PHYSICIANS' USE, EXCHANGE, AND EVALUATION OF ELECTRONIC MEDICAL RECORDS

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The Center for Health Information & Research (CHiR) is a multidisciplinary unit under the College of Health Solutions at Arizona State University. CHiR provides comprehensive health care information for Arizona and serves as a community resource and tool for academia and public health. CHiR is directed by George Runger, PhD, who is also Chair of the Department of Biomedical Informatics and Professor in the School of Computing, Informatics, and Decision Systems Engineering. For more information about CHiR's current initiatives as well as downloadable publications, please visit http://chir.asu.edu or email us at chir@asu.edu.

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Table of Contents

Executive Summary

- The percentage of Arizona physicians using electronic medical records (EMRs) increased from approximately 45% in 2007-2009 to approximately 81% in 2012-2014. The current trend suggests that nearly all Arizona physicians will be using EMRs by 2018. The incentives and support provided by Medicare and Medicaid, combined with other influences, have succeeded in increasing EMR adoption, but important obstacles remain.
- The single most important obstacle to the inter-organization transfer of electronic health information is the shortage of Health Information Exchanges (HIEs). The Health Information Network of Arizona (HINAz) is one such HIE. Although HINAz currently serves only thirty-seven participants, it continues to expand.
- The expected benefits of EMRs, such as the avoidance of duplicative tests, require the exchange of information among health care providers. However, among physicians whose EMRs include options such as patient care summaries, e-prescribing and others, less than 20% to slightly more than 46% of the physicians share the information with others, depending on the type of information being shared.
- This report is the second in the CHiR series to include physician rankings of EMRs by brand. EMRs were ranked on a 1-5 scale where 1=awful and 5=outstanding. Twenty five different EMR packages were ranked on each of five criteria.
- Many articles in the press and online discussions among HIE professionals suggest that physicians are very dissatisfied with the EMRs that they use. The results presented here differ, indicating that physicians are at least somewhat positive about the EMR software that they use with their rankings averaging slightly more than the midpoint in the 1-5 scale. The more accurate conclusion may be that physicians seek to improve individual elements of their EMRs but recognize that EMRs offer advantages not available from scanned records or paper medical records.
- We have implemented that focus on the use of and obstacles to the exchange of information among physicians who use EMRs. The new survey will also include an enhanced focus on Medicaid providers. The survey is scheduled to be in the field in January 2015.

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Introduction

This is one of a continuing series of reports designed to help the Arizona Health Care Cost Containment System (AHCCCS) and other stakeholders to create strategies to expand the use of Electronic Medical Records (EMRs) and develop regional Health Information Exchanges (HIEs). This report describes patterns of EMR utilization, the extent to which EMR data are exchanged among health care providers, and the values placed on EMRs by users and non-users. This report also distinguishes between physicians who influence decisions to implement EMRs and physicians who are not decision makers. Physicians' evaluations of their EMRs are included for the first time in this series.

It is widely believed that increased use of EMRs will improve the quality of health care and reduce costs (Chaudhry, et al. 2006; Sequist, et al. 2007). That belief led to the creation of the Arizona Health-e Connection and is one of the major objectives of The State of Arizona Health Information Exchange awarded in 2010 to the Arizona Governor's Office of Economic Recovery. Funds from this award were distributed to AHCCCS, Arizona's single Medicaid agency.

Background

Studies of EMR utilization have increased since 2005 but most use neither comparable definitions of an EMR nor comparable samples. We summarize several of the better known studies in Appendix A of this report. Additional, but not strictly comparable, information is available from a meta-analysis of national surveys of physician adoption of EMRs between 1994 and 2005. It estimated that, in 2005, approximately 24% of physicians used EMRs, but only 9% of the EMRs in use included functions such as e-prescribing (Jha, Ferris, et al. 2006). A consistent set of estimates is produced by the National Center for Health Statistics (NCHS) surveys of ambulatory care physicians in office settings. It is important to recognize that the estimates apply to only one segment of the physicians in this study. The exclusions include physicians in federal facilities and a number of specialty practices.

The percentage of office based physicians using some form of EMR in the United States increased from 48% in 2009 to 72% in 2012 (Hsiao and Hing 2012). The results from the NAMC survey estimate that more than 82% of physicians in office based practices in Arizona used some form of EMR in 2012 (Hsiao and Hing 2012).

The CHiR Survey of Physicians

This report and its predecessors are made possible by an ongoing partnership between the physician licensing boards in Arizona and Arizona State University's Center for Health Information & Research (CHiR). Beginning in 1992, the licensing boards permitted CHiR to add survey questions to license applications from physicians. With few exceptions, the data have been collected continuously since 1992. Previous reports and articles from the survey are listed in Appendix B.

The voluntary survey responses are merged with the licensing data collected by the boards for each physician. The licensing data for non-respondents to the survey permits a rigorous analysis of non-response bias.

The survey questions change over time and among different project sponsors. AHCCCS and the Arizona Strategic Enterprise Technology (ASET), an agency of the State of Arizona, have provided financial support for the project since 2009.

The survey was changed in July 2007 to focus on the use of EMRs and the influences affecting decisions to adopt EMRs. The 2007 survey was implemented with minimal pre-testing to accumulate information as early in the two year allopathic renewal cycle as possible and to capture the "once in every two year" renewal cycle for osteopathic physicians that included Fall 2007. The objective was to provide AHCCCS with estimates for targeting its campaign to expand the use of EMRs as quickly as possible. The rapid implementation of the survey was possible by the enthusiastic cooperation of the Directors and staff of the Arizona Medical Board (AMB) and the Arizona Board of Osteopathic Examiners (ABOE).

Short paper survey forms were used from 1992 through July 2009, greatly restricting the number and complexity of survey questions. The 2007 paper survey consisted, for example, of six questions. The licensing boards converted to electronic applications in 2009, but a large number of physicians continued to use paper surveys and funding was not available to create an electronic survey. (See Appendix C for a copy of the 2007-2011 survey instrument.) Results for the period July 2007 to July 2009 are described in a previous CHiR report (Johnson, Qiu, et al. 2010).

A new electronic survey was implemented in early 2012 with funding from AHCCCS and ASET. The electronic survey includes a greatly expanded set of questions and a large number of

decision trees, including different questions for physicians with Arizona licenses who practice outside the state. Many of the questions on the new survey duplicate questions used in national surveys, such as the NCHS and the National Health and Nutrition Examination Survey (NHANES) surveys, to permit direct comparisons to the national data. A copy of the new survey is included in Appendix D.

The periods of data collection discussed in this report are:

- 2007-2009 – represents July 17, 2007 to July 17, 2009
- 2009-2011 – represents November 1, 2009 to November 1, 2011
- 2012-2014 – represents March 20, 2012 to March 20, 2014

The period between November 1, 2011 and March 20, 2012 was used to deploy the new electronic survey. The most recent two year renewal cycle data was completed on March 20, 2014.

Some studies of EMR adoption identify the *number of practices* with EMRs, while this report counts the *number of physicians* with EMRs, as does the NCHS. Estimates of the number of physicians using EMRs is the most direct measure of potential impact on patients, but the number of practices is a more useful measure of the impact on organizations. A 2007 Massachusetts study is a good example of the effects of larger practices on physician counts (Simon, et al. 2007). The study reported that almost half of Massachusetts' physicians used EMRs, but less than one-quarter of practices in Massachusetts had adopted EMRs.

Definitions

Active license: The licensing boards define active physicians as those whose license has not expired or been suspended. Some physicians renew their licenses after retirement or while on leave. The distinction between physicians with an active license and those who are actively practicing medicine is only obtainable from responses to the survey. The true status of physicians who do not respond to the survey is, therefore, unknown. Survey respondents who indicate that they are retired or semi-retired/on leave physicians with active licenses are excluded from our results.

Electronic Medical Record: Physicians were given the opportunity to select any or all of the possible methods of storing their medical records. The specific survey question is:

How does the organization in which you practice store its medical records? (Check all that apply);

a) Paper ☐ Yes ☐ No
b) Scanned images of paper records ☐ Yes ☐ No
c) Electronic files (an electronic version of a patient's medical history, including progress notes, problems, medications and other information used in treatment.) ☐ Yes ☐ No
   i. *{if yes then ask}* What is the name of your EMR/EHR system

Note: Check boxes are provided for more than 21 types of EMRs with an open ended response for others.

This question is much more specific than the question on previous surveys which was thought to be too general, allowing some respondents to mistakenly include billing software as an EMR. The previous question was:

Are patients' medical records in your practice/organization stored as:

a.paper ◯ Yes ◯ No
Scanned images of paper files ◯ Yes ◯ No
Electronic files ◯ Yes (continue) ◯ No (If no, go to question #5)
◯ The records are stored on a PC/server located in my organization
◯ The records are stored on a server to which I connect via the internet
◯ I don't know where they are stored

Therefore, comparisons between the current results and data based on the short survey question may not be strictly comparable.

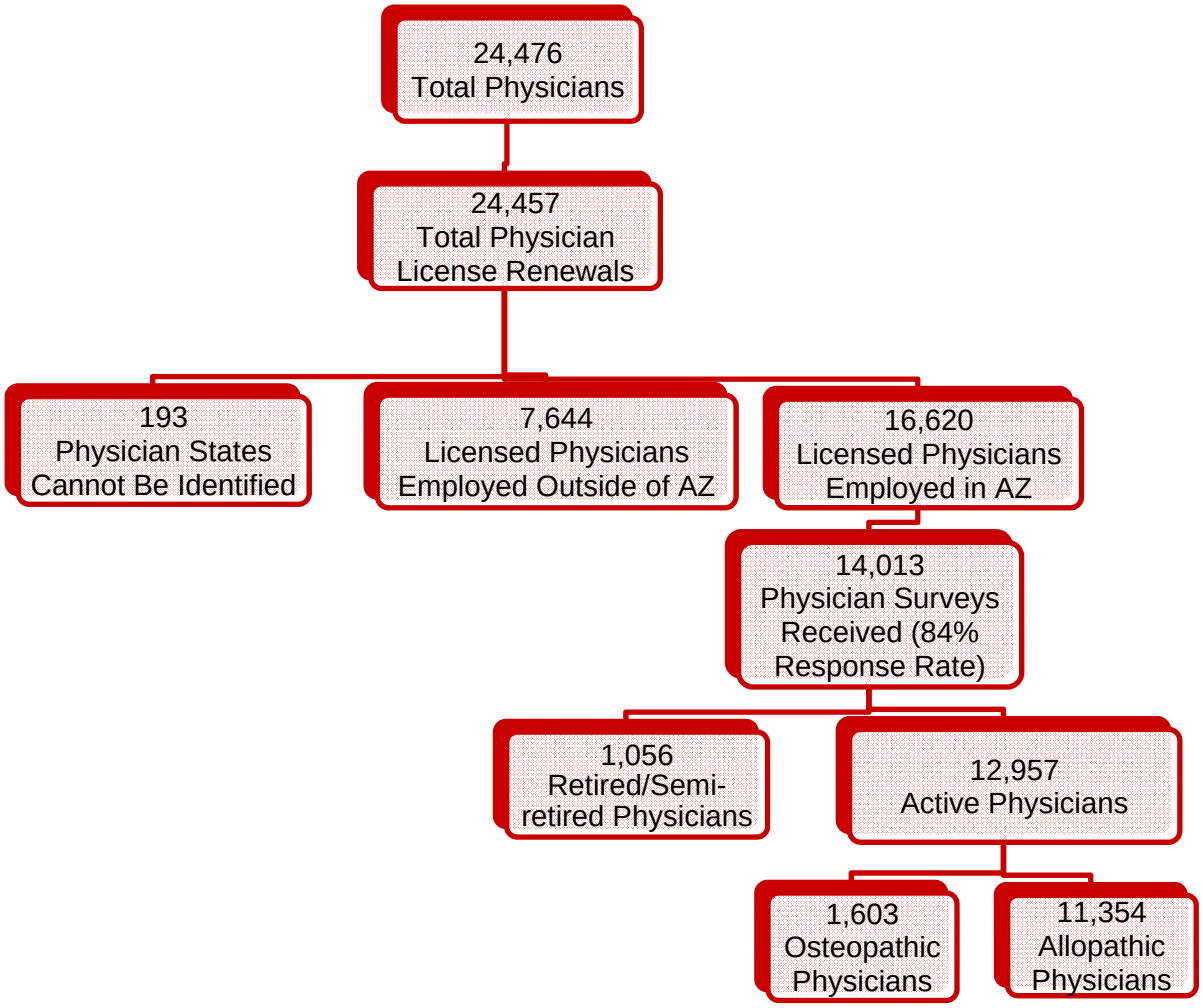
Specialty: Physicians can report more than one specialty to the licensing boards, and they need not be board certified in the reported specialty. We adopt the first specialty reported and do not classify physicians by multiple specialties. *Pediatric Specialties* are defined as pediatricians or physicians practicing a pediatric subspecialty. *Surgical Specialties* are defined to include surgeons or any surgical subspecialty. *Hospital Based Specialties* include critical care medicine, diagnostic imaging and radiology, emergency medicine, hospitalist medicine, infectious disease, neonatology, respiratory care, transport medicine, anesthesiology, intensive care medicine, pathology, nuclear medicine, rehab and occupational medicine, or radiation oncology. *Primary Care is* defined to include family care, general practice, geriatrics, or internal medicine when no other sub-specialty is listed. All other specialties are defined as *Medical Specialties,* including obstetrics and gynecology, following the conventions used by AHCCCS.

Type of Practice: The categories used from 1990-2012 were expanded and revised for the new electronic survey to be more internally consistent. Categories defined in terms of physician activity (e.g. semi-retired; locum tenens) were removed and replaced by categories representing the type of practice/organization in which a physician works. Thus, the type of practice data prior to 2012 is not strictly comparable to the data collected after March 2012.

Survey Sample

The number of physician renewals and survey respondents is described in Figure 1. A total of 24,457 physicians renewed their licenses between March 20, 2012 and March 20, 2014. Allopathic physicians renew their licenses every two years on their birthdays, and osteopathic physicians renew their licenses every other year, so the results represent approximately eighty-four percent of the physicians in the 2012-2014 renewal cycle. The unusually high response rate from the population of all physicians, rather than a sample, provides a very robust, representative set of results. The renewals included 16,620 physicians who live in Arizona and an additional 7,644 physicians with Arizona licenses who live outside Arizona. There were 193 physicians whose state of residence could not be identified. Survey responses were received from 14,013 physicians living in Arizona. Of those, 12,957 physicians were in active practice. These respondents include 11,354 allopathic physicians and 1,603 osteopathic physicians.

Figure 1. Active Physicians, 2012-2014



Source: Arizona Medical Board (AMB), Arizona Board of Osteopathic Examiners (ABOE) Survey and Administrative Data, 2012-2014.

Because all physicians renewing Arizona licenses have the opportunity to complete a survey, the number of respondents is substantially larger than the number obtained from a fractional sample that typically draws respondents from a relatively small percentage of the renewals. If, for example, a five percent sample of the 16,620 renewals had a response rate of 84% then the survey results would include 699 physicians rather than the 14,013 physician respondents represented in our results. Response rates of 60% or more are considered adequate for surveys. The 84% response rate is unusually high. The NCHS survey, for example, used

approximately 3,180 physicians to represent all office practice based physicians in the United States (Jamoom, et al. 2012).

Our very large sample minimizes the need to rely on small numbers of responses to some questions on the survey, and it reduces the variance surrounding estimates. In other words, the results are more certain.

Response Bias

The sample is quite large and the response rate is very high, but the best test of the extent to which a survey represents a population is a comparison of the respondents to the non-respondents. Since we have licensing data on all physicians, we can make that comparison. The "non-respondents" in our comparisons include retired or semi-retired physicians with active licenses. The identification of these physicians is only possible using answers to the survey questions. The inclusion of retired physicians is a much stricter test of response bias than the usual comparisons.

There are a few significant differences between respondents and all Arizona physicians. Physicians aged 35-54 are slightly overrepresented in the survey results, and physicians in the 65+ groups are slightly underrepresented among survey respondents. Hospital-Based specialists are slightly overrepresented and Surgical-Specialists are slightly underrepresented. Physicians in rural areas are slightly overrepresented. Because the differences are small, the results are representative of the physician population, subject to very small variations. The comparisons between respondents and non-respondents for previous years are summarized in Appendix E.

Table 1. Comparison of Respondents to Non-Respondents, 2012-2014

Characteristic	*Respondents (N =12,957)*		*Non-Respondents (N = 2,910)*		*P-Value*
Sex					
Female	3,719	28.7%	832	28.5%	NS
Male	8,805	67.9%	2,002	68.7%	NS
Total	12,524	96.6%	2,834	97.3%	
Age Group					
25 - 34	1,637	12.6%	573	19.6%	<0.01
35 - 44	4,067	31.5%	635	21.8%	<0.01
45 - 54	3,471	26.7%	596	20.4%	<0.01
55 - 64	2,664	20.5%	587	20.1%	NS
65+	900	6.9%	437	15.0%	<0.01
Total	12,739	98.3%	2,828	97.1%	
Specialty					
Primary Care	4,671	36.0%	1,050	35.0%	NS
Medical	2,944	22.7%	701	24.0%	NS
Hospital-Based	3,016	23.2%	535	18.3%	<0.01
Pediatric	1,108	8.5%	254	8.7%	NS
Surgical	1,183	9.1%	351	12.0%	<0.01
Total	12,922	99.7%	2,891	99.3%	
Location					
Maricopa County	8,061	62.2%	1,740	59.7%	NS
Pima County	2,344	18.0%	533	18.3%	NS
All Other Counties	2,129	16.4%	409	14.0%	<0.05
Total	12,534	96.7%	2,682	92.1%	

Source: AMB, ABOE Administrative/Survey Data, 2012-2014. Data include retired and semi-retired physicians.

Note: A p-value of .05 or less implies only a 5% probability of declaring the relationship significant when in fact it is not. NS = no significant difference. Gender was unknown for 433 (3.3%) respondents and 76 (2.6%) non-respondents. Age was unknown for 218 (1.6%) respondents and 82 (2.6%) non-respondents. Specialty was unknown for 35 (0.2%) respondents and 19 (0.6%) non-respondents. Location was unknown for 423 (3.2%) respondents and 228 (7.8%) non-respondents.

One potential source of response bias is the fact that physicians in the Veterans Administration (VA) health care system or the Indian Health Service (IHS) are not required to have an Arizona license unless they also practice outside the federal systems.

We tested for potential omissions of federal physicians in a previous report by comparing physicians who indicated employment in a government setting on the survey to a then recent HRSA report showing that 500 physicians were employed in the VA or IHS systems in Arizona (Health Resources and Services Administration (HRSA) 2007). The HRSA report showed that 38.8% (194/500) of Arizona physicians (MD) with a federal license practiced in primary care during 2007. The number of Arizona physicians who reported working in a government setting on the CHiR/AHCCCS survey was 457 MDs and 55 DOs.

Weighting the survey responses to population totals indicated that approximately 1,009 physicians [(457+55)*1.97] with Arizona licenses worked in a government setting. The estimate included all government settings, not just the VA and IHS, but comparisons with the HRSA report suggest that the relatively large number from the survey data implies that most of the federally employed physicians had Arizona licenses. Unfortunately, HRSA has not published more recent reports that would permit an update of these results.

Subject to some uncertainty about the current numbers of physicians who work in federal government settings, but who are not licensed in Arizona, the survey results are, reasonably representative of all osteopathic physicians and allopathic physicians practicing in Arizona in 2012-2014.

Note: From this point forward, retired and semi-retired/on leave physicians are excluded from all subsequent results in this report.

Physician Characteristics

The licensing board data are available for each of the 16,620 physicians who were employed in Arizona and who renewed their licenses between March 2012 and March 2014. There were 14,013 physicians who responded to the survey. Of those, approximately 12,957 are in active practice. Each survey respondent represents approximately 1.3 physicians in active practice who renewed their licenses in 2012-2014. Except where noted, the results are un-weighted counts and percentages because our primary interest is in the averages, which do not change if weighted, rather than the absolute number of responses.

We measure EMR users as a percentage of all physician respondents actively practicing in Arizona, including some physicians who may not need EMRs because they don't treat patients. The inclusion of physicians who do not need EMRs understates the utilization rates by a small amount given the very low number of physicians not providing direct care. As indicated in Table 2, approximately 92.0% of the physicians provided patient care.

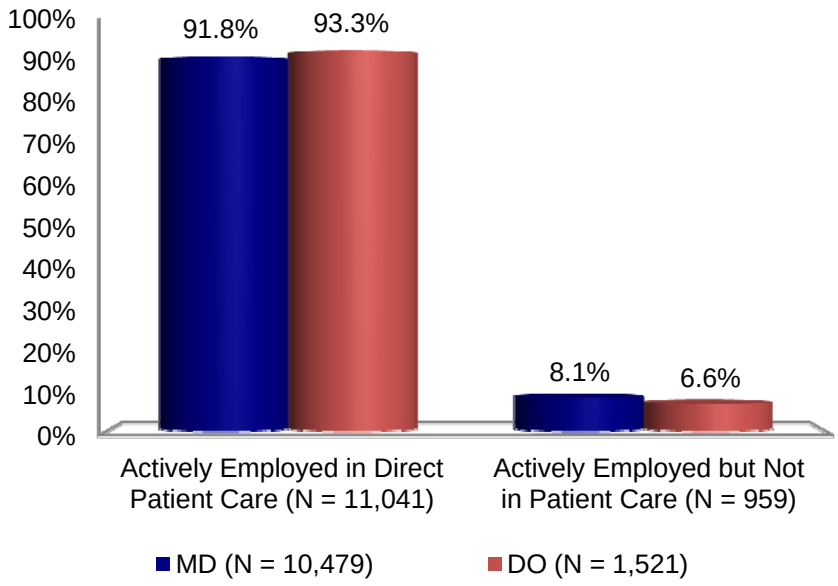
Table 2. Active Physicians by Employment Status, 2012-2014

Employment Status	*MD*		*DO*		*Total*	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Actively Employed in Direct Patient Care	9,621	91.8%	1,420	93.3%	11,041	92.0%
Actively Employed but Not in Patient Care	858	8.1%	101	6.6%	959	8.0%
Total	10,479	100%	1,521	100%	12,000	100.0%

Source: AMB, ABOE Survey data, 2012-2014.

Note: Employment status was unknown for 957 of physicians.

Figure 2. Physicians Providing Patient Care, 2012-2014



Source: AMB, ABOE Survey data, 2012-2014.

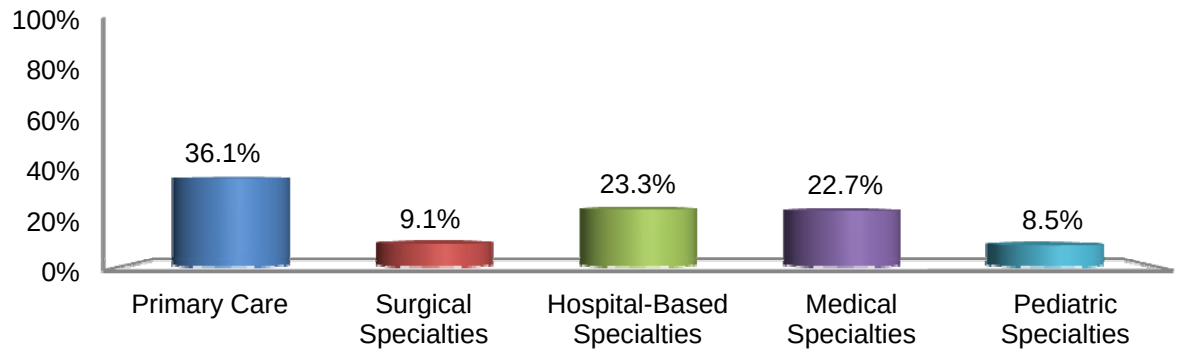
Table 3. Distribution of Practicing Physicians by Specialty, 2012-2014 (N = 12,922)

Specialty Groups	*Total Physicians*	
	N	*%*
Primary Care	4,671	36.1%
Surgical Specialties	1,183	9.1%
Hospital-Based Specialties	3,016	23.3%
Medical Specialties	2,944	22.7%
Pediatric Specialties	1,108	8.5%
Total	12,922	100.0%

Source: AMB, ABOE Survey data, 2012-2014.

Note: Primary specialty reported by physician at the time of licensure. 35 physicians did not report specialty to the medical board.

Figure 3. Distribution of Practicing Physicians by Specialty, 2012-2014 (N = 12,922)



Source: AMB, ABOE Survey data, 2012-2014.

Note: Primary specialty reported by physician at the time of licensure. 35 physicians did not report specialty to the medical board.

Practice Settings

Table 4. Type of Practice by MD and DO, 2012-2014

Type of Practice	*MD*	*DO*	*Total*
Physician Owned Solo Practice	1,683 (17.0%)	259 (17.8%)	1,942 (17.1%)
Physician Owned Group Practice	3,332 (33.7%)	497 (34.2%)	3,829 (33.8%)
Hospital/Medical School Group Practice	1,571 (15.9%)	228 (15.7%)	1,799 (15.8%)
Community or Rural Health Center	511 (5.1%)	88 (6.0%)	599 (5.2%)
Federal Government Hospital or Clinic	457 (4.6%)	55 (3.7%)	512 (4.5%)
Private Hospital System	820 (8.3%)	121 (8.3%)	941 (8.3%)
Non-Hospital Private Outpatient Facility	416 (4.2%)	78 (5.3%)	494 (4.3%)
Medical School/University Research Center	468 (4.7%)	48 (3.3%)	516 (4.5%)
Health Insurer/Health Related Organization that does not provide care	213 (2.1%)	22 (1.5%)	235 (2.0%)
City, State or County Clinic or Hospital System	139 (1.4%)	20 (1.3%)	159 (1.4%)
Other	254 (2.5%)	35 (2.4%)	289 (2.5%)
Hospice or SNF	32 (0.3%)	4 (0.2%)	36 (0.3%)
Independent Contractor	37(0.3%)	10 (0.6%)	47 (0.4%)
Medical Consultant	27 (0.2%)	3 (0.2%)	30 (0.2%)
Private Hospital -- Not for Profit	39 (0.3%)	3 (0.2%)	42 (0.3%)
Mental/Behavioral Health	8 (0.0%)	1 (0.0%)	9 (0.0%)
Total	9,864 (87.1%)	1,451 (12.8%)	11,315 (100.0%)

Source: AMB, ABOE Survey Data, 2012-2014.

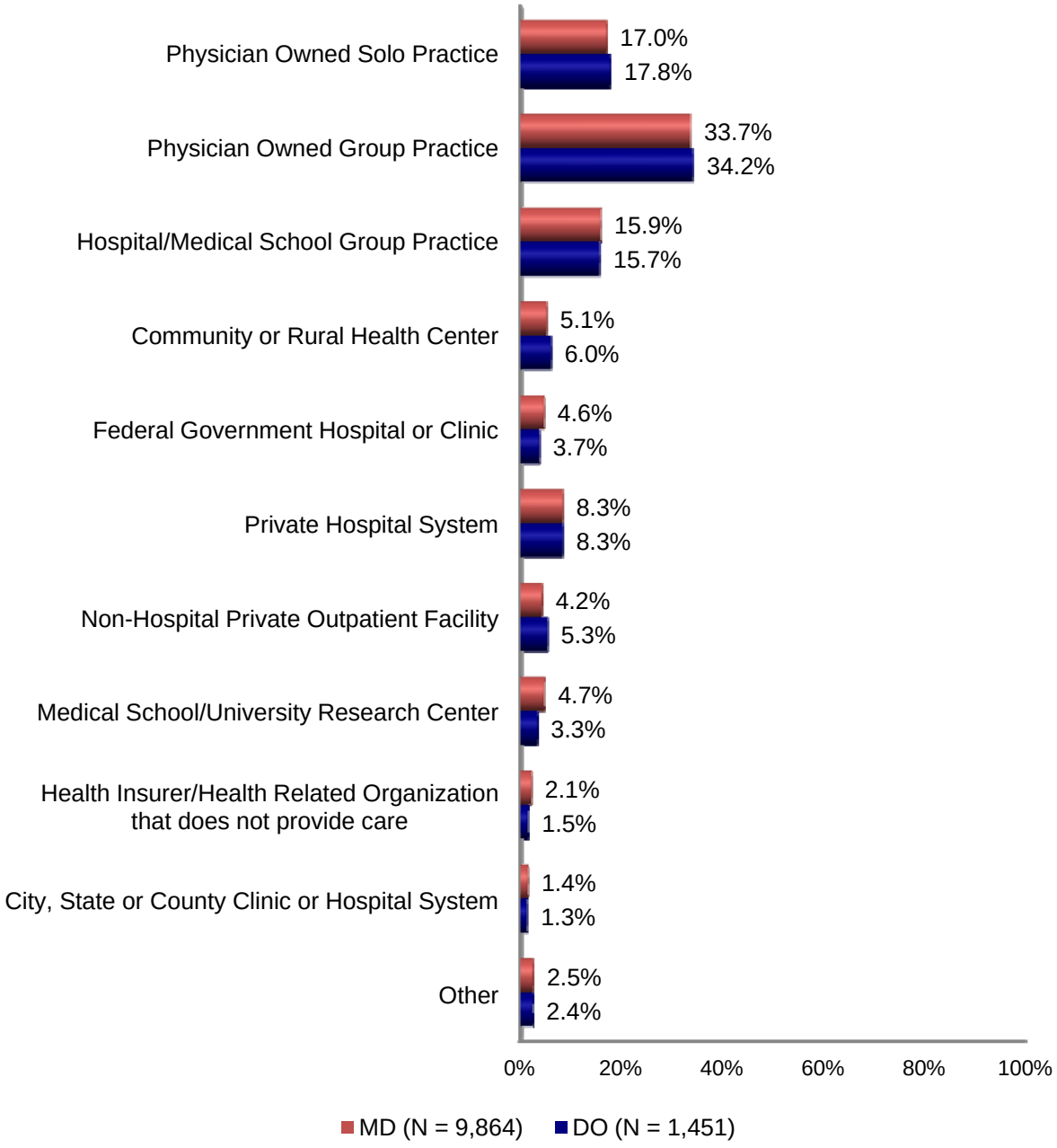
Note: 1,642 physicians did not report type of practice (missing). Percentages are based on responses. The five practice types listed under the "Other" section are a subset of the total types included in the Other category.

Table 4 shows the distribution of physicians by type of practice. More than 33% of physicians work in physician owned group practices, followed by 17% of physicians in solo practices. Hospital or Medical School owned group practices accounted for an additional 15.8% of the physicians. In total, two-thirds of Arizona physicians work in solo or group practices. Physicians were rather thinly distributed among the other practice types.

The prevalence of solo practice is declining in Arizona, in part due to acquisitions of practices by hospital systems. The percentage of physicians in solo practice dropped from 24% in 2007-2009 to 17% in 2012-2014. Solo practice physicians are, all else equal, much less likely to adopt EMRs than are physicians in other practice settings. All else equal, utilization rates of EMRs will continue to increase as the percentage of physicians in solo practice declines.

There are few differences in the distribution of MDs and DOs by type of practice. Medical Schools is the exception where MDs are somewhat more likely than DOs to be employed. The difference has narrowed over time. Should the expansion of osteopathic medical schools in Arizona continue, it is likely that the differences between MDs and DOs in that category will narrow.

Figure 4. Type of Practice by MD and DO, 2012-2014



Source: AMB, ABOE Survey data, 2012-2014.

Note: 1,642 Physicians did not report type of practice (missing). Percentages are based on responses.

Table 5. Type of Practice by Number of MDs, 2012-2014 (N = 4,934)

Type of Practice	*Number of Physicians*				*Total*
	2-5	*6-50*	*51-94*	*95+*	
Physician Owned Group Practice	1,168 82.5%	1,286 62.7%	119 40.2%	335 28.5%	2,908 58.9%
Hospital/Medical School Group Practice	80 5.6%	426 20.7%	92 31.0%	744 63.3%	1,342 27.1%
Community or Rural Health Center	86 6.0%	236 11.5%	67 22.6%	47 4.0%	436 8.9%
Non-Hospital Private Outpatient Facility	81 5.7%	101 4.9%	18 6.0%	48 4.0%	248 5.0%
Total	1,415 28.6%	2,049 41.5%	296 5.9%	1,174 23.7%	4,934 100.0%

Source: AMB, ABOE Survey data, 2012-2014.

Note: 1,490 MD's did not report practice type, and 2,700 MD's did not report the number of physicians in their practice for the above practice types.

Table 6. Type of Practice by Number of DOs, 2012-2014 (N = 751)

Type of Practice	*Number of Physicians*				*Total*
	2-5	*6-50*	*51-94*	*95+*	
Physician Owned Group Practice	174 75.6%	184 53.6%	20 34.4%	37 30.8%	415 55.2%
Hospital/Medical School Group Practice	10 4.3%	98 28.5%	26 44.8%	69 57.5%	203 27.0%
Community or Rural Health Center	20 8.6%	46 13.4%	9 15.5%	7 5.8%	82 10.9%
Non-Hospital Private Outpatient Facility	26 11.3%	15 4.3%	3 5.1%	7 5.8%	51 6.7%
Total	230 30.6%	343 45.6%	58 7.7%	120 15.9%	751 100.0%

Source: AMB, ABOE Survey data, 2012-2014.

Note: 152 DO's did not report practice type, and 334 DO's did not report the number of physicians in their practice for the above practice types.

Communication in Practice Environments

The survey asks physicians about the methods of communication and billing in their practices. The results are shown in the next two tables.

Table 7. Methods of Communication by Renewal Period, 2007-2014

Method	*2012-2014 N = 10,587*		*2009-2011 N = 11,100*		*2007-2009 N = 6,699*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Email	9,741	92.0%	9,634	86.7%	5,530	82.5%
Internet	9,933	93.8%	9,947	89.6%	5,702	85.1%
Fax	10,360	97.8%	10,365	93.4%	6,273	93.6%
Medifax	NA	NA	869	7.8%	536	8.0%
U.S. Mail	10,327	97.5%	NA	NA	NA	NA
None of the Above	0	0.0%	211	1.9%	96	1.4%

Source: AMB, ABOE Survey Data, 2007-2009, 2009-2011, 2012-2014.

Note: Categories are not mutually exclusive. 78 physicians did not respond to this question 2007-2009; 1,081 physicians did not respond 2009-2011; 2,370 physicians did not respond 2012-2013. Medifax was removed as a method of communication for the 2012-2014 data and U.S. Mail was added.

A surprisingly large number of physicians lacked access to the internet or email in the early years of the survey. As recently as 2007-2009, nearly 15% of the physicians practicing in Arizona did not have internet access. The rapid increases in internet access shown in Table 7 remove an important obstacle to the exchange of EMR information. Given the very high levels of access, we will discontinue publication of these results in the future.

Characteristics of EMR Users

The 2012-2014 survey expanded the set of questions on the types of practices in which physicians are employed (Table 8). The results, with the exception of solo practice, are not strictly comparable to the estimates from previous years.

The fact that solo practitioners have the lowest rates of EMR utilization relative to other practice types occurs in our previous surveys and in national studies. In absolute terms, however, EMR use by solo practitioners is rapidly increasing in Arizona. The utilization rate among solo practitioners increased from approximately 26% in 2007-2009 to approximately 56% in 2012-2014. The most recent rate is substantially higher than the NCHS estimate of 29% of all office based physicians in solo practice (Jamoom, et al. 2012). The national average is for a slightly earlier period (2011) and national averages are not representative of any particular state, but the difference is quite large and deserves additional investigation.

As expected, the highest utilization rate occurs in federal health systems with physicians associated followed by medical schools. Physicians in community health centers have essentially as high a utilization rate as those in medical school practices, presumably reflecting the effects of a number of federal and state incentive programs directed to community health centers and to rural areas. Physicians in private hospital systems and state or county systems are the next most highly ranked utilizers of EMRs.

Table 8. EMR Utilization by Type of Practice, 2012-2014 (N = 10,838)

Type of Practice	*Utilization Rates*
Physician Owned Solo Practice	55.6%
Physician Owned Group Practice	79.2%
Hospital/Medical School Group Practice	90.8%
Community or Rural Health Center	91.3%
Federal Government Hospital or Clinic	95.1%
Private Hospital System	86.4%
Non-Hospital Private Outpatient Facility	78.1%
Medical School/University Research Center	84.1%
Health Insurer/Health Related Organization that does not provide care	17.0%
City, State or County Clinic or Hospital System	69.8%
Other	62.3%
Hospice or SNF	80.6%
Independent Contractor	63.8%
Medical Consultant	40.0%
Mental/Behavioral Health	100.0%
Private Hospital - Not for Profit	78.6%

Source: AMB, ABOE Survey Data, 2012-2014.

Note: Rates = % of physicians within each practice type. 1,642 respondents were missing type of practice. 2,119 respondents were missing either variable.

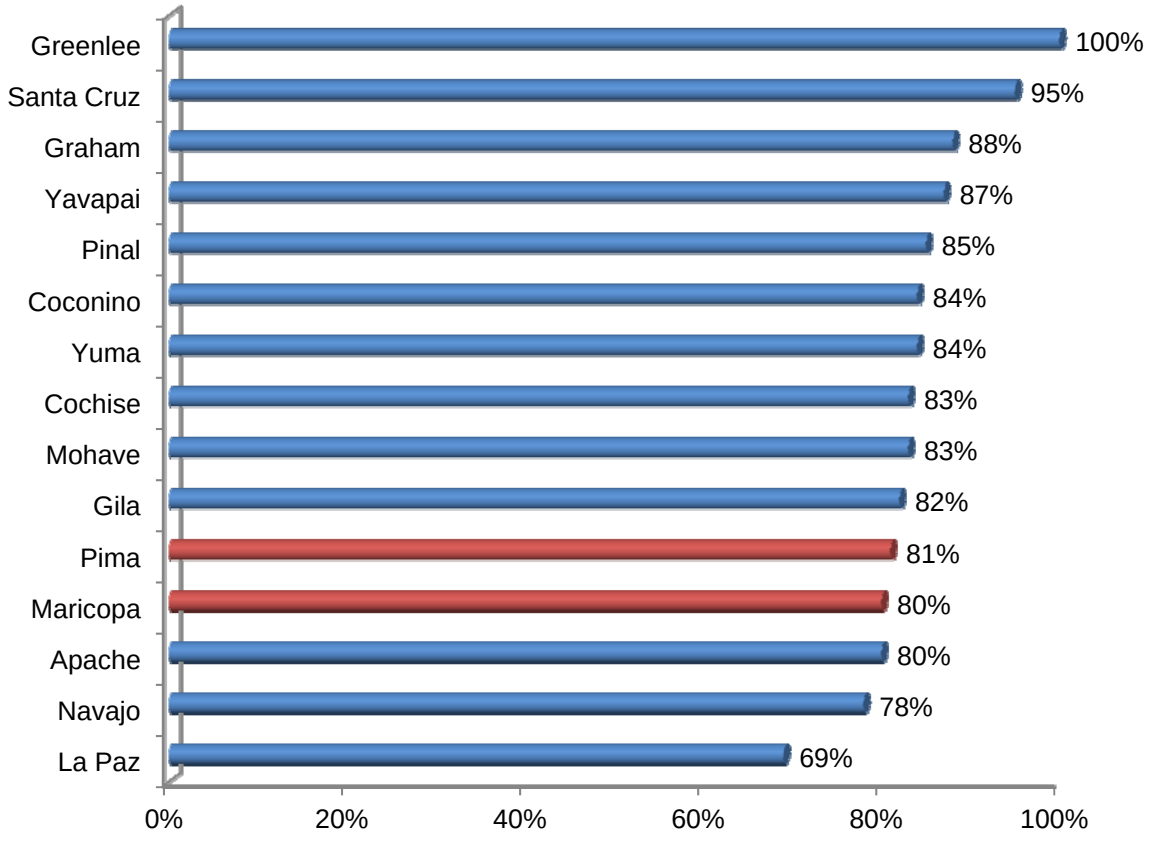
The distribution of EMR users by County is described in Figure 5. We characterize Maricopa and Pima counties as urban areas because they include the largest metropolitan areas in

Arizona. However, both counties are quite large and both include areas where population density is quite low.

The percentage of physicians who use EMRs ranges from 69% in La Paz County to 100% in Greenlee County. The number of practicing physicians ranges from 1 (Greenlee) to 5,443 (Maricopa).

The utilization rate in Maricopa County is the fourth lowest in the state. The relatively high adoption rates in many of the rural counties is likely the result of aggressive campaigns, including financial incentives, that have been directed to rural health care providers by the Centers for Medicare and Medicaid Services (CMS) and the State of Arizona.

Figure 5. EMR Utilization by County 2012-2014 (N = 10,207)



Source: AMB, ABOE Survey Data, 2012-2014.

Note: Approximately 2,100 respondents did not identify a method of storing medical records and 650 were of unknown county. Pima and Maricopa Counties (red) represent the urban areas. All other counties in blue represent the rural areas.

The Utilization of Electronic Medical Records

Trends in the utilization of EMRs are described in Table 9. A serious problem with the new reporting software for the survey in 2009-2011 required the application of utilization rates from the paper surveys to the electronic survey data. The paper surveys represented a substantial portion of the total responses in that time period, but the potential agreement between the paper and electronic results could not be validated. The overall results for that period can be interpreted with a reasonable level of confidence, but the results for some individual characteristics are subject to uncertainty. The most directly comparable results are between 2007-2009 and 2012-2014.

Table 9. Methods of Storing Medical Records by Renewal Period

Method	*2012-2014 N = 10,780*		*2009-2011 N = 2,137; W = 8,996*		*2007-2009 N = 6,387*	
	Number Yes	*% of total*	*Weighted Yes*	*% of total*	*Number Yes*	*% of total*
Paper Files Only	1,229	11.4%	3,140	37.3%	2,911	45.6%
EMR Only	1,510	14.0%	1,565	17.4%	859	13.4%
Scanned Images Only	194	1.7%	204	2.3%	205	3.2%
Paper + Scanned Images Only	592	5.4%	404	4.5 %	393	6.2%
EMR + Paper Only	335	3.1%	559	6.2%	484	7.6%
EMR + Scanned Images Only	3,525	32.6%	1,411	15.7%	742	11.6%
Paper + Scanned Images + EMR	3,395	31.4%	1,126	12.5%	793	12.4%
EMR alone or in combination*	8,765	81.3%	4,700	52.3%	2,878	45.1%

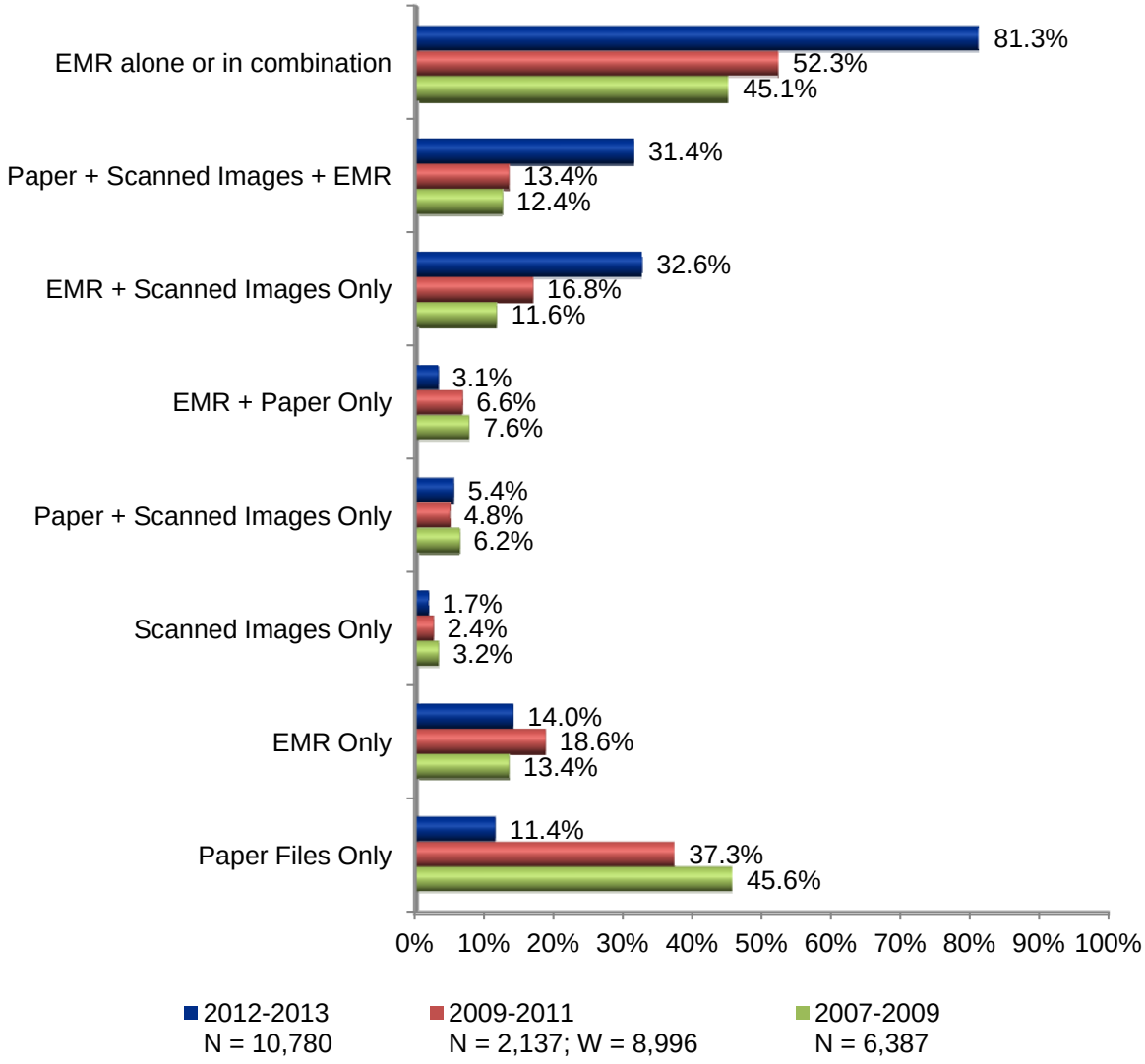
Source: AMB, ABOE Survey Data, 2007-2009; 2009-2011; 2012-2014.

Note: The 2011 weight = 4.21. The 2011 estimates are subject to substantially more uncertainty than the other renewal period data.

Respondents who did not identify a method of storing medical records (missing): 390 for 2007-2009 and 2,177 for 2012-2014.

*Data on "EMR alone or in combination" is not mutually exclusive from other categories.

Figure 6. Methods of Storing Medical Records by Renewal Period



Source: AMB, ABOE Survey Data, 2007-2009; 2009-2011; 2012-2014.

Note: The 2011 weight = 4.21. The 2011 estimates are subject to substantially more uncertainty than the other renewal period data.

Respondents who did not identify a method of storing medical records (missing): 390 for 2007-2009 and 2,177 for 2012-2014.

*Data on "EMR alone or in combination" is not mutually exclusive from other categories.

The uncertainty in the 2009-2011 estimates, notwithstanding the trend to increasing reliance on EMRs, often in combination with paper or scanned medical records, is quite clear. The percentage of physicians using EMRs increased from approximately 45% in 2007-2009 to approximately 81.3% in 2012-2014. The trend in Arizona is consistent with trends in the use of EMRs in the United States. The percentage of office based physicians using some form of

EMR in the United States increased from 48% in 2009 to 72% in 2012 (Hsiao and Hing 2012). The national data from the NAMC survey are not strictly comparable since they represent only a portion of the types of physicians included in our survey. The exclusions include physicians in federal facilities where the utilization rates of EMRs are 96% and a number of specialty practices (Hsiao and Hing 2012). The results from the NAMC survey estimate, however, that more than 82% of physicians in office based practices in Arizona used some form of EMR in 2012.

The use of paper records alone in Arizona declined from nearly 46% to less than 12% between 2007-2009 and 2012-2014. The use of EMRs in combination with scanned files increased nearly threefold from 12% to 33%. The use of EMRs in combination with paper and scanned files increased by a slightly larger multiple, suggesting that many of the new adopters of EMRs were physician practices that had previously begun a transition from paper records to scanned records. The process is one of gradual transition from paper records and scanned records to EMRs rather than the complete translation of existing records to EMRs. Our data do not address the transition from paper to EMRs, but one can imagine strategies that create EMRs for new patients or previous patients if they continue to seek care, while leaving the records of patients who may not return for care in their original format.

Another possible influence is the absence of electronic networks for the exchange of clinical information. In a summary of several surveys reported in *Information Week*, 80% of organizations with EMRs also use paper records (Terry 2012). The *Information Week* article, citing various sources, reports that many practices with EMRs receive faxes and paper documents from other practices because electronic interfaces are not available. Many of the documents are scanned or entered into the EMRs. The reliance on scanning in conjunction with EMRs suggests another reason for the proliferation of scanned documents in firms with EMRs.

A Multivariate Model of the Determinants of EMR Adoption & Information Exchange

We use multivariate logistic regression models to: (1) estimate the influence of various characteristics on the use of EMRs; and (2) measure the extent to which the characteristics of EMR users affect the extent to which they exchange information with others. The odds ratios are a measure of the influence of a particular characteristic, such as age, on use of an EMR, “all else equal”. An “all else equal” effect is the marginal influence of a measured characteristic,

such as age, holding the effects of all other characteristics (e.g., type of practice, gender, location, specialty etc.) constant. The variables added to the 2012-2014 results affect all the estimated coefficients by changing the content of the variables that provide the "all else equal" interpretations of the results.

The first set of results estimate the probability of being an EMR user, comparing EMR users to all physicians. The second and third columns of results compare the number of physicians with EMRs who exchange information to all physicians who use EMRs.

To use an example from Table 10 below, physicians age 25 to 34 are, all else equal, 4.06 times *more* likely to utilize EMRs in their practice than physicians age 65 and older. An odds ratio less than 1.0 indicates that physicians in a particular group are *less* likely than those in the comparison group to utilize EMRs. Physicians age 25 to 34 who use EMRs are less likely than older physicians to be partially connected (0.78).

There are no statistically significant differences, all else equal, between Osteopathic and Allopathic physicians; between female and male physicians or between urban and rural practices.

The odds ratios for types of practice can be ranked in terms of the odds that physicians use EMRs in each work setting relative to federal health care systems. None of the practice types reach as high a utilization rate as federal facilities. The statistically significant estimated odds ratios range from 0.11 for solo practice to 0.34 for Non-Hospital Outpatient Facilities.

The effects of age are measured relative to physicians in the 65+ age group. The odds of EMR use is at a maximum in the 25-34 year age group (4.06) and slightly lower among physicians age 35-44 (3.19). The odds drop sharply for the 45-54 year age to 2.26 and drop to 1.71 among physicians 55-64 years of age. An inverse relationship between physician age and EMR use has been observed in every period from 2007-2014.

One can speculate that differences in age represent differences in the culture of the medical profession, established work habits, facility with computerized applications, and training. An additional correlate of age, which is especially important for solo practitioners and small physician owned practices, is that the relatively short durations before retirement make the Return on Investment (ROI) to implement EMRs too low. The cost of purchasing a system is the most important single barrier cited by physicians in the NHCS Physician Workflow Survey (Jamoom, et al. 2012).

Table 10. Predictors of Being an EMR User/Partially or Fully Connected EMR User, 2012-2014

Variable	*2012-2014*		
	Odds Ratio (EMR User) N=10,201	*Odds Ratio (Partially Connected EMR User) N=8,217*	*Odds Ratio (Fully Connected EMR User) N=8,217*
DO (vs. MD)	0.98	0.972	1.28
Type of Practice (vs. Federal Government)			
Physician Owned Solo Practice	0.11*	3.27*	1.22
Physician Owned Group Practice	0.32*	3.25*	0.99
Hospital/Med School Group Practice	1.06	1.70*	0.93
Community or Rural Health Center	0.85	2.19*	0.91
Private Hospital System	0.59*	1.32*	0.72
Non-Hospital Private Outpatient Facility	0.34*	1.81*	0.69
Medical School, University Research Center	0.71	1.55*	0.41
City, State or County Clinic or Hospital System	0.19*	1.30	0.71
Other	0.17*	0.98	0.47
Age (vs. 65 and older)			
25 to 34	4.06*	0.78*	1.50
35 to 44	3.19*	0.98	1.32
45 to 54	2.26*	1.07	1.57
55 to 64	1.71*	1.08	1.36
Gender (Female vs. Male)	0.91	0.99	0.87
Location (vs. all other AZ counties)			
Maricopa County	0.89	0.85*	1.12
Pima County	0.84	0.94	1.19
Specialty (vs. Hospital Based Specialists)			
Primary Care	1.25*	4.23*	6.79*
Medical Care	1.07	3.55*	3.17*
Pediatric Care	1.17	3.77*	3.83*
Surgical Care	0.84	2.57*	2.37*

Source: AMB, ABOE Survey & Licensing Data, 2012–2014.

Note: 2,756 observations were deleted due to missing values for EMR Users and 543 observations were deleted for Partially Connected EMR Users and Fully Connected EMR Users. *Statistically significant at p less than or equal to 0 .05.

The odds ratios for the influence of each specialty are measured relative to physicians in hospital based specialties. All else equal, primary care physicians are more likely than the reference group to use EMRs and physicians in surgical care are less likely to use EMRs.

We next compare the extent to which physicians who use EMRs are partially or fully connected with others. The "Partially Connected" physicians are defined as users of at least one of their EMR's functions to exchange information with others. The "Fully Connected" physicians are those who use all six functions to exchange information to others.

Approximately 3,483 or 42 % of physicians with EMRs are "Partially Connected" and only 234 or 2.8% of physicians with EMRs are "Fully connected". The small sample of fully connected users is not, in our opinion, sufficient for stable estimates. We present results for the fully connected group, but defer discussion until a larger sample is available.

The significant influences on being partially connected are the type of practice, being in the youngest (25-34) age group, practicing in an urban location and physician specialty.

The practice types that are most likely to exchange information are the physician owned group practice, with solo practice a close second relative to federal government practices. Physicians in solo practice are the most likely to be partially connected. Thus, while solo practitioners are the least likely to have EMRs, the solo practice physicians with EMRs are the most likely to share at least some information with other health care organizations. Physicians in physician owned group practices are technically second to the solo practitioners, but the differences are very small. Community health centers are the next most likely to exchange information with others.

All the specialty groups have large significant effects on connectivity, with primary care the most influential. One can speculate that the results for primary care reflect the effects of the Medicaid and Medicare incentive programs, but that suggestion requires additional study.

The results suggest that the characteristics of individual physicians that are significant influences on the use of EMRs do not influence the exchange of information once an EMR is adopted. Older physicians are, for example, least likely to adopt EMRs, but once an EMR is adopted, the only significant age related difference in the extent to which physicians exchange EMR data with others is that the youngest group are less likely than the oldest group of physicians with EMRs to be connected.

It appears that the exchange of information depends primarily on the environment in which physicians work. As we indicated in the previous section, a major obstacle to the exchange of information is the absence of electronic networks (health information exchanges) that are necessary for exchanges to occur. The extent to which connectivity is determined by intra-organizational factors versus the availability of health information networks will require additional study.

Our results include exchanges within a practice or a single hospital system and exchanges between organizations. Exchanges among different organizations such as between hospital systems or among physician owned solo or group practices are much less frequent.

Trends 2007-2014

An advantage of the ongoing CHiR survey is the ability to track trends in the use of EMRs and an array of associated characteristics over time. Improvements in the electronic version of the survey were achieved at the costs of some loss of between-year comparability for some questions. The survey questions for previous years included, for example, only two specialty groups rather than the five classifications in current use. The categories for types of practice were also expanded and the content was changed to eliminate some internal inconsistencies. Other important questions, such as the types of medical records in use (EMR, paper, scanned and combinations) are the same and comparisons of EMR utilization rates over time are appropriate.

The definitions of partially and fully connected are completely changed with the availability of much more detailed survey questions on the availability and use of the functions embedded in EMR software packages. The changes limit comparability of the multivariate results over time. Inferences at a very general level are possible, including longitudinal differences among the effects of physicians' ages, differences between allopathic and osteopathic physicians, and urban versus rural physicians.

Table 11. Multivariate Predictors of Being an EMR User/Connected EMR User, 2007-2011

Variable	*2009-2011*		*2007-2009*	
	Odds Ratio (EMR User)	*Odds Ratio (Fully Connected EMR User)*	*Odds Ratio (EMR User)*	*Odds Ratio (Fully Connected EMR User)*
Type of Practice (vs. Government)				
Group Practice	0.38*	0.43*	0.28	0.13
Community Health Center	0.66	0.45*	0.23	0.08
Hospitalist	0.52	0.80	0.54	0.46
Solo Practice	0.11*	0.09*	0.08	0.02
Academic Teaching/Research	1.10	1.19	0.76	0.72
DO (vs. MD)	1.02	1.14	1.60*	1.04
Age (vs. 65 and older)				
25 to 34	2.63*	1.99	3.16*	2.12*
35 to 44	3.19*	1.85*	2.49*	1.69*
45 to 54	2.36*	1.75*	2.12*	1.90*
55 to 64	1.35	1.24	2.07*	1.92*
Gender (Female vs. Male)	0.75*	0.84	0.92	0.94
Location (vs. all AZ counties except Maricopa and Pima)				
Maricopa County	0.98	0.93	1.12	1.28
Pima County	0.92	0.92	1.18	0.89
Primary Care (vs. Specialty Care)	1.20	1.85*	1.20*	0.89

Source: AMB, ABOE Survey Data, 2007- 2009; 2009-2011.

Note: 1,284 observations were deleted due to missing values.

*Statistically significant at p less than or equal to 0 .05.

The inverse relationship between physician ages and the use of EMRs occurs in all the years. There is a shift, however, between the most recent results and the 2007-2009 results that may reflect aging of the workforce. In 2007-2009, the 25-34 year old physicians were most likely to use EMRs, with the odds steadily declining for each of the older age groups. In 2012-2014, the highest ratios apply to the 35-44 year old group, with the 25-34 age physicians ranking second. The other change was that physicians in the 55-64 age group in 2007-2009 were twice as likely

as oldest group of physicians to use EMRs. There is no significant difference between these two age groups in 2012-2014. Age is not the only influence on the use of EMRs, but the gap in utilization rates between older and younger physicians will gradually disappear as the younger physicians replace retiring older physicians.

Osteopathic physicians were more likely than allopathic physicians to have EMRs in 2007-2009, but there are no significant differences between DOs and MDs in 2009-2011 or in 2012-2014.

There are no significant differences in EMR use between Maricopa and Pima County physicians or between them and physicians practicing in more rural counties (the omitted group) in the past.

Utilization of EMR Functions

The functions included in EMR software packages vary among vendors. In addition, the selection of functions included varies among physicians. The results describe the extent to which key functions are included in physicians' EMRs; the extent to which physicians use those functions; and the extent to which information is exchanged with others by physicians who use the functions. Specifically we examine inclusion, use and exchange for each of the following:

- Patient Care Summary
- Prescription Function
- Lab Results Function
- Reminders Intervention Function
- Public Health Reports Function
- Quality Metrics Function

There is variation in the extent to which the functions are included in EMR software. Although there are some variations among categories, there are approximately 5,700 physicians who indicated that they used one or more of the functions.

Table 12. Utilization of Available EMR Functions*

EMR Functions	*Included in EMR*	*Used by the Respondent Number/Percent*		*Exchanged with Other Providers Number/Percent*	
Patient Care Summary	6,227	5,750	91.9%	2,005	32.2%
Prescription "e-prescribing"	5,886	5,272	89.6%	2,756	46.8%
Lab Results	6,173	5,751	93.2%	2,151	34.8%
Reminders for Interventions	3,904	3,221	82.5%	742	19.0%
Public Health Reports	2,900	2,223	76.7%	905	31.2%
Quality Metrics (HEDIS, AQA, etc.)	2,519	1,984	78.8%	889	35.3%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: *The data in this table effectively treat *"Don't Know"* answers as *"No"* since the questions ask for the respondent's experience, not for the practices of other physicians in the same organization.

The data in this table only include those physicians that answered *"Yes"* to the Include question for each EMR function. Furthermore, the data only includes those that answered both the Used and Exchanged questions for each EMR functions; if either question was left blank the physician was excluded from the table for that function.

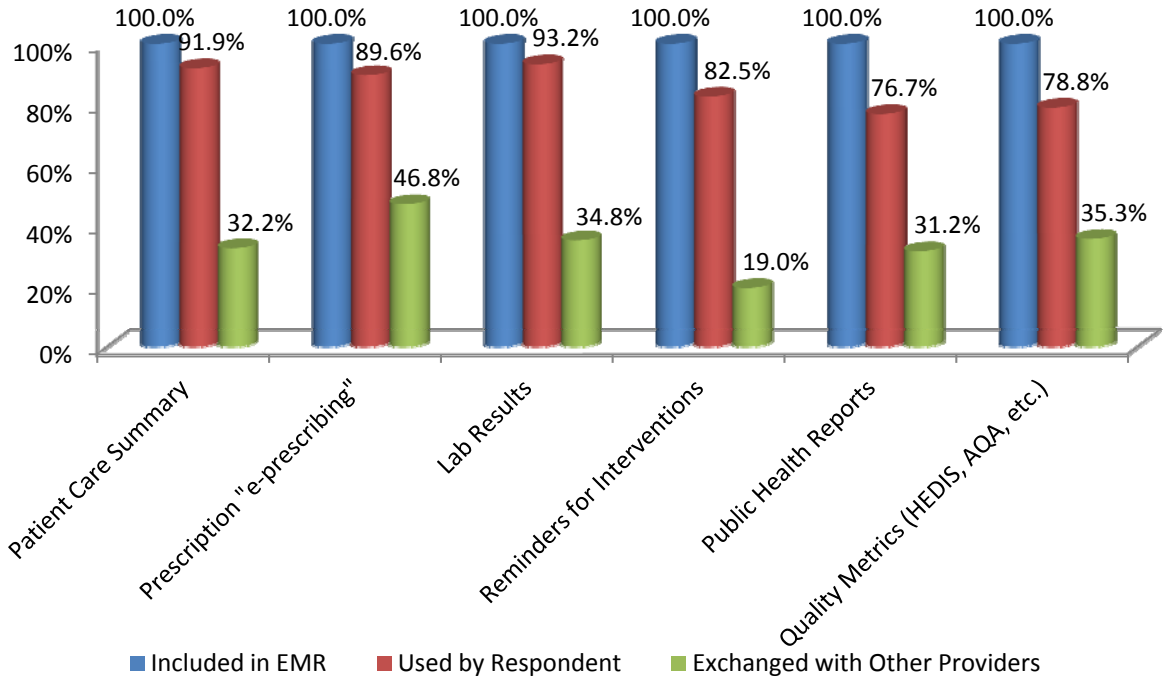
The most frequently used functions are the *Lab Results*, *Patient Care Summary and e-prescribing* functions. There has been a concerted effort in Arizona to incent providers to use e-prescribing and it appears to be succeeding. The prevalence of use of lab functions probably reflects the long standing practice of electronic reporting by Sonora Quest Laboratories. The pre-existing reporting systems simplified the inclusion of laboratory results in EMR software.

The *Quality Metrics f*unction is least often included in EMRs among the six functions and, when included, is used by only 79% of physicians.

The use of EMRs is the necessary condition for the realization of the benefits of EMRs, but it is not sufficient to reach that goal without adequate methods of exchanging information. The very low percentages of physicians who exchange their EMR data with others are a significant obstacle to achieving the benefits of EMRs.

Exchanges using *e-prescribing* were more prevalent than any other function, but less than one-half of the physicians made exchanges. Less than 20% of the physicians exchanged information involving the *Reminders* for *Guideline Based Interventions.* Exchanges of information from the other functions cluster between approximately 31% and 47%. Potential benefits that depend upon the exchange of information on a patient among different providers are, therefore, not being realized.

Figure 7. Summary Utilization of Available EMR Functions



Source: AMB, ABOE Survey Data, 2012–2014.

Note: The data in this table only include those physicians that answered *"Yes"* to the Include question for each EMR function. Furthermore, the data only includes those that answered both the Used and Exchanged questions for each EMR functions; if either question was left blank the physician was excluded from the table for that function.

Quality metrics and required reports such as reportable diseases are reported by other methods, including email, faxes and separate electronic networks. Although the information is not lost, EMRs would be a more efficient and timelier means of delivery. The marked disparity between the use of EMRs and the sharing of information is a consistent feature of all the previous CHiR surveys, although the previous results are less detailed.

The results overstate exchanges of information that occur between physicians in different practices or different hospital systems because the results include exchanges within a practice or a single hospital system as well as exchanges between organizations. Exchanges among different organizations such as between hospital systems or among physician owned solo or group practices are much less frequent.

The single most important obstacle to the inter-organization transfer of electronic health information is the shortage of Health Information Exchanges (HIEs). The history of HIEs linking different organizations is one of frequent failure, largely traceable to the absence of viable

business models (E Health Initiative 2012). The lack of HIEs also forces practices with EMRs to exchange information via fax, requiring the recipients to continue to use paper or scanned documents in addition to their EMRs (Terry 2012).

The Health Information Network of Arizona (HINAz), Arizona's statewide health information organization, is striving to solve the problems that have hampered the expansion of HIEs, but it does not yet provide service to the majority of Arizona physicians. HINAz currently has 37 participants, defined as organizations who have signed a Network Participation Agreement as of October 2014.

- 11 hospitals/health systems (50% of all licensed beds)
- 8 health plans
- 3 community health centers
- 2 reference laboratories
- 10 community providers
- 2 corrections departments
- 1 community behavioral health HIE

One promising feature of HINAz is the involvement of the eight health plans. The economic benefits of exchanging patient information directly accrue to payers. The unnecessary costs of duplicate testing, treatments required because of prescription errors, and other information related problems are borne by the organizations that assume economic risk, including insurers and health care organizations that provide capitated care. Thus, they are also the primary economic beneficiaries of exchanges of information that reduce avoidable negative outcomes of care.

Utilization of EMRs by Vendor

The 2012-2014 survey includes, for the first time, questions enabling physicians to evaluate their EMRs on usability, functionality and a number of other important characteristics.

The distribution of EMR brands by number of users is described in Figures 8 and 9. One peculiar feature of the results is the large number of EMR users who do not know the brand of

software they are using (Table 13). Large surveys always include responses that seem to be illogical or erroneous. These responses result from misunderstandings of the question because of a respondent's inattention or from poorly designed questions.

Table 13. EMR Users Unaware of EMR Vendor Name by Type of Practice, 2012-2014 (N = 981)

Type of Practice	*Number of Physicians*	*Percent*
Physician Owned Solo Practice	85	10.4%
Physician Owned Group Practice	308	37.6%
Hospital/Medical School Group Practice	112	13.7%
Community or Rural Health Center	59	7.2%
Private Hospital System	68	8.3%
Non-Hospital Private Outpatient Facility	64	7.8%
Medical School/University Research Center	36	4.4%
Health Insurer/Health Related Organization that does not provide care	21	2.5%
City, State or County Clinic or Hospital System	8	0.9%
Other	56	6.8%
Hospice or SNF	10	1.2%
Independent Contractor	9	1.1%
Medical Consultant	6	0.7%
Private Hospital - Not for Profit	3	0.3%
Mental/Behavioral Health	1	0.1%
Total	817	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

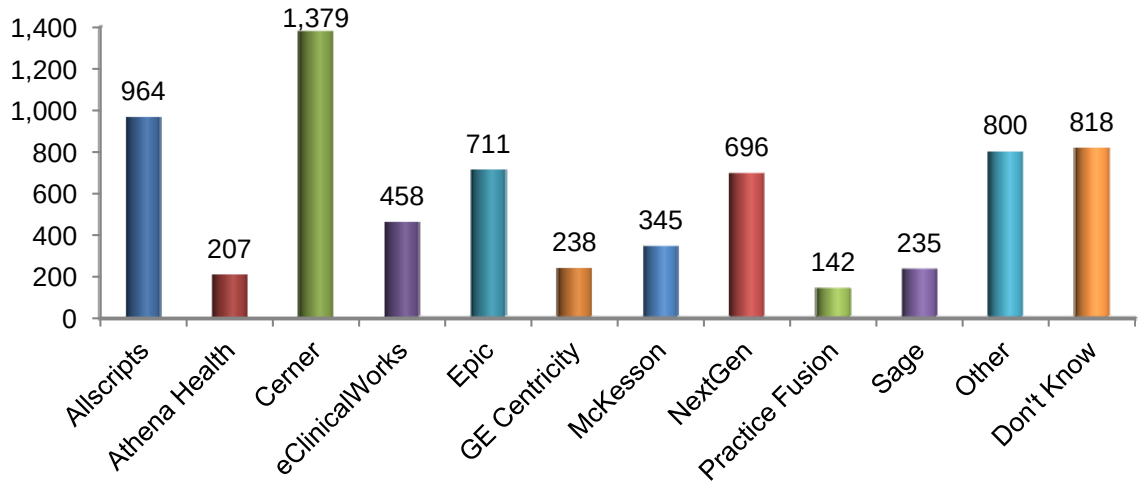
Note: N represents the number of physicians who answered "Don't Know" for this survey question. Governmental hospitals or clinics are excluded. There was one physician that didn't respond to practice type.

The question that asked for the vendor or brand name of the EMR used by a respondent included 21 brand names and a category for "Other" with an associated blank for the name to be written in by the respondent. Slightly more than 850 physicians answered "Other" and an additional 981 physicians who used EMRs did not know the brand name of their EMR. Previous years' results show that only approximately one-third of physicians using EMRs were either the decision maker or participated in a shared decision making process. The "Don't Know" answers may reflect the fact that, especially in large health care organizations, relatively few physicians make choices concerning the purchase of EMR systems.

We expected that the "Don't Know" responses should disproportionately be found in large organizations such as hospital systems but nearly 78% of the "don't know" respondents worked outside of hospital settings. It was most surprising that 10.4% of solo practitioners could not identify their EMRs.

One implication of the results is that many physicians using EMRs are not likely to communicate to their EMR vendor about the advantages or problems that they face in using the EMR. In large hospital systems, the feedback may be provided by physicians in management or information technology (IT) roles, but in smaller organizations, it appears that valuable information concerning the performance of EMRs is being lost.

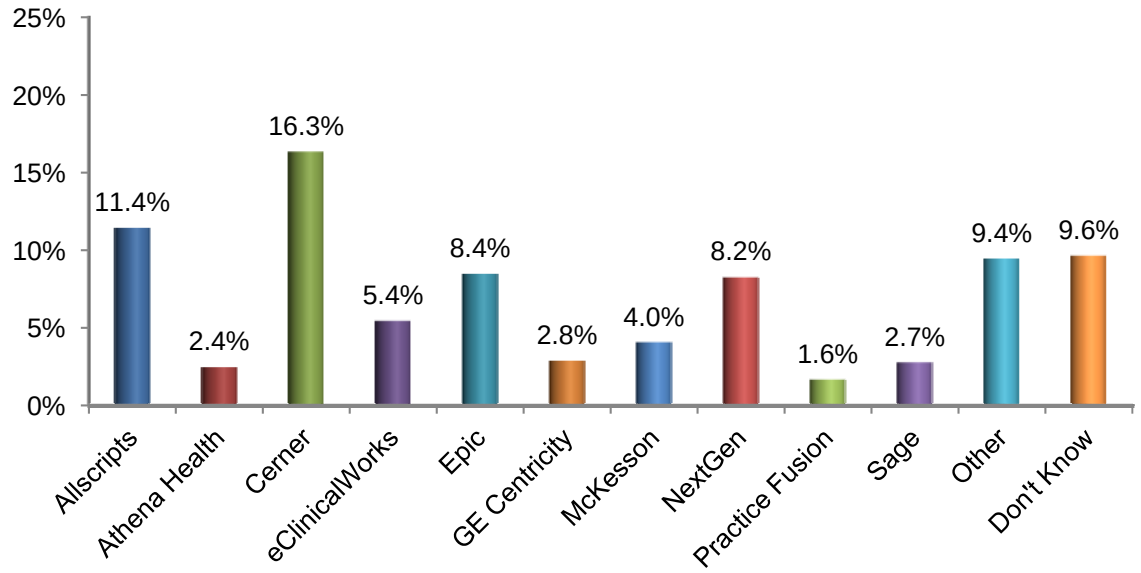
Figure 8. Number of EMR Users by Vendor ≥ 130 Users



Source: AMB, ABOE Survey Data, 2012–2014.

Note: The "Other" vendor excludes vendors contracted with government hospitals/clinics. 4,000 physicians did not respond to the survey question on vendor name.

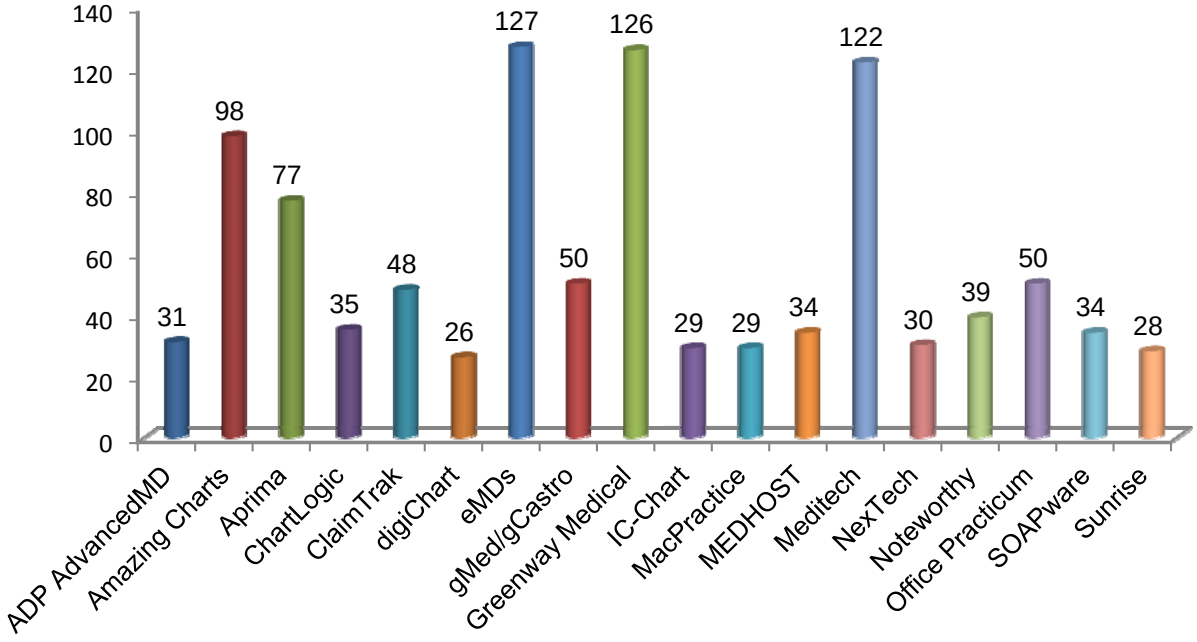
Figure 9. Percent of EMR Users by Vendor ≥ 130 Users



Source: AMB, ABOE Survey Data, 2012–2014.

Note: The "Other" vendor includes all vendors contracted with government hospitals/clinics. 4,000 physicians did not respond to the survey question on vendor name.

Figure 10. Number of EMR Users by Vendor < 130 Users



Source: AMB, ABOE Survey Data, 2012–2014.

Note: 4,000 physicians did not respond to the survey question on vendor name. Vendors with less than 25 users were excluded.

Physicians' Evaluation of EMR Software

The results in this section describe how Arizona physicians rank their EMR software on five criteria, namely:

- Ease of use
- Effect on physician productivity
- Effect on staff productivity
- Reliability
- Performance vs. promise

Each physician rates the EMR that she or he uses on a scale from 1 to 5, where 1 represents "Awful" and 5 represents "Outstanding". The intermediate values are not defined but the mid-point in the range can be thought of as approximating "acceptable" or a neutral evaluation. Rankings greater than 3 can be interpreted as positive. A ranking greater than "3" for physician or staff productivity indicates, for example, that an EMR has increased productivity, while rankings less than "3" suggest that an EMR has reduced productivity.

This section begins with a description of the rankings assigned to each of the five criteria described above. It then summarizes the results for each vendor in Table 25. Our discussion focuses on the summary results with a few comments on the more detailed information. Physicians practicing in government settings are excluded from these results but will be included in the next report in this series.

The rankings across all EMRs are a representation of a general evaluation of EMRs of several different types by different types of practices and physicians. Thus, without further clarification, individual EMR packages should not be interpreted as substitutes for one another. Many EMRs, such as *eClinicalWorks* are general purpose products while the *Gmed* EMR is specifically designed for gastroenterology specialists. Appendix G summarizes EMRs by vendor and intended use.

The fact that an EMR designed for primary care physicians might be ranked lower than an EMR designed for only one specialty does not imply that the primary care physicians could or should adopt the specialty EMR. Similarly, the finding that EMR brand A has a higher rating than EMR brand B should not imply that brand A is a better buy than brand B without reference to the cost (and thereby the cost effectiveness) of the two brands. We hope to further classify the EMR packages by their intended use to permit within group comparisons as part of the final report for the current renewal cycle.

The survey does not ask if the physician respondent is using an EMR that replaced an EMR package that was not acceptable. In such cases, the rankings of the current EMR could reflect a choice that solved the problems with the previous EMR and would, presumably be more positive than a first time EMR that was acceptable, but perhaps not as well suited to the physician's specific needs. Such situations are extremely costly but the information on the prevalence of these problems in Arizona is not known.

The results presented next are restricted to the ten EMR packages that have the largest number of users because of the difficulty of presenting results for the very large number of vendors that serve physicians in Arizona. A more complete summary is presented in Table 25.

A great deal of attention has been given to the shortcomings of EMRs, but the rankings described in the following tables have means equal to or slightly above the midpoint in the 1-5 scale. The results on physician satisfaction with EMRs are generally consistent with results from the NCHS Survey of physicians in office-based practices. The NCHS results for 2011 show that 38% of the physicians were very satisfied with their EMRs and 46% were somewhat satisfied (Jamoom, et al. 2012).

Table 14. Ranking of All EMRs by Ease of Use (N = 7,620) (Weighted Mean Rank = 3.3)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	547	7.1%
2	1,005	13.1%
3	2,689	35.2%
4	2,331	30.5%
5 (Outstanding)	1,048	13.7%

Source: AMB, ABOE Survey Data, 2012–2014.

As indicated in Table 14, the weighted mean rank for the ease of using an EMR is 3.3. Only 20.2% of physicians give their EMR a rank less than 3 while 44.2% rate their EMR as greater than 3. The distribution suggests that physicians are mildly positive about the ease with which the EMR can be used. With minor variations, this distribution is characteristic of the rankings for the other criteria used to evaluate EMRs.

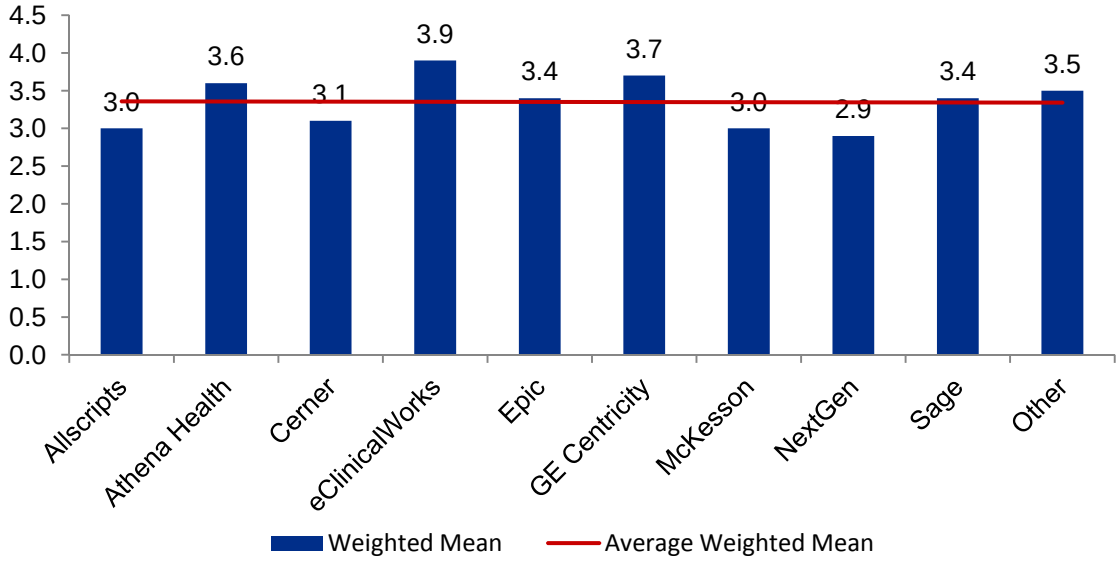
Table 15. Ease of Use by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean*
Allscripts	66 7.8%	140 16.6%	383 45.5%	202 24.0%	50 5.9%	841 15.3%	3.0
Athena Health	9 4.5%	21 10.6%	57 28.7%	70 35.3%	41 20.7%	198 3.6%	3.6
Cerner	134 10.5%	234 18.3%	436 34.2%	358 28.1%	112 8.7%	1,274 23.2%	3.1
eClinicalWorks	4 0.9%	29 6.6%	98 22.4%	183 41.8%	123 28.1%	437 7.9%	3.9
Epic	28 4.6%	66 11.0%	222 37.0%	215 35.8%	69 11.5%	600 10.9%	3.4
GE Centricity	6 2.7%	17 7.7%	54 24.6%	105 47.9%	37 16.8%	219 4.0%	3.7
McKesson	48 14.7%	56 17.2%	111 34.1%	78 24.0%	32 9.8%	325 5.9%	3.0
NextGen	87 13.4%	130 20.0%	237 36.5%	150 23.1%	45 6.9%	649 11.8%	2.9
Sage	5 2.2%	22 9.8%	101 45.0%	76 33.9%	20 8.9%	224 4.0%	3.4
Other	34 4.8%	73 10.3%	246 34.9%	226 32.1%	125 17.7%	704 17.7 %	3.5
Top 10 Total	421 7.6%	788 14.4%	1,945 35.5%	1,663 30.3%	654 11.9%	5,471 100.0%	3.2

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 589 physicians who did not identify a brand name but answered this question. The weighted mean for those physicians is 3.16.

Figure 11. Weighted Mean Rank of Ease of Use by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Figure 11 shows that *eClinicalWorks* is the most highly ranked EMR in terms of ease of use, followed by *GE Centricity* and *Athena Health,* followed closely by a cluster of EMRs with rankings either at the group weighted mean of slightly below or above the mean. The exception is *NextGen* with a ranking of 2.9 followed by Allscripts and McKesson both with a ranking of 3.0. Tables 16-24 detail the ranks that physicians assigned to EMRs from the 10 most widely used EMRs. Our discussion begins following Table 24 where the summary ranking of all EMR criteria are also presented.

The introduction of an EMR into a practice typically requires investments in physician and staff time to learn new procedures and make the transition from paper or scanned records to the EMR. In some instances, an EMR package does not fit well into a practice and must be replaced. Both situations imply a loss of physician and staff productivity and both are often cited in critiques of EMRs. Increases in productivity attributable to the use of EMRs are much less discussed. The physician rankings of the effect of EMRs on physician and staff productivity, however, reveal an almost exact balance between increases and reductions in productivity creating an average rank approximately equal to the mid-point in the scale.

We do not know from the current results whether the rankings would be substantially different if we separated physicians dealing with recently introduced EMRs from those with EMRs in use

for longer periods of time. We suspect that productivity, on average, would increase with the duration for which an EMR had been used. That is a topic worthy of additional analysis.

Table 16. Rank All EMRs by Physician Productivity (N = 7,596) (Weighted Mean = 3.0)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	958	12.6%
2	1,446	19.0%
3	2,524	33.2%
4	1,813	23.8%
5 (Outstanding)	855	11.2%

Source: AMB, ABOE Survey Data, 2012–2014.

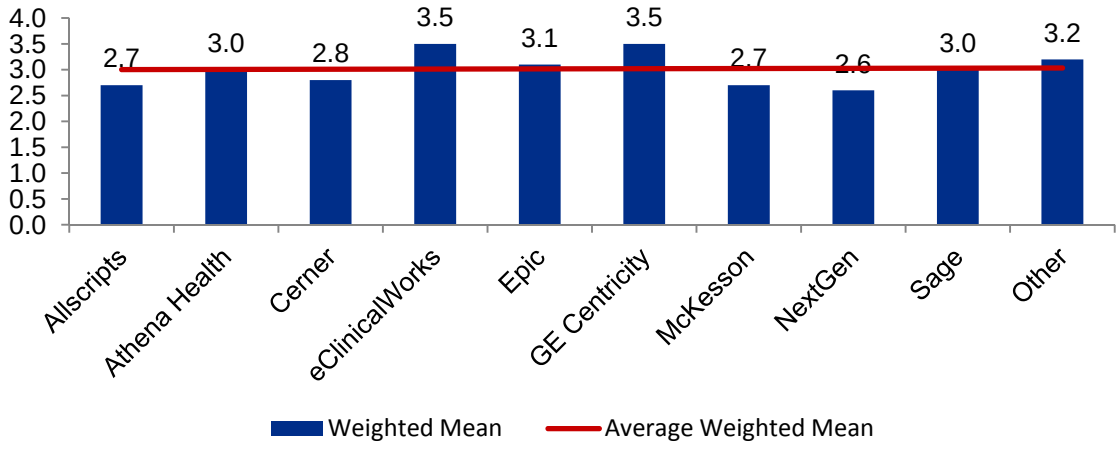
Among the ten vendors with the most users, the *eClinicalWorks* and *GE Centricity* EMR receive the most positive rankings in terms of physician productivity. *NextGen* received the lowest ranking and *Allscripts* and *McKesson* were only very slightly higher.

Table 17. Physician Productivity by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean**
Allscripts	129 15.3%	206 24.4%	306 36.3%	159 18.8%	42 4.9%	842 15.4%	2.7
Athena Health	29 14.6%	38 19.1%	66 33.3%	34 17.1%	31 15.6%	198 3.6%	3.0
Cerner	208 16.3%	277 21.7%	415 32.5%	268 21.0%	107 8.3%	1,275 23.3%	2.8
eClinicalWorks	21 4.8%	59 13.5%	104 23.9%	163 37.4%	88 20.2%	435 7.9%	3.5
Epic	56 9.3%	109 18.2%	217 36.2%	156 26.0%	60 10.0%	598 10.9%	3.1
GE Centricity	13 5.9%	22 10.0%	70 31.9%	79 36.0%	35 15.9%	219 4.0%	3.5
McKesson	63 19.5%	75 23.2%	108 33.4%	46 14.2%	31 9.5%	323 5.9%	2.7
NextGen	123 21.4%	141 23.9%	165 29.6%	116 18.3%	40 6.6%	585 11.8%	2.6
Sage	24 10.7%	45 20.1%	76 34.0%	62 27.8%	16 7.1%	223 4.0%	3.0
Other	75 10.7%	108 15.4%	238 34.0%	175 25.0%	104 14.8%	700 12.8%	3.2
Top 10 Total	757 13.8%	1,094 20.0%	1,792 32.8%	1,261 23.0%	557 10.1%	5,461 100.0%	3.0

Source: AMB, ABOE Survey Data, 2012–2014. Note: There were 583 physicians who did not identify a brand name but answered the Physician Productivity question. The weighted mean for those physicians is 3.04.

Figure 12. Weighted Mean Rank of Physician Productivity by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 18. Ranking of All EMRs by Staff Productivity (N = 7,554) (Weighted Mean Rank = 3.1)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	795	10.5%
2	1,357	17.9%
3	2,637	34.9%
4	1,895	25.0%
5 (Outstanding)	870	11.5%

Source: AMB, ABOE Survey Data, 2012–2014.

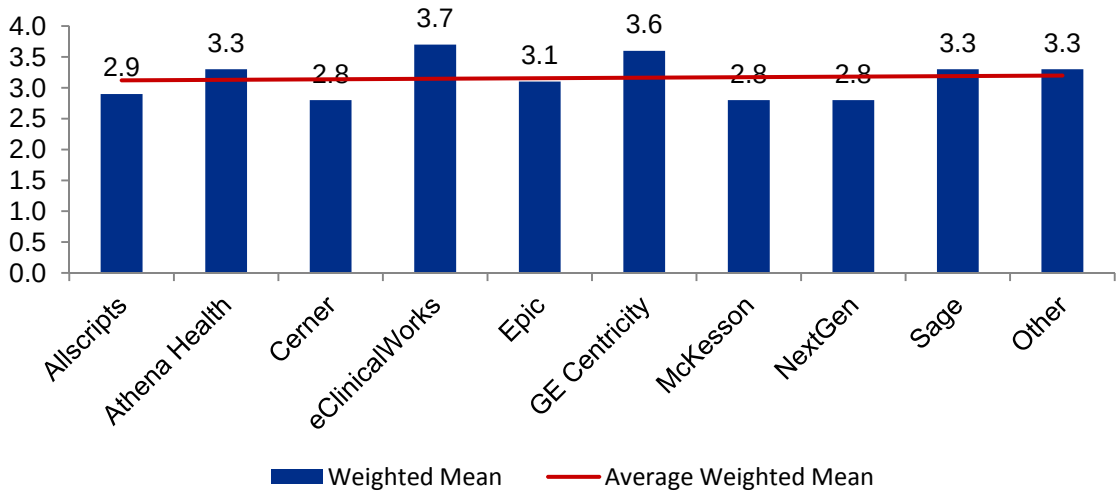
The *eClinicalWorks* and *GE Centricity* EMRs are the most highly ranked in terms of staff productivity, just as they were the most highly ranked for physician productivity. *Cerner, McKesson* and *NextGen* EMRs are tied for the lowest rankings. The ranking for *Allscripts* is only very slightly higher.

Table 19. Staff Productivity by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean*
Allscripts	97 11.5%	189 22.5%	333 39.7%	167 19.9%	51 6.0%	837 15.4%	2.9
Athena Health	19 9.6%	31 15.7%	59 29.9%	57 28.9%	31 15.7%	197 3.6%	3.3
Cerner	194 15.2%	298 23.4%	433 34.0%	251 19.7%	94 7.4%	1,270 23.3%	2.8
eClinicalWorks	12 2.7%	43 9.9%	110 25.4%	169 39.0%	99 22.8%	433 7.9%	3.7
Epic	53 8.9%	118 19.8%	215 36.1%	153 25.7%	55 9.2%	594 10.9%	3.1
GE Centricity	6 2.7%	20 9.1%	69 31.6%	89 40.8%	34 15.5%	218 4.0%	3.6
McKesson	54 16.8%	74 22.9%	107 33.2%	55 17.0%	32 9.9%	322 5.9%	2.8
NextGen	111 17.2%	154 23.8%	212 32.8%	120 18.6%	48 7.4%	645 11.8%	2.8
Sage	13 5.8%	23 10.3%	94 42.1%	74 33.1%	19 8.5%	223 4.1%	3.3
Other	68 9.7%	102 14.6%	239 34.3%	183 26.2%	104 14.9%	696 12.8%	3.2
Top 10 Total	627 11.5%	1,052 19.3%	1,871 34.4%	1,318 24.2%	567 10.4%	5,435 100.0%	3.0

Source: AMB, ABOE Survey Data, 2012–2014. Note: There were 578 physicians did not identify a brand name but answered the Staff Productivity question. The weighted mean for those physicians is 3.03.

Figure 13. Weighted Mean Rank of Staff Productivity by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 20. Ranking of All EMRs by Reliability, (N = 7,564) (Weighted Mean Rank = 3.5)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	362	4.7%
2	733	9.6%
3	2400	31.7%
4	2,787	36.8%
5 (Outstanding)	1,282	16.9%

Source: AMB, ABOE Survey Data, 2012–2014.

In this case, *Athena Health* and *eClinicalWorks* are the highest ranking EMRs in terms of reliability, followed closely by GE Centricity. The rankings for reliability are, however, higher in absolute terms for most of the EMRs relative to the rankings for productivity. The lowest ranking is for *McKesson* with *Allscripts* and *NextGen* only very slightly higher.

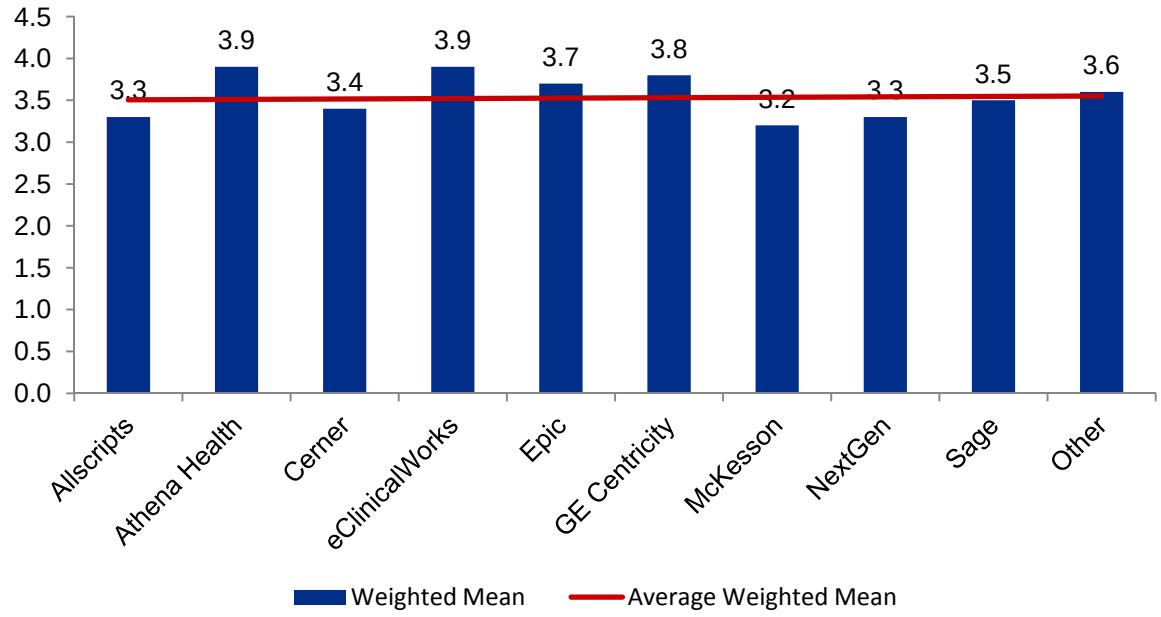
Table 21. Reliability by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean*
Allscripts	47 5.6%	94 11.2%	326 38.9%	297 35.4%	74 8.8%	838 15.3%	3.3
Athena Health	3 1.5%	12 6.1%	53 27.0%	65 33.1%	63 32.1%	196 3.6%	3.9
Cerner	66 5.1%	117 9.2%	435 34.2%	496 39.0%	157 12.3%	1,271 23.3%	3.4
eClinicalWorks	4 0.9%	20 4.5%	90 20.6%	201 46.2%	120 27.5%	435 7.9%	3.9
Epic	12 2.0%	49 8.2%	180 30.2%	237 39.8%	117 19.6%	595 10.9%	3.7
GE Centricity	2 0.9%	10 4.6%	52 24.0%	109 50.4%	43 19.9%	216 3.9%	3.8
McKesson	38 11.7%	48 14.8%	105 32.5%	85 26.3%	47 14.5%	323 5.9%	3.2
NextGen	57 8.7%	82 12.6%	216 33.3%	226 34.8%	67 10.3%	648 11.9%	3.3
Sage	8 3.5%	22 9.8%	77 34.5%	88 39.4%	28 12.5%	223 4.0%	3.5
Other	33 4.0%	69 9.8%	206 29.5%	248 35.5%	141 20.2%	697 12.8%	3.6
Top 10 Total	270 4.9%	523 9.6%	1,740 31.9%	2,052 37.7%	857 15.7%	5,442 100.0%	3.5

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 577 physicians who did not identify a brand name but answered the Reliability question. The weighted mean for those physicians is 3.30.

Figure 14. Weighted Mean Rank of Reliability by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 22. Ranking of All EMRs by Performance vs. Promise (N = 7,414) (Weighted Mean Rank = 3.1)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	773	10.4%
2	1,116	15.0%
3	2,816	37.9%
4	1,932	26.0%
5 (Outstanding)	777	10.4%

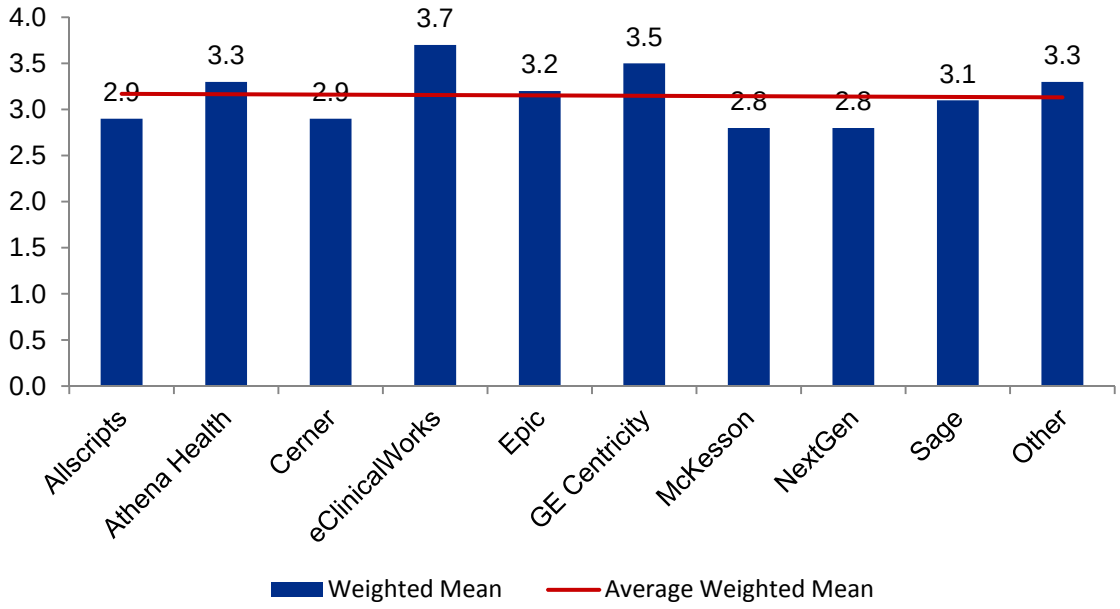
Source: AMB, ABOE Survey Data, 2012–2014.

Table 23. Performance vs. Promise by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean*
Allscripts	90 10.9%	166 20.1%	366 44.5%	166 20.1%	34 4.1%	822 15.4%	2.9
Athena Health	17 8.6%	22 11.1%	66 33.5%	60 30.4%	32 16.2%	197 3.6%	3.3
Cerner	176 14.2%	239 19.3%	463 37.3%	285 23.0%	75 6.0%	1,238 23.2%	2.9
eClinicalWorks	14 3.2%	24 5.5%	128 29.6%	181 41.9%	84 19.4%	431 8.0%	3.7
Epic	49 8.3%	80 13.6%	231 39.3%	165 28.1%	62 10.5%	587 11.0%	3.2
GE Centricity	11 5.1%	14 6.5%	72 33.6%	84 39.2%	33 15.4%	214 4.0%	3.5
McKesson	61 19.1%	51 16.0%	127 39.9%	58 18.2%	21 6.6%	318 5.9%	2.8
NextGen	100 15.9%	133 21.2%	234 37.3%	124 19.7%	36 5.7%	627 11.7%	2.8
Sage	12 5.5%	41 18.8%	96 44.2%	51 23.5%	17 7.8%	217 4.0%	3.1
Other	71 10.3%	73 10.6%	259 37.8%	194 28.3%	88 12.8%	685 12.8%	3.2
Top 10 Total	601 11.2%	843 15.7%	2,042 38.2%	1,368 25.6%	482 9.0%	5,336 100.0%	3.1

Source: AMB, ABOE Survey Data, 2012–2014.Note: There were 559 physicians who did not identify a brand name but answered the Reliability question. The weighted mean for those physicians is 3.01.

Figure 15. Weighted Mean Rank of Performance vs. Promise by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 24. Summary of All EMR Ranking Criteria

Criterion	*Weighted Mean*	*Number of Physicians*
Ease of Use	3.3	7,620
Effect on Physician Productivity	3.0	7,596
Effect on Staff Productivity	3.1	7,554
Reliability	3.5	7,564
Performance vs. Promise	3.1	7,414
Mean of the Weighted Means	3.3	--

Source: AMB, ABOE Survey Data, 2012–2014.

The mean rankings for the five criteria suggest that ease of use and reliability are more highly ranked than criteria such as effects of EMRs on productivity or perceptions of performance versus vendor promises. The differences are small and one must recognize that physicians who were not involved in the decision to implement a system may not be aware of the promises that accompanied the purchase of the system. Physicians using established systems may not have experienced the transitory effects or, if involved, may have their responses colored by

recall. The net effect of these influences is not known. A summary of all weighted means for each EMR ranking criteria by the top 25 vendors is listed in Appendix F.

The next section considers the extent to which physicians were aware of incentives to adopt EMRs and the extent to which applications for incentives were made. Many physicians in large organizations are not in a position to make these decisions and as the results indicate, a rather large number of respondents did not answer the incentive related questions.

EMR Adoption Incentives

The costs of implementing an EMR system are one of the most significant obstacles to EMR adoption and the problem is especially difficult for relatively small health care organizations. Economic incentives have been effective in increasing the rate of adoption nationally. A 2010 study of e-prescribing shows, for example, that nearly 40 percent of e-prescribers had adopted e-prescribing in response to a federal incentive program (Joseph, et al. 2013).

There are a number of conditions defining eligibility for Medicare or Medicaid incentives (Center for Medicare & Medicaid Services 2013). The basic eligibility criteria for Medicare are:

- Subsection (d) hospitals that are paid under the inpatient prospective payment system (PPS)
- Critical Access Hospitals (CAH)
- Medicare Advantage (MA-Affiliated) Hospitals

The Medicaid eligible hospitals include:

- Acute care hospitals with at least 10% Medicaid patient volume
- Children's hospitals

Eligible professionals for Medicaid incentives include:

- Physicians
- Nurse Practitioners
- Certified nurse-midwives
- Dentists
- Physician assistants who furnish services in a federally qualified community health center or rural health clinic led by a physician assistant.

The available survey data do not adequately distinguish between eligible and non-eligible physicians. The results include, therefore, physicians in environments to which the incentives do not apply. We hope to improve this analysis in future reports.

The incentive payments made by Medicare and Medicaid (AHCCCS) in Arizona are summarized in Tables 25 and 26. As noted, we do not have the data needed to link adoptions to incentives, but it is true that the recent increases in the rate of adoption of EMRs are correlated with the incentive payments made to health care providers.

Table 25. Total Arizona Medicare and Medicaid EHR Incentive Payments by Provider Type (January 2011 – February 2014)

Provider Type	*Number of Payments*	*Amount of Incentive Payments*
Medicare Eligible Professionals	4,636	$72,774,642
Medicaid Eligible Professionals	2,506	$53,025,844
Total Eligible Professionals	7,142	$125,800,486
Medicaid Eligible Hospitals	3	$$5,990,921
Medicare/Medicaid Eligible Hospitals (Medicare)	92	$131,520,254
Medicare/Medicaid Hospitals (Medicaid)	98	$105,533,709
Total Eligible Hospitals	193	$243,044,884
Total EPs and EHs	7,335	$368,845,370

Source: CMS Website https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/DataAndReports.html.

Table 26. Summary of AHCCCS Payments to Eligible Professionals as of July, 31 2013

Eligible Professionals	*Number of Providers*
Physicians (non-Pediatric)	1,384
Physicians (Pediatricians)	577
Physician Assistants (Federally Qualified Health Center)	5
Nurse Practitioners	293
Certified Nurse Midwives	71
Dentists	109
Total Eligible Professional Payments*	2,439

Source: (Johnson, Harootunian and Mayer 2013).

Note: *There were 3,200 payments attested, but 2,439 (76%) were paid.

The success in incentivizing physicians to adopt EMRs will continue, and there are physicians as yet unaware of the opportunities. Physicians in large organizations are often unaware of decisions regarding incentives. Others may practice in settings that are ineligible for incentives. We will more fully analyze these relationships when the current renewal cycle is completed.

Table 27. Medicare/Medicaid Incentive Payments (N = 9,901)

Aware of Incentive Payments	Number of Physicians	Percent
No	1,841	18.5%
Yes	8,060	81.4%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 2,544 physicians did not respond to this question.

The data in Table 27 support our speculation concerning the relationship between physicians' awareness of incentives and the organization in which they practice. The largest percentages of physicians not knowledgeable about incentives are employed in State or County hospital systems, with Medical Schools (generally not eligible for incentives) a close second. Solo practice physicians are the group most aware of the incentive programs with only approximately 11% of them who are not aware. The number of physicians in practices that have applied for Medicare incentive payments is described in Tables 30 through 33.

Table 28. Awareness of Incentive Payments by Type of Practice and Decision Maker (N = 9,555)

Type of Practice	*Aware of Incentive Payments*					
	Sole decision maker		*Decided by others*		*Shared decision*	
	Yes	*No*	*Yes*	*No*	*Yes*	*No*
	Number of Physicians (Percent)	*Number of Physicians (Percent)*	*Number of Physicians (Percent)*	*Number of Physicians (Percent)*	*Number of Physicians (Percent)*	*Number of Physicians (Percent)*
Physician Owned Solo Practice	1,638 (88.6%)	198 (10.7%)	8 (0.4%)	2 (0.1%)	1 (0.0%)	0 (0.0%)
Physician Owned Group Practice	2,030 (58.3%)	207 (5.9%)	829 (23.8%)	257 (7.3%)	147 (4.2%)	9 (0.2%)
Hospital/Medical School Group Practice	56 (3.5%)	25 (1.5%)	1,064 (66.9%)	379 (23.8%)	61 (3.8%)	5 (0.3%)
Community or Rural Health Center	4 (0.7%)	2 (0.3%)	364 (71.6%)	100 (19.6%)	36 (7.0%)	2 (0.3%)
Private Hospital System	36 (3.8%)	12 (1.4%)	534 (64.9%)	210 (25.5%)	30 (3.6%)	4 (0.4%)
Non-Hospital Private Outpatient Facility	36 (8.2%)	11 (2.5%)	271 (62.2%)	84 (19.3%)	28 (6.4%)	5 (1.1%)
Medical School, University Research Center	4 (0.9%)	2 (0.4%)	273 (63.0%)	133 (30.7%)	19 (4.3%)	2 (0.4%)
Health Insurer/Health Related Organization that does not provide care	9 (12.5%)	1 (1.3%)	30 (41.6%)	25 (34.7%)	6 (8.3%)	1 (1.3%)
City, State or County Clinic or Hospital System	0 (0.0%)	0 (0.0%)	74 (53.2%)	57 (41.0%)	7 (5.0%)	1 (0.7%)
Other	23 (10.0%)	10 (4.3%)	119 (51.7%)	60 (26.0%)	16 (6.9%)	2 (0.8%)
Hospice or SNF	2 (5.8%)	0 (0.0%)	26 (76.4%)	5 (14.7%)	1 (2.9%)	0 (0.0%)
Independent Contractor	4 (9.5%)	1 (2.3%)	19 (45.2%)	15 (35.7%)	3 (7.1%)	0 (0.0%)
Medical Consultant	8 (38.0%)	3 (14.2%)	3 (14.2%)	5 (23.8%)	1 (4.7%)	1 (4.7%)
Private Hospital - Not for Profit	0 (0.0%)	1 (2.9%)	19 (55.8%)	7 (20.5%)	7 (20.5%)	0 (0.0%)
Mental/Behavioral Health	0 (0.0%)	0 (0.0%)	6 (66.6%)	3 (33.3%)	0 (0.0%)	0 (0.0%)
Total	3,832 (40.1%)	468 (4.8%)	3,566 (37.3%)	1,307 (13.6%)	351 (3.6%)	31 (0.3%)

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 2,890 physicians were excluded from this table due to missing data, including 2,544 missing Awareness of Incentive Payments; 1,642 missing the Type of Practice; and 2,464 missing the Decision Maker.

Table 29. Applications for Medicare Incentives (N = 7,957)

Applied for Medicare Incentives	*Number of Physicians*	*Percent*
No	2,978	37.4%
Yes	4,979	62.5%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 4,488 did not respond to this question.

Table 30. Applications for Medicare Incentives by Type of Practice (N = 7,947)

Type of Practice	*Applied for Medicare Incentives*			
	Yes		*No*	
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*
Physician Owned Solo Practice	845	50.8%	817	49.1%
Physician Owned Group Practice	2,177	70.8%	894	29.1%
Hospital/Medical School Group Practice	840	68.9%	379	31.0%
Community or Rural Health Center	289	66.1%	148	33.8%
Private Hospital System	359	58.9%	250	41.0%
Non-Hospital Private Outpatient Facility	191	56.3%	148	43.6%
Medical School, University Research Center	178	59.5%	121	40.4%
Health Insurer/Health Related Organization that does not provide care	8	14.2%	48	85.7%
City, State or County Clinic or Hospital System	27	32.5%	56	67.4%
Other	59	34.3%	113	65.6%
Hospice or SNF	3	10.7%	25	89.2%
Independent Contractor	5	18.5%	22	89.2%
Medical Consultant	2	13.3%	13	86.6%
Private Hospital - Not for Profit	18	60.0%	12	40.0%
Mental/Behavioral Health	4	57.1%	3	42.8%
Total	4,973	62.5%	2,974	37.4%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 4,498 physicians were excluded from this table due to missing data, including 4,488 physicians missing applied for Medicare incentives and 1,642 missing type of practice related questions.

Table 31. Applications for Medicaid Incentives (N = 7,795)

Applied for Medicaid Incentives	*Number of Physicians*	*Percent*
No	3,840	49.2%
Yes	3,955	50.7%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 4,650 physicians did not respond to this question.

Table 32. Applications for Medicaid Incentives by Type of Practice (N = 7,785)

Type of Practice	*Applied for Medicaid Incentives*			
	Yes		*No*	
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*
Physician Owned Solo Practice	552	33.6%	1,088	66.3%
Physician Owned Group Practice	1,585	52.5%	1,434	47.4%
Hospital/Medical School Group Practice	755	64.0%	424	35.9%
Community or Rural Health Center	303	71.4%	121	28.5%
Private Hospital System	331	55.6%	264	44.3%
Non-Hospital Private Outpatient Facility	179	53.7%	154	46.2%
Medical School/University Research Center	166	56.6%	127	43.3%
Health Insurer/Health Related Organization that does not provide care	7	12.5%	49	87.5%
City, State or County Clinic or Hospital System	25	30.4%	57	69.5%
Other	47	28.6%	117	71.3%
Hospice or SNF	1	3.8%	25	96.1%
Independent Contractor	5	18.5%	22	81.4%
Medical Consultant	1	6.6%	14	93.3%
Private Hospital - Not for Profit	16	55.1%	13	44.8%
Mental/Behavioral Health	3	50.0%	3	50.0%
Total	3,950	50.7%	3,835	49.2%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 4,660 physicians were excluded from this table due to missing data, including 4,650 physicians missing applied for Medicaid incentives and 1,642 missing type of practice related questions.

Meaningful Use

Table 33. EMR Vendor Helping Meet Meaningful Use (N = 4,955)

Is EMR Vendor Helping Meet Meaningful Use	*Number of Physicians*	*Percent*
No	858	17.3%
Yes	4,097	82.6%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 7,490 physicians did not respond to the meaningful use question.

Table 34. EMR Vendor Helping Meet Meaningful Use by Type of Practice (N = 4,948)

Type of Practice	*Yes*		*No*	
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*
Physician Owned Solo Practice	707	78.8%	190	21.1%
Physician Owned Group Practice	1,838	84.1%	346	15.8%
Hospital/Medical School Group Practice	660	82.7%	138	17.2%
Community or Rural Health Center	251	83.9%	48	16.0%
Private Hospital System	286	86.1%	46	13.8%
Non-Hospital Private Outpatient Facility	153	80.5%	37	19.4%
Medical School, University Research Center	123	76.3%	38	23.6%
Health Insurer/Health Related Organization that does not provide care	5	62.5%	3	37.5%
City, State or County Clinic or Hospital System	21	84.0%	4	16.0%
Other	48	88.8%	6	11.1%
Hospice or SNF	1	100.0%	0	0.0%
Independent Contractor	6	100.0%	0	0.0%
Medical Consultant	1	50.0%	1	50.0%
Private Hospital - Not for Profit	18	94.7%	1	5.2%
Mental/Behavioral Health	4	100.0%	0	0.0%
Total	4,092	82.7%	856	17.2%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 7,497 physicians were excluded from this table due to missing data, including 1,642 missing type of practice.

The overall survey results suggest that nearly three-quarters of the respondents were not aware of the support offered by the Arizona Regional Extension Center (REC). The result is, however, misleading because many physicians do not participate in decisions to adopt EMRs. The results in Table 36 separate physicians according to their role in decision making. The most relevant group is physicians who are the sole decision makers. These physicians are often the owners of group practices and, of course, physicians in solo practice. Approximately 65% of the sole decision makers are not aware of the REC support. An additional 25.2% are aware of the support, but are not working with REC.

Further analysis of the results will be completed to classify the physicians by their eligibility for REC support. The results are also limited by the number of physicians who either did not respond to the decision maker question and/or the question on the awareness of support. The survey includes a question that offers physicians the opportunity to submit a request for information to the REC. Lists of the requesters are periodically delivered to the REC for further action.

Table 35. Support from Regional Health Extension Center by Decision Maker (N = 9,181)

Aware of Support Offered by AZ Regional Extension Center	*Decision Maker*					
	Decided by others		*Shared decision*		*Sole decision maker*	
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*	*Number of Physicians*	*Percent*
No	4,053	87.5%	277	74.0%	2,704	64.6%
Yes, but not working with them at present	568	12.2%	95	25.4%	1,055	25.2%
Yes, working with them	6	0.1%	2	0.5%	421	10.0%
Total	4,627	100.0%	374	100.0%	4,180	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 3,264 physicians were excluded from this table due to missing data, including 2,974 missing Awareness of Support Offered; and 2,464 missing the Decision Maker.

Plans to Install EMRs

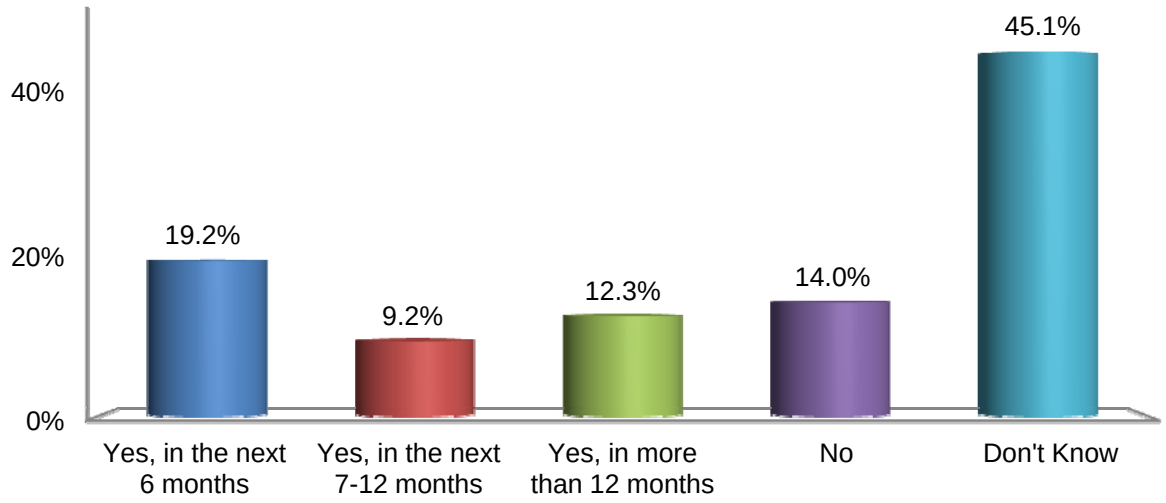
Table 36. Non-EMR Users Plans for Adoption of EMRs (N = 649)

Future Plans to Adopt EMRs	*Number of Physicians*	*Percent*
Don't Know	293	45.1%
No	91	14.0%
Yes, in more than 12 months	80	12.3%
Yes, in the next 7-12 months	60	9.2%
Yes, in the next 6 months	125	19.2%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Figure 16. Non-EMR Users Plans for Adoption of EMRs (N = 649)



Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 37. Plans to Install EMRs by Vendor (N = 649)

Vendor	*Number of Physicians*	*Percent*
Allscripts	20	4.9%
Amazing Charts	3	0.7%
Aprima	2	0.4%
Athena Health	3	0.7%
Cerner	24	5.8%
eClinicalWorks	8	1.9%
Epic	22	5.6%
Greenway Medical	2	0.4%
HealthPort	1	0.2%

Vendor	*Number of Physicians*	*Percent*
McKesson	11	2.6%
Meditech	2	0.4%
NextGen	10	2.4%
Noteworthy	1	0.2%
Sage	5	1.2%
SOAPware	1	0.2%
Other	71	17.4%
Don't Know	222	54.4%
Total	408	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings are excluded from these results. 241 physicians didn't answer the future EMR name question.

Table 38. Plans to Switch EMRs by Vendor (N = 2,475)

Vendor	*Number of Physicians*	*Percent*
Allscripts	134	6.5%
Amazing Charts	5	0.2%
Aprima	2	0.0%
Athena Health	16	0.7%
Cerner	254	12.3%
eClinicalWorks	23	1.1%
e-MDs	8	0.3%
Epic	440	21.4%
Greenway Medical	2	0.0%
McKesson	28	1.3%

Vendor	*Number of Physicians*	*Percent*
Meditech	6	0.2%
NextGen	109	5.3%
Noteworthy	4	0.1%
Office Practicum	1	0.0%
Sage	11	0.5%
SOAPware	2	0.0%
Other	246	11.9%
Don't Know	762	37.1%
Total	2,053	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings are excluded from these results. 422 physicians didn't answer the future EMR name question.

The Target Population

The data presented to this point are good profiles of the characteristics of the EMR users. It remains to describe the physicians who have not adopted EMRs. They are the targets of incentives that seek to increase EMR utilization. Their numbers are estimated in Table 39 by applying the population weights (W = 1.1 per respondent for 2012-2014, which is a complete two year renewal cycle. The weights for the two previous completed renewal cycles are 1.97 per respondent in 2007-2009 and 1.30 in 2009-2011 to the numbers (N) of survey respondents.

The target population of Non-EMR users in each county is described in Table 39. There are approximately 2,000 physicians who do not currently use EMRs. The target population ranges from one physician in Santa Cruz County to 1,459 physicians in Maricopa County.

The estimates of target populations by county are a guide to the prioritization of some types of incentives designed to expand the use of EMRs. The smaller the target population in a county is, the lower the priority for a project with a fixed budget. Some of the potentially low yield areas are also the areas where time and travel costs of some interventions will be relatively high. If, for example, an initiative includes IT support services on an ongoing basis, counties such as Apache, Gila or La Paz offer small payoffs and relatively high costs in terms of travel time for support personnel.

Table 39. The Target Population of Physicians without EMRs by County, 2012-2014 (N = 10,068)

Location	*2012-2014 Renewal Cycle*			
	All Survey Respondents (N)	*Survey Respondents EMR Users (N)*	*Survey Respondents Non-EMR Users (N)*	*The Target Population (W*N)*
Apache	19	13	6	7
Cochise	106	88	18	20
Coconino	252	210	42	46
Gila	44	36	8	9
Graham	30	26	4	4
Greenlee	1	1	0	0
La Paz	11	7	4	4
Maricopa	6,532	5,206	1,326	1,459
Mohave	260	216	44	48
Navajo	72	51	21	23
Pima	1,756	1,410	346	381
Pinal	161	138	23	25
Santa Cruz	19	18	1	1
Yavapai	264	228	36	40
Yuma	212	177	35	39
Missing	20	17	3	3
Unknown	309	227	82	90
Total	10,068	8,069	1,999	2,199*

Source: AMB, ABOE Survey Data, 2012-2014.

Note: Table does not include fully retired physicians or physicians practicing in government settings. 2,517 respondents did not identify a method of storing medical records and 404 were of unknown/missing county.

The target population is calculated as the number of non-EMR users multiplied by the population weight (1.1). *rounding errors

The results also suggest consideration of different approaches to increase EMR utilization for different geographic areas. We know from our multivariate results, for example, that the rate of EMR use is, all else equal, at its lowest among older physicians. It seems equally likely that the required investments and the relatively short period for the return on investment will make their potential rates of adoption much lower than among younger physicians. Age and other criteria can be added to the definition of the target population to sharpen the focus of planned interventions. The data described in Table 39 provide estimates of the target population that

can be used as a baseline against which to compare the success of interventions designed to increase the use of EMRs.

Progress in the expansion of EMR use in each county can be measured by comparing the 2012-2014 targets to the estimates from previous renewal cycles. We rely on comparisons between 2007-2009 and 2012-2014 because of the variability in the county results for 2009-2011.

Table 40. Trends in the Target Population of Physicians without EMRs by County, 2012-2014 vs. 2007-2009

Location	*Non- Users of EMRs as a Percent of Physicians*	
	2012-2014	*2007-2009*
Apache	31.6%	47.1%
Cochise	17.0%	56.6%
Coconino	16.7%	56.8%
Gila	18.2%	67.7%
Graham	13.3%	57.9%
Greenlee	0.0%	57.9%
La Paz	36.4%	66.7%
Maricopa	20.3%	57.2%
Mohave	16.9%	64.1%
Navajo	29.2%	52.9%
Pima	19.7%	56.0%
Pinal	14.3%	52.1%
Santa Cruz	5.3%	77.8%
Yavapai	13.6%	62.6%
Yuma	16.5%	73.3%
Total	20.5%	57.6%

Source: AMB, ABOE Survey Data, 2007-2009; 2012-2014.

Table 41. The Target Population of Physicians without EMRs by County, 2009-2011 vs. 2007-2009

Location	2009-2011			2007-2009		
	All Survey Respondents (W)	Survey Respondents Non-EMR Users (W)	Target Population (W*N)	All Survey Respondents (N)	Survey Respondents Non-EMR Users (N)	Target Population (W*N)
Apache	54	27	35	17	8	16
Cochise	110	42	55	76	43	85
Coconino	231	108	140	176	100	197
Gila	49	17	22	31	21	41
Graham	26	14	18	19	11	22
Greenlee	9	9	12	5	4	8
La Paz	9	9	12	9	6	12
Maricopa	5,229	2,859	3,717	4,371	2,500	4,925
Mohave	188	113	147	184	118	232
Navajo	105	46	60	68	36	71
Pima	1,965	857	1,114	1,376	771	1,519
Pinal	153	90	117	94	49	97
Santa Cruz	47	15	20	18	14	28
Yavapai	262	122	159	163	102	201
Yuma	149	92	120	135	99	195
Total	8,586	4,420	5,746	6,742	3,882	7,648

Source: AMB, ABOE Survey Data, 2007-2009; 2009-2011.

Note: Table does not include fully retired physicians. 342 respondents did not identify a method of storing medical records in 2007-2009.

The target population is calculated as the number of non-EMR users multiplied by the population weight (1.97 in 07-09 and 1.3 in 09-11).

The results in Table 39 document a substantial reduction in the percentage of physicians who do not use EMRs. On average, across all counties, there was more than a three-fold reduction in the percentage of physicians without access to an EMR between 2007-2009 and 2012-2014. The reduction was larger in many of the rural counties than in either Maricopa or Pima County.

Physicians and health care organizations that are not yet connected to a network that permits them to exchange information are another part of the target population. As the results on individual physician use show, EMR use continues to increase but the ability to exchange

information languishes. AHCCCS and ASET are addressing the problem with incentive payments to unconnected providers. The data in Table 42 described the most recent set of awardees, many of which serve rural areas of the state of Arizona.

Table 42. Grant Awards to Rural Providers to Plan for HIE

Unconnected Providers Sub-Grantee Award Information	
Sub-Grantee	*Funds Requested*
A New Leaf, Inc.	$50,000
CONMED Health Management	$50,000
Copper Queen Community Hospital	$50,000
Flagstaff Medical Center, Inc.	$98,007
Jewish Family and Children's Service, Inc.	$100,000
La Paz Hospital, Inc.	$50,000
Little Colorado Medical Center	$99,955
North Country Healthcare, Inc.	$100,000
People of Color Network, Inc.	$100,000
Quality Care Network	$100,000
Sierra Vista Regional Health Center, Inc.	$50,000
Symphony of Mesa and Springdale Village	$40,385
Terros, Inc.	$100,000
Villa Maria Care Center, LLC/CopperSands, Inc.	$42,210
Total Awarded Funds	$1,030,557

Source: (Johnson, Harootunian and Mayer 2013).

AHCCCS Physician Results

AHCCCS physicians are an interesting subset of the group of active physicians. AHCCCS physicians are defined as physicians providing services to AHCCCS patients. There were 10,580, or approximately 82%, of the physician respondents in active practice who served AHCCCS patients during the period 2012-2014. The results presented in this section are, not surprisingly, quite similar in many respects to the results presented in previous sections. With that said, some differences between AHCCCS physicians and the group of active physicians (AP) as a whole were observed. These differences include the employment status and type of practice, methods of storing medical records, EMR utilization by type of practice and county, and Medicare/Medicaid incentive payments.

Employment Status and Type of Practice

Differences in employment status and type of practice were observed. The proportion of the group of active physicians employed outside of patient care was greater than the proportion of AHCCCS providers employed outside of patient care (AHCCCS: 8.1% vs. AP: 4.8%). This was supported by the higher proportions of AHCCCS providers employed in physician owned groups and hospital/medical school group practices when compared to the entire group of active physicians.

Physician Owned Group Practice

MD
- **AHCCCS - 36.3%**
- **AP - 33.7%**

DO
- **AHCCCS - 37.7%**
- **AP - 34.2%**

Total
- **AHCCCS - 36.5%**
- **AP - 33.8%**

Hospital/Medical School Group Practice

MD
- **AHCCCS - 17.6%**
- **AP - 15.9%**

DO
- **AHCCCS - 17.2%**
- **AP - 15.7%**

Total
- **AHCCCS - 17.6%**
- **AP - 15.8%**

Similar support was found by the higher proportions of the entire group of active physicians employed in health insurer/health related organizations that do not provide care when compared to AHCCCS physicians alone. It is interesting to note that fewer AHCCCS physicians are employed by federal government hospitals.

Health Insurer/Health Related Organizations That Do Not Provide Care

MD
- AHCCCS – 0.8%
- AP – 2.1%

DO
- AHCCCS – 0.6%
- AP – 1.5%

Total
- AHCCCS – 0.7%
- AP – 2.0%

Federal Government Hospital or Clinic

MD
- AHCCCS – 2.8%
- AP – 4.6%

DO
- AHCCCS – 2.6%
- AP - 3.7%

Total
- AHCCCS – 2.8%
- AP – 4.5%

Methods of Storing Medical Records

The method of storing medical records reveals two differences. Storing medical records in paper files only was found to be greater among the group of active physicians when compared to AHCCCS physicians (AHCCCS: 9.6% vs. AP: 11.4%). A greater proportion of AHCCCS physicians were found to store medical records with EMR alone or in combination when compared to the group of active physicians (AHCCCS: 83.5% vs. AP: 81.3%).

EMR Utilization

EMR utilization rates were different between AHCCCS providers and the group of active physicians by type of practice. AHCCCS providers employed in the following types of practices had higher EMR utilization rates compared to the active group of physicians.

Type of Practice	*AHCCCS*	*AP*
• Physician Owned Solo Practice	61.5%	56.4%
• Medical School, University Research Center	95.9%	90.9%
• Health Insurer/Health Related Organization that does not provide care	64.2%	46.5%
• City, State or County Clinic or Hospital System	78.0%	72.5%
• Private Hospital - Not for Profit	92.8%	86.8%

Alternatively, the active group of physicians employed by a hospice or SNF (AHCCCS: 76.6% vs. AP: 80.5%) had higher EMR utilization rates compared to AHCCCS physicians.

Across the state of Arizona, different EMR utilization rates between AHCCCS providers and the group of active physicians were observed by county. AHCCCS providers had higher EMR utilization rates in the counties of Gila (AHCCCS: 87% vs. AP: 82%) and La Paz (AHCCCS: 82% vs. AP: 69%). The group of active physicians had higher EMR utilization rates in the

county of Apache (AP: 80% vs. AHCCCS: 74%). In all other counties EMR utilization rates were similar between AHCCCS physicians and the active group of providers.

Medicare/Medicaid Incentive Payments

Awareness of Medicare/Medicaid incentive payments differed by type of practice. AHCCCS physicians employed by the following types of practices were more aware of Medicare/Medicaid incentive payments than the active group of physicians.

Type of Practice	*AHCCCS*	*AP*
• Medical School, University Research Center	72.1%	68.6%
• City, State or County Clinic or Hospital System	65.9%	58.3%
• Private Hospital - Not for Profit	85.7%	78.9%
• Mental/Behavioral Health	80.0%	66.6%

Those of the active group of physicians employed in medical consulting (AP: 56.5% vs. AHCCCS: 50.0%) were more aware of Medicare/Medicaid incentive payments.

Further differences in awareness of Medicare/Medicaid incentive payments differed by type of practice and by decision maker. When decisions are made by others, AHCCCS physicians employed by the following were more aware of Medicare/Medicaid incentive payments.

Type of Practice	*AHCCCS*	*AP*
• City, State or County Clinic or Hospital System	58.6%	53.2%
• Private Hospital - Not for Profit	60.0%	55.8%
• Medical School, University Research Center	67.4%	63.0%
• Mental/Behavioral Health	80.0%	66.6%

When the physician was the sole decision maker, the group of active physicians employed at health insurer/health related organizations (AP: 12.5% vs. AHCCCS: 7.6%), and medical consultants (AP: 38.0% vs. AHCCCS: 33.3%) were more aware of Medicare/Medicaid incentive payments.

No difference was found between AHCCCS physicians and the group of active physicians in application for Medicare incentives as a whole. There were differences observed when

categorized by type of practice. More AHCCCS physicians who were employed at the following types of practices had applied for Medicare incentives when compared to the group of active physicians.

Type of Practice	*AHCCCS*	*AP*
• Physician Owned Solo Practice	56.3%	50.8%
• Non-Hospital Private Outpatient Facility	60.4%	56.3%
• Medical School, University Research Center	68.0%	59.5%
• Health Insurer/Health Related Organization that does not provide care	31.5%	14.2%
• Mental/Behavioral Health	80.0%	57.1%

Fewer AHCCCS physicians who were employed as medical consultants (AHCCCS: 0% vs. AP: 13.0%) had applied for Medicare incentives compared to all physicians.

More AHCCCS physicians (AHCCCS: 55.2% vs. AP: 50.7%) had applied for Medicaid incentives compared to the group of active physicians. Differences were also observed when type of practice was considered. AHCCCS physicians who were employed at the following types of practices had applied for Medicaid incentives compared to all physicians.

Type of Practice	*AHCCCS*	*AP*
• Non-Hospital Private Outpatient Facility	59.2%	53.7%
• Medical School, University Research Center	64.6%	56.6%
• Health Insurer/Health Related Organization that does not provide care	21.0%	12.5%
• City, State or County Clinic or Hospital System	36.6%	30.4%
• Mental/Behavioral Health	75.0%	50.0%

AHCCCS Physician Characteristics

Table 43. Comparison of AHCCCS Respondents to Non-Respondents, 2012-2014

Characteristic	*Respondents (N = 11,297)*		*Non-Respondents (N = 3,551)*		*P-Value*
Sex					
Female	3,000	28.3%	542	27.6%	NS
Male	7,181	67.8%	1,354	69.1%	NS
Total	10,181	96.2%	1,896	96.8%	
Age Group					
25 - 34	1,371	12.9%	370	18.9%	<0.01
35 - 44	3,656	34.5%	505	25.8%	<0.01
45 - 54	2,873	27.1%	455	23.2%	<0.05
55 - 64	1,930	18.2%	395	20.1%	NS
65+	619	5.8%	216	11.0%	<0.01
Total	10,449	98.7%	1,941	99.1%	
Specialty					
Primary Care	3,757	35.5%	676	34.5%	NS
Medical	2,318	21.9%	473	24.1%	<0.05
Hospital-Based	2,552	24.1%	378	19.3%	<0.05
Pediatric	987	9.3%	185	9.4%	NS
Surgical	941	8.8%	238	12.1%	<0.01
Total	10,555	99.7%	1,950	99.6%	
Location					
Maricopa County	6,674	63.0%	1,228	62.7%	NS
Pima County	1,914	18.0%	372	19.0%	NS
All Other Counties	1,707	16.1%	268	13.6%	<0.05
Total	10,295	97.3%	1,868	95.4%	

Source: AMB, ABOE Administrative/Survey Data, 2012-2013. Data include retired and semi-retired physicians.

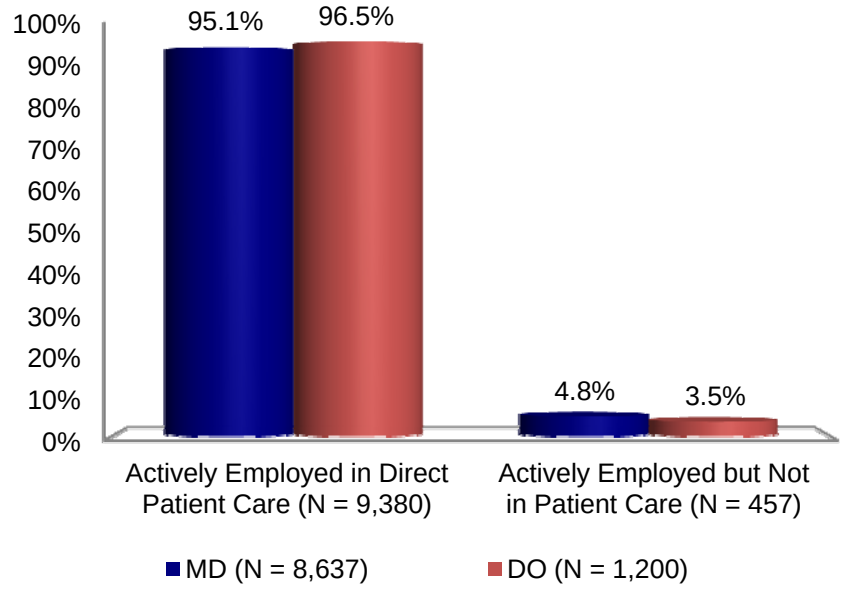
Note: A p-value of .05 or less implies only a 5% probability of declaring the relationship significant when in fact it is not. NS = no significant difference. Gender was unknown for 367 (3.7%) respondents and 102 (3.3%) non-respondents. Age was unknown for 115 (1.1%) respondents and 25 (0.8%) non-respondents. Specialty was unknown for 31 (0.3%) respondents and 6 (0.1%) non-respondents. Location was unknown for 249 (2.5%) respondents and 123 (4.0%) non-respondents.

Table 44. Active AHCCCS Physicians by Employment Status, 2012-2014

Employment Status	*MD*		*DO*		*Total*	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Actively Employed in Direct Patient Care	8,222	95.1%	1,158	96.5%	9,380	95.3%
Actively Employed but Not in Patient Care	415	4.8%	42	3.5%	457	4.6%
Total	8,637	100.0%	1,200	100.0%	9,837	100.0%

Source: AMB, ABOE Survey data, 2012-2014. 743 respondents were missing employment status.

Figure 17. AHCCCS Physicians Providing Patient Care, 2012-2014



Source: AMB, ABOE Survey data, 2012-2014.

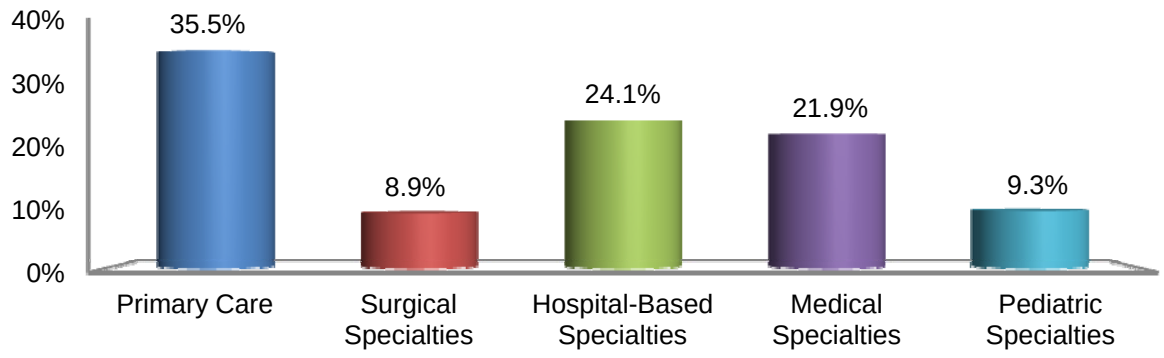
Table 45. Distribution of Practicing AHCCCS Physicians by Specialty, 2012-2014 (N = 10,555)

Primary Specialty Groups	*Total Physicians*	
	N	*%*
Primary Care	3,757	35.5%
Surgical Specialties	941	8.9%
Hospital-Based Specialties	2,552	24.1%
Medical Specialties	2,318	21.9%
Pediatric Specialties	987	9.3%
Total	10,555	100.0%

Source: AMB, ABOE Survey data, 2012-2013.

Note: Primary specialty reported by physician at the time of licensure. 25 physicians did not report specialty to the medical board.

Figure 18. Distribution of Practicing AHCCCS Physicians by Specialty, 2012-2014 (N = 9,674)



Source: AMB, ABOE Survey data, 2012-2013.

Note: Primary specialty reported by physician at the time of licensure. 25 physicians did not report specialty to the medical board.

Practice Settings

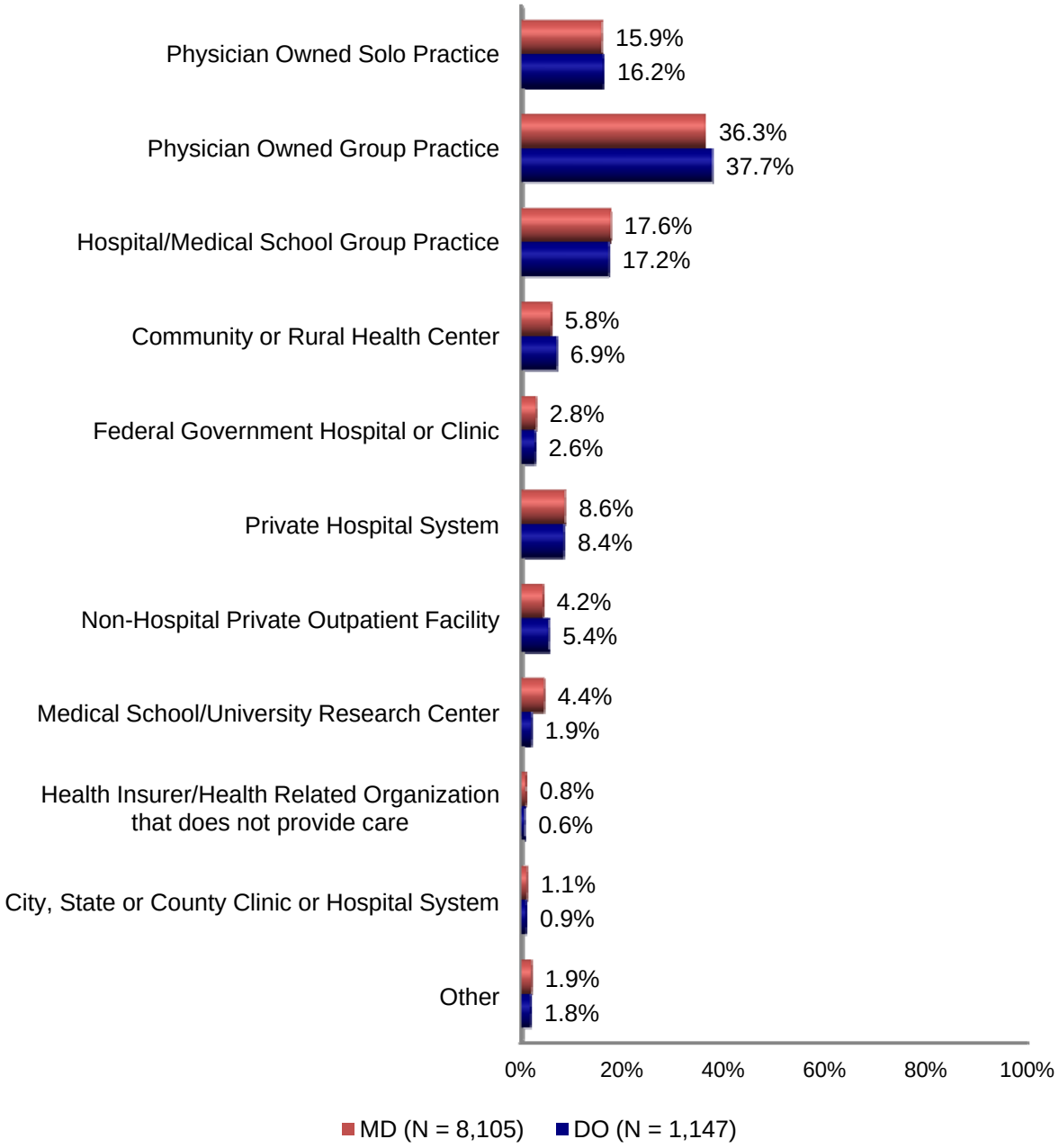
Table 46. Type of AHCCCS Practice by MD and DO, 2012-2014

Type of Practice	*MD*	*DO*	*Total*
Physician Owned Solo Practice	1,294 (15.9%)	186 (16.2%)	1,480 (15.9%)
Physician Owned Group Practice	2,949 (36.3%)	433 (37.7%)	3,382 (36.5%)
Hospital/Medical School Group Practice	1,434 (17.6%)	198 (17.2%)	1,632 (17.6%)
Community or Rural Health Center	472 (5.8%)	80 (6.9%)	552 (5.9%)
Federal Government Hospital or Clinic	235 (2.8%)	30 (2.6%)	265 (2.8%)
Private Hospital System	702 (8.6%)	97 (8.4%)	799 (8.6%)
Non-Hospital Private Outpatient Facility	343 (4.2%)	62 (5.4%)	405 (4.3%)
Medical School, University Research Center	360 (4.4%)	22 (1.9%)	382 (4.1%)
Health Insurer/Health Related Organization that does not provide care	67 (0.8%)	7 (0.6%)	74 (0.7%)
City, State or County Clinic or Hospital System	90 (1.1%)	(0.9%)	96 (1.0%)
Other	159 (1.9%)	21 (1.8%)	180 (1.9%)
Hospice or SNF	26 (0.3%)	4 (0.3%)	30 (0.3%)
Independent Contractor	27 (0.3%)	9 (0.7%)	36 (0.3%)
Medical Consultant	7 (0.0%)	1 (0.0%)	8 (0.0%)
Private Hospital - Not for Profit	28 (0.3%)	2 (0.1%)	30 (0.3%)
Mental/Behavioral Health	5 (0.0%)	0 (0.0%)	5 (0.0%)
Total	8,105 (87.6%)	1,147 (12.3%)	9,252 (100.0%)

Source: AMB, ABOE Survey Data, 2012-2014.

Note: 1,328 physicians did not report type of practice (missing). Percentages are based on responses.

Figure 19. Type of AHCCCS Practice by MD and DO, 2012-2014



Source: AMB, ABOE Survey data, 2012-2013.

Note: 1,328 Physicians did not report type of practice (missing). Percentages are based on responses.

Table 47. Type of AHCCCS Practice by Number of MDs, 2012-2014

Type of Practice	*Number of Physicians*				*Total*
	2-5	*6-50*	*51-94*	*95+*	
Physician Owned Group Practice	987 82.1%	1,165 62.5%	111 40.0%	311 28.8%	2,574 58.2%
Hospital/Medical School Group Practice	70 5.8%	388 20.8%	86 31.0%	687 63.7%	1,231 27.8%
Community or Rural Health Center	80 6.6%	222 11.9%	64 23.1%	39 3.6%	405 9.1%
Non-Hospital Private Outpatient Facility	65 5.4%	88 4.7%	16 5.7%	41 3.8%	210 4.7%
Total	1,202 27.1%	1,863 42.1%	277 6.2%	1,078 24.3%	4,420 100.0%

Source: AMB, ABOE Survey data, 2012-2013.

Note: 1,213 MD's did not report practice type, and 2,120 MD's did not report the number of physicians in their practice.

Table 48. Type of AHCCCS Practice by Number of DOs, 2012-2014

Type of Practice	*Number of Physicians*				*Total*
	2-5	*6-50*	*51-94*	*95+*	
Physician Owned Group Practice	141 74.6%	163 53.6%	18 35.2%	35 33.9%	357 55.1%
Hospital/Medical School Group Practice	7 3.7%	88 28.9%	22 43.1%	57 55.3%	174 26.8%
Community or Rural Health Center	18 9.5%	42 13.8%	8 15.6%	6 5.8%	74 11.4%
Non-Hospital Private Outpatient Facility	23 12.1%	11 3.6%	3 5.8%	5 4.8%	42 6.4%
Total	189 29.2%	304 46.9%	51 7.8%	103 15.9%	647 100.0%

Source: AMB, ABOE Survey data, 2012-2013.

Note: 111 DO's did not report practice type, and 249 DO's did not report the number of physicians in their practice.

Communication in Practice Environments

Table 49. Methods of Communication, 2012-2014

Method	*2012-2014*	
	Number	*%*
Email	8,213	92.5%
Internet	8,368	94.2%
Fax	8,725	98.2%
US Mail	8,655	97.4%

Source: AMB, ABOE Survey Data, 2012-2014.

Note: Categories are not mutually exclusive. 1,703 physicians did not respond 2012-2013. Medifax was removed as a method of communication for the 2012-2014 data and U.S. Mail was added.

Characteristics of EMR Users

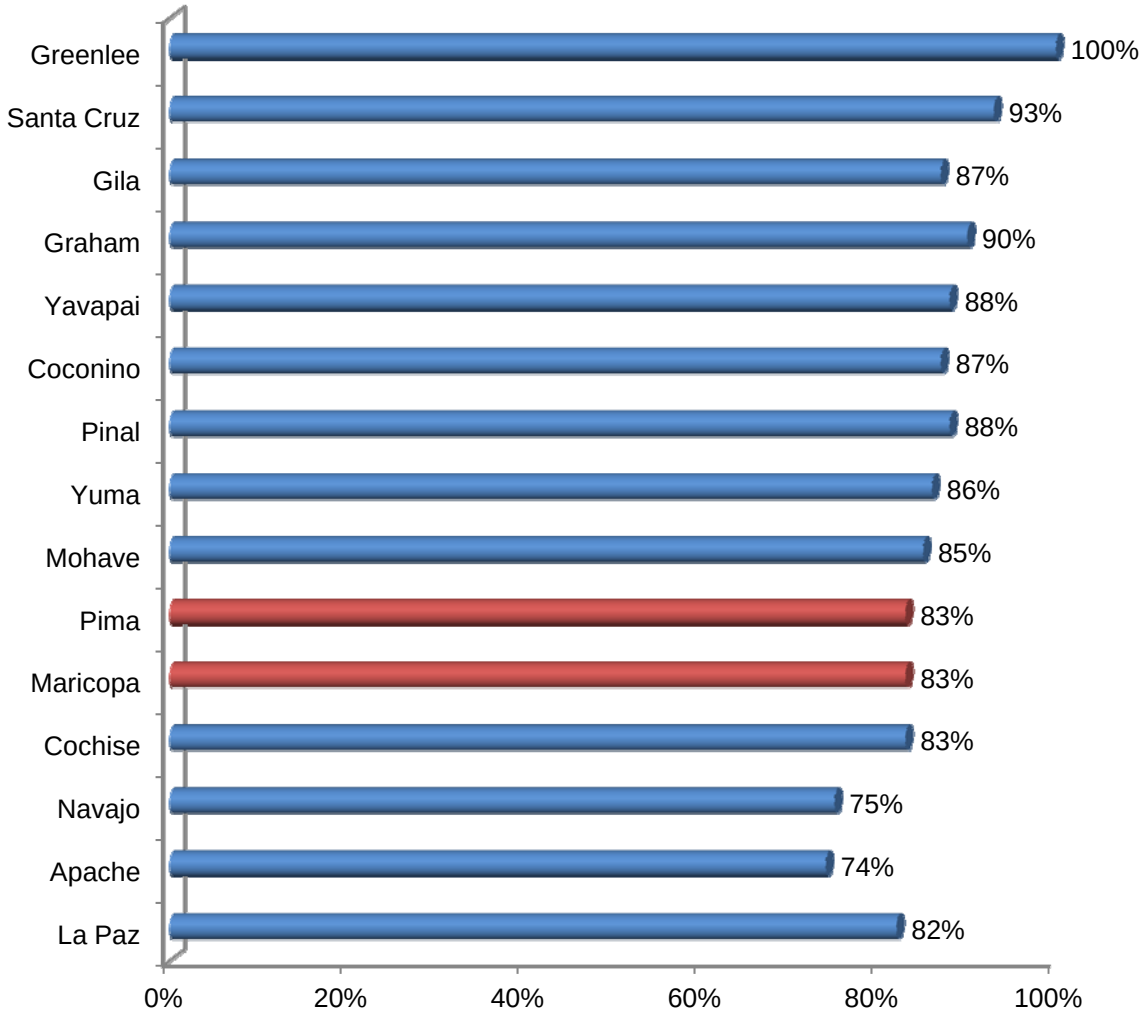
Table 50. EMR Utilization by Type of AHCCCS Practice, 2012-2014 (N = 7,449)

Type of Practice	*Utilization Rates*
Physician Owned Solo Practice	61.5%
Physician Owned Group Practice	82.2%
Hospital/Medical School Group Practice	93.5%
Community or Rural Health Center	93.0%
Federal Government Hospital or Clinic	95.7%
Private Hospital System	90.3%
Private Outpatient Facility not part of Hospital System	82.6%
Medical School, University Research Center	95.9%
Health Insurer/Health Related Organization that does not provide care	64.2%
City, State or County Clinic or Hospital System	78.0%
Other	79.0%

Source: AMB, ABOE Survey Data, 2012-2014.

Note: Rates = % of physicians within each practice type. 1,328 respondents were missing type of practice.

Figure 20. EMR Utilization by County 2012-2014 (N = 8,550)



Source: AMB, ABOE Survey Data, 2012-2014.

Note: Approximately 1,596 respondents did not identify a method of storing medical records and 434 were of unknown county. Pima and Maricopa Counties (red) represent the urban areas. All other counties in blue represent the rural areas.

The Utilization of Electronic Medical Records by AHCCCS Physicians

Table 51. Methods of Storing Medical Records 2012-2014 (N = 8,939)

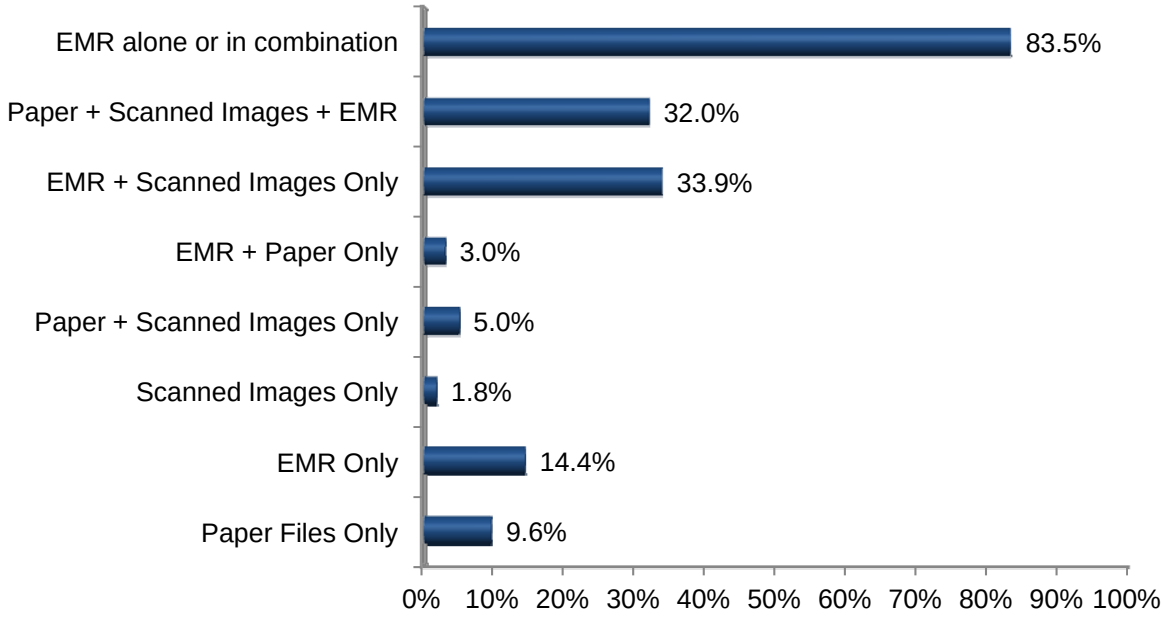
Method	*2012-2014*	
	Number Yes	*% of total*
Paper Files Only	859	9.6%
EMR Only	1,291	14.4%
Scanned Images Only	163	1.8%
Paper + Scanned Images Only	451	5.0%
EMR + Paper Only	271	3.0%
EMR + Scanned Images Only	3,038	33.9%
Paper + Scanned Images + EMR	2,866	32.0%
EMR alone or in combination*	7,466	83.5%

Source: AMB, ABOE Survey Data, 2012-2014.

Note: 1,641 respondents did not identify a method of storing medical records (missing).

*Data on "EMR alone or in combination" is not mutually exclusive from other categories.

Figure 21. Methods of Storing Medical Records by Renewal Period



Source: AMB, ABOE Survey Data, 2012-2014.

Note: 1,641 respondents did not identify a method of storing medical records (missing).

*Data on "EMR alone or in combination" is not mutually exclusive from other categories.

A Multivariate Model of the Determinants of EMR Adoption & Information Exchange

Table 52. Predictors of Being an EMR User/Partially or Fully Connected EMR User, 2012-2014

Variable	*Odds Ratio (EMR User) N= 8,481*	*Odds Ratio (Partially Connected EMR User) N= 7,021*	*Odds Ratio (Fully Connected EMR User) N=7,021*
DO (vs. MD)	1.10	0.95	1.26
Type of Practice (vs. Federal Government)			
Physician Owned Solo Practice	0.14 *	3.44*	1.57
Physician Owned Group Practice	0.39*	3.06*	1.21
Hospital/Med School Group Practice	1.24	1.63*	1.21
Community or Rural Health Center	1.00	2.09*	1.08
Private Hospital System	0.74	1.29	0.96
Non-Hospital Private Outpatient Facility	0.42*	1.83*	0.76
Medical School, University Research Center	2.00*	1.58*	0.49
City, State or County Clinic or Hospital System	0.28 *	1.35	1.17
Other	0.27 *	1.16	0.90
Age (vs. 65 and older)			
25 to 34	3.62 *	0.78	1.43
35 to 44	2.99*	0.98	1.22
45 to 54	2.26*	1.09	1.27
55 to 64	1.77*	1.07	1.11
Gender (Female vs. Male)	0.97	0.98	0.74
Location (vs. all other AZ counties)			
Maricopa County	0.85*	0.84*	1.18
Pima County	0.76*	0.96	1.23
Specialty (vs. Hospital Based Specialists)			
Primary Care	1.32*	4.26*	6.35*
Medical Care	1.23*	3.79*	3.19*
Pediatric Care	1.29*	4.01*	3.87*
Surgical Care	0.96	2.69*	2.35*

Source: AMB, ABOE Survey & Licensing Data, 2012–2014.

Note: 2,099 observations were deleted due to missing values for EMR Users and 443 observations were deleted for Partially Connected EMR Users and Fully Connected EMR Users. *Statistically significant at p less than or equal to 0 .05.

Utilization of EMR Functions by AHCCCS Physicians

Table 53. Utilization of Available EMR Functions*

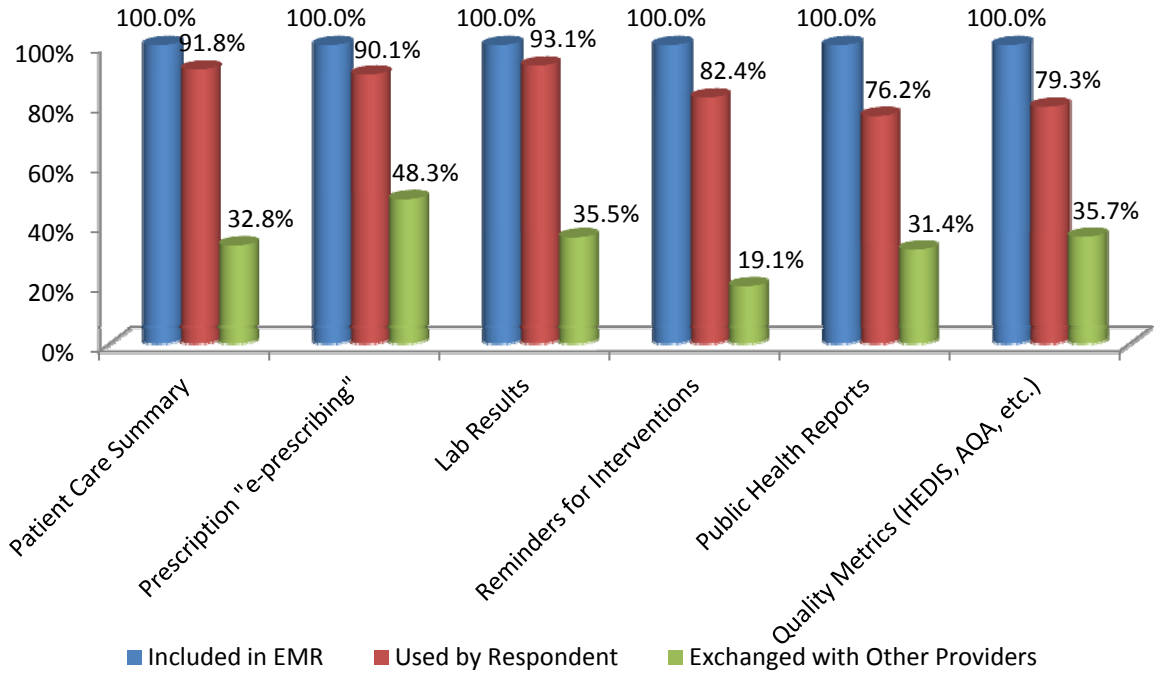
EMR Functions	*Included in EMR*	*Used by the Respondent Number/Percent*		*Exchanged with Other Providers Number /Percent*	
Patient Care Summary	5,349	4,913	91.8%	1,757	32.8%
Prescription "e-prescribing"	5,086	4,584	90.1%	2,455	48.3%
Lab Results	5,326	4,959	93.1%	1,893	35.5%
Reminders for Interventions	3,328	2,742	82.4%	635	19.1%
Public Health Reports	2,437	1,858	76.2%	764	31.4%
Quality Metrics (HEDIS, AQA, etc.)	2,168	1,719	79.3%	775	35.7%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: *The data in this table effectively treat *"Don't Know"* answers as *"No"* since the questions ask for the respondent's experience, not for the practices of other physicians in the same organization.

The data in this table only include those physicians that answered *"Yes"* to the Include question for each EMR function. Furthermore, the data only includes those that answered both the Used and Exchanged questions for each EMR functions; if either question was left blank the physician was excluded from the table for that function.

Figure 22. Summary Utilization of Available EMR Functions



Source: AMB, ABOE Survey Data, 2012–2014.

Note: The data in this table only include those physicians that answered *"Yes"* to the Include question for each EMR function. Furthermore, the data only includes those that answered both the Used and Exchanged questions for each EMR functions; if either question was left blank the physician was excluded from the table for that function.

Utilization of EMRs by Vendor for AHCCCS Physicians

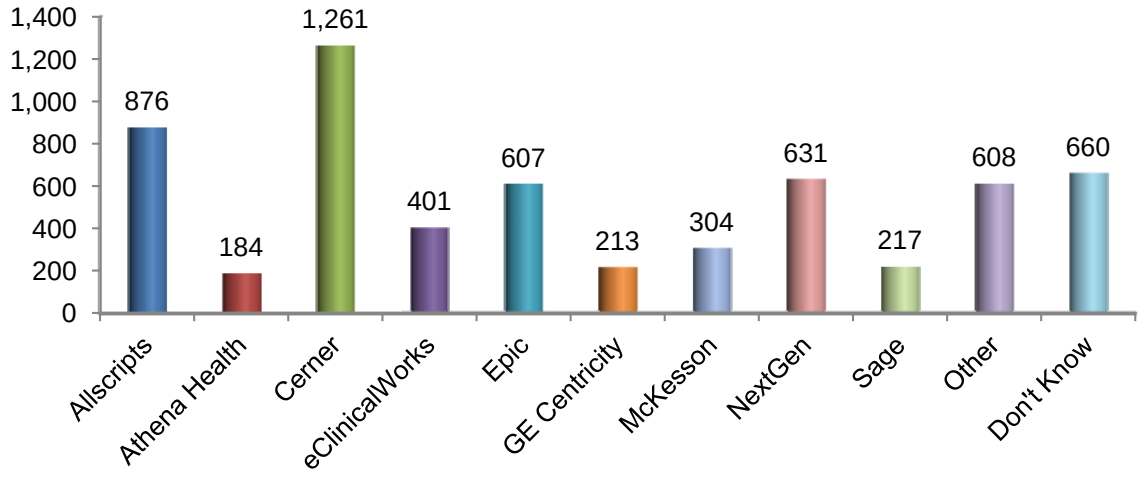
Table 54. EMR Users Unaware of EMR Vendor Name by Type of Practice, 2012-2014 (N = 659)

Type of Practice	*Number of Physicians*	*Percent*
Physician Owned Solo Practice	69	10.4%
Physician Owned Group Practice	269	40.8%
Hospital/Medical School Group Practice	98	14.8%
Community or Rural Health Center	54	8.1%
Federal Government Hospital or Clinic	0	0
Private Hospital System	51	7.7%
Non- Hospital Private Outpatient Facility	51	7.7%
Medical School, University Research Center	28	4.2%
Health Insurer/Health Related Organization that does not provide care	6	0.9%
City, State or County Clinic or Hospital System	5	0.7%
Other	28	4.2%
Hospice or SNF	7	1.0%
Independent Contractor	5	0.7%
Medical Consultant	2	0.3%
Private Hospital - Not for Profit	2	0.3%
Mental/Behavioral Health	0	0
Total	659	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: N represents the number of physicians who answered "Don't Know" for this survey question.

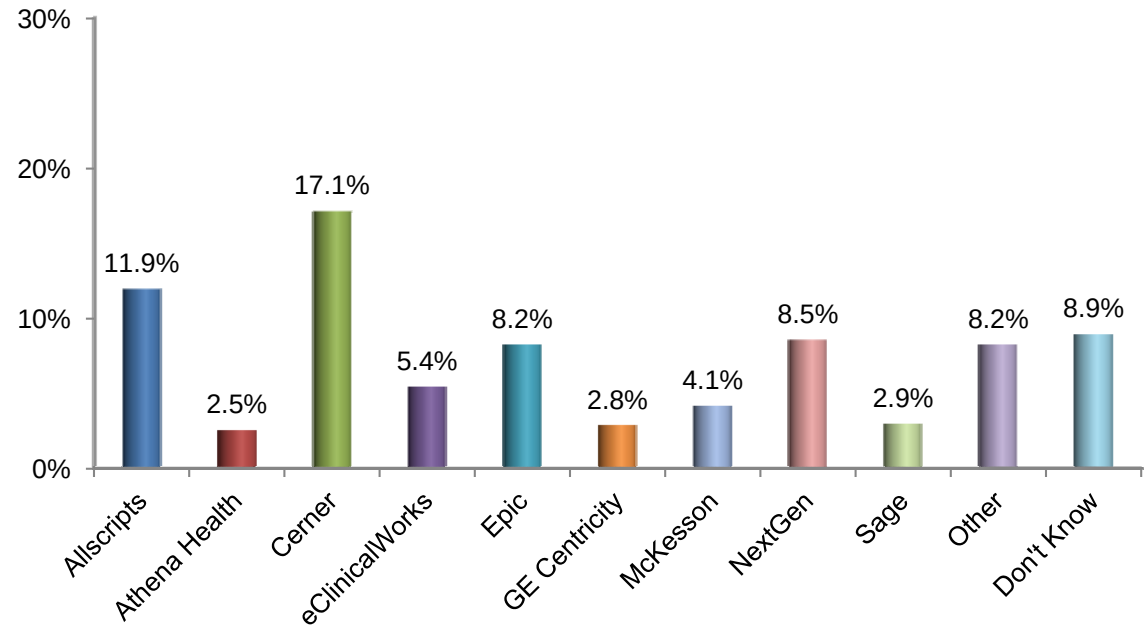
Figure 23. Number of EMR Users by Vendor ≥ 130 Users



Source: AMB, ABOE Survey Data, 2012–2014.

Note: The "Other" vendor includes all vendors contracted with government hospitals/clinics.

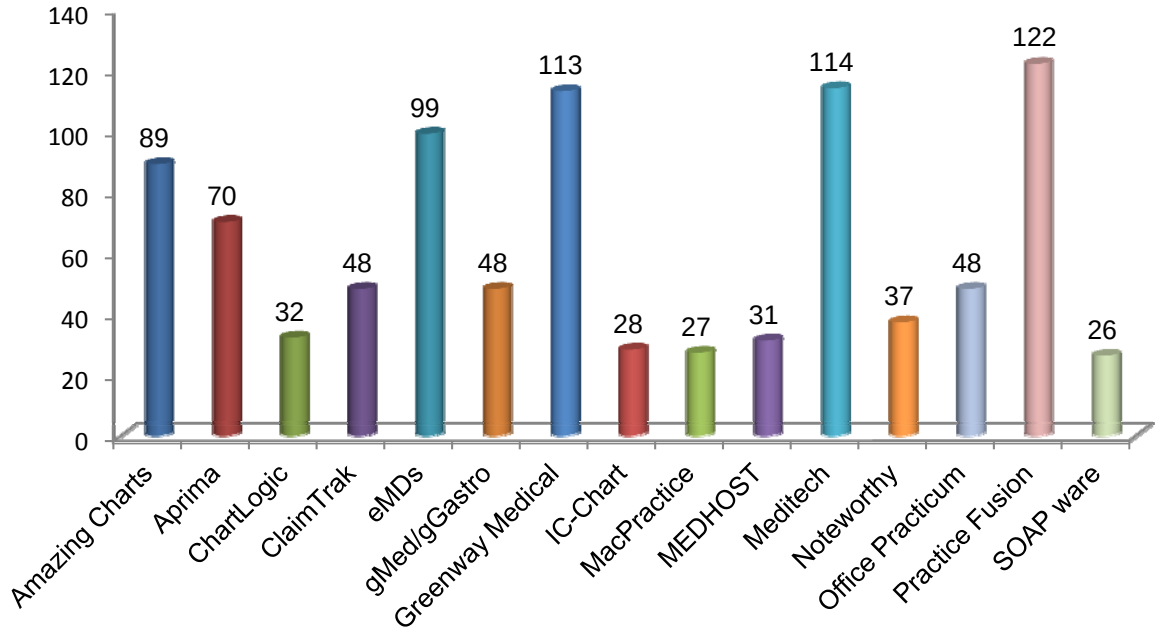
Figure 24. Percent of EMR Users by Vendor ≥ 130 Users



Source: AMB, ABOE Survey Data, 2012–2014.

Note: The "Other" vendor includes all vendors contracted with government hospitals/clinics.

Figure 25. EMR Use by Vendor < 130 Users



Source: AMB, ABOE Survey Data, 2012–2014.

Note: Vendors with less than 25 users were excluded from this figure.

AHCCCS Physicians' Evaluation of EMR Software

Table 55. Ranking of All EMRs by Ease of Use (N = 6,732) (Weighted Mean Rank = 3.3)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	496	7.3%
2	892	13.2%
3	2,374	35.2%
4	2,063	30.6%
5 (Outstanding)	907	13.4%

Source: AMB, ABOE Survey Data, 2012–2013.

Note: There were 486 physicians who did identify a brand name but answered the Ease of Use question. The weighted mean for those physicians is 3.15.

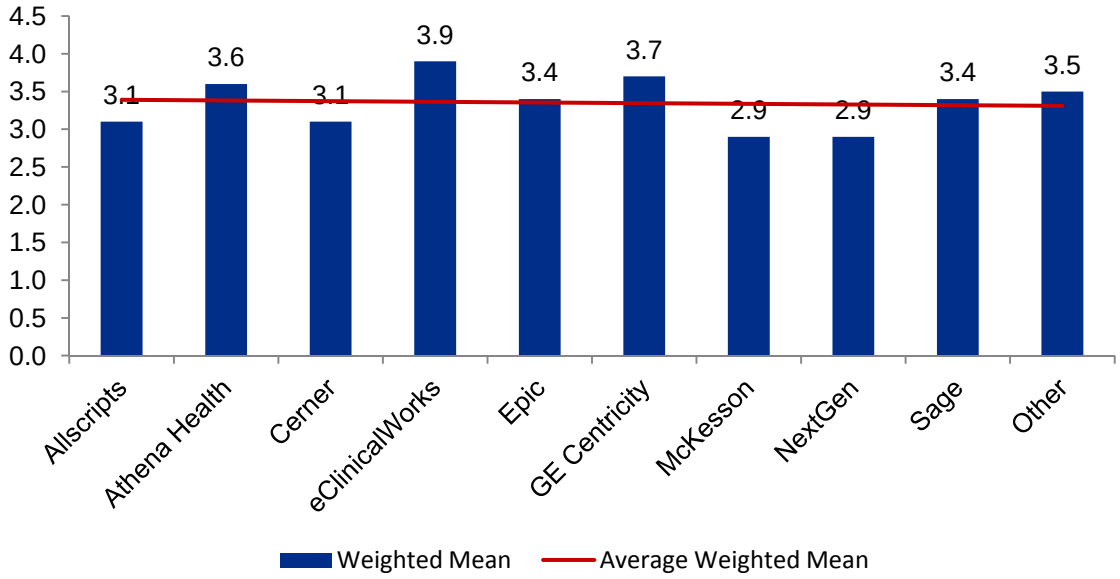
Table 56. Ease of Use by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean*
Allscripts	59 7.4%	128 16.1%	362 45.7%	199 25.1%	44 5.5%	792 16.1%	3.1
Athena Health	8 4.4%	19 10.6%	51 28.6%	65 36.5%	35 19.6%	178 3.6%	3.6
Cerner	129 10.9%	212 18.0%	403 34.2%	330 28.0%	103 8.7%	1,177 24.0%	3.1
eClinicalWorks	2 0.5%	23 5.9%	89 23.1%	163 42.3%	108 28.0%	385 7.8%	3.9
Epic	24 4.5%	59 11.0%	196 36.7%	195 36.5%	59 11.0%	533 10.8%	3.4
GE Centricity	4 2.0%	17 8.5%	52 26.1%	92 46.2%	34 17.0%	199 4.0%	3.7
McKesson	44 15.4%	50 17.5%	98 34.3%	67 23.5%	26 9.1%	285 5.8%	2.9
NextGen	80 13.4%	121 20.4%	216 36.4%	132 22.2%	44 7.4%	593 12.1%	2.9
Sage	4 1.9%	21 10.1%	91 43.9%	73 35.2%	18 8.6%	207 4.2%	3.4
Other	26 4.8%	50 9.2%	188 34.7%	175 32.3%	102 18.8%	541 11.0%	3.5
Top 10 Total	380 7.7%	700 14.3%	1,746 35.7%	1,491 30.4%	573 11.7%	4,890 100.0%	3.2

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 486 physicians who did identify a brand name but answered the Ease of Use question. The weighted mean for those physicians is 3.15.

Figure 26. Weighted Mean Rank of Ease of Use by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 57. Ranking of All EMRs by Physician Productivity (N = 6,711) (Weighted Mean Rank = 3.0)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	858	12.7%
2	1,275	18.9%
3	2,225	33.1%
4	1,612	24.0%
5 (Outstanding)	741	11.0%

Source: AMB, ABOE Survey Data, 2012–2013.

Note: There were 480 physicians who did not identify a brand name but answered the Physician Productivity question. The weighted mean for those physicians is 3.03.

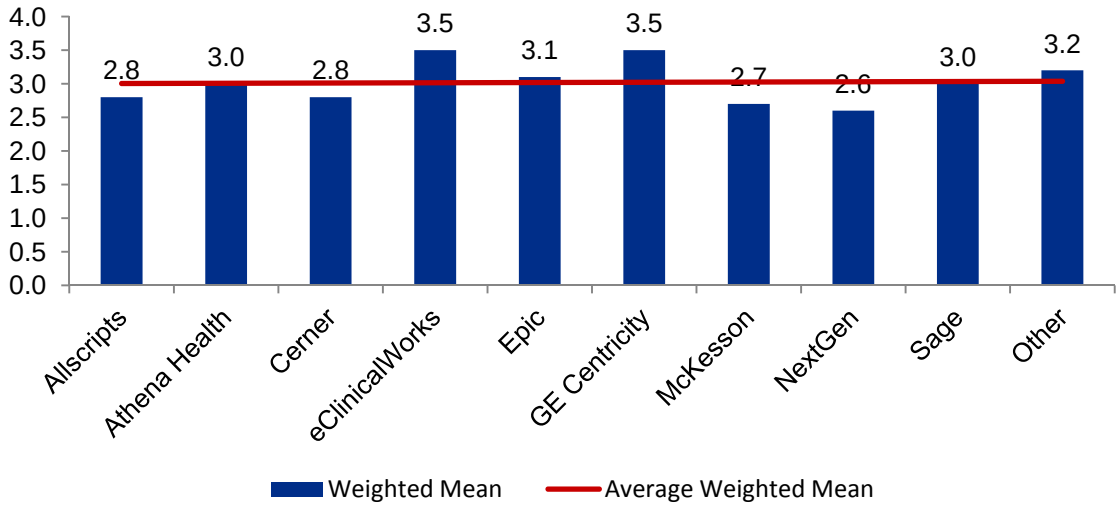
Table 58. Physician Productivity by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean**
Allscripts	116 14.6%	191 24.0%	293 36.9%	156 19.6%	37 4.6%	793 16.2%	2.8
Athena Health	27 15.1%	35 19.6%	59 33.1%	30 16.8%	27 15.1%	178 3.6%	3.0
Cerner	193 16.3%	251 21.3%	383 32.5%	249 21.1%	10 18.5%	1,177 24.1%	2.8
eClinicalWorks	17 4.4%	54 14.0%	93 24.2%	145 37.8%	74 19.3%	383 7.8%	3.5
Epic	49 9.2%	95 17.8%	193 36.2%	144 27.0%	51 9.5%	532 10.8%	3.1
GE Centricity	12 6.0%	21 10.5%	62 31.1%	71 35.6%	33 16.5%	199 4.0%	3.5
McKesson	57 20.1%	67 23.6%	96 33.9%	40 14.1%	23 8.1%	283 5.7%	2.7
NextGen	130 21.9%	143 24.1%	172 29.0%	105 17.7%	42 7.0%	592 12.1%	2.6
Sage	19 9.2%	44 21.3%	70 33.9%	58 28.1%	15 7.2%	206 4.2%	3.0
Other	58 10.7%	75 13.9%	184 34.2%	139 25.8%	82 15.2%	538 11.0%	3.2
Top 10 Total	678 13.8%	976 19.9%	1,605 32.8%	1,137 23.2%	485 9.9%	4,881 100.0%	3.0

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 480 physicians who did not identify a brand name but answered the Physician Productivity question. The weighted mean for those physicians is 3.03.

Figure 27. Weighted Mean Rank of Physician Productivity by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 59. Ranking of All EMRs by Staff Productivity (N = 6,677) (Weighted Mean Rank = 3.1)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	717	10.7%
2	1,209	18.1%
3	2,325	34.8%
4	1,674	25.0%
5 (Outstanding)	752	11.2%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 475 physicians did not identify a brand name but answered the Staff Productivity question. The weighted mean for those physicians is 3.01.

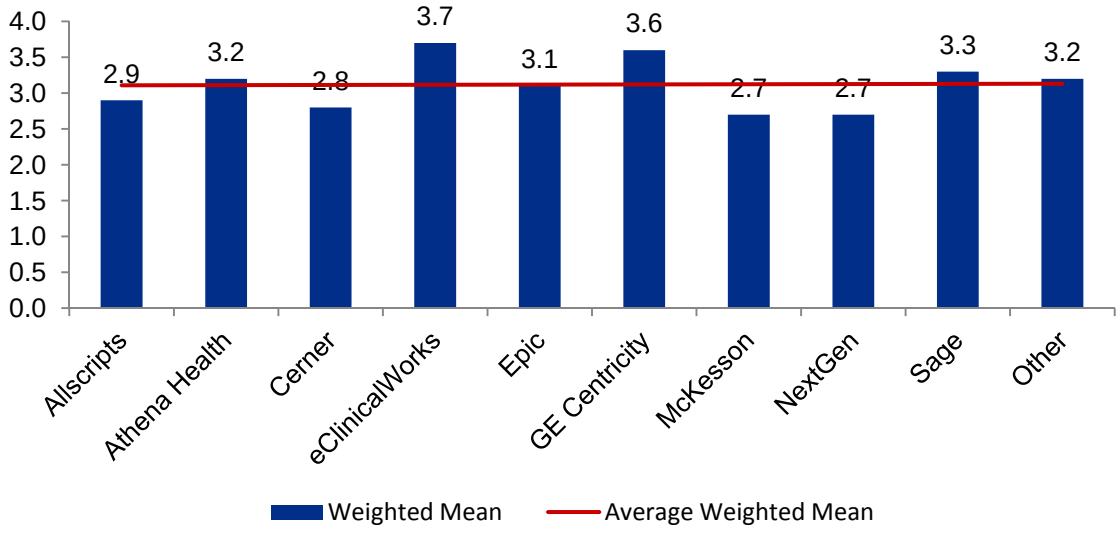
Table 60. Staff Productivity by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean**
Allscripts	89 11.2%	174 22.0%	317 40.1%	162 20.5%	47 5.9%	789 16.2%	2.9
Athena Health	19 10.7%	28 15.8%	52 29.3%	52 29.3%	26 14.6%	177 3.6%	3.2
Cerner	180 15.3%	270 22.9%	400 34.0%	235 20.0%	89 7.5%	1,174 24.1%	2.8
eClinicalWorks	11 2.8%	36 9.4%	99 25.9%	1513 9.6%	84 22.0%	381 7.8%	3.7
Epic	48 9.0%	102 19.2%	194 36.6%	138 26.0%	47 8.8%	529 10.8%	3.1
GE Centricity	5 2.5%	19 9.5%	63 31.8%	79 39.8%	32 16.1%	198 4.0%	3.6
McKesson	49 17.3%	69 24.3%	94 33.2%	47 16.6%	24 8.4%	283 5.8%	2.7
NextGen	104 17.6%	143 24.2%	191 32.4%	106 17.9%	45 7.6%	589 12.1%	2.7
Sage	12 5.8%	22 10.6%	86 41.7%	68 33.0%	18 8.7%	208 4.2%	3.3
Other	51 9.5%	77 14.4%	182 34.0%	141 26.4%	83 15.5%	534 10.9%	3.2
Top 10 Total	568 11.6%	940 19.3%	1,678 34.5%	1,179 24.2%	495 10.1%	4,860 100.0%	3.0

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 475 physicians who did identify a brand name but answered the Staff Productivity question. The weighted mean for those physicians is 3.01.

Figure 28. Weighted Mean Rank of Staff Productivity by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 61. Ranking of All EMRs by Reliability, (N = 6,679) (Weighted Mean Rank = 3.5)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	323	4.8%
2	650	9.7%
3	2,145	32.1%
4	2,465	36.9%
5 (Outstanding)	1,096	16.4%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 476 physicians who did not identify a brand name but answered the Reliability question. The weighted mean for those physicians is 3.29.

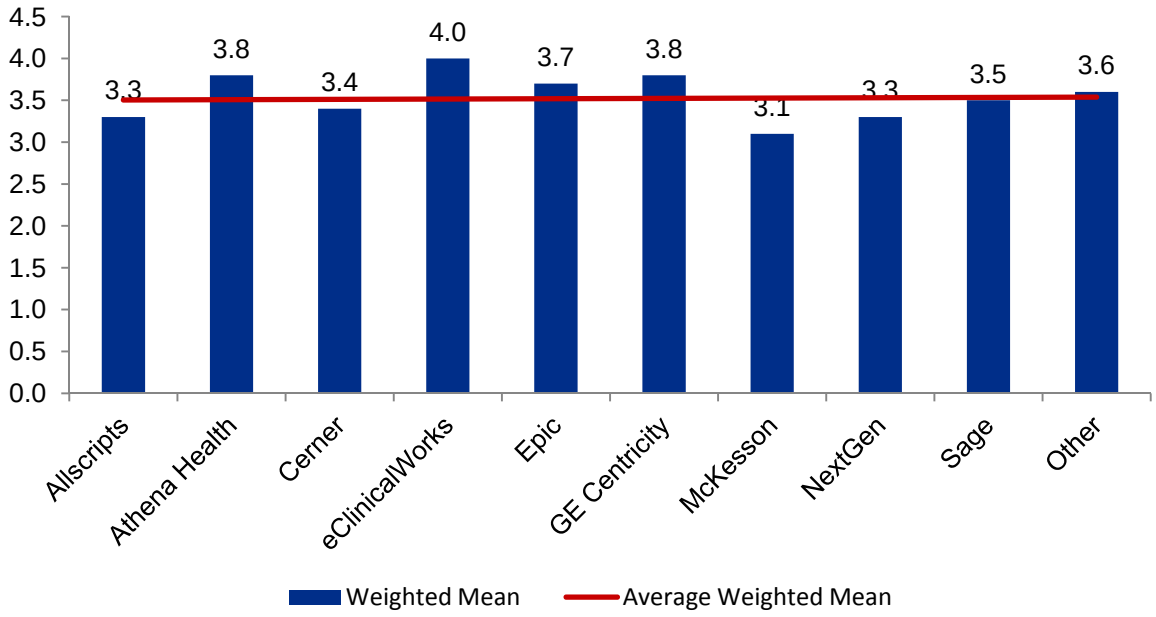
Table 62. Reliability by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean**
Allscripts	41 5.1%	88 11.1%	309 39.1%	284 35.9%	67 8.4%	789 16.2%	3.3
Athena Health	3 1.7%	12 6.8%	49 27.8%	59 33.5%	53 30.1%	176 3.6%	3.8
Cerner	62 5.2%	109 9.2%	406 34.6%	452 38.5%	144 12.2%	1,173 24.1%	3.4
eClinicalWorks	3 0.7%	16 4.1%	81 21.1%	180 46.9%	103 26.8%	383 7.8%	4.0
Epic	11 2.0%	46 8.6%	156 29.4%	214 40.4%	102 19.2%	529 10.8%	3.7
GE Centricity	1 0.5%	9 4.5%	51 26.0%	96 48.9%	39 19.8%	196 4.0%	3.8
McKesson	35 12.3%	45 15.8%	96 33.8%	72 25.3%	36 12.6%	284 5.8%	3.1
NextGen	52 8.7%	79 13.3%	191 32.2%	209 35.3%	61 10.3%	592 12.1%	3.3
Sage	7 3.3%	19 9.2%	72 34.9%	83 40.2%	25 12.1%	206 4.2%	3.5
Other	24 4.4%	49 9.1%	162 30.3%	192 35.9%	107 20.0%	534 10.9%	3.6
Top 10 Total	239 4.9%	472 9.7%	1,573 32.3%	1,841 37.8%	737 15.1%	4,862 100.0%	3.5

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 476 physicians who did not identify a brand name but answered the Reliability question. The weighted mean for those physicians is 3.29.

Figure 29. Weighted Mean Rank of Reliability by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 63. Ranking of All EMRs by Performance vs. Promise (N = 6,547) (Weighted Mean Rank = 3.1)

Ranking	*Number of Physicians*	*Percent*
1 (Awful)	693	10.5%
2	1,002	15.3%
3	2,492	38.0%
4	1,711	26.1%
5 (Outstanding)	649	9.9%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 460 physicians who did not answer this question. The weighted mean for those physicians is 2.99.

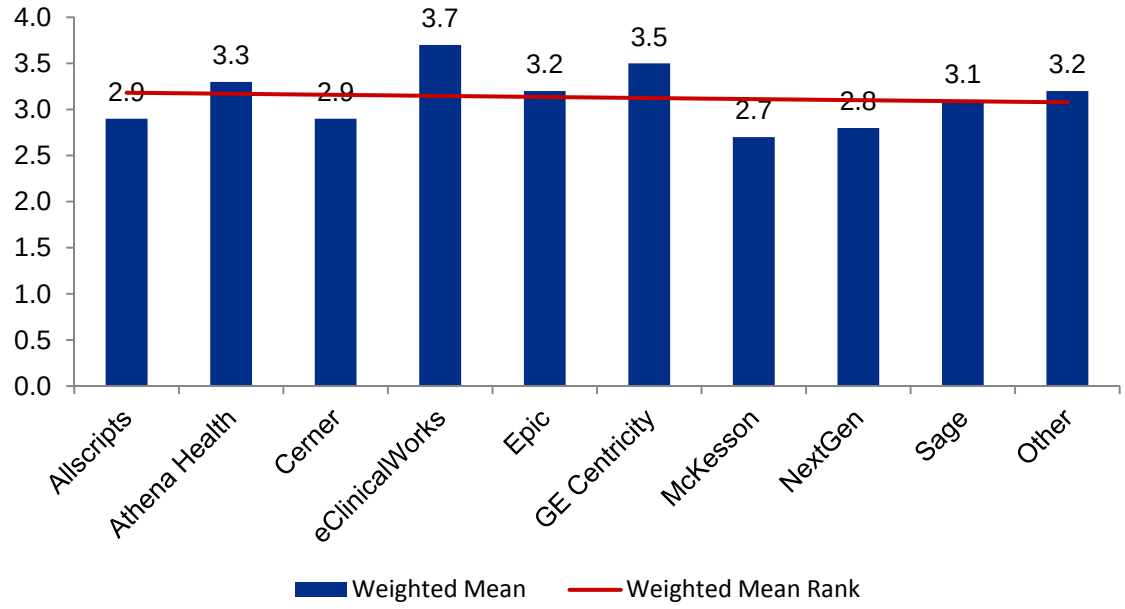
Table 64. Performance vs. Promise by Top 10 Vendors

Vendor	*1 Awful*	*2*	*3*	*4*	*5 Outstanding*	*Total*	*Weighted Mean**
Allscripts	80 10.3%	156 20.1%	346 44.7%	161 20.8%	31 4.0%	774 16.2%	2.9
Athena Health	17 9.5%	20 11.2%	58 32.5%	56 31.4%	27 15.1%	178 3.7%	3.3
Cerner	164 14.3%	222 19.4%	424 37.1%	265 23.2%	67 5.8%	1,142 23.9%	2.9
eClinicalWorks	12 3.1%	16 4.2%	118 31.0%	159 41.8%	75 19.7%	380 7.9%	3.7
Epic	43 8.2%	70 13.4%	206 39.5%	152 29.1%	50 9.5%	521 10.9%	3.2
GE Centricity	9 4.6%	14 7.2%	68 35.0%	74 38.1%	29 14.9%	194 4.0%	3.5
McKesson	55 19.7%	48 17.2%	114 41.0%	46 16.5%	15 5.3%	278 5.8%	2.7
NextGen	92 16.0%	125 21.8%	212 37.0%	109 19.0%	34 5.9%	572 12.0%	2.8
Sage	11 5.5%	38 19.0%	88 44.0%	49 24.5%	14 7.0%	200 4.1%	3.1
Other	51 9.7%	53 10.0%	201 38.2%	155 29.5%	65 12.3%	525 11.0%	3.2
Top 10 Total	534 11.2%	762 15.9%	1,835 38.5%	1,226 25.7%	407 8.5%	4,764 100.0%	3.0

Source: AMB, ABOE Survey Data, 2012–2014.

Note: There were 460 physicians who did not identify a brand name but answered the Performance vs. Promise question. The weighted mean for those physicians is 2.99.

Figure 30. Weighted Mean Rank of Performance vs. Promise by Top 10 Vendors



Source: AMB, ABOE Survey Data, 2012–2014.

Table 65. Summary of All EMR Ranking Criteria

Criterion	*Weighted Mean*	*Number of Physicians*
Ease of Use	3.3	6,732
Effect on Physician Productivity	3.0	6,711
Effect on Staff Productivity	3.1	6,677
Reliability	3.5	6,679
Performance vs. Promise	3.1	6,547
Mean of the Weighted Means	3.2	--

Source: AMB, ABOE Survey Data, 2012–2014.

EMR Adoption Incentives by AHCCCS Physicians

Table 66. Medicare/Medicaid Incentive Payments (N = 8,321)

Aware of Incentive Payments	*Number of Physicians*	*Percent*
No	1,477	17.7%
Yes	6,844	82.2%
Total	8,321	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 67. Medicare/Medicaid Incentive Payments by Type of Practice by Decision Maker (N = 8,037)

Type of Practice	*Aware of Incentive Payments*					
	Decided by others		*Sole decision maker*		*Shared decision*	
	Yes	*No*	*Yes*	*No*	*Yes*	*No*
	Number of Physicians Percent	*Number of Physicians Percent*	*Number of Physicians Percent*	*Number of Physicians Percent*	*Number of Physicians Percent*	*Number of Physicians Percent*
Physician Owned Solo Practice	7 0.4%	2 0.1%	1,256 89.3%	140 9.9%	1 0.0%	0 0.0%
Physician Owned Group Practice	724 23.6%	216 7.0%	1,798 58.7%	192 6.2%	126 4.1%	7 0.2%
Hospital/Medical School Group Practice	975 67.4%	334 23.1%	54 3.7%	22 1.5%	55 3.8%	5 0.3%
Community or Rural Health Center	334 71.6%	92 19.7%	4 0.8%	1 0.2%	33 7.0%	2 0.4%
Private Hospital System	461 65.5%	175 24.8%	29 4.1%	12 1.7%	22 3.1%	4 0.5%
Private Outpatient Facility not part of Hospital System	230 64.0%	69 19.2%	30 8.3%	7 1.9%	20 5.5%	3 0.8%
Medical School, University Research Center	220 67.4%	89 27.3%	0 0.0%	1 0.3%	14 4.2%	2 0.6%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 68. Medicare/Medicaid Incentive Payments by Type of Practice by Decision Maker (N = 8,037) (cont.)

Type of Practice	*Aware of Incentive Payments*					
	Decided by others		*Sole decision maker*		*Shared decision*	
	Yes	*No*	*Yes*	*No*	*Yes*	*No*
	Number of Physicians Percent	*Number of Physicians Percent*	*Number of Physicians Percent*	*Number of Physicians Percent*	*Number of Physicians Percent*	*Number of Physicians Percent*
Health Insurer/Health Related Organization that does not provide care	11 42.3%	10 38.4%	2 7.6%	0 0.0%	3 11.5%	0 0.0%
City, State or County Clinic or Hospital System	54 58.6%	32 34.7%	0 0.0%	0 0.0%	6 6.5%	0 0.0%
Other	90 59.6%	33 21.8%	11 7.2%	4 2.6%	12 7.9%	1 0.6%
Hospice or SNF	22 78.5%	4 14.2%	1 3.5%	0 0.0%	1 3.5%	0 0.0%
Independent Contractor	15 45.4%	12 36.3%	3 9.0%	1 3.0%	2 6.0%	0 0.0%
Medical Consultant	1 16.6%	1 16.6%	2 33.3%	1 16.6%	0 0.0%	1 16.6%
Private Hospital - Not for Profit	15 60.0%	4 16.0%	0 0.0%	0 0.0%	6 24.0%	0 0.0%
Mental/Behavioral Health	4 80.0%	1 20.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Total	3,106 38.6%	1,052 13.0%	3,184 39.6%	379 4.7%	292 3.6%	24 0.2%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 69. Applications for Medicare Incentives (N = 6,746)

Applied for Medicare Incentives	*Number of Physicians*	*Percent*
No	2,289	33.9%
Yes	4,457	66.0%
Total	6,746	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 70. Applications for Medicare Incentives by Type of Practice (N = 6,739)

Type of Practice	*Applied for Medicare Incentives*			
	No		Yes	
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*
Physician Owned Solo Practice	556	43.6%	719	56.3%
Physician Owned Group Practice	746	27.5%	1962	72.4%
Hospital/Medical School Group Practice	335	30.1%	776	69.8%
Community or Rural Health Center	132	32.9%	269	67.0%
Private Hospital System	207	39.6%	315	60.3%
Private Outpatient Facility not part of Hospital System	113	39.5%	173	60.4%
Medical School, University Research Center	75	31.9%	160	68.0%
Health Insurer/Health Related Organization that does not provide care	13	68.4%	6	31.5%
City, State or County Clinic or Hospital System	37	60.6%	24	39.3%
Other	72	59.5%	49	40.4%
Hospice or SNF	20	86.9%	3	13.0%
Independent Contractor	18	85.7%	3	14.2%
Medical Consultant	3	100.0%	0	0
Private Hospital - Not for Profit	9	37.5%	15	62.5%
Mental/Behavioral Health	1	20.0%	4	80.0%
Total	2286	33.9%	4453	66.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 71. Applications for Medicaid Incentives (N = 6,607)

Applied for Medicaid Incentives	*Number of Physicians*	*Percent*
No	2,959	44.7%
Yes	3,648	55.2%
Total	6,607	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 72. Applications for Medicaid Incentives by Type of Practice (N = 6,057)

Type of Practice	*Applied for Medicaid Incentives*			
	Yes		No	
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*
Physician Owned Solo Practice	495	39.2%	766	60.7%
Physician Owned Group Practice	1,489	55.9%	1,174	44.0%
Hospital/Medical School Group Practice	702	65.4%	371	34.5%
Community or Rural Health Center	283	72.7%	106	27.2%
Private Hospital System	293	57.4%	217	42.5%
Private Outpatient Facility not part of Hospital System	167	59.2%	115	40.7%
Medical School, University Research Center	148	64.6%	81	35.3%
Health Insurer/Health Related Organization that does not provide care	4	21.0%	15	78.9%
City, State or County Clinic or Hospital System	22	36.6%	38	63.3%
Other	40	35.0%	74	64.9%
Hospice or SNF	1	4.7%	20	95.2%
Independent Contractor	4	19.0%	17	80.9%
Medical Consultant	0	0	3	100.0%
Private Hospital - Not for Profit	13	56.5%	10	43.4%
Mental/Behavioral Health	3	75.0%	1	25.0%
Total	3,643	55.1%	2,957	44.8%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Meaningful Use

Table 73. Is the Vendor Helping You Achieve Meaningful Use?

Is EMR Vendor Helping Meet	*Number of Physicians*	*Percent*
No	758	17.0%
Yes	3,698	82.9%
Total	4,456	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 5,859 physicians were excluded from this table due to missing data.

Table 74. EMR Vendor Helping Meet Meaningful Use by Type of Practice (N = 4,450)

Type of Practice	*Is EMR Vendor Helping Meet Meaningful Use*			
	Yes		No	
	Number	*Percent*	*Number*	*Percent*
Physician Owned Solo Practice	614	79.1%	162	20.8%
Physician Owned Group Practice	1,671	84.6%	303	15.3%
Hospital/Medical School Group Practice	612	83.0%	125	16.9%
Community or Rural Health Center	235	83.9%	45	16.0%
Private Hospital System	251	85.6%	42	14.3%
Private Outpatient Facility not part of Hospital System	141	80.5%	34	19.4%
Medical School, University Research Center	106	74.6%	36	25.3%
Health Insurer/Health Related Organization that does not provide care	4	66.6%	2	33.3%
City, State or County Clinic or Hospital System	19	86.3%	3	13.6%
Other	41	91.1%	4	8.8%
Hospice or SNF	1	100.0%	0	0
Independent Contractor	4	100.0%	0	0
Medical Consultant	0	0	0	0
Private Hospital - Not for Profit	15	93.7%	1	6.2%
Mental/Behavioral Health	4	100.0%	0	0
Total	3,694	83.0%	756	16.9%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 75. Support from Regional Health Extension Center by Decision Maker (N = 7,721)

Aware of Support Offered by AZ Regional Extension Center	*Decision Maker*					
	Decided by others		Shared decision		Sole decision maker	
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*	*Number of Physicians*	*Percent*
No	3,452	87.5%	229	74.8%	2,229	64.2%
Yes, but not working with them at present	487	12.3%	75	24.5%	877	25.2%
Yes, working with them	6	0.1%	2	0.6%	364	10.4%
Total	3,945	100.0%	306	100.0%	3,470	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 2,594 physicians were excluded from this table due to missing data, including 2,348 missing Awareness of Support Offered; and 1,925 missing the Decision Maker.

Plans to Install EMRs by AHCCCS Physicians

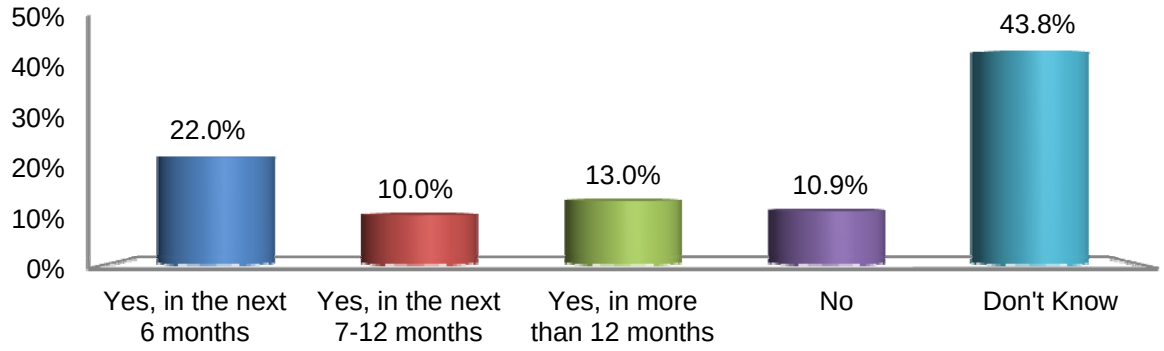
Table 76. Non-EMR Users Plans for Adoption of EMRs (N = 467)

Future Plans to Adopt EMRs	*Number of Physicians*	*Percent*
Don't Know	205	43.8%
No	51	10.9%
Yes, in more than 12 months	61	13.0%
Yes, in the next 7-12 months	47	10.0%
Yes, in the next 6 months	103	22.0%
Total	467	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Figure 31. Non-EMR Users Plans for Adoption of EMRs (N = 467)



Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results.

Table 77. Plans to Install EMRs by Vendor (N = 306)

Vendor	*Number of Physicians*	*Percent*
Allscripts	18	5.7%
Amazing Charts	2	0.6%
Aprima	2	0.6%
Athena Health	3	0.9%
Cerner	21	6.6%
eClinicalWorks	8	2.5%
Epic	17	5.3%
Greenway Medical	2	0.6%
HealthPort	1	0.3%

Vendor	*Number of Physicians*	*Percent*
McKesson	10	3.1%
Meditech	2	0.6%
NextGen	8	2.5%
Noteworthy	1	0.3%
Sage	3	0.9%
SOAPware	1	0.3%
Other	60	19.0%
Don't Know	156	49.5%
Total	315	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings are excluded from these results.

Table 78. Plans to Switch EMRs by Vendor (N = 2,087)

Vendor	*Number of Physicians*	*Percent*
Allscripts	123	6.9%
Amazing Charts	5	0.2%
Aprima	2	0.1%
Athena Health	13	0.7%
Cerner	229	12.9%
eClinicalWorks	20	1.1%
e-MDs	7	0.3%
Epic	388	21.9%
Greenway Medical	2	0.1%
McKesson	24	1.3%
Meditech	6	0.3%
NextGen	99	5.6%
Noteworthy	4	0.2%
Office Practicum	1	0.0%
Sage	8	0.4%
Other	1	0.0%
SOAPware	198	11.2%
Don't Know	635	35.9%
Total	1,765	100.0%

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings are excluded from these results.

The Target Population

Table 79. The Target Population of AHCCCS Physicians without EMRs by County, 2012-2014

Location	*All Survey Respondents (N)*	*2012-2014 One Half of Renewal Cycle*			*The Projected Target Population Complete Renewal Cycle 2012-2014*
		Survey Respondents EMR Users (N)	*Survey Respondents Non-EMR Users (N)*	*The Target Population (W*N)*	
Apache	17	11	6	7	7
Cochise	94	78	16	18	18
Coconino	212	183	29	32	32
Gila	38	33	5	6	6
Graham	28	25	3	3	3
Greenlee	1	1	0	0	0
La Paz	9	7	2	2	2
Maricopa	5,561	4,591	970	1,067	1,067
Mohave	223	190	33	36	36
Navajo	65	44	21	23	23
Pima	1,478	1,224	254	279	279
Pinal	143	126	17	19	19
Santa Cruz	15	14	1	1	1
Yavapai	242	213	29	32	32
Yuma	186	159	27	30	30
Missing	18	15	3	3	3
Unknown	184	141	43	47	47
Total	8,514	7,055	1,459	1,605	1,605

Source: AMB, ABOE Survey Data, 2012-2014.

Note: Table does not include fully retired physicians or physicians practicing in government settings. 273 respondents were of unknown/missing county.

The target population is calculated as the number of non-EMR users multiplied by the population weight (1.1).

*Rounding errors

Table 80. Trends in the Target Population of AHCCCS Physicians without EMRs by County, 2012-2014

Location	*Non- Users of EMRs as a Percent of Physicians*
	2012-2014
Apache	35.3%
Cochise	17.0%
Coconino	13.7%
Gila	13.2%
Graham	10.7%
Greenlee	0.0%
La Paz	22.2%
Maricopa	17.4%
Mohave	14.8%
Navajo	32.3%
Pima	17.2%
Pinal	11.9%
Santa Cruz	6.7%
Yavapai	12.0%
Yuma	14.5%
Total	17.7%

Source: AMB, ABOE Survey Data, 2012-2014.

Summary & Conclusion

The percentage of Arizona physicians using EMRs increased from approximately 45% in 2007-2009 to approximately 81% in 2012-2014. The current trend suggests that nearly all Arizona physicians will be using EMRs by 2018. The results from 2007-2014 consistently show that utilization of EMRs is lowest among older physicians and physicians in solo practices. The findings are similar to the results of national surveys. The increased use of EMRs in Arizona reflects the gradual replacement of retiring older physicians by younger physicians and the consolidation of solo practices into larger group practices or hospital based practices. The growth is also induced by Medicare and Medicaid incentive payments.

The use of EMRs increased more rapidly in the rural counties of Arizona than in the urbanized areas. The Medicare and Medicaid incentives and the support from organizations such as the REC are often directed to organizations with the most need, including smaller practices which typify rural medicine. This appears to have had a very significant impact on the use of EMRs by rural health care providers and Community Health Centers.

The expected benefits of EMRs, such as the avoidance of duplicative tests, require the exchange of information among health care providers. The lack of communication networks is now a much more important obstacle to the realization of the benefits of EMRs than is underutilization of EMRs. Among physicians with EMRs that include functions such as *e*-prescribing, patient summaries and others, slightly more than 20% to slightly more than 47% of the physicians share information with other providers. The data, however, include exchanges among providers within organizations such as hospital systems. Exchanges between hospital systems or among solo or group practices are much less frequent.

HINAz continues to expand and its future is hopeful. It currently serves thirty-three participants.

This report is the second in the CHiR series to include physician rankings of EMRs by brand. EMRs were ranked on a 1-5 scale where 1=Awful and 5=Outstanding. Twenty five different EMR packages were ranked on each of five criteria.

Many articles in the press and on-line discussions among HIE professionals suggest that physicians are very dissatisfied with the EMRs that they use. The results presented here differ, indicating that physicians are at least somewhat positive about the EMR software that they use with their rankings averaging slightly more than the midpoint in the 1-5 scale. Ease of use and

reliability receive the highest rankings, although the variance among rankings of the five criteria is very small. The more accurate conclusion may be that physicians seek to improve individual elements of their EMRs, but recognize that EMRs offer advantages not available from scanned records or paper medical records.

We have revised the survey questions to include a focus on the use of and obstacles to the exchange of information among physicians who use EMRs. The new survey will also include an enhanced focus on Medicaid providers. The implementation of the survey has been delayed by workload problems at the Arizona Board of Medical Examiners, but it is expected to be in the field before December 2014.

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Appendix A: Comparison to National Surveys

The results of a national survey of EMR use and attitudes toward the adoption of EMRs by physicians with the American Medical Association (AMA) memberships were published on July 3, 2008 (DesRoches, et al. 2008; Jha, DesRoches, et al. 2009). The results cannot be strictly compared to the results reported here because of differences in the structure of the sample and some differences in methods. The sample design does not, for example, provide estimates for Arizona and is limited to members of the AMA.

The ASU study queries all physicians who renew their Arizona licenses. The practice began in 1992 and with a few interruptions has continued. The data are not, therefore, a sample but rather a census of all physicians. Some characteristics, drawn from the information required for licensing, are obtained for all physicians while the survey questions are voluntary and obtained from those physicians who choose to respond. Fully retired physicians were not asked to respond to the survey questions.

The national survey results are restricted to non-federal, allopathic physicians directly involved in patient care who are members of the AMA. Doctors of Osteopathy were excluded. Other exclusions included physicians working in federally owned hospitals, those who requested not to be contacted; radiologists; anesthesiologists; pathologists; psychiatrists; no known address; medical school students and physicians not providing patient care.

The NCHS released the preliminary results of a mail survey of a national sample of office based physicians in December 2008. The survey, conducted from April through August 2008 shows that 38.4% of physicians used full or partial EMR systems in their office based practices. Approximately 20.4% of the physicians used systems that included orders for prescriptions, orders for tests, results of lab or imaging tests and clinical notes (Hsiao and Hing, Use and characteristics of electronic health record systems among office-based physician practices: United States, 2001-2012 2012). As indicated in Table A – 1 below, our results are much closer to the NCHS study than the NEJM study. The difference between the two national studies is surprisingly large give the apparent similarities in sample design.

Table A - 1. Comparison of CHiR Survey vs. National EMR Surveys (under revision 9/13/13)

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
Hing et al. (2007)	2006 National Ambulatory Medical Care Survey	1,311	Sample consists of non-federal, office-based physicians who see patients in an office setting.	29.2% (B) 12.4% (F)	Use of full or partial electronic records	NA	Can electronically order prescriptions & tests, report results to lab or radiology; manage clinical notes
DesRoches et al. (2008)	Survey created by the study team and Research Triangle Institute	2,758	Sample consists of US physicians who provide direct patient care. Exclusions: D.O.s, residents, physicians in federally owned hospitals, retired physicians, radiologists, anesthesiologists, pathologists, psychiatrists, hospitalists, part-time, physicians who worked < 20 hour per week.	13% (C) 4% (F)	NA	EMR can store demographic data, problem lists, medication lists, and clinical notes; can order prescriptions; can view laboratory results and imaging results. (Study authors refer to this type of record as a "basic EMR")	All capabilities listed in previous column, plus enhanced order-entry management and clinical-decision support
AHCCCS/ CHIR (2009)	Survey created by study team and Arizona Hospital and Health Care Association; Licensing data from Arizona Medical Board and Arizona Board of Osteopathic Examiners	10,813	This sample includes Arizona-based physicians who provide direct patient care and exclude the following: DOs, residents, retired/semi-retired, physicians in government settings, radiologists, anesthesiologists, pathologists, psychiatrists, hospitalists. Specialty exclusions were for Primary Specialty. (exclusions not part of full survey..applied to compare to DesRoches.	40.8% (B) 19.9% (C) 6.1% (F)	Use of electronic files as method of storing medical records	EMR that is connected to at least one of the following: hospital, radiology, lab, pharmacy	EMR that is connected to all of the following: radiology, lab, pharmacy

*B = basic EMR, C = connected EMR, F = fully functional EMR

Table A - 2. Comparison of CHiR Survey vs. National EMR Surveys (cont.)

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
Jamoom et al. (2012)	2011 Physician Workflow Survey	3,180	Sample consists of non-federal, office-based physicians who see patients in an office setting. Excludes: radiologists, anesthesiologists and Pathologists	54%	Electronic medical records or electronic health records not including billing records	NA	?
CHiR/ AHCCCS (2012)	Survey created by CHIR and AHCCCS; Licensing data from Arizona Medical Board and Arizona Board of Osteopathic Examiners		Sample consists of all Arizona physicians with active licenses who renewed their license between November 1, 2009 and November 1, 2011. Exclusions: non-Arizona physicians, fully retired physicians.	44.5% (B) 24.1% (C) 9.3% (F			
	Survey created by study team and Arizona Hospital and Health Care Association; Licensing data from Arizona Medical Board and Arizona Board of Osteopathic Examiners	10,813	Arizona-based physicians who provide direct patient care and exclude the following: DOs, residents, retired/semi-retired, physicians in government settings, radiologists, anesthesiologists, pathologists, psychiatrists, hospitalists. Specialty exclusions were for Primary Specialty.	40.8% (B) 19.9% (C) 6.1% (F)	Use of electronic files as method of storing medical records	EMR that is connected to at least one of the following: hospital, radiology, lab, pharmacy	EMR that is connected to all of the following: radiology, lab, pharmacy
			Sample consists of all Arizona physicians with active licenses who renewed their license between November 1, 2009 and November 1, 2011. Exclusions: non-Arizona physicians, fully retired physicians.	44.5% (B) 24.1% (C) 9.3% (F)			

Table A - 3. Comparison of CHiR Survey vs. National EMR Surveys (cont.)

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
DesRoches et al. (2013)	American Medical Association Physician Masterfile.	1820 primary care physician and specialists in office-based practices	Primary care physicians. Board certified in adolescent medicine, family practice, general practice, general preventive medicine, internal medicine, or pediatrics.	43.5%	Computerized system that can view and manage patient demographics, patient problem lists, electronic lists of medications taken by patients, clinical notes, orders for prescriptions, laboratory results, and imaging results.	NA	NA
Geisler et al. (2010)	NHAMCS (2005-2006)	694 EDs	Non-Federal hospital EDs. No exclusions were made.	46% of EDs reported having an EMR	EMR systems that included demographic information, CPOE, lab and imaging results. 'Basic with Clinical Notes' was a separate classification.	NA	A comprehensive EMR system include characteristics from basic EMR, basic with clinical notes EMR, and also included electronic prescribing, radiographic image display, and decision support.

Table A - 4. Comparison of CHiR Survey vs. National EMR Surveys (cont.)

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
Hing et al. (2010)	2007 National Ambulatory Medical Care Survey (NAMCS)	1,743	Sample of office-based physicians who reported they were direct patient care. Specialists in radiology, anesthesiology, and pathology were excluded.	34.8% of office-based physicians	Systems that included patient demographic information, patient problem lists, clinical notes, orders for prescriptions, and viewing laboratory and imaging results.	NA	Systems that included characteristics of basic system plus medical history and follow-ups, orders for tests, prescription and test orders sent electronically, warnings of drug interactions or contradictions, highlighting out-of-range test levels, electronic images returned, and reminders for guideline-based interventions.

Table A - 5. Comparison of CHiR Survey vs. National EMR Surveys (cont.)

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
Hsaio et al. (2011)	2010, 2011 mail surveys of physicians of physicians in NAMCS	13,081 survey responses – 6,798 from 2010 and 6,283 from 2011	Physicians classified as providing direct patient care in office-based practices, including clinicians in community health centers. Radiologists, anesthesiologists, and pathologists are excluded.	34% of physicians reported having a basic system.	System which has the following functionalities: patient history and demographics, patient problem list, physician clinical notes, comprehensive list of patient's medications and allergies, computerized orders for prescriptions, and ability to view laboratory and imaging results electronically.	NA	NA

Table A - 6. Comparison of CHiR Survey vs. National EMR Surveys (cont.)

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
Kazley et al. (2011)	2005-2008 HIMSS Analytics survey of integrated health delivery systems and 2007-2008 AHA Annual Survey of Hospitals.	3,388 hospitals from 2007 and 3.458 hospitals from 2008.	All hospitals in HIMSS Analytics survey of integrated health delivery systems and AHA Annual Survey of Hospitals.	HIMSS Data - 2005: 49% 2006: 45% 2007: 38% 2008: 39% AHA Data - 2007: 17% (Full), 44% (Partial) 2008: 18% (Full), 51% (Partial)	HIMSS definition was employed – "An application environment that is composed of the clinical data repository, clinical decision support, controlled medical vocabulary, order entry, computerized practitioner order entry, and clinical and physician documentation applications. This environment supports the patient's electronic medical record across inpatient modalities of care and may also support outpatient care services, and is used by healthcare practitioners to document, monitor, and manage health care delivery."	NA	NA

Table A - 7. Comparison of CHiR Survey vs. National EMR Surveys (cont.)

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
Kokkonen et al. (2013)	2003-2010 NAMCS Data	102,965 primary care physician survey responses; 126,000 specialist survey responses	All physicians in NAMCS data.	Partial EMR: 2005: 25.2% 2009: 50.4% 2010: 52% Full EMR - 2005: 14.2% 2009: 37.8% 2010: 39%	No definition was given by the authors. Since NAMCS data was used it is assumed the definition used by Hsaio et al. (2011) was used in this study for the Basic EMR.	NA	NA

Appendix B: CHiR Health Care Workforce Reports and Articles

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Rimsza ME, Johnson WG, Speicher M, Grossman M. (2006) *The Arizona physician workforce study: part II*. Tempe (AZ): Arizona State University, Center for Health Information and Research.

Rimsza ME, Johnson WG, Speicher M, Grossman M. (2005). *The Arizona psychiatric physician workforce study*. Tempe (AZ): Arizona State University, Center for Health Information and Research.

Schneller ES, Preuss N, Johnson WG, Klett D. (1993). The survey of medical residency programs: a report to the Arizona Council for Graduate Medical Education. Tempe (AZ): Arizona State University.

Wilson BL, Johnson WG. (July/August 2009). Using innovation to assess nursing workforce in Arizona: a collaborative approach. *Nursing Economics.* 27(4):233-238.

Appendix C: Survey Instruments (2007-2014)

Survey Instrument 2007-2011

1. How would you best characterize your practice? (PLEASE DO NOT CHECK MORE THAN TWO)

◯ Fully retired (skip to end)	◯ Community health center	◯ Government (VA, IHS, etc.)
◯ Semi-retired/On Leave	◯ Group Practice	◯ Administrative Medicine
◯ Med school, intern, resident, fellow	◯ Solo Practice	◯ Academic/Teaching/Research
	◯ Hospitalist	◯ Locum Tenens

2. Which of the following are available at your practice location? (CHECK ALL THAT APPLY)
◯ Email ◯ Internet ◯ Fax ◯ Medifax ◯ None of the above

3. How do you submit your bills to payers? (CHECK ALL THAT APPLY)
◯ Email ◯ Internet ◯ Fax ◯ US Mail ◯ Don't Know ◯ N/A

4. Are patients' medical records in your practice/organization stored as:
a. Paper files ◯ Yes ◯ No
Scanned images of paper files ◯ Yes ◯ No
Electronic files ◯ Yes (continue) ◯ No (If no, go to question #5)
◯ The records are stored on a PC/server located in my organization
◯ The records are stored on a server to which I connect via the internet
◯ I don't know where they are stored

b. Is your EMR system connected to: (CHECK ALL THAT APPLY)
◯ Hospital ◯ Pharmacy ◯ Lab ◯ Radiology Center ◯ None of these
Are you the person who decided to purchase an electronic medical record system?
◯ Sole Decisionmaker ◯ Shared Decision ◯ Decided by Others
What is a reasonable amount to pay for an electronic medical record system (per individual provider within a practice setting)?
◯ $5,000-$10,000/provider ◯ $10,000-$20,000/provider ◯ >$20,000/provider

GO TO QUESTION #6

5. Are you the person who would decide to purchase an electronic medical record system?
a. ◯ Sole Decisionmaker ◯ Shared Decision ◯ Decided by Others
b. What best describes the barriers to adoption of electronic medical records in your practice/organization?
◯ Cost ◯ Insufficient Return on Investment ◯ Time/Training ◯ Lack of Interoperability ◯ Attitudes
c. Would you consider an internet-based system (patient records stored offsite) rather than one where the records are stored in your office PC or server? ◯ Yes ◯ No
d. What is a reasonable amount to pay for an electronic medical record system (per individual provider within a practice setting)? ◯ $5,000-$10,000/provider ◯ $10,000-$20,000/provider ◯ >$20,000/provider

6. Would you be willing to participate in a web-based system that permits the exchanges of medical records among health care providers? ◯ Yes ◯ No (if no, SKIP TO #7)
a. Who would you trust to manage the health information exchange system? (CHECK ALL THAT APPLY)

◯ Commercial Vendor	◯ Health Insurer/Managed Care Plan
◯ Hospital System	◯ Regional Health Information Organization (RHIO)
◯ State of Arizona (AHCCCS)	◯ Other

7. ◯ PLEASE SEND ME A COPY OF THE RESULTS

Thank you for completing this survey.

Survey Instrument (2012-2014)

Since 1991, the Arizona Physician Survey has, with the cooperation of physicians, their licensing boards and their professional associations, collected important information on the physician workforce. The current survey focuses on the use of medical records that are electronic (often called electronic medical records (EMRs) or electronic health records (EHRs)). Your participation is encouraged by the *Arizona Medical Association* and the *Arizona Osteopathic Medical Association*. Your answers are confidential and results are published only in aggregate form.

1. Which one of the following **best** describes your employment status ?(check one)
    a. Actively employed in Arizona in direct patient care ☐Yes ☐No {if yes ask:}
        i. I usually treat _____patients in a typical work week.
        ii. I usually work _____hours/day, _____days/week, and _____weeks/year.
    b. Actively employed in Arizona but not in direct patient care ☐Yes ☐No
    c. Actively employed outside of Arizona ☐Yes ☐No {*skip to separate survey questions*}
    d. Semi-retired/on leave ☐Yes ☐No *{go to end fill all intermediate questions with DNA}*
    e. Retired ☐Yes ☐No {go to end fill all intermediate questions with DNA}

2. Which one of the following **best** describes the organization in which you practice
    a. a physician owned solo practice ☐Yes ☐No *{if yes, auto fill 3a=yes; skip to 4}*
    b. A physician owned group practice ☐Yes ☐No
    {if yes then ask}
        i. Approximately how many physicians are associated with this practice?
            1. 2-5 physicians ☐Yes ☐No
            2. 6-50 physicians ☐Yes ☐No
            3. 51-94 physicians ☐Yes ☐No
            4. 95 or more physicians ☐Yes ☐No
    c. A hospital or medical school physician group practice ☐Yes ☐No
    if yes then ask}
        i. Approximately how many physicians are associated with this practice?
            1. 2-5 physicians ☐Yes ☐No
            2. 6-50 physicians ☐Yes ☐No o
            3. 51-94 physicians ☐Yes ☐No
            4. 95 or more physicians ☐Yes ☐No
    d. A community or rural health center(e.g. federally qualified CHC) ☐Yes ☐No
    {if yes then ask}
        i. Approximately how many physicians are associated with this center?
            1. 2-5 physicians ☐Yes ☐No
            2. 6-50 physicians ☐Yes ☐No
            3. 51-94 physicians ☐Yes ☐No
            4. 95 or more physicians ☐Yes ☐No
    e. Federal Government hospital or clinic (e.g. VA, IHS etc.) ☐Yes ☐No { *if yes skip to 5}*
    f. State or County hospital system ☐Yes ☐No *if yes skip to 4}*
    g. Private Hospital system ☐Yes ☐No

h. Private Outpatient Facility not part of a hospital system (e.g. Urgent Care center, insurer owned clinic, etc.) ☐Yes ☐No
{if yes then ask}
    i. Approximately how many physicians are associated with this facility?
        1. 2-5 physicians ☐Yes ☐No
        2. 6-50 physicians ☐Yes ☐No
        3. 51-94 physicians ☐Yes ☐No
        4. 95 or more physicians ☐ Yes ☐ No
i. Medical school ,university, research center ☐ Yes ☐ No
j. Public or private health Insurer, pharmaceutical company or other health related organization that does not provide care. ☐ Yes ☐ No *{if yes then skip to end; auto code intermediate questions as DNA}*
k. Other_____

3. Which of the following **best** describes your primary role in the organization in which you practice? *{(if 2d=yes or 2e=yes or 2f=yes) then set 3b=yes)}*
    a. Owner , partner, part-owner ☐ Yes ☐ No
    {if yes then ask}
        i. Approximately how many of each of the following providers are associated with this practice?
            1. _____ PAs
            2. _____RNs
            3. _____NPs
            4. _____Other Licensed Health Care Providers
    b. Employee/contractor/locum tenens ☐ Yes ☐ No
    c. Faculty ☐ Yes ☐ No
    d. Student (include residents, fellows etc.) ☐ Yes ☐ No

4. Which of the following are available at your practice location? (check all that apply)
    a. Email ☐ Yes ☐ No
    b. Internet (FTP etc.) ☐ Yes ☐ No
    c. Fax ☐ Yes ☐ No
    d. US Mail ☐ Yes ☐ No
    e. Don't know ☐ Yes ☐ No

5. How does the organization in which you practice submit bills/claims to insurers or other payers? (check all that apply)
    a. Email ☐ Yes ☐ No
    b. Internet (FTP etc.) ☐ Yes ☐ No
    c. Fax ☐ Yes ☐ No
    d. US Mail ☐ Yes ☐ No
    e. Don't know ☐ Yes ☐ No

6. How does the organization in which you practice store its medical records? (Check all that apply);
    a. Paper ☐ Yes ☐ No
    b. Scanned images of paper records ☐ Yes ☐ No
    c. Electronic files (an electronic version of a patient's medical history, including progress notes, problems, medications and other information used in treatment.) ☐ Yes ☐ No *{if yes then ask}*
        i. What is the name of your EMR/EHR system

Allscripts ☐ Yes ☐ No
Amazing Charts ☐ Yes ☐ No
Aprima ☐ Yes ☐ No
Athena Health ☐ Yes ☐ No
GE Centricity ☐ Yes ☐ No
Cerner ☐ Yes ☐ No
CHARTCARE ☐ Yes ☐ No
eClinicalWorks ☐ Yes ☐ No
Epic ☐ Yes ☐ No
eMDs ☐ Yes ☐ No
Epic ☐ Yes ☐ No
GE ☐ Yes ☐ No
Greenway Medical ☐ Yes ☐ No
HealthPort ☐ Yes ☐ No
McKesson ☐ Yes ☐ No
Meditech ☐ Yes ☐ No
NextGen ☐ Yes ☐ No
Noteworthy ☐ Yes ☐ No
Office Practic.com ☐ Yes ☐ No
Sage ☐ Yes ☐ No
SOAP ware ☐ Yes ☐ No
Other_____ ☐ Yes ☐ No
Don't know ☐ Yes ☐ No

7. On a scale of 1 (awful) to 5 (outstanding), how would you rate your EMR/EHR system in terms of:
   a. Ease of use ☐1 ☐2 ☐3 ☐4 ☐5
   b. Effect on your productivity ☐1 ☐2 ☐3 ☐4 ☐5
   c. Effect on staff productivity ☐1 ☐2 ☐3 ☐4 ☐5
   d. Reliability ☐1 ☐2 ☐3 ☐4 ☐5
   e. Performance versus vendor's promises ☐1 ☐2 ☐3 ☐4 ☐5

8. *{if 6c=yes} then ask:* Does the EMR/EHR system include the following functions? (CHECK ALL THAT APPLY) *{if 6c ne yes then auto fill DNA and skip to 8}*

Functions	**Is the Function Included in the EMR?**	**Do You Use the Function?**	**Do you exchange this information using your EMR/EHR to organizations outside your practice?"**
Patient Care Summary	☐Yes ☐No ☐Don't Know {If yes then go to next row}	☐ Yes ☐ No	☐Yes ☐No ☐Don't Know
Prescriptions (e-prescribing)	☐ Yes ☐ No ☐ Don't Know {If yes then go to next row}	☐ Yes ☐ No	☐Yes ☐No ☐Don't Know
Lab Test Results	☐Yes ☐No ☐Don't Know {If yes then go to next row}	☐ Yes ☐ No	☐Yes ☐No ☐Don't Know
Reminders for Guideline Based Interventions	☐Yes ☐No ☐Don't Know {If yes then go to next row}	☐ Yes ☐ No	☐Yes ☐No ☐Don't Know
Public Health Reports: immunizations, notifiable diseases	☐Yes ☐No ☐Don't Know {If yes then go to next row}	☐ Yes ☐ No	☐Yes ☐No ☐Don't Know
Quality Metrics (HEDIS, AQA etc.)	☐Yes ☐No ☐Don't Know {If yes then go to next row}	☐ Yes ☐ No	☐Yes ☐No ☐Don't Know

9. {if 6c=yes and (3a=yes or 3b=yes or 3c=yesor 3d=yes) then ask}: Are you aware of the incentive payments from Medicare and Medicaid to physicians who adopt EMRs/EHRs that meet **meaningful use criteria**?
    a. ☐ Yes ☐ No {if no skip to c}
    b. Have you applied OR are you planning to apply for the meaningful use incentives offered by Medicare and Medicaid? Medicare ☐Yes ☐No Medicaid ☐Yes ☐ No {if both No *skip to c}*
    c. Is your EMR/EHR vendor helping you to meet the **meaningful use criteria**?
        i. ☐ *Yes*
        ii. ☐ *No*
    d. Are you aware of the support offered by the Arizona Regional Extension Center?
        i. ☐ *Yes :workin*g with them {go to wind up question}
        ii. ☐ Yes but not working with them at present
        iii. ☐ No

        If you would like more information on the Arizona Regional Extension Center you can contact them at 602-688-7200 or *her@azhec.org* Or
        Would you like us to submit a request with your name and address but not reveal any other information included on this survey? ☐ Yes ☐ No

{ if (3a=yes then code 9ai=yes skip to wind up question); else ask:

10. Are you the person who would decide to purchase an EMR/EHR system?
    a. Sole decision maker ☐Yes ☐No
    b. Shared decision ☐Yes ☐No
    c. Decided by others ☐Yes ☐No
11. Are there plans for installing an EMR/EHR system in the future?
    a. ☐No
    b. ☐Don't know
    c. ☐Yes, in the next ☐6 months ☐7-12 months ☐more than 12 months
        i. {if yes}What system are you planning to install?

Allscripts ☐Yes ☐No	Greenway Medical ☐Yes ☐No
Amazing Charts ☐Yes ☐No	HealthPort ☐Yes ☐No
Aprima ☐Yes ☐No	McKesson ☐Yes ☐No
Athena Health ☐Yes ☐No	Meditech ☐Yes ☐No
Centricity ☐Yes ☐No	NextGen ☐Yes ☐No
Cerner ☐Yes ☐No	Noteworthy ☐Yes ☐No
CHARTCARE ☐Yes ☐No	Office Practic.com ☐Yes ☐No
eClinicalWorks ☐Yes ☐No	Sage ☐Yes ☐No
Epic ☐Yes ☐No	SOAP ware ☐Yes ☐No
eMDs ☐Yes ☐No	Other_____
GE Centricity ☐Yes ☐No	Don't Know ☐Yes ☐No

Thank you very much for providing a physician's evaluation of the use and value of electronic health records. Any additional comments are most welcome:

_____

SURVEY QUESTIONS FOR PHYSICIANS WITH AZ LICENSES WHO DO NOT PRACTICE IN ARIZONA

1. When did you leave Arizona?
    a. ☐ I left Arizona in _____,(year) or
    b. ☐ I have never practiced in Arizona

    c. ☐I serve patients in multiple states via Telemedicine
    d. ☐ Travel among states at different times of year
        The states in which I serve patients
        i. ☐include Arizona
        ii. ☐ do not include Arizona

Please rate the importance of *each of the following* as an influence on your choice to practice in your current country/state/territory rather than Arizona

Code #	Factor	Important	Not Important	Does Not Apply
1.	To be Closer to Family/Friends……..	☐	☐	☐
2.	Better Elementary/Secondary Schools	☐	☐	☐No school age kids
3.	Better Climate	☐	☐	☐
4.	Better salary/compensation/career opportunity	☐	☐	☐
5.	Unable to find a position in my field in Arizona	☐	☐	☐
6.	Lower Medical Malpractice Premiums	☐	☐	☐
7.	Career Opportunity for Spouse/Partner	☐	☐	☐No spouse/partner
8.	Better Lifestyle	☐	☐	☐
9.	Better Political Climate	☐	☐	☐
10.	Transferred by the Military	☐	☐	☐
11.	To continue training (residency, fellowship)	☐	☐	☐
14.	To Practice near my Residency location	☐	☐	☐
15.	Availability of Part-time Positions/Locum Tenens	☐	☐	☐
16.	Fulfill loan repayment obligation	☐	☐	☐
17.	If other important factor, specify_____			

_____

2. Are you planning to return to practice in Arizona?
    ☐Yes ☐No
    {if yes then ask}
    a. When do you plan to return?
        i. ☐Upon completion of postgraduate training
        ii. ☐In the next 5 years.
        iii. ☐Other
3. Which one of the following **best** describes the organization in which you practice?
    a. A physician owned solo practice ☐Yes ☐No *{if yes, auto fill 3a=yes; skip to 4};*
    b. A physician owned group practice ☐Yes ☐No
    {if yes then ask}
        i. Approximately how many physicians are associated with this group?
            1. 2-5 physicians ☐Yes ☐No
            2. 6-50 physicians ☐Yes ☐No
            3. 51-94 physicians ☐Yes ☐No
            4. 95 or more physicians ☐Yes ☐No
    c. A hospital or medical school physician group practice ☐Yes ☐No
    {if yes then ask}
        i. Approximately how many physicians are associated with this center?

1. 2-5 physicians ☐Yes ☐No
2. 6-50 physicians ☐Yes ☐No
3. 51-94 physicians ☐Yes ☐No
4. 95 or more physicians ☐Yes ☐No

d. A community or rural health center(e.g. federally qualified CHC) ☐Yes ☐No
{if yes then ask}
   i. Approximately how many physicians are associated with this center?
      1. 2-5 physicians ☐Yes ☐No
      2. 6-50 physicians ☐Yes ☐No
      3. 51-94 physicians ☐Yes ☐No
      4. 95 or more physicians ☐Yes ☐No

e. Federal Government hospital or clinic (e.g. VA, HIS etc.) ☐Yes ☐No { *if yes skip to 5}*
f. State or County hospital system ☐Yes ☐No {*if yes skip to 4}*
g. Private Hospital system ☐Yes ☐No
h. Private Outpatient Facility not part of a hospital system (e.g. Urgent Care center, insurer owned clinic,) ☐Yes ☐No
{if yes then ask}
   i. Approximately how many physicians are associated with this facility?
      1. 2-5 physicians ☐Yes ☐No
      2. 6-50 physicians ☐Yes ☐No
      3. 51-94 physicians ☐Yes ☐No
      4. 95 or more physicians ☐Yes ☐No

i. Medical school ,university, research center ☐Yes ☐No
j. Public or private health Insurer, pharmaceutical company or other health related organization that does not provide care. ☐Yes ☐No *{if yes then skip to end; auto code intermediate q's as DNA}*
k. Other_____ ☐Yes ☐No

4. Which of the following **best** describes your primary role in the organization in which you practice? *{(if 5d=yes or 5e=yes or 5f=yes) then set 6a=yes)}*
   a. Owner, partner, part-owner ☐Yes ☐No
   {if yes then ask}
      i. Approximately how many of each of the following providers are associated with this practice:
         1. ____PAs
         2. ____RNs
         3. ____NPs
         4. ____Other licensed health care providers
      ii. Employee/contractor/locum tenens ☐Yes ☐No
      iii. Faculty ☐Yes ☐No
      iv. Student (include residents, fellows etc.) ☐Yes ☐No

5. Which of the following are available at your practice location? (check all that apply)
   a. Email ☐Yes ☐No
   b. Internet (FTP etc.) ☐Yes ☐No
   c. Fax ☐Yes ☐No
   d. US Mail ☐Yes ☐No
   e. Don't Know ☐Yes ☐No

6. How does the organization in which you practice submit bills/claims to insurers or other payers? (check all that apply)
   a. Email ☐Yes ☐No
   b. Internet (FTP etc.) ☐Yes ☐No
   c. Fax ☐Yes ☐No
   d. US Mail ☐Yes ☐No
   e. Don't Know ☐Yes ☐No

7. How does the organization in which you practice store its medical records? (Check all that apply);

a. Paper ☐Yes ☐No
b. Scanned images of paper records ☐Yes ☐No
c. Electronic files (an electronic version of a patient's medical history, including progress notes, problems, medications and other information used in treatment.) ☐Yes ☐No
{if yes then ask}
    i. What is the name of your EMR/EHR system*?*
        1. Allscripts ☐Yes ☐ No
        2. Amazing Charts ☐ Yes ☐No
        3. Aprima ☐Yes ☐ No
        4. Athena Health ☐ Yes ☐No
        5. Centricity ☐Yes ☐No
        6. Cerner ☐Yes ☐ No
        7. CHARTCARE ☐ Yes ☐No
        8. eClinicalWorks ☐ Yes ☐No
        9. Epic ☐Yes ☐No
        10. eMDs ☐Yes ☐No
        11. GE ☐Yes ☐No
        12. Greenway Medical ☐Yes ☐No
        13. HealthPort ☐Yes ☐No
        14. McKesson ☐Yes ☐No
        15. Meditech ☐Yes ☐ No
        16. NextGen ☐Yes ☐ No
        17. Noteworthy ☐Yes ☐No
        18. Office Practic.com ☐Yes ☐No
        19. Sage ☐Yes ☐No
        20. SOAP ware ☐Yes ☐No
        21. Other_____ _____ ☐Yes ☐ No
        22. Don't Know ☐Yes ☐No

8. On a scale of 1 (awful) to 5 (outstanding), how would you rate your EMR/HER system in terms of:
    a. Ease of use ☐1 ☐2 ☐3 ☐4 ☐5
    b. Effect on your productivity ☐1 ☐2 ☐3 ☐4 ☐5
    c. Effect on staff productivity ☐1 ☐2 ☐3 ☐4 ☐5
    d. Reliability ☐1 ☐2 ☐3 ☐4 ☐5
    e. Performance versus vendors promises ☐1 ☐2 ☐3 ☐4 ☐5

Thank you very much for providing valuable insights into physicians' choice of practice locations and the use and value of electronic health records. Any additional comments are most welcome:

_____

Appendix D: New Survey Instrument 2014-2016

Since 1991, the Arizona Physician Survey has, with the cooperation of physicians, their licensing boards and their professional associations, collected important information on the physician workforce. The current survey focuses on the use of medical records that are electronic (often called electronic medical records (EMRs) or electronic health records (EHRs). Your participation is encouraged by the ***Arizona Medical Association*** and the ***Arizona Osteopathic Medical Association***. The survey includes an opportunity for you to express your opinions on the benefits and limitations of EMRs. Your answers are confidential and results are published only in aggregate form.

1. Which one of the following **best** describes your employment status? **(check one)**

a) Actively employed in Arizona in direct patient care ☐ *{if checked ask:}*
   i. I usually treat _____patients in a typical work week.
   ii. I usually work _____hours/day, _____days/week, and _____weeks/year.

b) Provide telemedicine services to Arizona patients ☐

c) Actively employed in Arizona but not in direct patient care ☐

d) Actively employed outside of Arizona ☐ *{if checked skip to separate survey questions for out of state physicians}*

e) Retired/ Semi-retired/on leave ☐ *{if checked go to end fill all intermediate questions with DNA}*

2. Have you joined a different organization since your last licensing application?
☐ Yes ☐ No *{if yes , go to 3}*

3. Which one of the following **best** describes the organization in which you practice

a) ☐A physician owned solo practice *{if checked, skip to 4 d);*

b) ☐A physician owned group practice
   i. Approximately how many physicians are associated with this organization? [check one]
      i. 2-5 physicians ☐
      ii. 6-50 physicians ☐
      iii. 51-94 physicians ☐
      iv. 95 or more physicians ☐

c) ☐A hospital or medical school physician group practice ☐
   i. Approximately how many physicians are associated with this organization? [check one]
      i. 2-5 physicians ☐
      ii. 6-50 physicians ☐
      iii. 51-94 physician ☐
      iv. 95 or more physicians ☐

d) ☐A community or rural health center(e.g. federally qualified CHC) ☐
   i. Approximately how many physicians are associated with this organization? [check one]
      i. 2-5 physicians ☐
      ii. 6-50 physicians ☐
      iii. 51-94 physician ☐
      iv. 95 or more physicians ☐

e) ☐Private Outpatient Facility not part of a hospital system (e.g. Urgent Care center, insurer owned clinic, etc.)
   i. Approximately how many physicians are associated with this organization? [check one]
      i. 2-5 physicians ☐
      ii. 6-50 physicians ☐
      iii. 51-94 physician ☐
      iv. 95 or more physicians ☐

{ if 3f or 3g or 3h or 3i or 3j checked, then , check4 a) and ask 6}

f) ☐Federal Government hospital or clinic (e.g. VA, IHS)
g) ☐ City, State or County clinic or hospital
h) ☐ Private For Profit Hospital system
i) ☐ Private Not for Profit Hospital System
j) ☐ Public or private health Insurer, pharmaceutical company or other health related organization that does **not** provide care. ☐ Medical school ,university, research center
k) ☐ Independent Consultant
l) ☐ Public Health Agency or Department *{if checked then check 4 a) & skip to 17; auto code intermediate questions as DNA}*
m) ☐ Other_____

4. Which of the following **best** describes your primary role in the organization in which you practice? **Please Check Only One Box**
a) ☐Employee/contractor/locum tenens
b) ☐Faculty
c) ☐Student (include residents, fellows etc.)
d) ☐Owner , partner, partner, part-owner *{if checked then ask}*

5. Are you the person who decides or would decide to purchase or replace an EMR/EHR system?
a) ☐Sole decision maker
b) ☐Shared decision
c) ☐Decided by others

6. How does the organization in which you practice store its medical records**? (Please answer Yes or No to <u>each part</u> a,b,c)**

a) Paper ☐ Yes ☐ No

b) Scanned images of paper records ☐ Yes ☐ No

c) Electronic files (an electronic version of a patient's medical history, including progress notes, diagnosis, medications and other information used in treatment.)
☐ Yes ☐ No

{if 6 c) checked no, skip to 11 ;code 6 c)I, ii,, iii, iv, v and 7 (all parts)and 8 (all parts) as DNA ; if yes, continue}

i. What is the name of your current EMR/EHR system **Please check only one box**

1. ☐ ADP AdvancedMD
2. ☐ ALERT
3. ☐ Allscripts
4. ☐ AltaPoint
5. ☐ Amazing Charts
6. ☐ Aprima
7. ☐ Artemis/digiChart
8. ☐ Athena Health
9. ☐ Avatar
10. ☐ Cerner
11. ☐ Chart Logic
12. ☐ Chart Source
13. ☐ ClaimTrak
14. ☐ eClinicalWorks
15. ☐ Empower
16. ☐ Epic
17. ☐ eMDs
18. ☐ GE Centricity
19. ☐ Glo Stream
20. ☐ gMed/gGastro
21. ☐ Greenway Medical
22. ☐ HealthPort
23. ☐ MacPractice
24. ☐ McKesson
25. ☐ Medhost/HMS HealthTech/ PatientLogic
26. ☐ Meditech
27. ☐ NextGen
28. ☐ Noteworthy
29. ☐ Office Ally
30. ☐ Office Practice
31. ☐ Optum/CareTracker
32. ☐ Picis
33. ☐ Practice Fusion
34. ☐ Sage
35. ☐ SOAP ware
36. ☐ Sunrise
37. ☐ Other_____ (**please insert name**)
38. ☐ Don't Know

ii. On a scale of 1 (awful) to 5 (outstanding), how would you rate your EMR/EHR system in terms of:

a.	Ease of use	☐1	☐2	☐3	☐4	☐5
b.	Effect on your productivity	☐1	☐2	☐3	☐4	☐5
c.	Effect on staff productivity	☐1	☐2	☐3	☐4	☐5
d.	Effect on patient satisfaction	☐1	☐2	☐3	☐4	☐5
e.	Reliability	☐1	☐2	☐3	☐4	☐5
f.	Performance versus vendor's promises	☐1	☐2	☐3	☐4	☐5

iii. Do you have a scribe enter the data while you examine and communicate with the patient? ☐ Yes ☐ No

iv. In approximately what year did you first use your current electronic medical record?

☐Before 2005 ☐2009 ☐2013

☐2006 ☐2010 ☐2014

☐2007 ☐2011

☐2008 ☐2012

1. Was this a replacement for a different brand of electronic medical record? ☐ Yes {go to a} ☐ No ☐ Don't Know

---

7. Does your EMR/EHR system include the following functions? **(CHECK ALL THAT APPLY)**

Functions	**7 a) Is the Function Included in the EMR?**	**7 b) Do You Use the Function?**	**7 c) Do you exchange this information using your EMR/EHR to organizations outside your practice or the hospital system in which you practice?"**
i. Patient Care Summary	☐Yes ☐No ☐ Don't Know *{If ne yes set 7 b)i and 7 c) i equal No; then go to 7 a) ii else continue}*	☐ Yes ☐ No *{if No set 7 c) i to no and go to 7 a) ii}*	☐Yes ☐No ☐Don't Know *{if ne yes, go to 7 a) ii f yes then ask: A Health Information Exchange (HIE) an organization that provides for the electronic exchange of health information according to nationally recognized standards}* 7 c)-1: I exchange the information by ☐ email ☐ a health information exchange Other _____
ii. Prescriptions (e-prescribing)	☐ Yes ☐ No ☐ Don't Know *{If ne yes set 7 b)ii and 7 c) ii equal No then go to 7 a) iii else continue }*	☐ Yes ☐ No *{if No set 7 c) ii to no and go to 7 a) iii}*	☐Yes ☐No ☐Don't Know *{if ne yes, go to 7 a) iii if yes then ask : A Health Information Exchange (HIE) an organization that provides for the electronic exchange of health information according to nationally recognized standards}* 7 c)-2: I exchange the information by ☐ email ☐ a health information exchange Other _____
iii. Lab Test Results	☐Yes ☐No ☐ Don't Know *{If ne yes set 7 b)iii and 7 c) iii equal No; then go to 7a) iv else continue }*	☐ Yes ☐ No *{if No set 7 c) iii to no and go to 7 a) iv}*	☐Yes ☐No ☐Don't Know *{if ne yes, go to 7 a) iv. if yes then ask : A Health Information Exchange (HIE) an organization that provides for the electronic exchange of health information according to nationally recognized standards}* 7 c)-3: I exchange the information by ☐

			email ☐ a health information exchange Other _____
iv. Reminders for Guideline Based Interventions	☐Yes ☐No ☐ Don't Know *{If ne yes set 7 b)ii and 7 c) iv equal No then go to 7 a) v else continue }*	☐ Yes ☐ No *{if No set 7 c) iv to no and go to 7 a) v}*	☐Yes ☐No ☐Don't Know *{if ne yes, go to 7 a) v. if yes then ask: A Health Information Exchange (HIE) an organization that provides for the electronic exchange of health information according to nationally recognized standards }* 7 c)-4 : I exchange the information by ☐ email ☐ a health information exchange Other _____
v. Public Health Reports: immunizations, notifiable diseases	☐Yes ☐No ☐ Don't Know *{If ne yes set 7 b)v and 7 c) v equal No; then go to 8 else continue }*	☐ Yes ☐ No *{if No set 7 c) v to no and go to 8}*	☐Yes ☐No ☐Don't Know *{if ne yes, go to 8 if yes then ask: A Health Information Exchange (HIE) an organization that provides for the electronic exchange of health information according to nationally recognized standards}* 7 c)-5: I exchange the information by ☐ email ☐ a health information exchange Other _____

8. In your opinion, what are the most important obstacles to exchanging clinical information with other health care providers electronically (not fax)? (check all that apply)

a) ☐ Lack of a health information exchange
b) ☐ Concerns with maintaining patient confidentiality
c) ☐ Lack of technological support for problems
d) ☐ Cost
e) ☐ Other_____

☐ No

{Note: the next question is the first question to be answered by physicians without EMRs after they answer question #6)

9. Does the organization in which you practice plan to install an EMR/EHR system?

a) ☐ No *{go to 15}*
b) ☐ Yes, in the next:
   i. ☐6 months ☐7-12 months ☐more than 12 months ☐Don't know the timing
   ii. What systems are you considering (check all that apply)?

1. ☐ ADP AdvancedMD
2. ☐ ALERT
3. ☐ Allscripts
4. ☐ AltaPoint
5. ☐ Amazing Charts
6. ☐ Aprima
7. ☐ Artemis/digiChart
8. ☐ Athena Health
9. ☐ Avatar
10. ☐ Cerner
11. ☐ Chart Logic
12. ☐ Chart Source
13. ☐ ClaimTrak
14. ☐ eClinicalWorks
15. ☐ Empower
16. ☐ Epic
17. ☐ eMDs
18. ☐ GE Centricity
19. ☐ Glo Stream
20. ☐ gMed/gGastro
21. ☐ Greenway Medical
22. ☐ HealthPort
23. ☐ MacPractice
24. ☐ McKesson
25. ☐ Medhost/HMS HealthTech/ PatientLogic
26. ☐ Meditech
27. ☐ NextGen
28. ☐ Noteworthy
29. ☐ Office Ally
30. ☐ Office Practice
31. ☐ Optum/CareTracker
32. ☐ Picis
33. ☐ Practice Fusion
34. ☐ Sage
35. ☐ SOAP ware
36. ☐ Sunrise
37. ☐ Other_____ (**please insert name**)
38. ☐ Don't Know

10. Which of the following factors influenced your practice's decision to acquire an EHR? **Check all that apply**.

a) ☐ Lower costs for implementation
b) ☐ Medicare based incentives
c) ☐ Medicaid based incentives
d) ☐ Clear direction on market leading vendors
e) ☐ Easily customizable systems to fit our needs
f) ☐ Cost effective access to EMR training
g) ☐ Ease of integration with our legacy systems
h) ☐ Low learning curve
i) ☐ Agreed upon and published industry standards for EMRs
j) ☐ Confidence in security and privacy of the system
k) ☐ Access to technical resources to support the system
l) ☐ Other (please specify) _____

11. In what ways do you use information from **EMRs**?

a. ☐ Population health management {if checked ask i)
   i. Do you have a separate vendor for population management
b. ☐ Tracking contagious diseases/infections
c. ☐ Outreach to patients based on analysis of EMR data
d. ☐ Evaluating appropriate utilization of care
e. ☐ Analyzing costs or cost effectiveness of care
f. ☐ Post market analysis of side effects of pharmaceuticals
g. ☐ Other_____

12. In what ways do you use information from **Claims Data**?

h. ☐ Population health management
i. ☐ Tracking contagious diseases/infections
j. ☐ Outreach to patients based on analysis of claims data
k. ☐ Evaluating appropriate utilization of care
l. ☐ Analyzing costs or cost effectiveness of care
m. ☐ Post market analysis of side effects of pharmaceuticals
n. ☐ Other_____

13. Please enter any comments that you would like to contribute.

Thank you very much for helping to create an accurate description of how practicing physicians use and rank electronic medical records.

THIS SECTION APPLIES TO PHYSICIANS WITH AZ LICENSES WHO DO NOT PRACTICE IN AZ

{Variable names should indicate that they apply to out of state physicians}

1. When did you leave Arizona?
   a. ☐ I left Arizona in _____,(year) or
   b. ☐ I have never practiced in Arizona

2. I serve patients in multiple states ☐Yes (if yes, check all that apply) ☐No (go to 3)
   a. ☐Telemedicine
   b. ☐Travel among states at different times of year
   c. The states in which I serve patients
      i. ☐include Arizona
      ii. ☐ do not include Arizona

3. Please rate the importance of *each of the following* as an influence on your choice to practice in your current country/state/territory rather than Arizona

		Important	Not Important	Not Applicable
a.	To be Closer to Family/Friends……..	☐	☐	☐
b.	Better Elementary/Secondary Schools	☐	☐	☐
c.	Better Climate	☐	☐	☐
d.	Better salary/compensation/career opportunity	☐	☐	☐
e.	Unable to find a position in my field in Arizona	☐	☐	☐
f.	Lower Medical Malpractice Premiums	☐	☐	☐
g.	Career Opportunity for Spouse/Partner	☐	☐	☐
h.	Better Lifestyle	☐	☐	☐
i.	Better Political Climate	☐	☐	☐
j.	Transferred by the Military	☐	☐	☐
k.	To continue training (residency, fellowship)	☐	☐	☐
l.	To Practice near my Residency location	☐	☐	☐
m.	Availability of Part-time Positions/Locum Tenens	☐	☐	☐
n.	Fulfill loan repayment obligation	☐	☐	☐

o. If other important factor,
specify_____

4. Which of the influences that you checked in #3 was the most important reason for practicing outside of Arizona? (please check only one)

   a. ☐ To be Closer to Family/Friends
   b. ☐ . Better Elementary/Secondary Schools
   c. ☐ . Better Climate
   d. ☐ . Better salary/compensation/career opportunity
   e. ☐ Unable to find a position in my field in Arizona
   f. ☐ . Lower Medical Malpractice Premiums
   g. ☐ . Career Opportunity for Spouse/Partner
   h. ☐ . Better Lifestyle
   i. ☐ . Better Political Climate
   j. ☐ . Transferred by the Military
   k. ☐ . To continue training (residency, fellowship)
   l. ☐ . To Practice near my Residency location
   m. ☐ . Availability of Part-time Positions/Locum Tenens
   n. ☐ . Fulfill loan repayment obligation
   o. ☐ Other important factor

5. Are you planning to return to practice in Arizona?
   a. ☐ Definitely yes
      i. When do you plan to return?
         1. ☐ Upon completion of postgraduate training
         2. ☐ In the next 5 years.
         3. ☐ Other(SPECIFY)_____
   b. ☐ Maybe
   c. ☐ Definitely no

6. In your opinion, what changes would make Arizona more attractive to physicians as a place in which to practice?

_____

Appendix E: Comparison of Respondents to Non-Respondents by Renewal Period, 2007-2011

Characteristic	*2009-2011*					*2007-2009*				
	Respondents N = 12,181		*Non-Respondents N = 3,607*		*P-Value*	*Respondents N =6,777*		*Non-Respondents N =6,594*		*P-Value*
Gender					N.S.					<0.05
Female	3,325	28.3%	932	26.4%		1,791	27.3%	1,640	25.9%	
Male	8,418	71.7%	2,595	73.6%		4,769	72.7%	4,689	74.1%	
Total	11,743	100.0%	3,527	100.0%		6,560	100.0%	6,329	100.0%	
Age Group										
25-34	749	6.2%	372	10.3%	<0.01	438	6.5%	758	11.5%	<0.01
35-44	3,682	30.2%	840	23.3%	<0.01	1,976	29.2%	2,024	30.7%	<0.01
45-54	3,422	28.1%	720	20.0%	<0.01	2,012	29.7%	1,855	28.1%	<0.05
55-64	2,873	23.6%	758	21.0%	<0.01	1,590	23.5%	1,328	20.1%	
65+	1,455	11.9%	916	25.4%		758	11.2%	627	9.5%	
Total	12,181	100.0%	3,606	100.0%		6,774	100.0%	6,592	100.0%	
Specialty					<0.01					<0.01
Primary Care	5,753	47.3%	1,566	43.7%		2,945	43.6%	2,501	38.2%	
Specialty Care	6,401	52.7%	2,016	56.3%		3,812	56.4%	4,053	61.8%	
Total	12,154	100.0%	3,582	100.0%		6,757	100.0%	6,554	100.0%	
Location					N.S.					N.S.
Maricopa County	7,990	65.6%	2,365	65.6%		4,371	64.5%	4,421	67.0%	
Pima County	2,416	19.8%	757	21.0%		1,376	20.3%	1,250	19.0%	
All Other Counties	1,775	14.6%	485	13.5%		1,030	15.2%	923	14.0%	
Total	12,181	100.0%	3,607	100.0%		6,777	100.0%	6,594	100.0%	

Source: AMB, ABOE Administrative/Survey Data, 2007-2009; 2009–2011.

Note: Percentages are calculated on numbers of cases with non-missing values. A p-value of .05 or less implies only a 5% probability of declaring the relationship significant when in fact it is not. N.S. =no significant difference.

Appendix F: EMR Rankings and Meaningful Use Results by Vendor for All Physicians and AHCCCS Physicians

The results in Tables F - 1 through Table F - Table F - 36 summarize the scores for each of the five criteria and the mean score that characterizes the overall ranking of each EMR package. Individual results for vendors with less than 10 users are excluded but the information is included in calculating the total scores and total number of respondents.

Table F - 1. Summary of EMR Ranking Weighted Means by Vendor (N = 7,553)

Vendor	*Total Weighted Average Rank*	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*	*Total Respondents*
ADP AdvancedMD	3.4	3.5	3.2	3.2	3.8	3.3	28
ALERT	1.5	1.6	1.3	1.4	1.6	1.6	10
Allscripts	3	3	2.7	2.9	3.3	2.9	833
AltaPoint	2.9	3.2	2.9	3.1	2.9	2.5	1411
Amazing Charts	3.7	3.8	3.3	3.5	3.8	3.8	79
Aprima	3.2	3.3	3.1	3.3	3.4	3	65
ARIA	3.4	3.3	3.4		3.4	3	19
Athena Health	3.4	3.6	3	3.3	3.9	3.3	198
Avatar	2.3	2.3	2.3	2.2	2.7	2.2	10
Cerner	3	3.1	2.8	2.8	3.4	2.9	1,276
Chart Logic	3.5	3.7	3.4	3.7	3.5	3.2	29
Chart Source	2.8	2.8	2.5	2.6	3.1	3	12
ClaimTrak	2.5	2.6	2.6	2.6	2.4	2.2	38
digiChart	4	4.14.3	3.9	4.1	4.2	4.1	
DocuTAB	3.8	4.1	3.8	3.8	3.6	3.6	12
Don't Know	3.1	3.2	3	3	3.3	3	589
EBIO	3.1	3.5	2.6	2.9	3.6	3.1	10
eClinicalWorks	3.8	3.9	3.5	3.7	3.9	3.7	437
EMA Modernizing	3.8	4	3.4	3.6	3.9	3.7	16
e-MDs	3.6	3.8	3.4	3.5	3.8	3.5	123
Emergisoft	2.2	1.9	2.3	2.2	2.7	1.9	10
Empower	3.8	4	4.1	3.9	3.3	3.4	16
EncounterPro	3.3	3.3	3.3	3.4	3.5	2.8	10

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 2. Summary of EMR Ranking Weighted Means by Vendor (N = 7,553) (cont.)

Vendor	*Total Weighted Average Rank*	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*	*Total Respondents*
Epic	3.3	3.4	3.1	3.1	3.7	3.2	600
GE Centricity	3.6	3.7	3.5	3.6	3.8	3.5	219
gloStream	3.7	3.9	3.9	4.1	3.8		15
gMed/gGastro	3.5	3.9	3.4	3.4	3.8	3.3	48
Greenway Medical	3.4	3.4	3.1	3.4	3.9	3.2	101
Health Fusion	3.3	3.4	2.5	2.8	3.7	3.5	12
IC-Chart	4.9	5	4.9	4.9	4.9	4.9	29
IKnowMed	3.3	3.3	2.9	3.6	3.7	3.1	12
Intelligent Medicine	3.6	3.9	3.3	3.6	3.9	3.3	10
MacPractice	3.6	3.7	3.2	3.4	4	3.5	27
McKesson	2.9	3	2.7	2.8	3.2	2.8	324
MD Plus	3.2	3.4	3.1	3.3	3.3	3.1	17
MEDHOST	3	3.1	2.8	2.8	3.3	2.9	33
Medinformatix	3.3	3.5	3.3	3.5	3.3	2.7	11
Medinotes	3.1	3.3	3	3	3.3	2.8	12
Meditech	2.8	2.8	2.6	2.6	3.2	2.8	115
Modernizing Medi	3.8	4.2	3.3	3.4	3.9	4	11
NexTech	3.8	3.9	3.5	3.6	4	3.9	29
NextGen	2.9	2.9	2.6	2.8	3.3	2.8	649
Noteworthy	3.5	3.5	3.5	3.5	3.7	3.3	35
Office Ally	3.7	3.8	3.5	3.8	3.7	3.6	21
Office Practicum	3.8	3.8	3.6	3.7	4	3.8	50
ONCO	4	4	3.8	3.9	4.4	3.8	11
OptumInsight	3.5	3.6	3.5	3.4	3.6	3.4	16
Other	3.3	3.5	3.2	3.3	3.6	3.3	278
Patient Now	3.8	4.2	3.9	4.1	3.8	2.9	10
Picis	3.1	3.6	3	2.6	3.6	3.1	21
Point N Click	4.1	4.6	3.5	3.6	4.7	4.1	14
Practice Fusion	3.7	3.9	3.3	3.4	3.9	3.9	136
Praxis	3.5	3.7	3.5	3.4	3.4	3.3	12

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 3. Summary of EMR Ranking Weighted Means by Vendor (N = 7,553) (cont.)

Vendor	*Total Weighted Average Rank*	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*	*Total Respondents*
PrognoCIS	3.4	3.5	3.3	3.5	3.6	3.4	11
Prorietary	4	4.2	4	3.8	4.2	3.8	11
Sage	3.2	3.4	3	3.3	3.5	3.1	224
SOAPware	3.7	3.9	3.6	3.6	3.9	3.6	34
SpringChart	3.7	4	3.7	3.8	3.5	3.4	13
Sunrise	3.6	3.6	3.7	3.6	3.8	3.5	21
Valant	3.3	3.2	2.9	3.1	3.9	3.6	10
VistA	3.4	3.6	3.1	2.9	3.9	3.3	15
Average	3.2	3.3	3	3.1	3.5	3.1	7,553

Source: AMB, ABOE Survey Data, 2012–2014.

The top ranked EMRs are *ICChart* with a rank of 4.9, followed by *DigiChart*, ranked at 4.2 and, *eClinicalWorks, gloStream* and *SOAPware*, each with a rank equal to 3.8. One reason for their high rankings is that *ICChart* received an outstanding (rank=5) and a 4.9 on all the other criteria. *eClinicalWorks* and *SOAPware* received a score of 4 on the ease of use criterion and also were ranked as a 4 on reliability. There were five other EMRs with overall scores of 3.6 - 3.7, sufficiently close to the top ranked three EMRs to be considered effectively the same ranking.

The lowest ranked EMR was *ClaimTrak* with a very narrow range of scores for each of the five criteria.

Table F - 4. Summary of EMR Ranking Weighted Means by Vendors for AHCCCS Physicians (N =6,081)

Vendor	*Total Weighted Average Rank*	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*	*Total Respondents*
ADP AdvancedMD	3.3	3.4	3.1	3	3.8	3.2	22
ALERT	1.1	1	1.1	1	1.2	1.2	7
Allscripts	3	3.1	2.8	2.9	3.3	2.9	793
AltaPoint	2.9	3.1	2.9	3.1	2.9	2.4	12
Amazing Charts	3.7	3.9	3.4	3.6	3.9	3.8	85
Aprima	3.2	3.3	3.1	3.2	3.4	3	65
ARIA	3.1	3.2	3	3.1	3.4	3	19
Athena Health	3.4	3.6	3	3.2	3.8	3.3	178
Avatar	2.3	2.3	2.3	2.2	2.7	2.2	10
Cerner	3	3.1	2.8	2.8	3.4	2.9	1,178
Chart Logic	3.5	3.6	3.4	3.6	3.5	3.2	28
Chart Source	2.4	2.1	2.1	2.3	2.7	2.6	7
CHARTCARE	2.9	3	2.5	3.5	2.5	3	2
ClaimTrak	2.5	2.7	2.6	2.7	2.5	2.2	46
digiChart	3.9	4	3.8	3.9	4	3.8	23
DocuTAB	3.7	4	3.6	3.7	3.5	3.5	11
EBIO	3.1	3.5	2.6	2.9	3.6	3.1	10
eClinicalWorks	3.8	3.9	3.5	3.7	4	3.7	385
EMA Modernizing	3.9	4.1	3.6	3.8	4.1	3.8	14
e-MDs	3.6	3.8	3.5	3.5	3.8	3.5	97
Emergisoft	2.2	1.9	2.3	2.2	2.7	1.9	10
Empower	3.8	4	4.1	3.9	3.3	3.4	16
EncounterPro	3.3	3.4	3.4	3.6	3.3	3	7
Epic	3.3	3.4	3.1	3.1	3.7	3.2	533
GE Centricity	3.6	3.7	3.5	3.6	3.8	3.5	199
gloStream	3.6	3.9	3.8	3.9	3.5	3.1	14
gMed/gGastro	3.5	3.9	3.4	3.4	3.8	3.3	46
Greenway Medical	3.4	3.4	3	3.3	3.9	3.2	89

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 5. Summary of EMR Ranking Weighted Means by Vendors for AHCCCS Physicians (N =6,081) (cont.)

Vendor	*Total Weighted Average Rank*	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*	*Total Respondents*
Health Fusion	3.3	3.4	2.5	2.8	3.7	3.5	12
HealthPort	4	4	4	4	4	4	1
IC-Chart	4.9	5	4.9	4.9	4.9	4.9	28
IKnowMed	3.3	3.4	3	3.4	3.8	3.1	10
Intelligent Medi	3.6	3.9	3.3	3.6	3.9	3.3	10
MacPractice	3.5	3.7	3.2	3.4	4	3.4	25
McKesson	2.8	2.9	2.7	2.7	3.1	2.7	285
MD Plus	3.1	3.3	3	3.2	3.1	2.9	15
MEDHOST	3.1	3.2	2.9	2.9	3.4	3	30
Medinformatix	3.1	3.4	3.1	3.1	3.1	2.3	8
Medinotes	2.8	3	2.7	2.7	3.1	2.4	10
Meditech	2.7	2.7	2.5	2.6	3.1	2.7	107
Modernizing Medi	3.7	4.2	3.3	3.3	3.8	3.8	5
NexTech	3.8	3.9	3.5	3.6	4.1	3.9	18
NextGen	2.9	2.9	2.6	2.7	3.3	2.8	593
Noteworthy	3.5	3.5	3.5	3.4	3.7	3.3	33
Office Ally	3.7	3.8	3.6	3.8	3.7	3.7	19
Office Practicum	3.8	3.9	3.5	3.7	4	3.8	48
ONCO	3.9	3.9	3.7	3.8	4.3	3.7	10
OptumInsight	3.5	3.7	3.5	3.4	3.6	3.5	14
Patient Now	3.8	4.2	3.9	4.1	3.8	2.9	9
Picis	3.1	3.6	3	2.6	3.6	3.1	21
Point N Click	4.4	4.7	4	4	5	4.3	6
Practice Fusion	3.7	3.9	3.4	3.4	3.9	3.9	117
Practice Partner	3.4	3.2	2.8	3.2	4.2	3.4	5
Praxis	3.1	3.3	3	3	3	3	6
PrognoCIS	3.4	3.5	3.3	3.5	3.6	3.4	11
Prorietary	4.1	4.2	4	4	4.4	4	5

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 6. Summary of EMR Ranking Weighted Means by Vendors for AHCCCS Physicians (N =6,081) (cont.)

Vendor	*Total Weighted Average Rank*	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*	*Total Respondents*
Sage	3.3	3.4	3	3.3	3.5	3.1	207
SOAPware	3.7	4	3.6	3.7	3.9	3.5	26
SpringChart	3.7	4.1	3.8	3.8	3.5	3.4	12
Sunrise	3.6	3.6	3.6	3.6	3.8	3.4	20
Valant	3.4	3.5	3.3	3.3	3.5	3.3	4
VistA	3.3	3.4	3.1	2.9	3.9	3.3	10
Don't Know	3.1	3.1	3	3	3.3	3	486
Other	3.4	3.5	3.2	3.2	3.6	3.2	541
Average	3.2	3.3	3.0	3.1	3.5	3.1	6,673

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 7. Summary of EMR Ranking Criteria by Vendor

Vendor	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*
ADP AdvancedMD	26	26	26	26	25
ALERT	9	8	8	8	8
Allscripts	768	769	765	767	754
AltaPoint	11	11	11	11	11
Amazing Charts	79	79	79	78	78
Aprima	65	65	65	65	65
ARIA	10	10	10	9	10
Athena Health	178	178	178	176	178
Avatar	9	9	9	9	9
Baby Steps	8	8	8	8	7
Cerner	1,136	1,137	1,133	1,134	1,104
Chart Logic	24	24	24	24	24
Chart Source	12	12	12	12	12
CHARTCARE	1	1	1	1	1
ChartMaxx	6	6	6	6	5
Claim Track	7	7	7	7	7

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 8. Summary of EMR Ranking Criteria by Vendor (cont.)

Vendor	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*
ClaimTrak	33	33	33	33	32
Computer Systems	1	1	1	1	1
CORE-AT	1	1	1	1	1
CPSI	3	3	3	3	3
digiChart	18	17	17	17	17
DocuTAB	9	9	8	9	8
EBIO	10	10	10	10	10
eClinicalWorks	407	405	403	405	401
e-MDs	114	114	114	114	113
Emergisoft	9	9	9	9	9
Empower	15	15	15	15	14
EncounterPro	10	10	10	10	10
Epic	530	528	524	526	519
GE Centricity	183	183	182	181	178
GEMMS	5	5	5	5	5
gloStream	12	12	12	12	12
gMed/gGastro	41	41	41	41	41
Greenway Medical	89	89	88	89	88
HealthPort	1	1	1	1	1
HealthTrio	1	1	1	1	1
IC-Chart	25	25	25	25	25
IKnowMed	12	12	12	12	12
Indian Health Se	2	2	2	2	2
JCLMyChart	1	1	1	1	1
MacPractice	24	24	24	23	24
McKesson	297	295	294	295	290
MD Plus	13	13	13	13	12
MEDHOST	31	31	29	31	31
Medinformatix	11	11	11	11	9
Medinotes	10	10	10	10	10
Meditech	102	102	102	101	99
Modernizing Medi	10	9	9	9	9

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 9. Summary of EMR Ranking Criteria by Vendor (cont.)

Vendor	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*
NexTech	26	26	26	26	26
NextGen	586	585	582	585	563
Noteworthy	34	34	34	34	34
Office Ally	19	19	19	19	19
Office Practicum	49	49	49	49	48
OmniMD	2	2	2	2	2
ONCO	9	9	9	9	9
OptumInsight	13	13	13	13	13
Patient Now	9	9	9	9	9
Picis	19	19	18	18	18
Point N Click	9	9	9	9	9
Practice Fusion	122	122	120	120	121
Practice Partner	6	6	6	6	6
PracticeStudio	1	1	1	1	1
Praxis	6	6	6	6	6
ProfileEMR	1	1	1	1	1
PrognoCIS	11	11	11	11	11
Prorietary	7	7	7	7	5
Pulse Complete E	1	1	1	1	1
Sage	208	207	207	207	202
Sequest	1	1	1	1	1
SOAPware	29	29	29	29	29
SpringChart	12	12	12	12	12
Success	5	5	5	5	5
Sunrise	19	19	19	19	18
SYSTOC	9	9	9	9	9
VistA	10	10	10	10	9
Waiting Room Sol	5	5	5	5	5
WoundExpert	4	4	4	4	4
Other	725	719	713	716	705
Don't Know	543	538	532	532	517
Total	6,879	6,859	6,821	6,832	6,704

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 10. Summary of EMR Ranking Criteria by Vendor for AHCCCS Physicians

Vendor	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*
ADP AdvancedMD	22	22	22	22	21
ALERT	7	7	6	6	6
Allscripts	792	793	789	789	774
AltaPoint	12	12	12	12	12
Amazing Charts	85	85	84	84	85
Aprima	65	65	65	65	65
ARIA	19	19	19	18	18
Athena Health	178	178	177	176	178
Avatar	10	10	10	10	10
Cerner	1,177	1,177	1,174	1,173	1,142
Chart Logic	28	28	28	28	28
Chart Source	7	7	7	7	7
CHARTCARE	2	2	2	2	2
ClaimTrak	46	46	46	46	45
digiChart	23	22	22	22	22
DocuTAB	11	11	11	11	10
EBIO	10	10	10	10	10
eClinicalWorks	385	383	381	383	380
EMA Modernizing	14	12	11	12	12
e-MDs	97	97	97	97	96
Emergisoft	10	10	10	10	10
Empower	16	16	16	16	15
EncounterPro	7	7	7	7	7
Epic	533	532	529	529	521
GE Centricity	199	199	198	196	194
gloStream	14	14	14	14	14
gMed/gGastro	46	46	46	46	46
Greenway Medical	89	89	88	89	88
Health Fusion	12	11	11	11	11
HealthPort	1	1	1	1	1
IC-Chart	28	28	28	28	28
IKnowMed	10	10	10	10	10

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 11. Summary of EMR Ranking Criteria by Vendor for AHCCCS Physicians (cont.)

Vendor	*Ease of Use*	*Doc Productivity*	*Staff Productivity*	*Reliability*	*Performance vs. Promise*
Intelligent Medi	10	10	10	10	10
MacPractice	25	25	25	24	25
McKesson	285	283	283	284	278
MD Plus	15	15	15	15	14
MEDHOST	30	30	28	30	29
Medinformatix	8	8	8	8	7
Medinotes	10	10	10	10	10
Meditech	107	107	107	106	103
Modernizing Medi	5	4	4	4	4
NexTech	18	18	18	18	18
NextGen	593	592	589	592	572
Noteworthy	33	33	33	33	33
Office Ally	19	19	19	19	19
Office Practicum	48	48	48	48	47
ONCO	10	10	10	10	10
OptumInsight	14	14	14	14	14
Patient Now	9	9	9	9	9
Picis	21	21	20	19	20
Point N Click	6	6	6	6	6
Practice Fusion	117	117	116	115	117
Practice Partner	5	5	5	5	5
Praxis	6	6	6	6	6
PrognoCIS	11	11	11	11	11
Prorietary	5	5	5	5	5
Sage	207	206	206	206	200
SOAPware	26	26	26	26	26
SpringChart	12	12	12	12	12
Sunrise	20	20	20	20	19
Valant	4	4	4	4	3
VistA	10	10	10	10	8
Don't Know	486	480	475	476	460
Other	541	538	534	534	525
Total	6,671	6,651	6,617	6,619	6,493

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 12. Are Vendors Helping Physicians Achieve Meaningful Use? - Results by Vendor (N = 4,069)

Vendor	*No*		*Yes*		*Total*
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*	*Total*
ADP AdvancedMD	7	36.8%	12	63.1%	19
ALERT	1	25.0%	3	75.0%	4
Allscripts	97	17.7%	449	82.2%	546
AltaPoint	2	20.0%	8	80.0%	10
Amazing Charts	19	30.1%	44	69.8%	63
Aprima	9	18.0%	41	82.0%	50
ARIA	2	22.2%	7	77.7%	9
Athena Health	10	7.0%	132	92.9%	142
Avatar	1	25.0%	3	75.0%	4
Baby Steps	0	0.0%	2	100.0%	2
Cerner	88	19.6%	360	80.3%	448
Chart Logic	0	0.0%	21	100.0%	21
Chart Source	1	100.0%	0	0.0%	1
Claim Track	1	100.0%	0	0.0%	1
ClaimTrak	2	20.0%	8	80.0%	10
CPSI	0	0.0%	1	100.0%	1
digiChart	4	26.6%	11	73.3%	15
DocuTAB	0	0.0%	1	100.0%	1
EBIO	0	0.0%	9	100.0%	9
eClinicalWorks	45	13.8%	280	86.1%	325
e-MDs	18	19.5%	74	80.4%	92
Emergisoft	0	0.0%	1	100.0%	1
Empower	0	0.0%	4	100.0%	4
EncounterPro	0	0.0%	5	100.0%	5
Epic	25	9.5%	238	90.4%	263
GE Centricity	8	6.5%	115	93.4%	123
GEMMS	1	16.6%	5	83.3%	6
gloStream	2	16.6%	10	83.3%	12
gMed/gGastro	6	15.3%	33	84.6%	39
Greenway Medical	15	17.6%	70	82.3%	85

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 6,883 physicians did not respond to the meaningful use question, and 3,709 physicians did not identify their EMR.

Table F - 13. Are Vendors Helping Physicians Achieve Meaningful Use? - Results by Vendor (N = 4,069) (cont.)

Vendor	*No*		*Yes*		*Total*
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*	*Total*
IC-Chart	4	17.3%	19	82.6%	23
IKnowMed	0	0.0%	9	100.0%	9
Indian Health Se	0	0.0%	1	100.0%	1
MacPractice	3	18.7%	13	81.2%	16
McKesson	40	23.6%	129	76.3%	169
MD Plus	2	22.2%	7	77.7%	9
MEDHOST	0	0.0%	6	100.0%	6
Medinformatix	2	28.5%	5	71.4%	7
Medinotes	1	33.3%	2	66.6%	3
Meditech	9	23.6%	29	76.3%	38
Modernizing Medi	1	16.6%	5	83.3%	6
NexTech	1	5.8%	16	94.1%	17
NextGen	60	13.9%	369	86.0%	429
Noteworthy	4	16.0%	21	84.0%	25
Office Ally	3	17.6%	14	82.3%	17
Office Practicum	1	3.0%	32	96.9%	33
OmniMD	0	0.0%	2	100.0%	2
ONCO	0	0.0%	9	100.0%	9
OptumInsight	0	0.0%	12	100.0%	12
Other	74	19.3%	308	80.6%	382
Patient Now	1	14.2%	6	85.7%	7
Picis	4	33.3%	8	66.6%	12
Practice Fusion	11	12.0%	80	87.9%	91
Practice Partner	3	60.0%	2	40.0%	5
Praxis	2	33.3%	4	66.6%	6
ProfileEMR	0	0.0%	1	100.0%	1
PrognoCIS	0	0.0%	10	100.0%	10
Prorietary	1	100.0%	0	0.0%	1
Pulse Complete E	0	0.0%	1	100.0%	1
Sage	18	10.2%	157	89.7%	175

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 6,883 physicians did not respond to the meaningful use question, and 3,709 physicians did not identify their EMR.

Table F - 14. Are Vendors Helping Physicians Achieve Meaningful Use? - Results by Vendor (N = 4,069) (cont.)

Vendor	*No*		*Yes*		*Total*
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*	*Total*
SOAPware	4	19.0%	17	80.9%	21
SpringChart	1	14.2%	6	85.7%	7
Success	0	0.0%	4	100.0%	4
Sunrise	1	12.5%	7	87.5%	8
VistA	2	33.3%	4	66.6%	6
Waiting Room Sol	0	0.0%	5	100.0%	5
WoundExpert	2	66.6%	1	33.3%	3
Total	619	15.9%	3,268	84.0%	3,887

Source: AMB, ABOE Survey Data, 2012–2014.

Note: Physicians practicing in government settings have been excluded from these results. 6,883 physicians did not respond to the meaningful use question, and 3,709 physicians did not identify their EMR.

Table F - 15. Are Vendors Helping AHCCCS Physicians Achieve Meaningful Use? - Results by Vendor (N = 3,881)

Vendor	*No*		*Yes*		*Total*
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*	
ADP AdvancedMD	7	36.80%	12	63.10%	19
ALERT	1	33.30%	2	66.60%	3
Allscripts	90	16.00%	471	83.90%	561
AltaPoint	2	18.10%	9	81.80%	11
Amazing Charts	19	26.70%	52	73.20%	71
Aprima	8	15.00%	45	84.90%	53
ARIA	4	22.20%	14	77.70%	18
Athena Health	8	5.70%	130	94.20%	138
Avatar	1	20.00%	4	80.00%	5
Cerner	96	21.10%	358	78.80%	454
Chart Logic	0	0.00%	23	100.00%	23
Chart Source	1	100.00%	0	0.00%	1
ClaimTrak	3	27.20%	8	72.70%	11

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 16. Are Vendors Helping AHCCCS Physicians Achieve Meaningful Use? - Results by Vendor (N = 3,881) (cont.)

Vendor	No		Yes		Total
	Number of Physicians	Percent	Number of Physicians	Percent	
digiChart	7	35.00%	13	65.00%	20
DocuTAB	0	0.00%	2	100.00%	2
EBIO	0	0.00%	9	100.00%	9
eClinicalWorks	41	13.10%	271	86.80%	312
EMA Modernizing	3	25.00%	9	75.00%	12
e-MDs	17	21.50%	62	78.40%	79
Emergisoft	0	0.00%	1	100.00%	1
Empower	0	0.00%	5	100.00%	5
EncounterPro	0	0.00%	4	100.00%	4
Epic	28	10.00%	252	90.00%	280
GE Centricity	11	8.40%	119	91.50%	130
gloStream	3	21.40%	11	78.50%	14
gMed/gGastro	6	13.90%	37	86.00%	43
Greenway Medical	11	12.60%	76	87.30%	87
Health Fusion	1	7.60%	12	92.30%	13
IC-Chart	4	15.30%	22	84.60%	26
IKnowMed	0	0.00%	7	100.00%	7
Intelligent Medi	1	11.10%	8	88.80%	9
MacPractice	3	17.60%	14	82.30%	17
McKesson	39	25.00%	117	75.00%	156
MD Plus	3	27.20%	8	72.70%	11
MEDHOST	0	0.00%	7	100.00%	7
Medinformatix	1	25.00%	3	75.00%	4
Medinotes	1	20.00%	4	80.00%	5
Meditech	11	28.20%	28	71.70%	39
Modernizing Medi	0	0.00%	4	100.00%	4
NexTech	1	8.30%	11	91.60%	12
NextGen	63	14.60%	368	85.30%	431
Noteworthy	4	16.00%	21	84.00%	25
Office Ally	4	21.00%	15	78.90%	19

Source: AMB, ABOE Survey Data, 2012–2014.

Table F - 17. Are Vendors Helping AHCCCS Physicians Achieve Meaningful Use? - Results by Vendor (N = 3,881) (cont.)

Vendor	*No*		*Yes*		*Total*
	Number of Physicians	*Percent*	*Number of Physicians*	*Percent*	
Office Practicum	1	2.90%	33	97.00%	34
ONCO	0	0.00%	10	100.00%	10
OptumInsight	1	7.10%	13	92.80%	14
Patient Now	1	12.50%	7	87.50%	8
Picis	4	28.50%	10	71.40%	14
Point N Click	0	0.00%	2	100.00%	2
Practice Fusion	10	11.30%	78	88.60%	88
Practice Partner	2	50.00%	2	50.00%	4
Praxis	2	28.50%	5	71.40%	7
PrognoCIS	0	0.00%	10	100.00%	10
Prorietary	1	100.00%	0	0.00%	1
Sage	19	10.80%	156	89.10%	175
SOAPware	2	11.10%	16	88.80%	18
SpringChart	1	14.20%	6	85.70%	7
Sunrise	1	11.10%	8	88.80%	9
Valant	1	100.00%	0	0.00%	1
VistA	2	28.50%	5	71.40%	7
Other	54	16.80%	267	83.10%	321
Total	605	15.5%	3,276	84.4%	3,881

Source: AMB, ABOE Survey Data, 2012–2014.

Appendix G: EMR Software Descriptions

Table G - 1. Intended Use of EMR Software for Most Popular Vendors

EMR Vendor	*Intended Use*
Allscripts	Different versions for solo/mid-size practices vs. large/multi practices; Access info anywhere on any device; Connected to pharmacies, labs, payers & patients; Practice management/claims processing; Templates for >20 specialties
Amazing Charts	For solo or multi-clinician practices; Includes office flow, charting, scheduling, messaging, e-prescribing, reporting, billing & templates
Aprima	Transcription/dictation; e-prescribing; diagnosis & payer Info; electronic lab orders & results; patient portal; patient compliance alerts; Meaningful Use stage 2 certified
Athena Health	Quality mgmt for Meaningful Use, pay-for-performance; cloud-based full-service solution; interfaces w/pharmacies, hospitals, registries and HIEs
Cerner	Clinical summary; chart search; e-prescribe; computer assisted coding; electronic orders & results; pre-completed notes for documentation; electronic immunization download/upload; Meaningful Use
ClaimTrak	Solution for clinicians & administrators; clinical forms for assessments, treatment plans, progress notes, discharge summaries, medication administration, etc.; access and manage all aspects of caseloads; electronic billing, scheduling, reports; document scanning to records
eClinicalWorks	Caters to all size private practices, CHCs & hospitals; supports >50 specialties; patient mgmt system; clinical decision support; access lab/test results; registry & quality measure reporting; exchange data electronically; e-prescribing; meets Meaningful Use
eMDs	Adaptable to multiple clinical settings & sizes; clinical decision support; customizable templates & patient flow sheets; e-prescribing
Epic	Meaningful Use stage 2 certified; accommodates >40 specialties; chart review; order management; documentation; clinical & financial decision support; telemedicine options
GE Centricity	Caters to physician practices of all sizes; Fully interoperable; meets Meaningful Use; automated workflows; ICD-9/ICD-10 compatible; clinical decision support; e-prescribing
gloStream	Customizable to individual physicians in a multi-physician setting; Cloud-based; Meaningful Use certified; e-prescribing; labs/orders; scheduling and tasking; note taking
GMed	Caters to small, large & surgery centers and hospitals for gastro, cardio & urology practices; customizable workflow; interoperable; clinical decision support
Greenway Medical	Combined EHR/Practice Management solution integrating clinical/financial/administrative functions for primary care & >30 specialties in all types/sizes of practices; interoperable; Meaningful Use certified;
McKesson	Certified Meaningful Use stage 1; separate web-based solutions for different types/sizes of practices; complete medical billing, scheduling & clinical functionality
Meditech	Integrated medical and practice management solution for all types/sizes of practices which includes scheduling, labs, registration, EHRs, billing, ordering, reporting
NextGen	Certified Meaningful Use stage 2; scalable; ICD-10 ready; accommodates 25 specialties; patient workflows/summaries; health information exchange
Noteworthy	Certified Meaningful Use stage 1; full EHR/PM solution scalable for all physician practices
Office Practicum	Pediatric only EHR solution that includes encounters/flow sheets; prescriptions/diagnostic tests; vaccine recording/forecasting; billing; practice management

Table G - 2. Intended Use of EMR Software by Vendor (cont.)

EMR Vendor	*Intended Use*
Practice Fusion	Free, web-based EHR/PM solution for >25 specialties; scalable to all practice types/sizes; includes e-prescribing; charting; scheduling mobile access; labs/imaging; patient health record; Meaningful Use certified
Sage	Certified Meaningful Use; scalable for practice size and multiple specialties; charting; scheduling; orders; labs; e-prescribing; quality measure reporting; HL7 interoperable
SOAPware	scheduling; coding; integrate data from specific medical devices; order entry; e-prescribing; patient education/maintenance; additional practice management tools
Sunrise	EHR solution specifically for hospitals and health systems; addresses Meaningful Use; contains interoperable, fully connected care with order entry, clinical decision support, e-prescribing/medication management

Source: EMR Vendors' individual websites.