



# Developments in Arizona Rural Health: Health Information Technology

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Evolution of Rural Health.

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**CHIR**  
Center for Health Information & Research





# Physician Adoption & Ranking of Electronic Medical Records March 2012–April 2013

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The data collection model and the results to be presented today would not have been possible without their dedicated cooperation.



# Introduction

- This report describes:
  - The characteristics of physicians and the organizations in which they practice in Arizona
  - The utilization and exchange of electronic medical records among physicians & healthcare organizations
  - Physicians rankings of EMR software by brand
  - The extent to which EMR available functions (e.g. electronic prescribing) are used in practice
  - Physician awareness and application for Medicare and Medicaid incentives for the adoption of EMRs
  - Physicians future plans for implementing EMRs

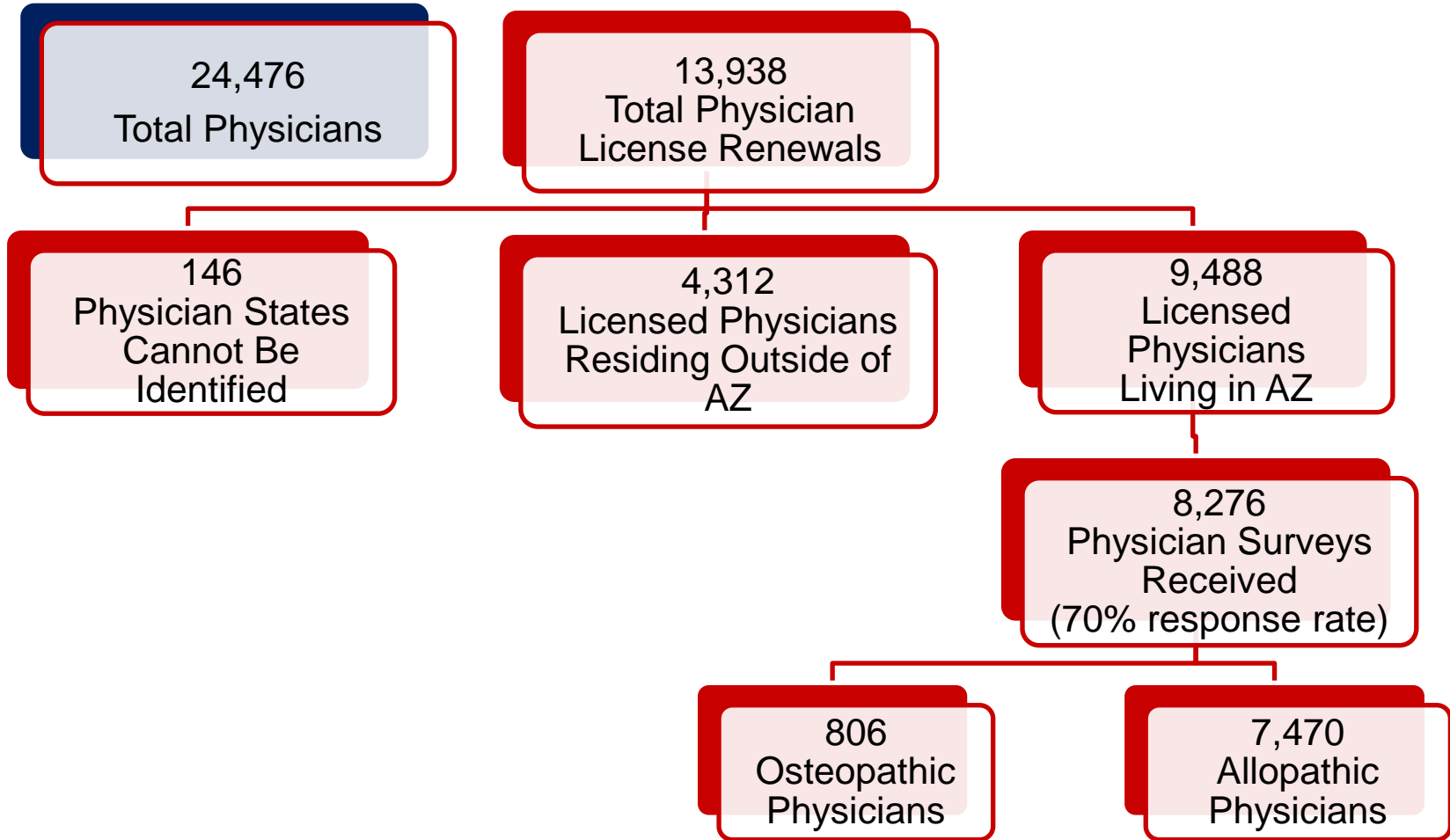


# Data Collection Methods

- Data collection began in 1991. (Extended to nurses and pharmacists in 2007).
- Survey data are merged with licensing applications.
- Scope of the survey limited by reliance on paper forms until adoption of electronic survey in March, 2012.
- Data are collected for in-state and out-of-state physicians. The current report is restricted to in-state physicians.
- Physicians with active licenses who are retired, semi-retired or on leave are excluded from the study.



# Data Collection March 2012 – April 2013



Source: Arizona Medical Board (AMB), Arizona Board of Osteopathic Examiners (ABOE) Survey and Administrative Data, 2012-2013.  
Note: Physicians who responded to the survey as retired or semi-retired/on leave were removed from the denominator (excluded from this schematic).



# UTILIZATION OF ELECTRONIC MEDICAL RECORDS

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# Methods of Storing Medical Records: 2012-2013

## (N = 5,709)

<i>Method</i>	<i>Number of Physicians</i>	<i>Percent</i>
Paper Files Only	686	12.0 %
EMR Only	374	6.5 %
Scanned Images Only	71	1.2 %
Paper + Scanned Images Only	362	6.3 %
EMR + Paper Only	149	2.6 %
EMR + Scanned Images Only	1,834	32.1 %
Paper + Scanned Images + EMR	2,233	39.1 %
EMR alone or in combination*	3,476	60.8%

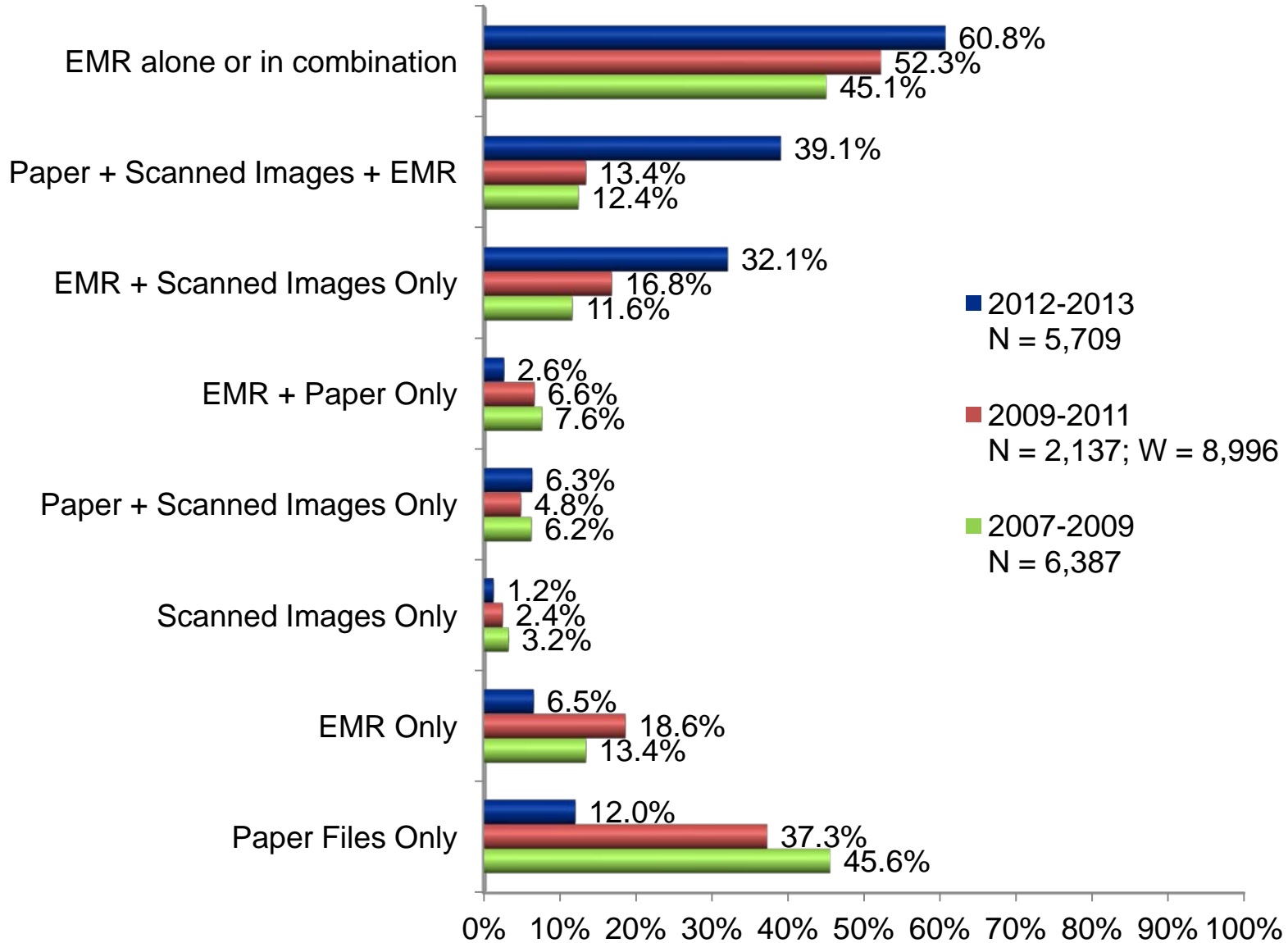
Source: AMB, ABOE Survey Data, 2007-2009; 2009-2011; 2012-2013.

Note: 2,567 respondents did not identify a method of storing medical records (missing).





## Methods of Storing Medical Records 2012-2013 vs. 2007-2009 & 2009-2011



Source: AMB, ABOE Survey Data, 2007-2009; 2009-2011; 2012-2013.

Note: 2007-2009, Respondents who did not identify a method of storing medical records (missing): 390 for 2007-2009 and 2,567 for 2012-2013.

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



## EMR Utilization by Type of Practice, 2012-2013

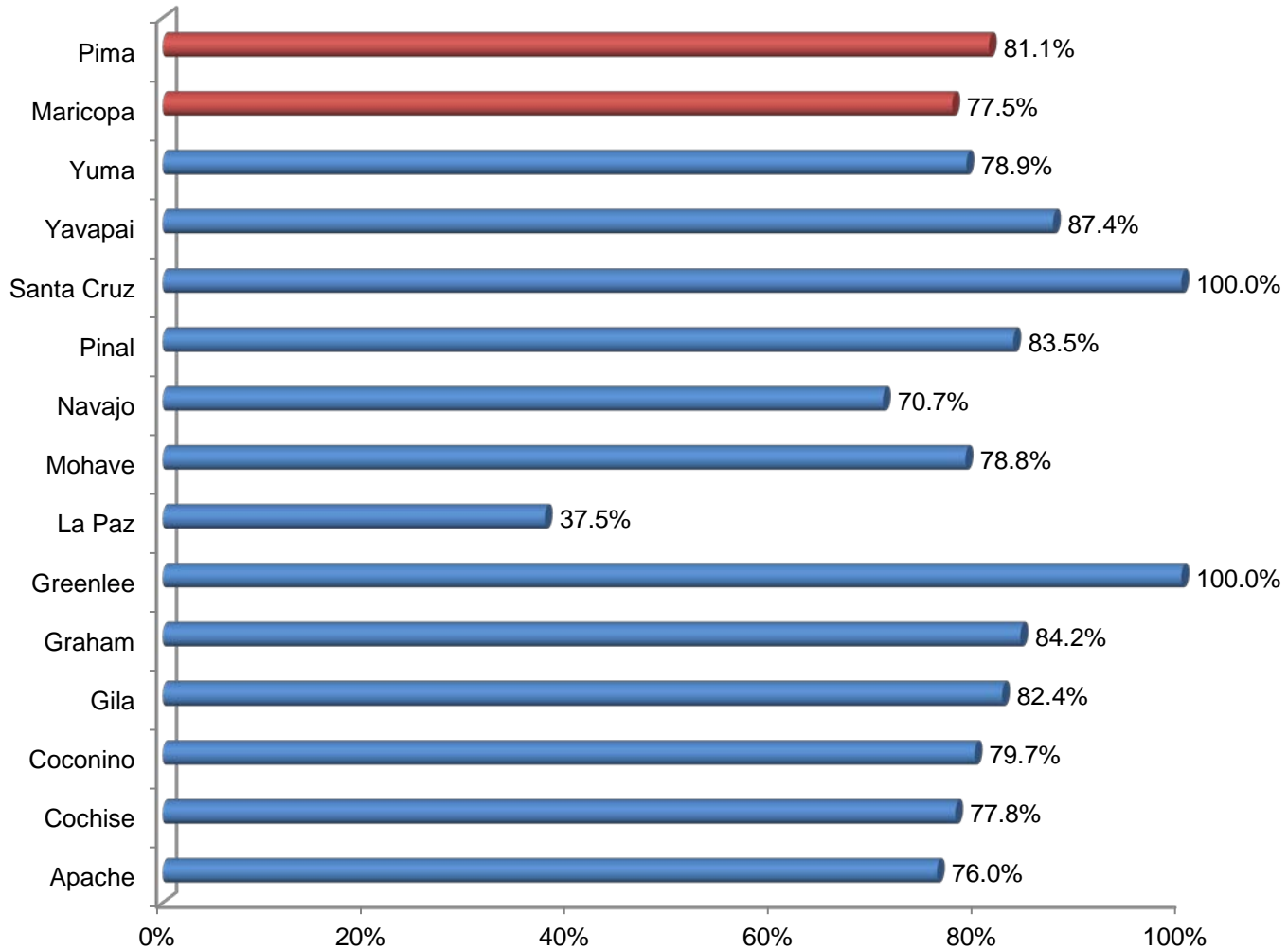
<i>Type of Practice</i>	<i>Utilization Rate</i>
Physician Owned Solo Practice	53.9%
Physician Owned Group Practice	78.6%
Hospital or Medical School Physician Group Practice	91.7%
Community or Rural Health Center	91.3%
Government Health Organization (VA, Indian Health Service, etc.)	95.8%
Private Hospital System	87.4%
Private Outpatient Facility Not Part of a Hospital System	76.5%
Medical School/University/Research Center	91.6%
Health Insurer/Pharmacy/ w/o Provision of Care	NA
Other	69.2%



# Urban Rural Comparisons



# EMR Use by County, 2012-2013 (N=6,420)



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

Note: Table does not include retired physicians. Additionally, 1,468 respondents did not identify a method of storing medical records and 388 were of unknown county.

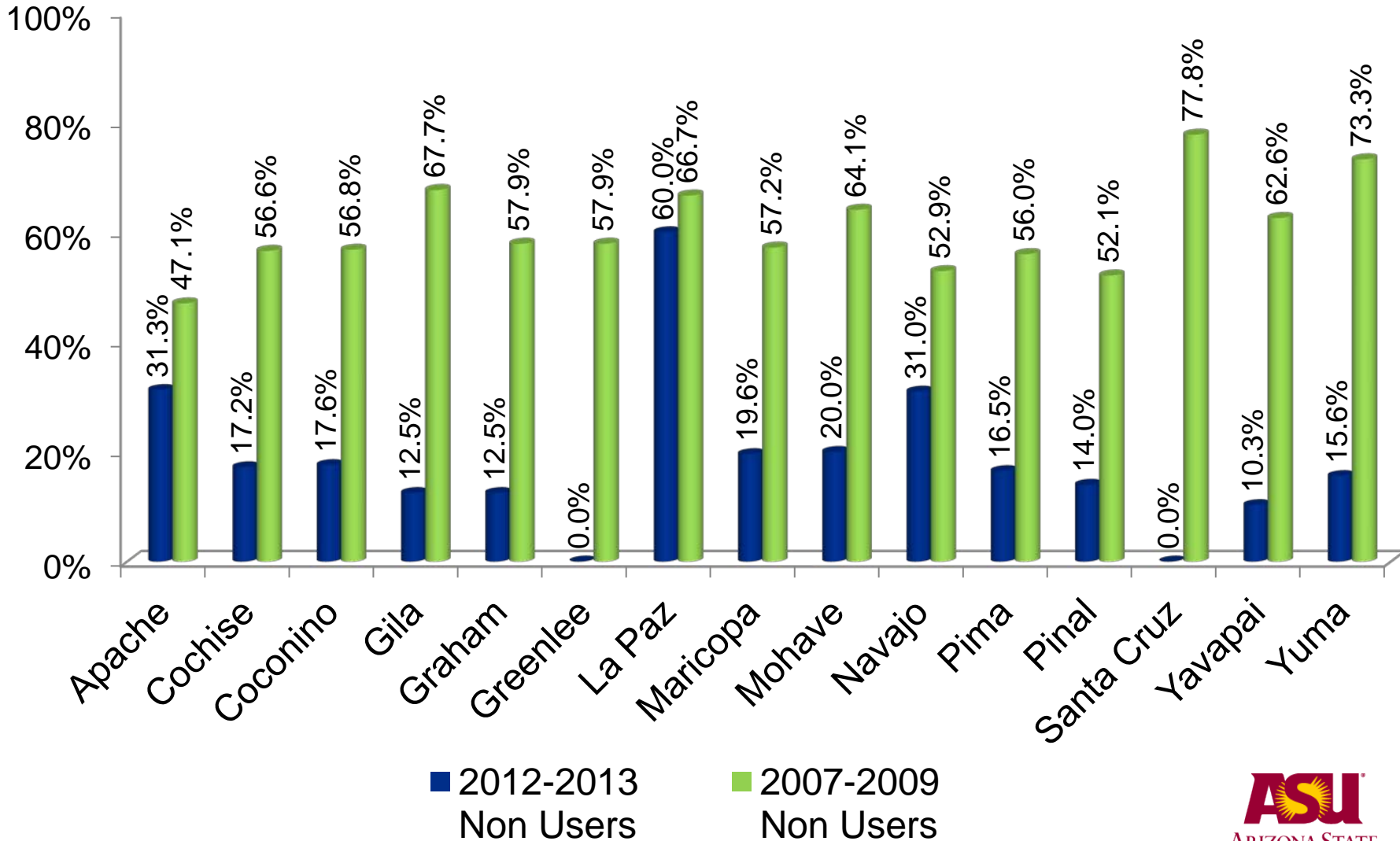


# Trends

<i>County</i>	<i>2012-2013 % Non Users</i>	<i>2007-2009 % Non Users</i>
Apache	<b>31.3%</b>	<b>47.1%</b>
Cochise	<b>17.2%</b>	<b>56.6%</b>
Coconino	<b>17.6%</b>	<b>56.8%</b>
Gila	<b>12.5%</b>	<b>67.7%</b>
Graham	<b>12.5%</b>	<b>57.9%</b>
Greenlee	<b>0%</b>	<b>57.9%</b>
La Paz	<b>60.0%</b>	<b>66.7%</b>
Maricopa	<b>19.6%</b>	<b>57.2%</b>
Mohave	<b>20.0%</b>	<b>64.1%</b>
Navajo	<b>31.0%</b>	<b>52.9%</b>
Pima	<b>16.5%</b>	<b>56.0%</b>
Pinal	<b>14.0%</b>	<b>52.1%</b>
Santa Cruz	<b>0%</b>	<b>77.8%</b>
Yavapai	<b>10.3%</b>	<b>62.6%</b>
Yuma	<b>15.6%</b>	<b>73.3%</b>
<b>Total</b>	<b>17.8%</b>	<b>57.6%</b>



# Trends





# Multivariate Predictors of Using an EMR 2012-2013

<i>Variable</i>	<i>Odds Ratio (EMR User)</i>	<i>Odds Ratio (Fully Connected EMR User)</i>
Type of Practice (vs. Federal Government)		
Physician Owned Solo Practice	0.05*	0.61
Physician Owned Group Practice	0.14*	0.53**
Hospital/Medical School Group Practice	0.41*	0.47*
Community or Rural Health Center	0.37*	0.34*
Private Hospital System	0.26*	0.26*
Private Outpatient Facility not part of Hospital System	0.13*	0.42
Medical School, University Research Center	0.37*	0.10*
State or County Hospital	0.26*	1.00**
DO (vs. MD)	0.97	1.29
Age (vs. 65 and older)		
25 to 34	3.70*	3.04*
35 to 44	3.38*	2.59**
45 to 54	2.36*	2.37**
55 to 64	1.68*	1.68



# Multivariate Predictors of Using an EMR, 2012-2013 (cont.)

<i>Variable</i>	<i>Odds Ratio (EMR User)</i>	<i>Odds Ratio (Fully Connected EMR User)</i>
Gender (Female vs. Male)	0.84**	0.69
Location (vs. all AZ counties except Maricopa and Pima)		
<b>Maricopa County</b>	<b>0.88</b>	<b>0.77</b>
<b>Pima County</b>	<b>0.97</b>	<b>0.74</b>
Specialty (vs. Hospital-Based)		
Primary Care	1.21*	6.83*
Medical Care	1.01**	3.23*
Pediatric Care	1.29**	3.93*
Surgical Care	0.86	1.41

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

Note: 1,742 observations were deleted due to missing values.

\*Statistically significant at  $p$  less than or equal to 0.05. \*\*Statistically significant at less than or equal to 0.10.





# Summary

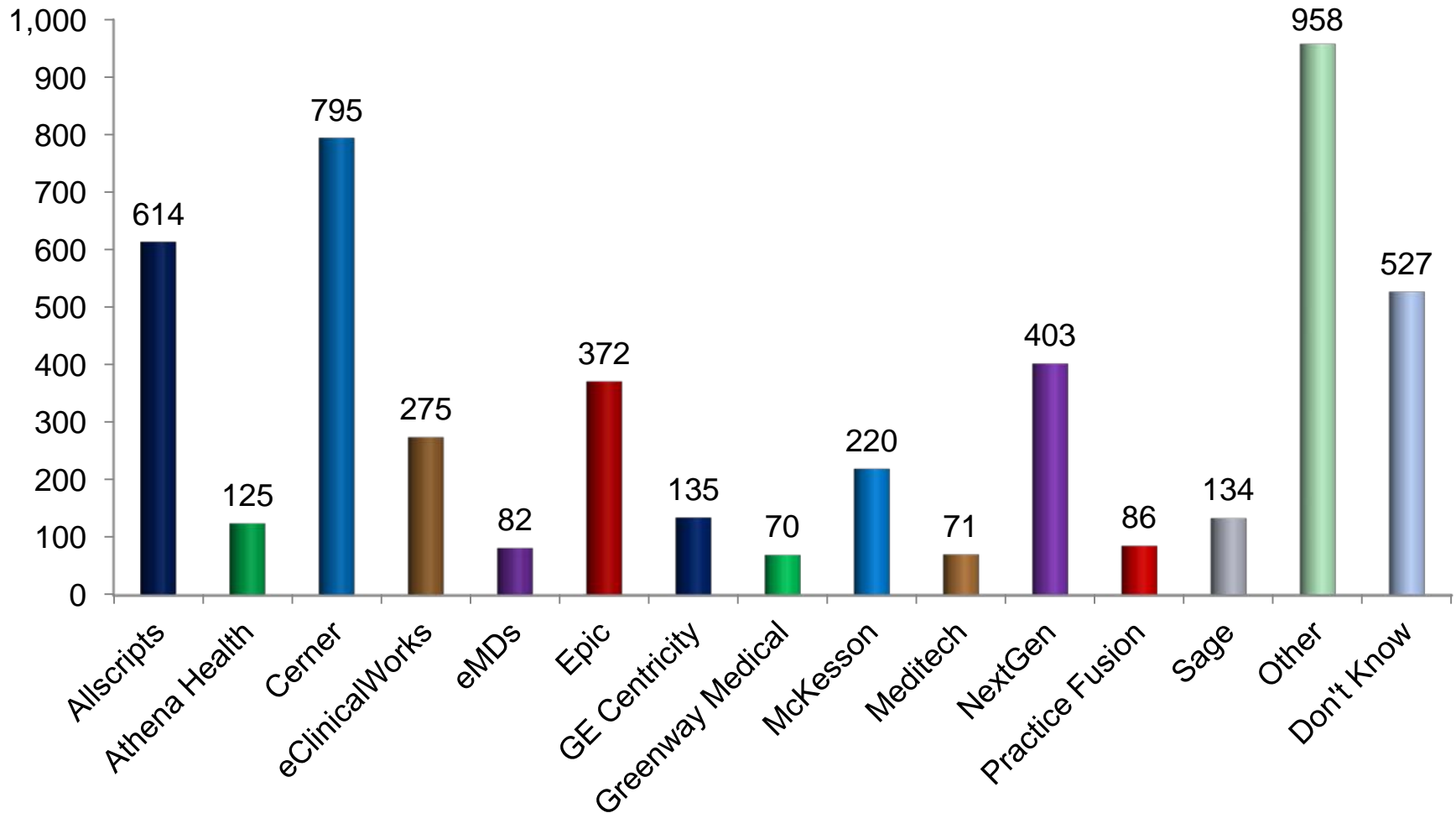
- Clear trends between 2007-2013
  - Increasing use of EMRs
  - Somewhat slower increase in the exchange of electronic information
  - Reliance on paper records alone decreasing but paper records frequently used in combination with EMRs
  - Utilization of scanned forms increasing slightly
- Background of likely sources of growth
  - Incentives/penalties designed to induce increases in use of EMRs
  - Cohort effects: as older physicians retire they are replaced by cohorts trained in use of EMRs (see med school rates)
  - Higher probability of implementation by hospitals and large group practices causes disproportionate increase in the number of physicians using EMRs, which is what our survey measures



# EMR SOFTWARE USE AND PHYSICIAN RANKINGs



# EMR Use by Vendor $\geq 70$ Users

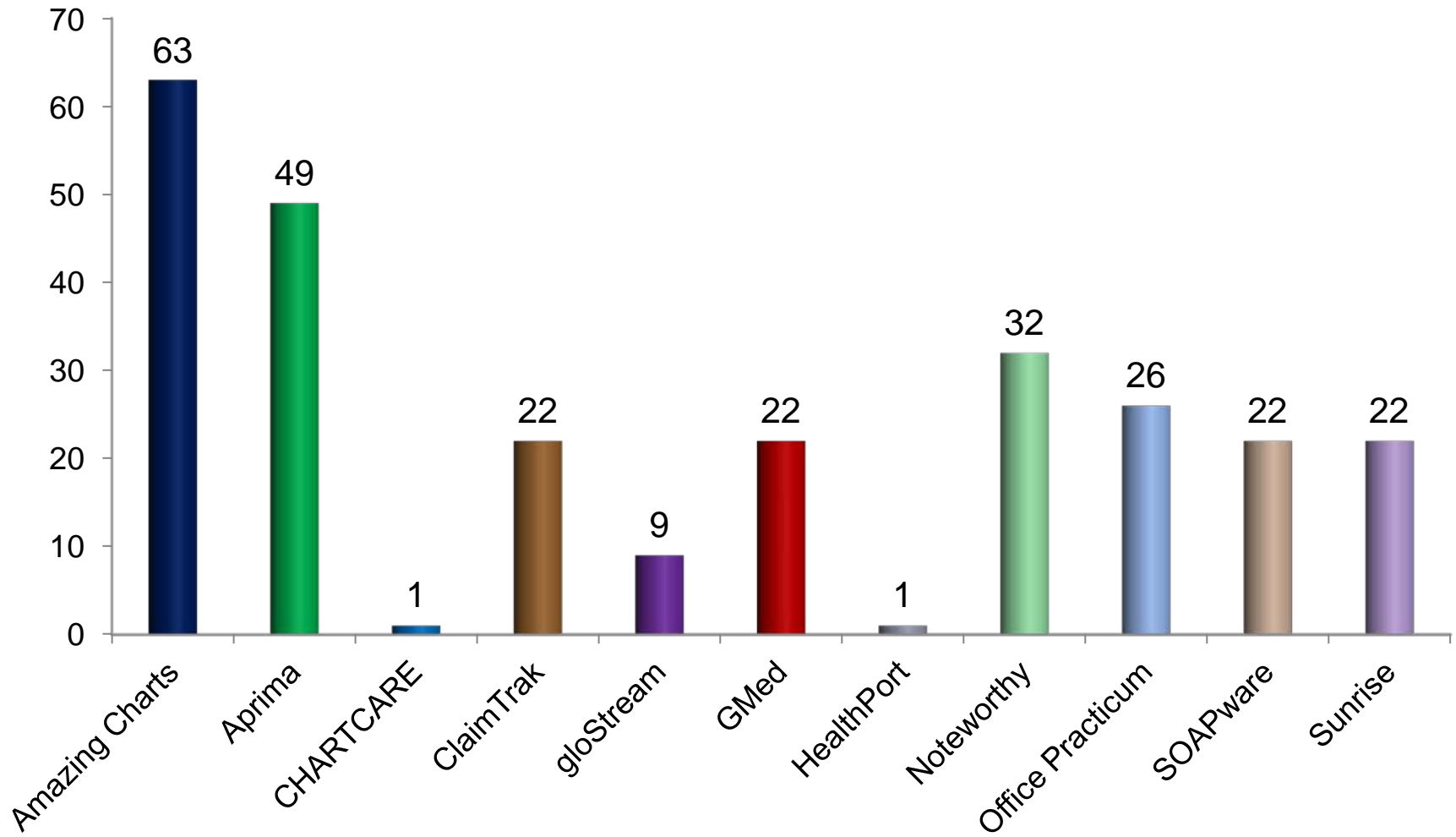


Source: AMB, ABOE Survey Data, 2012-2013.

Note: The "Other" vendor includes all vendors contracted with government hospitals/clinics. 2,820 physicians did not respond to the survey question on vendor name.



# EMR Use by Vendor < 70 Users



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

Note: 2,820 physicians did not respond to the survey question on vendor name.



# EMR Users Ratings of All Vendors: Summary

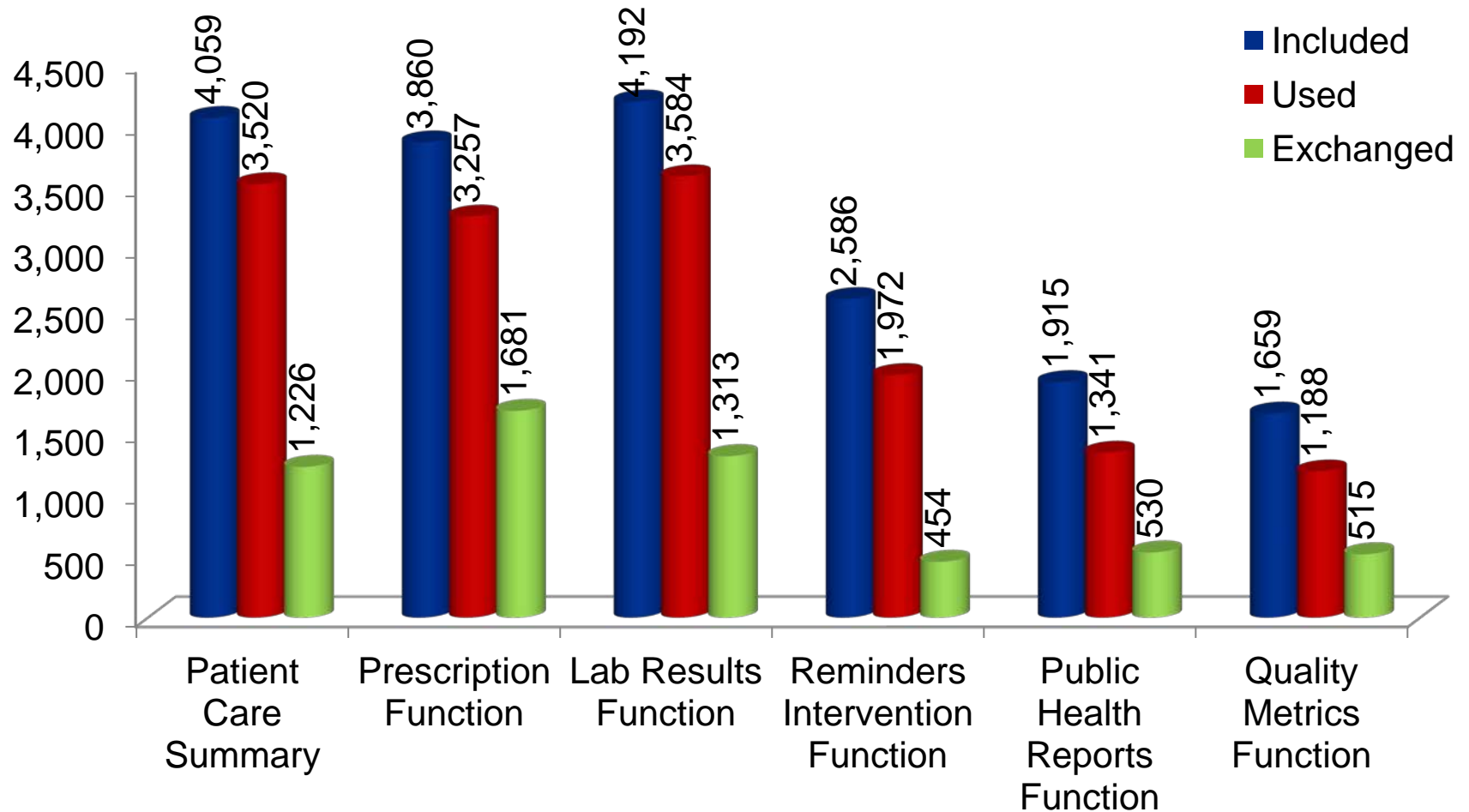
<i>Criterion</i>	<i>Weighted Mean</i>	<i>Number of Physicians</i>
Ease of Use	3.3	4,640
Effect on Physician Productivity	3.0	4,619
Effect on Staff Productivity	3.1	4,597
Reliability	3.5	4,604
Performance vs. Promise	3.1	4,517
Mean of the Weighted Means	3.3	--

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

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



# Physician Utilization of EMR Functions





# Conclusion

- Percentage of physicians with EMRs is higher than national studies suggest, but much of the difference is due to difference in sample characteristics.
- Use of EMRs is much higher the larger the organization.
- Use of EMRs is inversely related to age.
- Rural counties have increased EMR use at a faster rate than urban counties
- Lack of exchange networks (HIEs) limits the exchange of EMR information between different practices/organizations
- Complete report will be available in September: send your email address if you wish to receive a copy



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