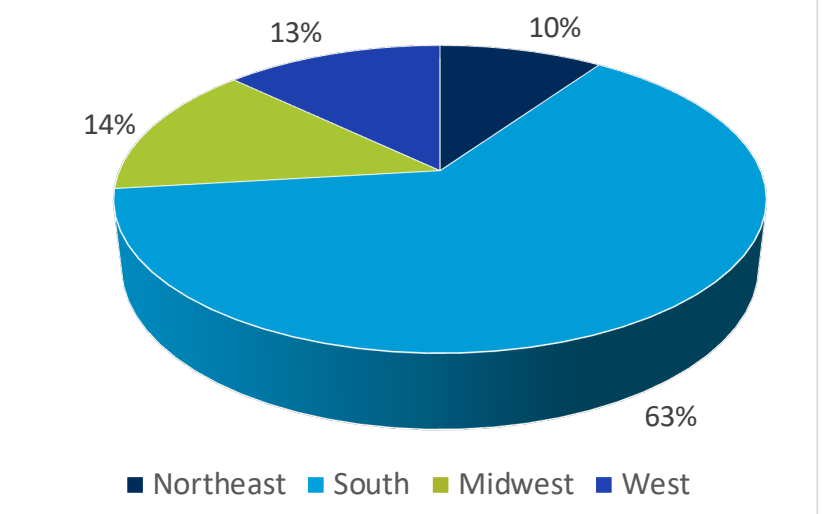
## SURVEY RESULTS – SURGERY

### RESPONDENT CHARACTERISTICS

Ninety-six percent of the surgical program respondents were in an integrated hospital and/or health system environment in 2022. In fact, the cohort of private surgical groups was too small to report or break out separately. Of all the physician respondents, 55% were cardiac and 45% vascular surgeons. Nearly 90% of the surgeons represented are male while only 11% are female – just slightly lower than cardiology gender proportions with 13% female respondents.

Like in cardiology, the surgical respondents came overwhelmingly from the South (**Figure 52**), with relatively equal representation from the remaining three. The median-sized cardiac surgery group had 2.2 FTE surgeons in 2022, while the median vascular group was slightly smaller at 2.0 FTEs (**Figure 53**). This same chart shows that cardiac surgery groups had a median 1.7 APP FTEs per surgeon – a nearly 2:1 ratio – while vascular surgeons had a median 0.9 APP FTEs per surgeon.

Figure 52: 2022 Surgery Programs by Region

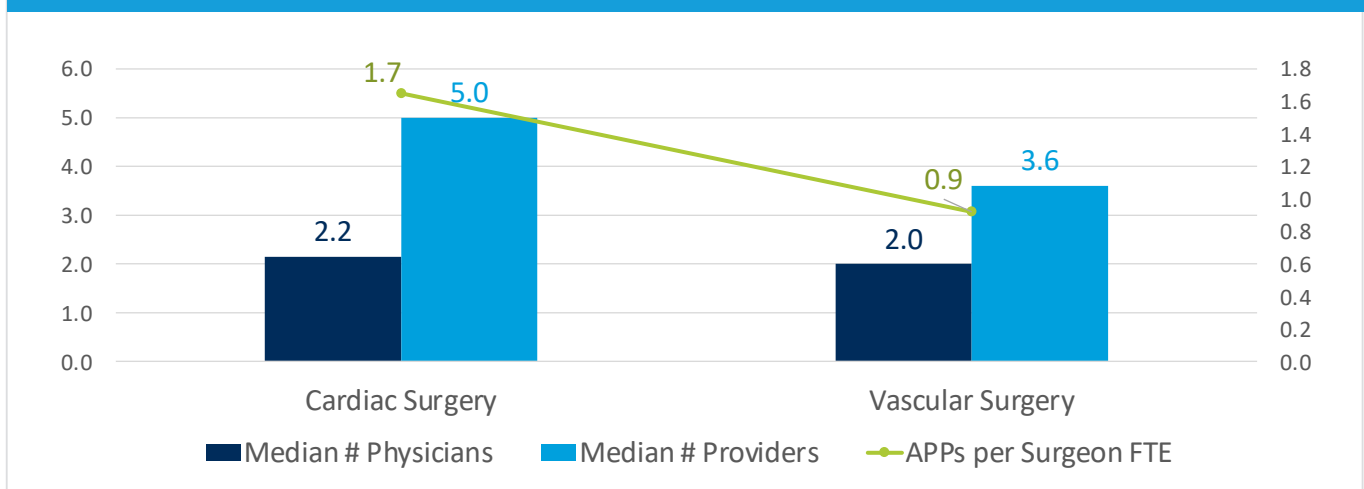


**CARDIAC SURGERY GROUPS HAD A MEDIAN 1.7 APP FTEs PER SURGEON A NEARLY 2:1 RATIO**



**VASCULAR SURGEONS HAD A MEDIAN 0.9 APP FTEs PER SURGEON**

Figure 53: 2022 Median Program Size by Number of Surgeons and APP Ratio



The narrative and data below represent all ownership models combined.

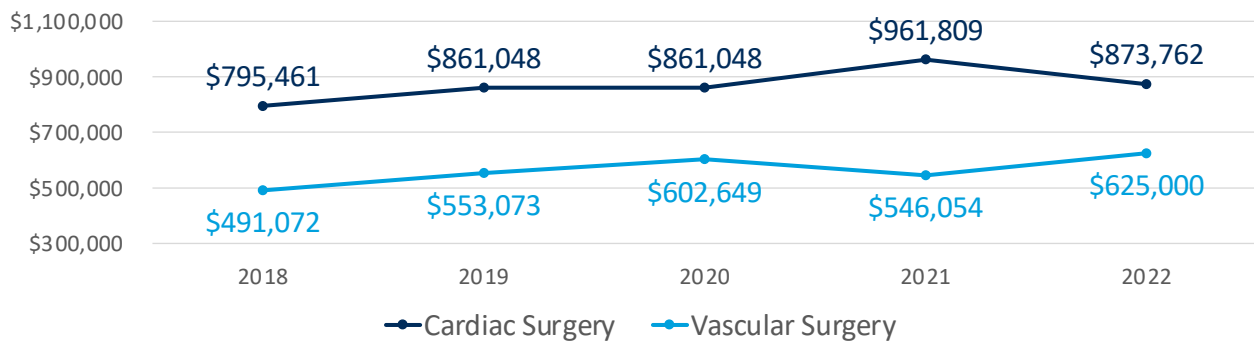
## SURGICAL COMPENSATION AND PRODUCTION

After peaking in 2021 at a median of just under \$1 million per FT surgeon, total compensation for cardiac surgeons dropped in 2022 to a median of \$873,762 (Figure 54). Vascular surgery diverged and recorded its highest level ever in MedAxiom survey history at a median of \$625,000 per FT vascular surgeon. The delta between these two surgical specialties narrowed to its lowest point in 2022, at a difference of \$248,762 per FT surgeon per year at the median.

**TOTAL COMPENSATION FOR CARDIAC SURGEONS DROPPED IN 2022**

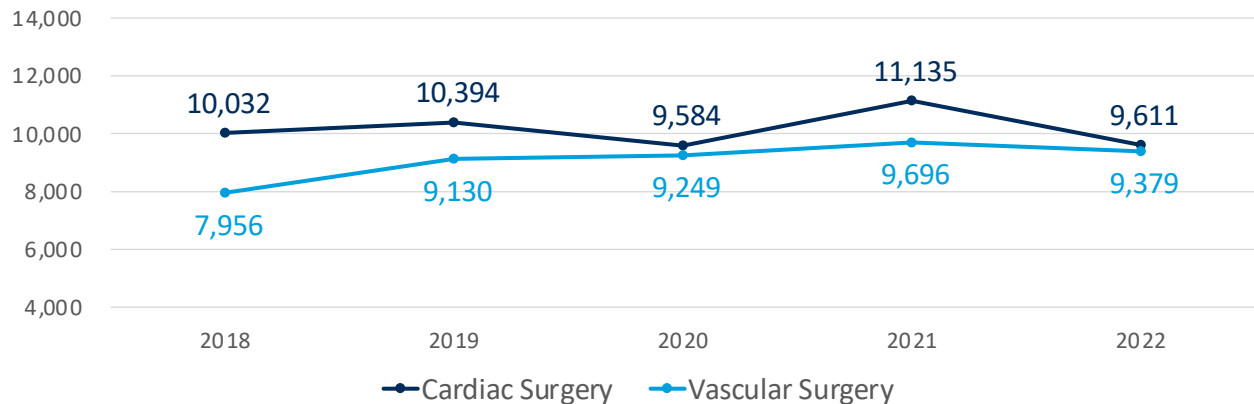


Figure 54: Median Total Compensation per FT Surgeon by Specialty



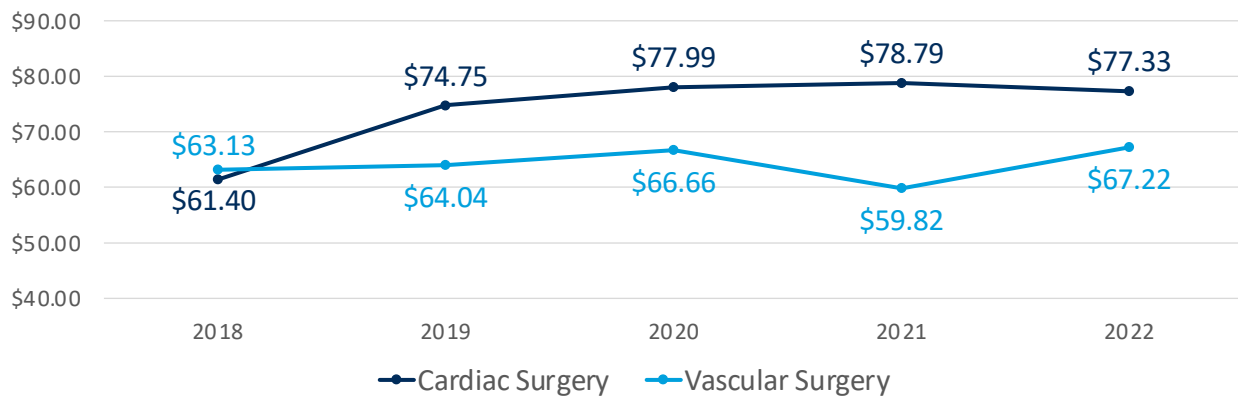
Median productivity between the surgical specialties also narrowed to its smallest degree of separation at just 232 wRVUs per FT surgeon (Figure 55). Vascular surgery production has remained relatively stable over the five years shown here while cardiac surgery dropped significantly from its 2021 median of 11,135 wRVUs per FT surgeon. Perhaps pointing out the obvious, cardiac surgeons earn nearly a quarter of a million dollars more per year at the median for nearly identical production as FT vascular surgeons. This is likely a reflection of the call burden, a shortage of cardiac surgeons and other market dynamics.

Figure 55: Median wRVUs per FT Surgeon by Specialty



Given these comparisons, the result is a divergent total compensation per wRVU as found in **Figure 56**. Cardiac surgery total compensation per wRVU has remained consistent for the past three surveys while vascular surgery has fluctuated more significantly. The delta of just over \$10 per wRVU at the median in 2022 has been relatively persistent over the years. Again, this is likely a reflection of the different market dynamics between surgical specialties.

Figure 56: Median Total Compensation per wRVU by Specialty

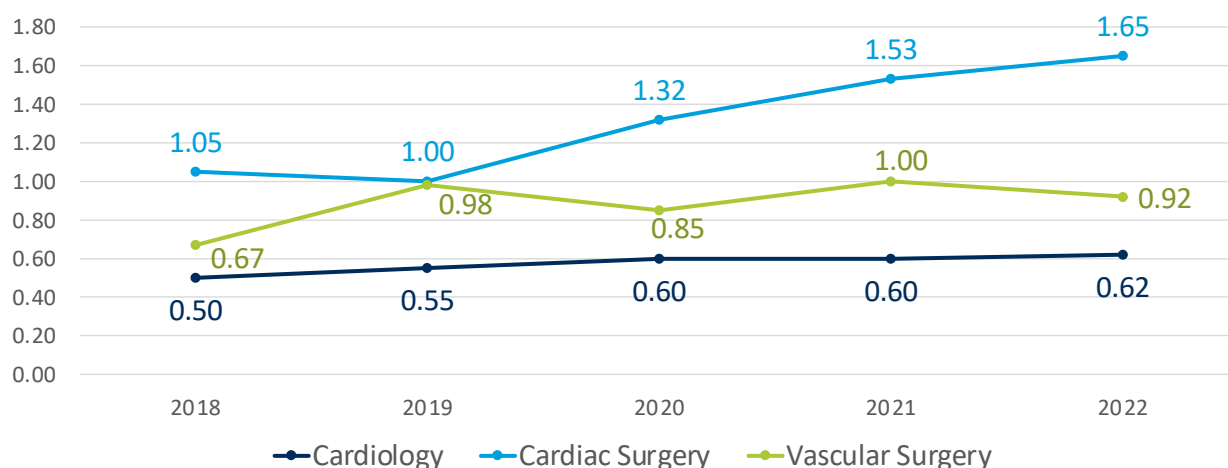


## SURVEY RESULTS – ADVANCED PRACTICE PROVIDERS

### ROLE WITHIN CARDIOVASCULAR

After hovering around one advanced practice provider (APP) per cardiac surgeon for years, the last three surveys have shown a marked increase in this ratio, growing 57% since 2019 (**Figure 57**). In fact, if the trend from the last three years continues, the median will surpass two APP FTEs per cardiac surgeon by 2025.

Figure 57: Median APP FTEs per CV Physician FTE



This expansion is probably connected to a shortage of cardiac surgeons, which was predicted in a 2018 article in the [Journal of Thoracic and Cardiovascular Surgery](#). Dr. Moffatt-Bruce and her co-authors found that the demand for surgical services would outstrip the supply of surgeons in the field, requiring a 121% increase in the caseload per surgeon by 2023. While APPs cannot themselves perform surgeries, they can mitigate much of the follow-up work allowing fewer surgeons to take on more patients and surgeries.

The ratio of vascular surgery APPs to vascular surgeons has been more stable over time, fluctuating around one APP FTE per surgeon.

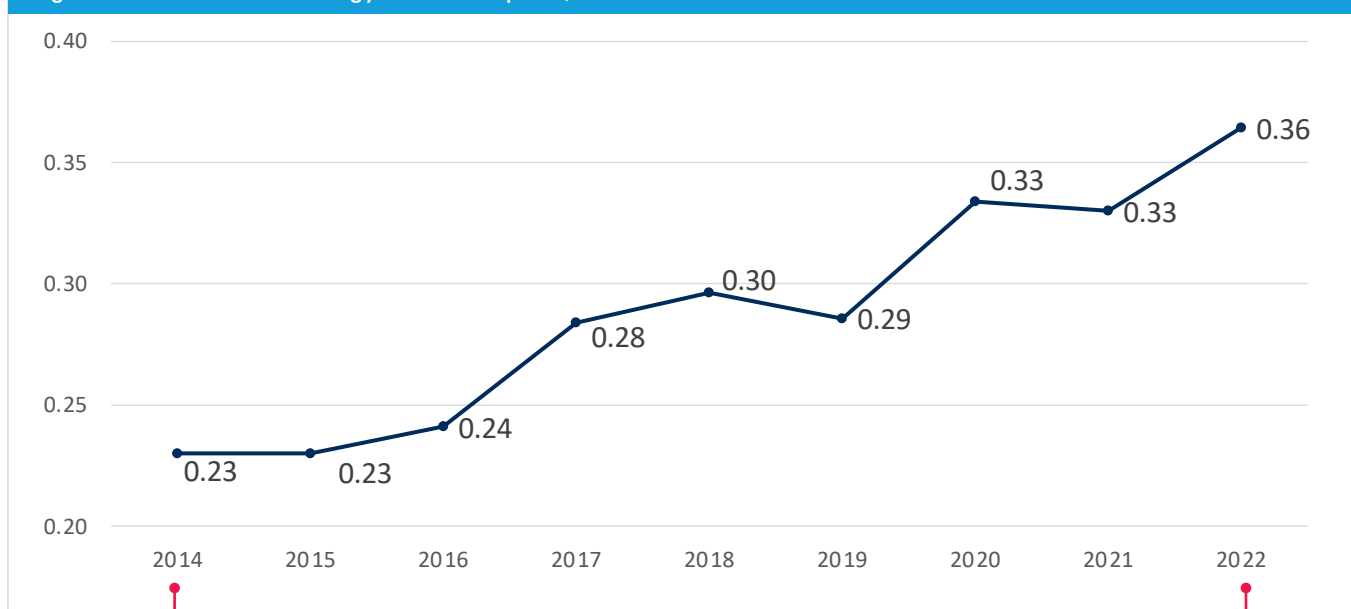
**CARDIAC SURGERY APP TO CARDIAC SURGEON RATIO HAS INCREASED 57% SINCE 2019**

**VASCULAR SURGERY APPS TO VASCULAR SURGEONS HAS BEEN MORE STABLE OVER TIME**



The inclusion of APPs in cardiology programs continued its rise in 2022, with the median now sitting at 0.62 APP FTEs per cardiologist (also **Figure 57**). Considering this, it is illuminating to look at APP deployment at the panel level in the cardiology data (**Figure 58**). At the median in 2014, there were 0.23 APPs per 1,000 active cardiology patients (patient panel). By 2022, that ratio had increased to 0.36 APP FTEs at the median. Using the example of a hypothetical cardiology group with 25,000 active patients in its panel, this group would have had 5.75 APP FTEs  $((25,000 \times 0.23)/1,000)$  in 2014. The same group would have nine APPs in 2022 – a 56% increase (**Figure 58**).

Figure 58: Median Cardiology APP FTEs per 1,000 Active Patients



**5.75 APPS FOR 25,000 PATIENT PANEL**

**9 APPS FOR 25,000 PATIENT PANEL**



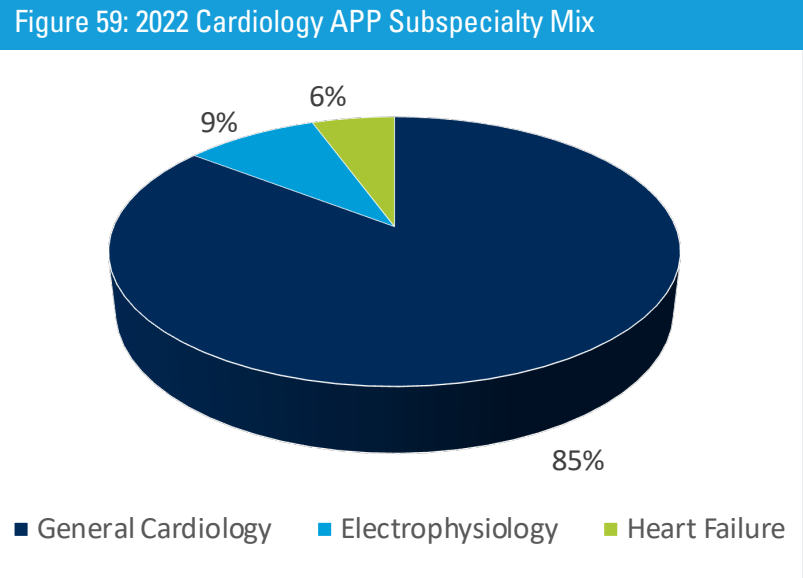
## CV TRANSFORMUM

The CV Transformum conference, hosted by MedAxiom biannually, unites cardiovascular thought leaders from across the country to transform cardiovascular care, together. CV Transformum features interactive, industry-leading education designed for the MedAxiom membership community.

Learn More At [MedAxiom.com/CVTransformumHub](https://www.MedAxiom.com/CVTransformumHub).

**CONNECT.  
LEARN.  
TRANSFORM.**

There have been discussions at MedAxiom membership meetings that predict an acceleration of APP deployment in cardiology in the coming years. This is forecast given the growing demand for services – resulting in active panel expansion and the continued challenge of recruiting cardiologists. Only time will tell if this prognostication comes true but the data seem to be aligning to suggest such a conclusion. Within cardiology, APPs can concentrate in areas of specialization similar to the cardiologists with whom they work. **Figure 59** shows the 2022 breakdown by subspecialty type. The vast majority (85%) falls within the “general cardiology” category. The next largest slice is EP at 9%, followed by advanced HF at 6%.

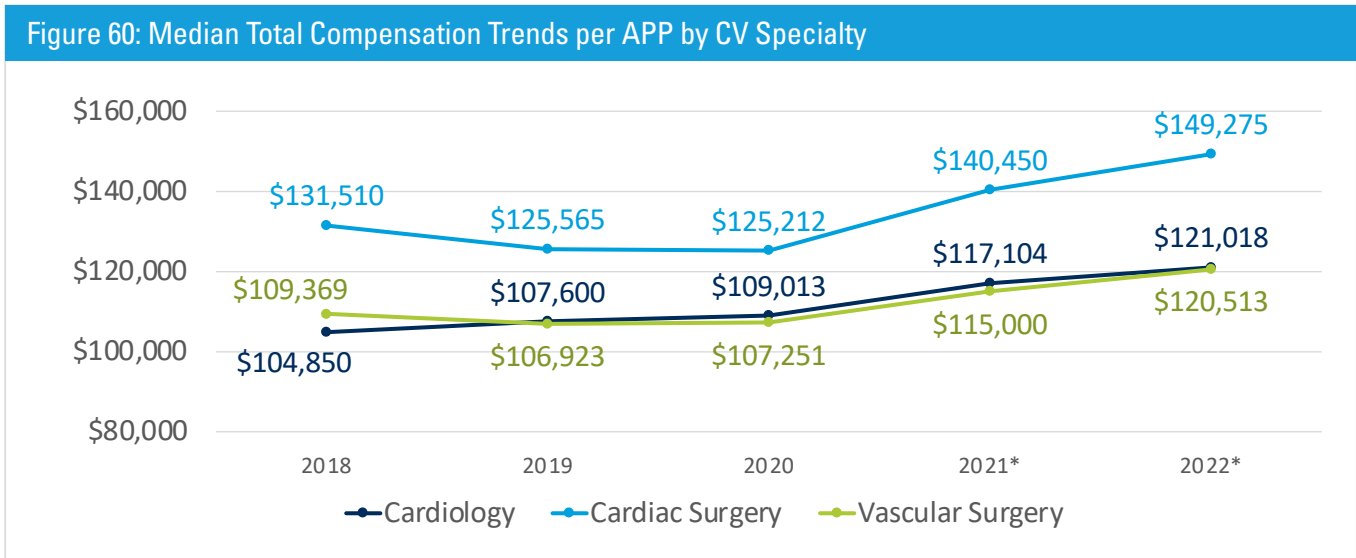


### APP COMPENSATION

Median compensation per FT APP rose for the third consecutive year for both cardiology and vascular surgery (**Figure 60**). Cardiac surgery median APP compensation also increased each year between 2020 and 2022 but was effectively flat from 2019 to 2020. It should be pointed out that prior to 2021, MedAxiom was reporting compensation for all APPs, regardless of whether they worked a full- or part-time. Beginning in 2021 these results were filtered to just FT APPs.

### MEDIAN COMPENSATION PER APP BY CV SPECIALTY

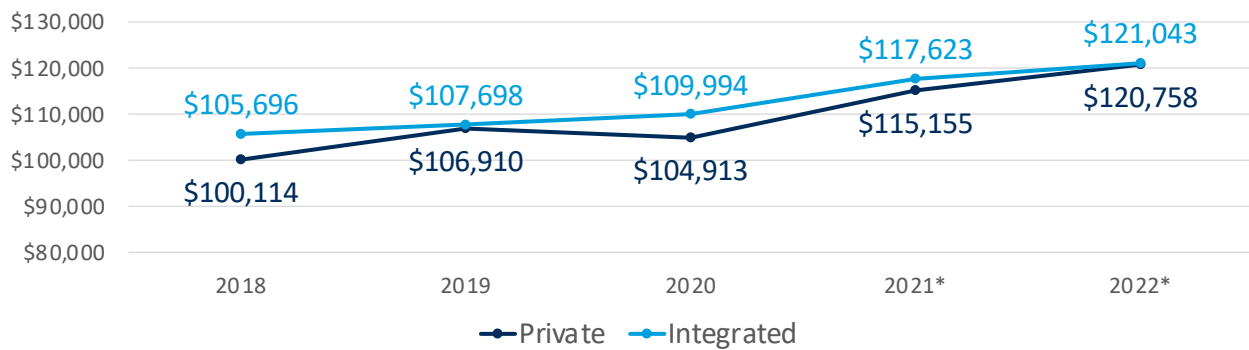
1. CARDIAC SURGERY
2. CARDIOLOGY
3. VASCULAR SURGERY



\*FT APPs only

As in all years past, cardiac surgery APPs are the highest paid of the specialties with a median compensation of \$149,275, followed by cardiology at \$121,018 and then vascular surgery at \$120,513. Looking deeper into the cardiology compensation in **Figure 61**, the ownership model has little bearing on total compensation for APPs, unlike what is found for the physicians. In fact, the two ownership cohorts pulled into a statistical dead heat in 2022.

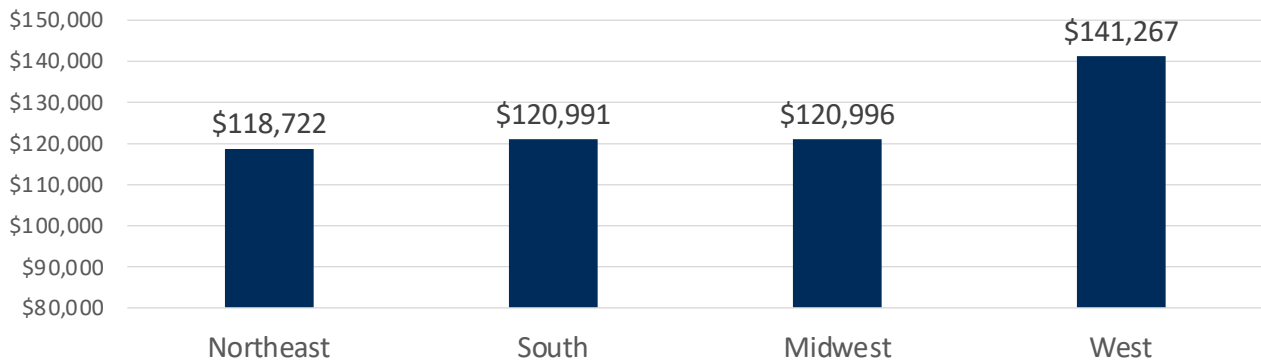
**Figure 61: Median Total Compensation Trends per Cardiology APP by Ownership**



\*FT APPs only

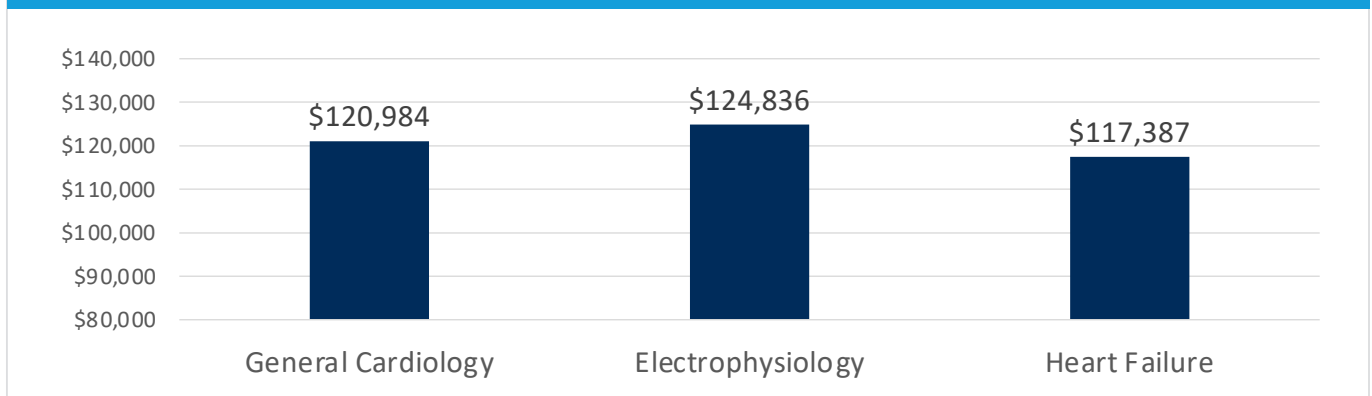
In somewhat paradoxical fashion and as covered earlier, the West had the lowest reported median total physician compensation in 2022, yet for cardiology APP compensation this region comes out on top by a significant margin (**Figure 62**). Median total APP compensation in the West was 17% higher than the next closest region, the Midwest. All three other regions were bunched within 2% of each other.

**Figure 62: Median 2022 Total Compensation per FT Cardiology APP by Region**



The subspecialty role of an APP also impacts total compensation (**Figure 63**) and follows the same rank order as compensation for cardiologists of the same subspecialties. APPs working in the EP domain had the highest median income in 2022 at \$124,836 per APP, 6% greater than those working in advanced HF, the lowest median compensation per APP. While this is the same rank order as the cardiologists, the spread between the subspecialties is much smaller.

Figure 63: 2022 Median Total Compensation per FT Cardiology APP by Subspecialty



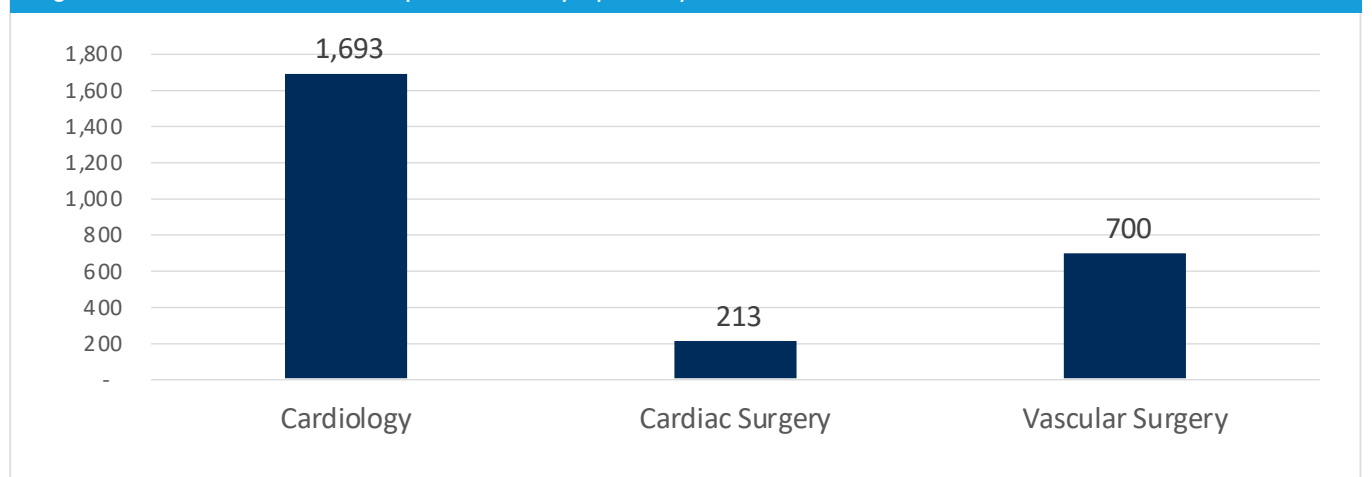
## APP PRODUCTION

Cardiology APPs once again reported the highest median wRVU production per FT APP of all the cardiovascular specialties (**Figure 64**). As has been noted in previous surveys, much of the surgical work is bundled into global procedural codes where the pre, peri and post work are all accounted for at once. In this environment, each activity is not generating a new billable event and thus additional wRVUs. This is quite different than cardiology for which each visit is predominantly its own billable activity and generates wRVUs for the provider. Thus, wRVUs alone are not an accurate way to measure work between specialty APPs.

### APP wRVU PRODUCTION

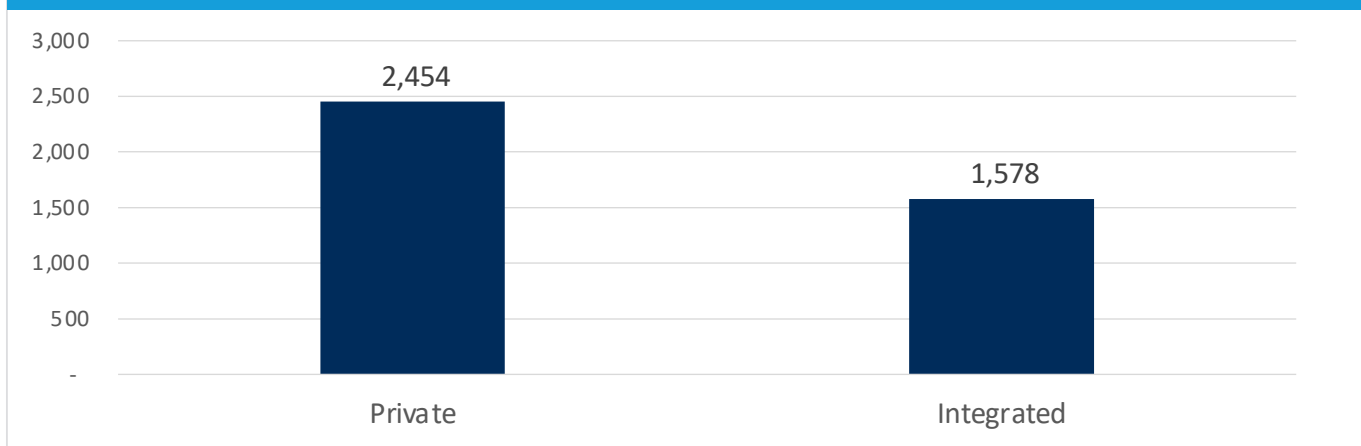
1. **CARDIOLOGY**
2. **VASCULAR SURGERY**
3. **CARDIAC SURGERY**

Figure 64: 2022 Median wRVUs per FT APP by Specialty



Unlike cardiology APP compensation, the ownership model does have a significant impact on APP wRVU production. In **Figure 65** the data show that, at the median, private APPs generated 55% more wRVUs than their analogs in integrated practices.

Figure 65: 2022 Median wRVUs per FT Cardiology APP by Ownership

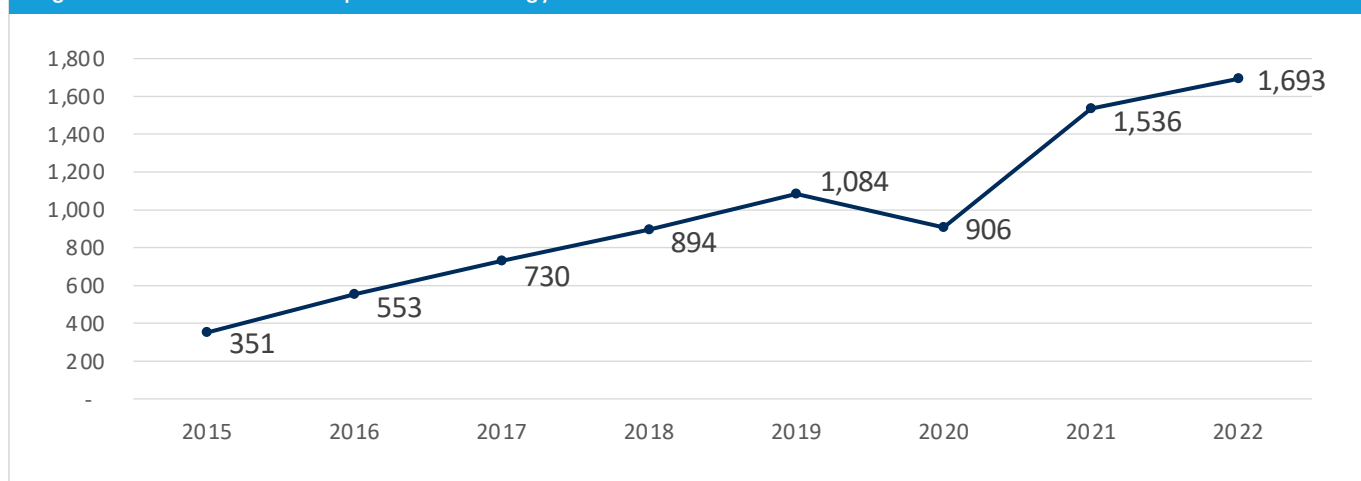


This may be explained in part by economic alignment. More than half of integrated cardiology practices are paid on individual physician wRVU production. When this is the case, the economic motivation for the physician is to utilize APPs for efficiency but still perform enough of the visit to capture the wRVUs. In contrast, physician compensation in private groups is derived from revenue minus expenses. The differential on revenue between a physician and an APP E/M visit is quite modest so there is more motivation to allow independent APP visits.

Agnostic to ownership model, subspecialty or even role in the practice, median cardiology APP wRVUs have been steadily increasing over time (**Figure 66**). Over these eight survey years, median production has increased more than 4.5 times and now sits at 1,693 wRVUs per FT cardiology APP.

**AT THE MEDIAN, PRIVATE APPS GENERATED 55% MORE APP wRVUS THAN THEIR ANALOGS IN INTEGRATED PRACTICES**

Figure 66: Median wRVUs per FT Cardiology APP



While significantly higher than in the past, the median wRVUs reported for FT APPs are still significantly lower than what is possible for an FT APP in the office. As shown in **Table 7**, a fully subscribed office APP can generate around 5,500 wRVUs when billing independently.

APPs in **Figure 66** admittedly include those working in the office and/or hospital settings, so the wRVU production is a blend of the two roles. APPs in the hospital typically work in a “split-share” environment where their work is frequently billed under the physician, resulting in fewer reported wRVUs. However, even at the 90th percentile for cardiology APPs, wRVUs were just 4,885 per FT APP in private programs and 3,777 for integrated programs (**Figure 67**). More than likely, these APPs at the 90th percentile are predominately office-based, suggesting that there is still room for improvement when it comes to utilizing APPs to their full potential and embracing team-based care.

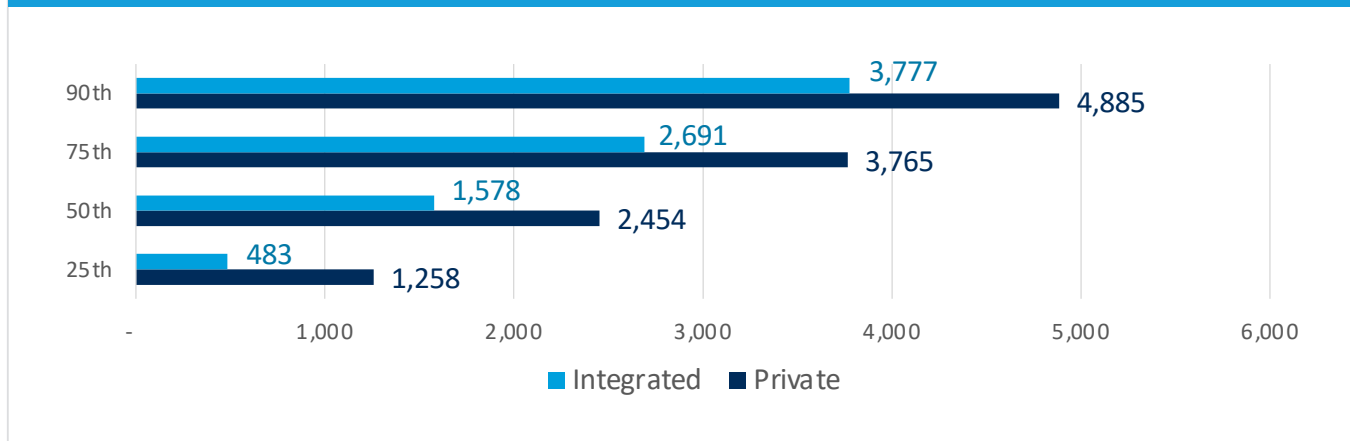
**Table 7: Cardiology Office APP Potential**

**Annualized Office Assumptions: Outpatient Visit Model**

46	weeks worked per year
40	office hours per week
10%	no-show rate
2022	CMS RBRVS schedule

CPT Code	Billable Visits per Year	wRVU	Annual wRVUs
99213	1,490	1.30	1,938
99214	1,656	1.92	3,180
99215	166	2.80	464
<b>GRAND TOTALS</b>	<b>3,312</b>		<b>5,581</b>

**Figure 67: wRVUs per FT Cardiology APP by Ownership Model - 2022 Percentiles**



**RESOURCES**

**APP RESOURCES**

MedAxiom publishes a companion survey dedicated to cardiovascular APPs. The APP survey report goes into much greater detail on clinical roles, deployment models and other relevant information.

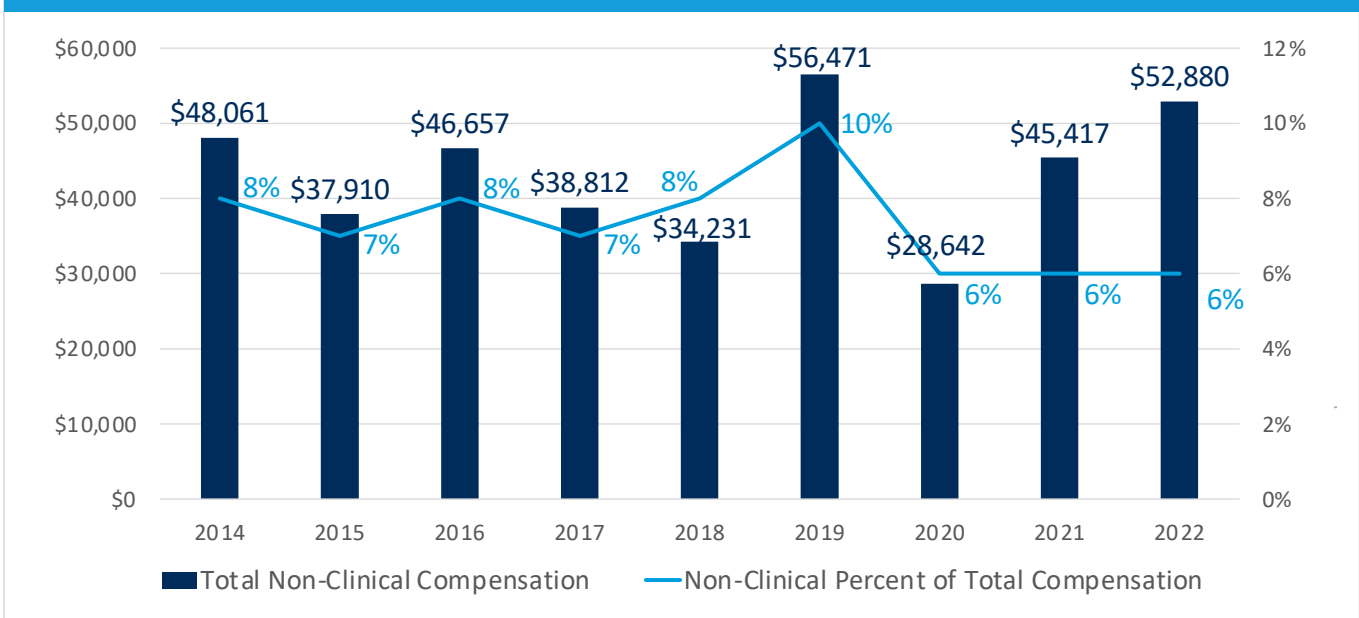
- [2022 APP Report](#)
- See [all reports](#) (2023 APP Compensation and Production Survey Report coming soon)
- Be sure to check out the APP Hub for all of the latest and greatest resources: [MedAxiom.com/APPHub](https://MedAxiom.com/APPHub).

## SURVEY RESULTS – NON-CLINICAL COMPENSATION

Medicare and other third-party payors have expressed a keen interest in moving healthcare reimbursement away from volume – often described as “fee-for-service” metrics – and more to value indicators. In this migration, value is a combination of quality and service over cost. While this has been the expressed intent, the actual transition has been very slow.

Perhaps reflective of this sluggish transition, cardiovascular compensation tied to non-clinical activities, efforts other than wRVU production, has remained well below 10% of total compensation in all but one year (Figure 68). For the last three years the median has been stuck at 6% of total compensation.

Figure 68: Median Total Non-Clinical Compensation per CV Physician FTE



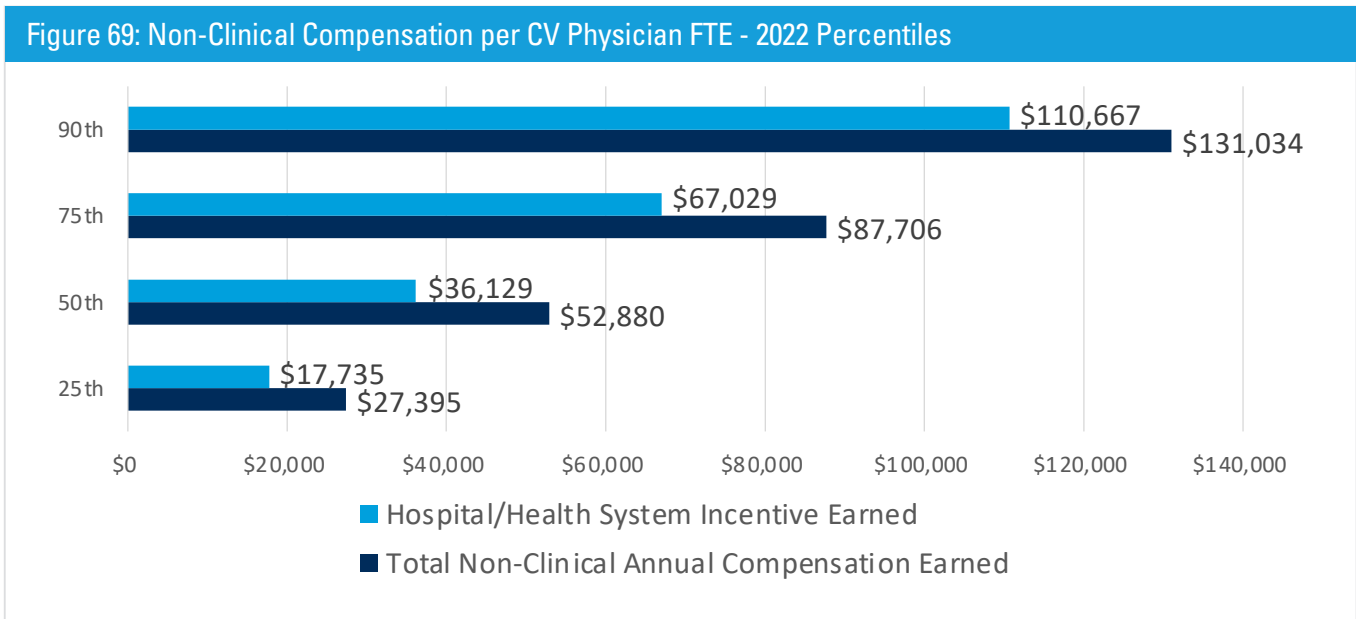
**CARDIOVASCULAR COMPENSATION TIED TO NON-CLINICAL EFFORTS OTHER THAN wRVU PRODUCTION**

**HAS REMAINED WELL BELOW 10% OF TOTAL COMPENSATION IN ALL BUT ONE YEAR**

**FOR THE LAST THREE YEARS THE MEDIAN HAS BEEN**

**STUCK AT 6% OF TOTAL COMPENSATION**

As in years past, the bulk of all non-clinical incentive compensation comes from hospital and/or health system payments, shown in **Figure 69**. At the median, 68% of total non-clinical compensation was a result of hospital/health system incentives. This figure also shows that incentive amounts for those groups in top quartiles can be quite substantial on a per FTE physician basis, with nearly 80% of payments coming from hospital/health system incentives.



New in 2023 are data for “Teaching/Research Pay Earned” and “Other Compensation Earned.” The results for these metrics can be found in the tables on page 52. As a note, call pay is not included in this year’s survey. MedAxiom will conduct a separate and more detailed membership call survey in early 2024 as an update to the call survey published in 2022.





TABLE 8: PHYSICIAN COMPENSATION – CARDIOLOGY

		2020					2021					2022				
		N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Actual Compensation (no benefits) per FTE Cardiologist</b>		<b>1,919</b>	<b>\$472,253</b>	<b>\$611,882</b>	<b>\$736,788</b>	<b>\$896,657</b>	<b>2,101</b>	<b>\$486,745</b>	<b>\$621,596</b>	<b>\$771,618</b>	<b>\$946,117</b>	<b>1,750</b>	<b>\$504,492</b>	<b>\$641,001</b>	<b>\$769,472</b>	<b>\$935,543</b>
Ownership Model	Private	414	\$394,888	\$589,032	\$750,000	\$970,300	383	\$381,378	\$604,652	\$843,942	\$1,068,702	362	\$462,140	\$588,272	\$765,959	\$908,734
	Electrophysiology	50	\$411,346	\$617,409	\$770,599	\$920,145	48	\$474,081	\$631,752	\$872,244	\$1,022,546	45	\$524,275	\$702,619	\$805,832	\$898,429
	Invasive	26	\$293,512	\$587,881	\$740,908	\$971,239	26	\$436,940	\$770,496	\$831,673	\$1,059,064	31	\$445,589	\$659,276	\$780,946	\$1,066,055
	General Non-Invasive	146	\$335,916	\$420,153	\$750,000	\$888,408	131	\$320,818	\$405,479	\$750,000	\$987,272	130	\$434,099	\$471,211	\$598,177	\$779,239
	Interventional	192	\$464,433	\$669,229	\$771,480	\$1,063,222	177	\$514,089	\$741,189	\$854,197	\$1,145,282	150	\$521,331	\$669,442	\$787,662	\$997,122
	Advanced Heart Failure	*	*	*	*	*	*	*	*	*	*	6	\$450,937	\$460,700	\$651,957	\$658,629
	Integrated	1,505	\$498,592	\$612,216	\$714,007	\$870,953	1,718	\$510,339	\$621,596	\$754,263	\$921,277	1,388	\$534,846	\$645,388	\$771,744	\$936,943
	Electrophysiology	207	\$578,630	\$671,730	\$808,660	\$1,039,600	221	\$559,569	\$689,177	\$861,527	\$1,035,234	174	\$614,287	\$714,976	\$894,609	\$1,091,400
	Invasive	186	\$505,519	\$586,419	\$719,761	\$909,845	192	\$575,556	\$638,696	\$808,003	\$989,900	120	\$559,589	\$663,567	\$842,775	\$970,436
	General Non-Invasive	557	\$434,538	\$565,098	\$634,866	\$707,550	734	\$435,999	\$567,134	\$655,486	\$771,357	622	\$442,350	\$600,712	\$686,412	\$838,008
	Interventional	510	\$555,016	\$653,360	\$780,960	\$964,128	502	\$582,823	\$688,042	\$836,599	\$964,696	409	\$625,224	\$717,120	\$867,550	\$1,031,710
	Advanced Heart Failure	44	\$478,046	\$554,945	\$614,803	\$688,889	67	\$396,631	\$572,488	\$639,241	\$829,325	53	\$340,123	\$576,498	\$645,388	\$696,381
Geographic Breakdown	Northeast	387	\$409,052	\$559,376	\$658,933	\$750,000	535	\$328,187	\$516,600	\$642,818	\$797,267	495	\$400,237	\$548,192	\$681,270	\$768,625
	South	976	\$492,135	\$634,866	\$767,891	\$981,272	895	\$545,532	\$690,975	\$856,957	\$1,046,726	780	\$563,606	\$698,881	\$863,657	\$1,026,958
	Midwest	455	\$500,000	\$612,216	\$695,106	\$899,812	519	\$535,465	\$626,366	\$752,878	\$967,401	367	\$557,514	\$635,773	\$758,315	\$1,000,954
	West	101	\$450,061	\$584,180	\$671,457	\$754,472	152	\$475,841	\$574,696	\$671,582	\$819,146	108	\$567,960	\$645,388	\$692,020	\$742,658
Overall	Electrophysiology	257	\$554,223	\$665,813	\$797,387	\$999,588	269	\$537,935	\$686,209	\$862,295	\$1,026,544	219	\$610,865	\$714,976	\$872,702	\$1,050,590
	Invasive	212	\$493,220	\$586,419	\$734,965	\$928,782	218	\$569,383	\$644,146	\$821,386	\$1,003,787	151	\$558,497	\$662,006	\$809,747	\$967,998
	General Non-Invasive	703	\$404,846	\$555,016	\$638,811	\$750,000	865	\$391,000	\$559,467	\$659,466	\$810,740	752	\$437,134	\$585,849	\$684,763	\$826,422
	Interventional	702	\$535,755	\$656,989	\$780,960	\$998,613	679	\$572,193	\$694,967	\$843,388	\$1,039,171	559	\$593,982	\$709,714	\$856,500	\$1,018,730
	Advanced Heart Failure	44	\$478,046	\$554,945	\$614,803	\$688,889	68	\$400,200	\$572,488	\$645,006	\$831,835	59	\$378,563	\$575,000	\$645,388	\$689,634
<b>Actual Compensation per Work RVU</b>		<b>1,876</b>	<b>\$53.18</b>	<b>\$66.24</b>	<b>\$85.69</b>	<b>\$115.79</b>	<b>2,019</b>	<b>\$48.88</b>	<b>\$59.33</b>	<b>\$72.53</b>	<b>\$90.86</b>	<b>1,730</b>	<b>\$51.39</b>	<b>\$62.48</b>	<b>\$76.17</b>	<b>\$104.63</b>
Ownership Model	Private	414	\$39.47	\$49.00	\$65.13	\$81.19	383	\$38.33	\$47.87	\$62.91	\$80.74	362	\$36.34	\$46.04	\$59.95	\$78.40
	Electrophysiology	50	\$34.80	\$44.94	\$55.79	\$68.50	48	\$33.81	\$40.57	\$54.27	\$67.67	45	\$34.54	\$42.37	\$57.45	\$73.75
	Invasive	26	\$34.96	\$41.69	\$72.32	\$85.70	26	\$42.92	\$50.31	\$80.93	\$90.95	31	\$39.55	\$52.05	\$67.74	\$124.95
	General Non-Invasive	146	\$41.43	\$50.41	\$64.61	\$76.51	131	\$37.84	\$46.67	\$58.42	\$73.82	130	\$37.89	\$48.00	\$59.95	\$79.78
	Interventional	192	\$40.18	\$49.14	\$68.99	\$85.77	177	\$39.57	\$49.38	\$67.87	\$88.94	150	\$34.80	\$42.15	\$58.23	\$78.41
	Advanced Heart Failure	*	*	*	*	*	*	*	*	*	*	6	\$49.93	\$51.87	\$75.24	\$115.63
	Integrated	1,462	\$58.34	\$69.99	\$91.16	\$125.27	1,636	\$51.43	\$61.11	\$74.25	\$94.49	1,368	\$54.70	\$65.38	\$79.01	\$112.83
	Electrophysiology	203	\$51.26	\$62.10	\$76.44	\$101.17	214	\$47.30	\$55.31	\$65.51	\$77.06	169	\$52.30	\$59.98	\$68.41	\$82.68
	Invasive	186	\$61.33	\$75.21	\$100.66	\$138.08	168	\$53.86	\$64.33	\$72.46	\$86.91	114	\$54.52	\$65.43	\$77.34	\$98.72
	General Non-Invasive	537	\$61.54	\$75.38	\$95.57	\$123.76	704	\$51.22	\$61.90	\$77.32	\$105.27	620	\$54.70	\$66.71	\$82.32	\$171.71
	Interventional	501	\$56.87	\$67.19	\$84.63	\$111.27	491	\$53.20	\$60.80	\$71.55	\$85.15	402	\$55.29	\$64.35	\$74.97	\$89.26
	Advanced Heart Failure	35	\$74.32	\$117.42	\$254.58	\$333.53	57	\$62.89	\$79.54	\$113.99	\$141.12	53	\$77.25	\$92.33	\$134.86	\$291.00
Geographic Breakdown	Northeast	386	\$54.10	\$68.70	\$86.90	\$109.52	532	\$44.90	\$60.71	\$75.10	\$97.47	495	\$53.45	\$68.55	\$101.47	\$289.84
	South	973	\$50.11	\$61.93	\$75.99	\$104.10	865	\$46.60	\$54.82	\$64.27	\$78.27	760	\$48.53	\$56.37	\$68.18	\$81.99
	Midwest	410	\$64.25	\$80.76	\$102.47	\$136.64	471	\$56.31	\$66.53	\$80.55	\$106.93	367	\$55.79	\$65.56	\$77.50	\$95.54
	West	101	\$54.55	\$60.09	\$79.52	\$106.65	151	\$56.53	\$66.51	\$84.01	\$119.22	108	\$57.25	\$68.24	\$78.72	\$92.43
Overall	Electrophysiology	253	\$48.53	\$59.39	\$73.23	\$93.44	262	\$44.87	\$53.23	\$64.33	\$74.94	214	\$49.71	\$58.03	\$67.25	\$80.26
	Invasive	212	\$58.28	\$70.69	\$97.34	\$132.79	194	\$51.66	\$63.89	\$74.48	\$89.20	145	\$51.94	\$64.10	\$76.18	\$98.63
	General Non-Invasive	683	\$56.13	\$69.32	\$90.88	\$118.03	835	\$48.31	\$59.39	\$75.29	\$98.76	750	\$52.64	\$64.29	\$79.22	\$141.40
	Interventional	693	\$51.36	\$64.14	\$80.22	\$103.06	668	\$49.47	\$59.08	\$70.14	\$86.29	552	\$49.24	\$60.22	\$72.78	\$88.04
	Advanced Heart Failure	35	\$74.32	\$117.42	\$254.58	\$333.53	58	\$62.77	\$78.17	\$113.89	\$141.02	59	\$73.50	\$88.94	\$131.69	\$276.90

\* Received fewer than 5 submissions; not enough data to report

**TABLE 9: PHYSICIAN PRODUCTIVITY – CARDIOLOGY**

		2020					2021					2022				
		N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Work RVUs per FTE Cardiologist</b>		<b>2,282</b>	<b>6,573</b>	<b>9,145</b>	<b>12,034</b>	<b>15,945</b>	<b>2,463</b>	<b>7,758</b>	<b>10,390</b>	<b>13,647</b>	<b>17,436</b>	<b>2,483</b>	<b>7,657</b>	<b>10,255</b>	<b>13,265</b>	<b>16,998</b>
Ownership Model	Private	415	8,461	10,740	14,201	18,484	414	9,533	11,998	16,074	19,718	439	8,913	11,694	15,369	20,030
	Electrophysiology	50	11,108	13,315	16,312	19,293	54	12,872	15,121	18,657	21,466	51	11,596	14,795	18,004	22,106
	Invasive	27	7,470	9,348	11,155	18,193	32	9,178	10,798	16,060	22,893	31	8,648	11,122	14,001	18,617
	General Non-Invasive	146	7,092	9,754	11,178	13,739	150	7,792	10,305	12,617	17,585	194	7,815	9,944	11,951	15,627
	Interventional	192	9,240	11,531	16,358	19,533	177	10,503	13,055	17,137	20,054	157	10,827	14,327	18,125	21,730
	Advanced Heart Failure	*	*	*	*	*	*	*	*	*	*	6	5,994	8,348	9,227	15,843
	Integrated	1,867	6,313	8,709	11,629	15,120	2,049	7,455	10,083	13,174	16,650	2,044	7,412	10,002	12,844	16,082
	Electrophysiology	265	8,675	11,570	14,783	19,285	284	10,001	12,996	16,496	20,912	271	10,049	12,851	15,879	19,616
	Invasive	266	6,307	8,574	11,181	13,588	249	7,873	9,869	12,663	15,316	232	7,779	10,251	13,437	16,297
	General Non-Invasive	641	5,225	6,976	9,135	11,564	817	6,124	8,610	10,950	13,364	840	6,474	8,642	10,744	12,897
	Interventional	650	7,753	9,907	12,875	16,491	629	9,209	11,544	14,507	17,933	615	8,849	11,230	14,108	17,470
	Advanced Heart Failure	36	2,294	4,311	6,423	7,817	67	3,408	5,480	8,924	13,281	73	2,734	5,539	7,104	8,251
Geographic Breakdown	Northeast	414	6,063	7,570	10,178	12,117	554	6,439	8,700	10,744	12,872	634	6,129	8,639	10,781	13,027
	South	1,251	7,784	10,186	13,492	17,809	1,181	9,214	12,187	15,445	19,283	1,196	8,903	11,771	15,247	19,552
	Midwest	459	5,386	7,967	10,274	13,407	499	7,361	9,770	12,465	15,045	474	7,753	9,929	12,097	14,946
	West	158	6,544	8,595	11,163	14,737	229	6,790	9,210	12,268	16,342	179	7,303	9,221	11,532	14,189
Overall	Electrophysiology	315	9,026	11,905	15,367	19,285	338	10,327	13,401	16,937	21,059	322	10,210	13,118	16,327	19,834
	Invasive	293	6,382	8,610	11,182	13,992	281	7,981	10,014	13,049	16,217	263	7,870	10,334	13,471	16,542
	General Non-Invasive	787	5,505	7,404	9,746	12,240	967	69,475	8,858	11,193	13,978	1,034	6,797	8,870	10,967	13,234
	Interventional	842	8,116	10,348	13,458	17,513	806	9,439	11,926	14,822	18,531	772	9,231	11,756	14,872	18,934
	Advanced Heart Failure	36	2,294	4,311	6,423	7,817	68	3,464	5,494	9,444	13,582	79	3,268	5,994	7,298	9,202

\* Received fewer than 5 submissions; not enough data to report

TABLE 10: PHYSICIAN COMPENSATION – SURGERY

	2020					2021**					2022				
	N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Actual Compensation (no benefits) per FTE Surgeon</b>	<b>139</b>	<b>\$542,723</b>	<b>\$743,789</b>	<b>\$977,098</b>	<b>\$1,341,362</b>	<b>148</b>	<b>\$529,302</b>	<b>\$752,361</b>	<b>\$1,110,127</b>	<b>\$1,359,922</b>	<b>135</b>	<b>\$562,693</b>	<b>\$730,000</b>	<b>\$1,060,799</b>	<b>\$1,351,263</b>
<b>Ownership Model</b>															
Private	*	*	*	*	*	*	*	*	*	*	28	\$485,989	\$579,633	\$868,335	\$1,256,737
Cardiac	*	*	*	*	*	*	*	*	*	*	12	\$577,368	\$702,858	\$886,299	\$1,137,869
Vascular	*	*	*	*	*	*	*	*	*	*	16	\$456,684	\$547,783	\$819,641	\$1,319,761
Integrated	135	\$557,400	\$747,676	\$977,098	\$1,348,451	145	\$529,302	\$755,000	\$1,121,038	\$1,362,516	107	\$601,903	\$740,046	\$1,083,875	\$1,370,373
Cardiac	73	\$745,304	\$868,110	\$1,132,248	\$1,531,860	78	\$676,671	\$967,250	\$1,283,344	\$1,495,445	58	\$678,838	\$893,465	\$1,153,380	\$1,627,241
Vascular	62	\$500,000	\$602,649	\$720,169	\$1,064,873	67	\$450,749	\$546,054	\$786,596	\$1,140,401	49	\$525,000	\$678,209	\$865,574	\$1,194,972
<b>Geographic Breakdown</b>															
Northeast	6	\$494,118	\$783,883	\$873,244	\$950,518	10	\$495,973	\$823,614	\$898,461	\$1,400,486	28	\$471,971	\$576,197	\$739,073	\$854,185
South	85	\$540,117	\$648,871	\$900,000	\$1,528,042	54	\$585,085	\$876,161	\$1,165,027	\$1,711,231	68	\$655,131	\$766,731	\$1,140,004	\$1,654,291
Midwest	40	\$675,093	\$844,494	\$1,137,177	\$1,329,748	66	\$507,434	\$675,060	\$1,082,847	\$1,326,648	30	\$607,612	\$811,435	\$1,153,380	\$1,274,496
West	8	\$491,983	\$649,570	\$1,264,067	\$1,368,236	18	\$405,152	\$625,899	\$961,809	\$1,138,143	9	\$525,000	\$940,000	\$955,000	\$1,054,000
<b>Overall</b>															
Cardiac	75	\$723,492	\$861,048	\$1,123,841	\$1,528,042	79	\$675,662	\$961,809	\$1,276,857	\$1,495,095	70	\$666,762	\$873,762	\$1,125,000	\$1,571,949
Vascular	64	\$499,783	\$602,649	\$723,852	\$1,053,807	69	\$450,430	\$546,054	\$793,028	\$1,139,517	65	\$508,727	\$625,000	\$865,574	\$1,199,117
<b>Actual Compensation per Work RVU</b>	<b>133</b>	<b>\$61.63</b>	<b>\$73.77</b>	<b>\$104.04</b>	<b>\$134.67</b>	<b>142.00</b>	<b>\$56.82</b>	<b>\$68.28</b>	<b>\$86.34</b>	<b>\$126.65</b>	<b>131</b>	<b>\$60.45</b>	<b>\$71.15</b>	<b>\$87.52</b>	<b>\$118.08</b>
<b>Ownership Model</b>															
Private	*	*	*	*	*	*	*	*	*	*	27	\$69.41	\$79.21	\$115.25	\$178.43
Cardiac	*	*	*	*	*	*	*	*	*	*	11	\$74.84	\$113.66	\$154.21	\$205.26
Vascular	*	*	*	*	*	*	*	*	*	*	16	\$69.48	\$75.38	\$94.84	\$174.11
Integrated	129	\$61.63	\$73.58	\$104.61	\$136.88	139	\$57.12	\$68.50	\$86.51	\$127.36	104	\$59.78	\$67.63	\$85.27	\$105.01
Cardiac	70	\$64.40	\$77.99	\$111.76	\$136.33	73	\$65.33	\$79.63	\$106.70	\$235.39	55	\$62.36	\$75.35	\$86.50	\$110.11
Vascular	59	\$56.99	\$65.93	\$95.59	\$136.08	66	\$52.93	\$59.82	\$70.16	\$77.97	49	\$55.85	\$63.53	\$79.09	\$103.46
<b>Geographic Breakdown</b>															
Northeast	6	\$61.65	\$62.75	\$75.27	\$95.19	10	\$51.83	\$87.19	\$114.47	\$147.33	24	\$62.03	\$72.43	\$110.42	\$168.89
South	85	\$59.02	\$68.92	\$91.52	\$133.56	49	\$58.22	\$66.72	\$79.02	\$104.89	68	\$61.22	\$76.14	\$93.41	\$120.50
Midwest	39	\$65.97	\$83.63	\$117.15	\$160.74	65	\$65.66	\$68.50	\$87.36	\$128.30	30	\$60.17	\$69.23	\$77.81	\$99.73
West	*	*	*	*	*	18	\$53.09	\$70.65	\$97.64	\$218.23	9	\$51.51	\$55.82	\$80.47	\$105.93
<b>Overall</b>															
Cardiac	72	\$64.27	\$77.99	\$110.26	\$135.22	74	\$65.10	\$78.79	\$106.59	\$231.58	66	\$62.89	\$77.33	\$99.97	\$136.72
Vascular	61	\$58.21	\$66.66	\$97.06	\$133.85	68	\$52.69	\$59.82	\$70.44	\$77.96	65	\$59.10	\$67.22	\$80.48	\$106.50

TABLE 11: PHYSICIAN PRODUCTIVITY - SURGERY

	2020					2021					2022				
	N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Work RVUs per FTE Surgeon</b>	<b>248</b>	<b>6,181</b>	<b>9,537</b>	<b>12,572</b>	<b>17,428</b>	<b>338</b>	<b>7,386</b>	<b>10,485</b>	<b>13,709</b>	<b>18,528</b>	<b>329</b>	<b>6,634</b>	<b>9,492</b>	<b>12,935</b>	<b>17,253</b>
<b>Ownership Model</b>															
Private	*	*	*	*	*	39	7,787	11,157	14,169	21,279	27	4,609	7,186	8,636	14,382
Cardiac	*	*	*	*	*	17	9,593	12,964	16,174	24,101	11	4,174	5,246	8,432	13,619
Vascular	*	*	*	*	*	22	5,503	9,532	12,228	17,617	16	5,679	7,819	10,297	16,741
Integrated	244	6,371	9,560	12,606	17,474	299	7,350	10,210	13,606	18,293	302	6,859	9,613	13,105	17,466
Cardiac	152	6,453	9,668	13,277	18,531	159	7,141	10,930	14,322	20,963	168	6,836	9,708	14,053	17,915
Vascular	92	5,846	9,249	11,901	15,534	140	7,484	9,730	12,717	16,048	134	6,972	9,502	12,417	16,390
<b>Geographic Breakdown</b>															
Northeast	16	6,596	8,857	10,681	14,110	24	7,977	10,375	11,287	13,201	44	5,292	7,819	9,520	12,904
South	144	7,108	10,453	12,606	17,474	179	8,102	10,943	13,970	20,640	195	6,952	10,127	13,500	18,313
Midwest	57	6,778	10,533	15,451	18,533	76	7,793	11,408	14,998	20,342	57	8,434	10,565	15,383	18,196
West	29	4,443	5,813	6,627	9,256	59	4,783	7,526	12,345	15,477	33	4,903	6,330	11,211	14,861
<b>Overall</b>															
Cardiac	154	6,447	9,584	13,215	18,523	176	7,353	11,135	14,440	21,310	179	6,473	9,611	13,778	17,682
Vascular	94	5,799	9,249	11,637	15,508	162	7,411	9,696	12,635	16,015	150	6,833	9,379	12,364	16,590

\* Received fewer than 5 submissions; not enough data to report

\*\* 2021 data published in the 2023 report differs from the 2021 data published in the 2022 report due to a correction of assigned specialties

**TABLE 12: 2022 APP COMPENSATION**

		Cardiology (All)					Cardiac Surgery					Vascular Surgery				
		N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Actual Compensation (no benefits) per FTE APP</b>		<b>920</b>	<b>\$107,539</b>	<b>\$121,018</b>	<b>\$137,541</b>	<b>\$175,524</b>	<b>105</b>	<b>\$124,145</b>	<b>\$149,275</b>	<b>\$175,524</b>	<b>\$197,242</b>	<b>48</b>	<b>\$108,651</b>	<b>\$120,513</b>	<b>\$132,187</b>	<b>\$151,655</b>
<b>Ownership Model</b>	Private	195	\$104,772	\$120,758	\$131,578	\$153,771	17	\$117,039	\$125,979	\$160,722	\$168,522	12	\$101,741	\$113,389	\$126,412	\$134,420
	Integrated	725	\$108,364	\$121,043	\$140,155	\$175,524	88	\$127,742	\$157,620	\$175,524	\$200,998	36	\$109,316	\$122,957	\$146,022	\$152,650
<b>Geographic Breakdown</b>	Northeast	200	\$107,074	\$118,722	\$132,478	\$144,055	19	\$119,006	\$135,624	\$160,399	\$167,399	12	\$96,396	\$110,191	\$124,053	\$129,283
	South	470	\$107,812	\$120,991	\$144,102	\$175,524	59	\$118,971	\$148,290	\$175,524	\$190,200	19	\$105,984	\$124,913	\$131,769	\$151,523
	Midwest	208	\$106,330	\$120,996	\$133,986	\$150,395	20	\$136,030	\$152,891	\$166,513	\$196,967	14	\$110,645	\$119,539	\$143,306	\$158,849
	West	42	\$124,067	\$141,267	\$164,713	\$175,038	7	\$178,438	\$190,244	\$215,109	\$217,548	*	*	*	*	*
		General Cardiology					Electrophysiology					Heart Failure				
		N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Actual Compensation (no benefits) per FTE APP</b>		<b>790</b>	<b>\$107,812</b>	<b>\$120,984</b>	<b>\$138,000</b>	<b>\$175,524</b>	<b>88</b>	<b>\$104,628</b>	<b>\$124,836</b>	<b>\$140,141</b>	<b>\$157,760</b>	<b>42</b>	<b>\$105,963</b>	<b>\$117,387</b>	<b>\$127,441</b>	<b>\$145,469</b>
<b>Ownership Model</b>	Private	172	\$105,451	\$121,644	\$131,764	\$154,439	18	\$92,115	\$105,593	\$130,000	\$138,682	5	\$105,025	\$120,400	\$129,246	\$150,183
	Integrated	618	\$108,201	\$120,762	\$140,198	\$175,524	70	\$111,459	\$127,147	\$144,159	\$159,574	37	\$106,620	\$114,374	\$127,939	\$143,214
<b>Geographic Breakdown</b>	Northeast	156	\$106,840	\$118,466	\$132,325	\$143,683	30	\$104,231	\$122,258	\$134,326	\$151,505	14	\$107,600	\$113,085	\$121,141	\$126,602
	South	437	\$109,437	\$121,156	\$144,919	\$175,524	23	\$103,079	\$115,265	\$136,788	\$153,505	10	\$93,280	\$108,633	\$124,556	\$141,967
	Midwest	165	\$106,416	\$120,100	\$131,408	\$150,396	30	\$109,090	\$129,700	\$140,154	\$152,390	13	\$99,050	\$113,796	\$127,084	\$137,258
	West	32	\$119,938	\$131,991	\$161,867	\$170,377	5	\$145,881	\$162,320	\$174,870	\$174,877	5	\$139,945	\$152,181	\$178,965	\$189,617

**TABLE 13: 2022 APP PRODUCTIVITY**

		Cardiology (All)					Cardiac Surgery					Vascular Surgery				
		N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Work RVUs per FTE APP</b>		<b>1,283</b>	<b>548</b>	<b>1,693</b>	<b>2,810</b>	<b>3,920</b>	<b>220</b>	<b>78</b>	<b>213</b>	<b>476</b>	<b>1,038</b>	<b>107</b>	<b>336</b>	<b>700</b>	<b>1,640</b>	<b>2,276</b>
<b>Ownership Model</b>	Private	180	1,258	2,454	3,765	4,885	*	*	*	*	*	*	*	*	*	*
	Integrated	1,103	483	1,578	2,691	3,777	220	78	213	476	1,038	105	326	678	1,623	2,261
<b>Geographic Breakdown</b>	Northeast	224	375	1,311	2,638	3,782	28	83	242	584	3,950	6	95	436	700	737
	South	700	406	1,567	2,909	4,139	133	64	187	465	897	62	355	729	1,633	2,325
	Midwest	279	889	1,853	2,686	3,823	27	87	282	713	1,660	34	352	731	1,923	2,346
	West	80	1,986	2,584	3,020	3,447	32	91	207	391	1,001	5	325	722	1,278	1,779
		General Cardiology					Electrophysiology					Heart Failure				
		N	25th	50th	75th	90th	N	25th	50th	75th	90th	N	25th	50th	75th	90th
<b>Work RVUs per FTE APP</b>		<b>1,091</b>	<b>484</b>	<b>1,627</b>	<b>2,816</b>	<b>3,989</b>	<b>123</b>	<b>1,234</b>	<b>1,890</b>	<b>2,746</b>	<b>3,742</b>	<b>69</b>	<b>956</b>	<b>1,978</b>	<b>2,732</b>	<b>3,824</b>
<b>Ownership Model</b>	Private	171	1,208	2,370	3,777	4,877	7	2,086	2,611	2,980	4,569	*	*	*	*	*
	Integrated	920	393	1,495	2,676	3,777	116	1,183	1,744	2,739	3,716	67	927	1,896	2,667	3,794
<b>Geographic Breakdown</b>	Northeast	189	332	1,252	2,675	3,795	22	1,344	1,695	2,324	2,942	13	542	1,727	2,488	3,984
	South	618	361	1,528	2,925	4,206	52	1,073	1,697	2,859	4,062	30	497	1,541	2,426	3,595
	Midwest	225	877	1,802	2,574	3,728	38	1,383	2,067	3,134	3,900	16	1,312	2,414	3,761	4,267
	West	59	1,894	2,595	3,052	3,480	11	2,077	2,541	2,975	3,401	10	1,978	2,462	2,863	3,156

\* Received fewer than 5 submissions; not enough data to report

**TABLE 14: 2022 Non-Clinical Compensation Measures**

	N	25th	50th	75th	90th	
<b>Non-Clinical Compensation Earned per FTE Cardiovascular Physician</b>						
Non-Clinical Annual Compensation - Earned - Directorship/Admin Pay per Program Designated Physician	41	\$3,656	\$9,521	\$18,957	\$27,068	
Non-Clinical Annual Compensation - Earned - Hospital/Health System Incentive per Program Designated Physician	33	\$17,735	\$36,129	\$67,029	\$110,667	
Non-Clinical Annual Compensation - Earned - Teaching/Research Pay per Program Designated Physician	19	\$820	\$2,088	\$5,598	\$15,901	
Non-Clinical Annual Compensation - Earned - Other Compensation per Program Designated Physician	20	\$3,710	\$11,854	\$25,790	\$57,352	
Total Non-Clinical Annual Compensation Earned per Program Designated Physician	42	\$27,395	\$52,880	\$87,706	\$131,034	
Percentage of Non-Clinical Compensation to Actual Compensation (no benefits)	39	3%	6%	13%	20%	
<b>Physician Compensation to Total Revenue</b>						
Ratio of Total Physician Compensation to Total Revenue	35	39%	68%	94%	98%	
	Integrated	24	50%	91%	96%	101%
	Private	11	32%	38%	48%	79%

## ABOUT THE AUTHORS



**Joel Sauer**  
MBA

*Executive Vice  
President of  
Consulting, MedAxiom*

Since 2010, **Joel Sauer** has been providing consultative services around the country to accelerate the value transition in health care, particularly within the cardiovascular realm. A significant area of concentration has been creating contemporary and effective physician/hospital partnership structures, utilizing employment and other contractual arrangements (such as professional services agreements) and joint ventures. His work includes full service line advancement, including governance and leadership development, and the creation of targeted co-management programs. Joel is an expert in vision and strategy setting, cultural and operational integration, and physician compensation plan design that promotes the vision and objectives of the organization.

Prior to consulting, Joel spent 14 years as chief executive officer (CEO) of a large Midwestern multi-specialty physician group that included 23 cardiologists. In 2008 Joel led his group through acquisition by a major health system and then took over as CEO of its entire physician enterprise, which eventually included nearly 500 providers.

A recognized national resource in cardiovascular physician compensation, Joel is author of the annual *MedAxiom Cardiovascular Provider Compensation & Production Survey* and has expertise in provider workforce planning and development. Along with the entire MedAxiom Care Transformation Services team, he is a resource in new federal payment models such as the Quality Payment Program and the Bundled Payments for Care Improvement Advanced (BPCI Advanced), and other episode payment-based arrangements. Joel is often published in health care magazines, blogs and trade journals and is a regular speaker at national health care meetings.

**Karen Wilson**

MHA

*Vice President,  
Member Services*

As Vice President of Member Services, **Karen Wilson's** current role at MedAxiom allows her to use her years of experience in cardiology and as a former MedAxiom member to ensure that MedAxiom members are aware of all the resources available and using them to their full advantage.

Karen has worked in healthcare for more than two decades, beginning her career in hospital administration with a focus on strategic planning and service line management. After several years, she transitioned to physician practices when given the opportunity to work for a large, independent cardiology group in Richmond, VA, (one of the original MedAxiom members). While there, she built a referring physician program and led business development and planning and marketing strategies.

A family move to San Antonio, TX provided a transition to integrated cardiology practices. Karen held several positions with the physician services group of a large national health system, starting with business development for three cardiology practices and then expanding to strategic planning for all physician practice specialties in the market. Eventually, Karen was put in an operational role over the market's largest cardiology practice.

In all her positions, thanks to her love of numbers and strategic planning roots, Karen became known as the "data expert" and the go-to person for reports, data analyses and presentations. The same is true at MedAxiom where her knowledge of cardiology operational data and familiarity with MedAxiom have made her a MedAxiom expert providing a member's perspective. For the past few years, Karen has been a contributing author to the annual *MedAxiom Cardiovascular Provider Compensation & Production Survey*.

Karen has a Bachelor of Arts degree in Business and Economics from Wheaton College and a Master of Health Administration from Virginia Commonwealth University, Medical College of Virginia Campus.

## SURVEY METHODOLOGY AND DATA INTEGRITY

Each year, MedAxiom surveys its membership to collect data on providers, volume, productivity, compensation, finances and staffing. We also collect several demographic attributes – including location, number of providers in the program, ownership and compensation models – to allow a deep dive into the data for greater analyses. The majority of data are obtained from billing and other practice management systems. Members submit data via spreadsheet templates or online entry through a secure upload process.

Submissions are processed in MedAxiom’s data warehouse and compiled into over 800 measures. MedAxiom members can then use MedAccess, the cardiovascular industry’s leading proprietary database and business intelligence application, to perform many different types of analyses. MedAxiom also uses these data to create reports for the membership, partnering organizations and the public.

The tables starting on page 48 have been filtered to only include full-time physicians and APPs, which is the same for the rest of the report unless otherwise indicated.

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 goes above and beyond in its pursuit of data integrity. All data points are examined against their own same-practice historical trend and against the program’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 member 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. Once data are loaded into the MedAccess database, critical measures relating to FTE physicians and APPs, as well as volume and financial information, are verified to make sure they are in alignment with the statistical norms in the database. A set of limits defined by a team of cardiovascular administration experts is key to this step.

**MEDAXIOM**  
**MEDACCESS**

**By Cardiology, For Cardiology:** Having the right measures and high data integrity are what make MedAxiom’s data the most trusted in the cardiovascular industry.



## GLOSSARY

### Physician Actual Compensation *(no benefits)*:

- Compensation for full-time physicians
- Physician wages reported as direct compensation on a W2, 1099, or K1 (for partnerships) plus all voluntary salary reductions such as 401(k), 403(b), Section 125 Tax Savings Plan, and Medical Savings Plan. Does not include income or distributions from outside investments such as real estate, facility ownership (such as an ASC or hospital), and other entities outside clinical practice. Does not include income from private equity acquisitions.

### APP Compensation *(no benefits)*:

- Compensation for full-time APPs *(full-time filter available starting with 2021 data)*
- APP wages reported as direct compensation on a W2

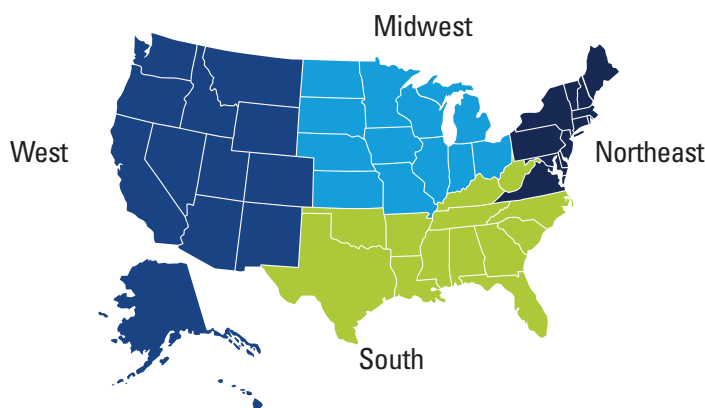
### Work Relative Value Units (wRVUs):

- The *Omnibus Budget Reconciliation Act of 1989* enacted a Medicare fee schedule; as of 2018, about 7,000 distinct physician services are listed. Based on classifications created by the American Medical Association under the Current Procedural Terminology (CPT) system, each service in the fee schedule is assigned a value under the resource-based relative value scale.
- For each CPT code, a payment formula may contain three RVUs, one for physician work, one for practice expense and one for malpractice expense. This measure considers only the wRVU.
- No adjustments are made for APP activities.
- Zero wRVUs are given to CPT codes with the following modifiers *(no adjustments made)*:
  - Assistant surgery modifiers – AS, 80, 81, 82
  - Co-surgery modifiers – 60, 66
  - Bilateral or multiple procedure modifiers – 50, 51
  - Reduced services or discontinued procedure modifiers – 52 and 53
- Work RVUs included for all professional and surgical services performed by providers

### Physician Actual Compensation *(no benefits)* per wRVU:

- Physician reported W2 compensation divided by the calculated wRVUs reported by the CPT submission

### Geographic Areas:



**Northeast:** CT, DC, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT, VA

**South:** AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, WV

**Midwest:** IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI

**West:** AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY

### Ownership Models:

- Private Program – Organized corporate model where the physicians are shareholders, or where one or more physicians own the practice and employ other physicians or providers
- Integrated (Employed and PSA) and Academic Programs – Physician services are legally tethered to a hospital or health system via employment or through a contract such as a professional services agreement (PSA)

**Full-Time Provider:**

- All physicians and APPs designated as 0.80 full-time equivalent (FTE) or higher

**Compensation Model:**

- The internal distribution methodology used for splitting the available compensation pool to the individual physicians:
  - 100% Equal Share (pro rata split per physician)
  - 100% Productivity (pro rata share by some production measure, such as wRVUs)
  - Blended (a combination of the two above)
  - Salary Plus Bonus (fixed base plus some incentive payment)

**Physician Subspecialty:**

- A classification for physician specialty/subspecialty based on where physician spends 50% or more time
  - Electrophysiology
  - Invasive
  - General/Non-Invasive
  - Interventional
  - Advanced Heart Failure
  - Adult Congenital
  - Cardiac Surgery
  - Vascular Surgery

**Advanced Practice Provider Subspecialty:**

- A classification for APP specialty/subspecialty based on the most time spent
  - APP – General Cardiology
  - APP – Electrophysiology (EP)
  - APP – Heart Failure (HF)
  - APP – Cardiac Surgery
  - APP – Vascular Surgery

**Non-Clinical Compensation:**

- Leadership Positions – Payments not at risk for performance, such as time or stipend-based chair positions and administrative leadership positions (CMO, CMIO, CVSL Director, etc.)
- Medical Directorships – Payments not at risk for performance, such as time or stipend-based directorships (cardiac rehab, cath lab, EP lab, non-invasive imaging, etc.)
- Call Coverage – Call pay for STEMI, general cardiology, outside facilities, etc. This is not the value ascribed to call for internal distribution purposes, rather additional compensation from a third party (hospital, health system, etc.) specifically identified and valued for call.
- Hospital/Health System Incentive Compensation – Non-production performance (at risk) payments for improvements to quality, service and cost, co-management incentives, value-based payment, gain sharing, administrative incentives, etc.
- Commercial (non-governmental) Payer Incentive Compensation – Non-clinical performance (at risk) payments for improvements to quality, service and cost, coding and documentation, etc.

**Claim Definitions of Rendering vs. Billing Providers:**

- Rendering Provider – The provider who rendered care to the beneficiary
- Billing Provider – The individual or organization that furnishes and bills for the ordered/referred services provided to the beneficiary

**TRANSLATE BUSINESS INTELLIGENCE INTO PRACTICAL STRATEGIES**

MedAxiom's Care Transformation Services team can help you translate contemporary compensation data into an actionable business plan, tailored to today's market.

**Contact us at**  
*CareTransformationServices@MedAxiom.com*