Office for Oregon Health Policy and Research

Oregon Electronic Health Record Survey Report: Ambulatory Practices and Clinics

Spring 2009

Oregon Electronic Health Record Survey Report: Ambulatory Practices and Clinics

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Produced for:
Office for Oregon Health Policy and Research

By:
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About the Office for Oregon Health Policy and Research

The Office for Oregon Health Policy and Research (OHPR) provides analysis, technical, and policy support to the Governor and the Legislature on issues relating to healthcare costs, utilization, quality, and access and serves as the policy making body for the Oregon Health Plan. OHPR also provides staff support to statutorily-established advisory bodies, including the Oregon Health Fund Board, the Oregon Health Policy Commission, the Health Resources Commission, the Health Services Commission, the Advisory Committee on Physician Credentialing and the Medicaid Advisory Committee. In addition, the Office coordinates the work of the Oregon Health Research and Evaluation Collaborative. For more information about OHPR, visit http://www.oregon.gov/OHPPR/index.shtml or contact the office at (503) 373-1779.

About the Author

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Mr. Witter is the principal in Witter & Associates providing consulting support to non-profit organizations and governmental agencies seeking to improve healthcare quality and operational performance through innovative solutions including health information technologies. Mr. Witter has over thirty years experience in the leadership, operations and finances of health care organizations. Mr. Witter spent six years at the Association of American Medical Colleges (Washington, DC) serving as Vice President of Enterprise (business) Development, Vice President of Information Resources (CIO) and Director of the Clinical - Administrative Data Service. Mr. Witter spent six years as president and CEO of the Academic Medical Center Consortium (Rochester, NY), an organization created by twelve major teaching hospital CEOs to conduct major health services research-based initiatives to improve quality and operations. Mr. Witter spent seventeen years at the Oregon Health Sciences University serving as, Interim University President, Vice President for Administration, Director of the Biomedical Information and Communication Center, University Hospital CEO, COO and CFO . Mr. Witter holds bachelor and master degrees in economics.

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Oregon Electronic Health Record Survey
Ambulatory Practices and Clinics
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SURVEY HIGHLIGHTS

Oregon Continues to be Ahead of National EHR Adoption Rates

	2006 Any EHR System	2009 Any EHR System	2009 "Basic"* EHR System	2009 "Fully – Functional"* EHR System
Oregon Clinicians in Ambulatory Practices	**52.8%**	**65.5%**	**48.3%**	**32.2%**
National Physicians Survey: Office-Based Practices #	**29.2%**	**43.9%**	**20.5%**	**6.3%**
Ratio: Oregon to National	**1.81**	**1.34**	**2.36**	**5.11**

The American Recovery and Reinvestment Act (ARRA) provides strong incentives to encourage the adoption and meaningful use of electronic health records including health information exchange to improve the continuity and coordination of care and reporting of quality metrics. Medicare and Medicare incentive payments are critically dependent on the use of certified EHRs by eligible professionals to demonstrate meaningful use including e-prescribing, health information exchange, reporting of quality metrics and providing patients with timely access to information.

National data# for 2009 indicates that **43.9% of office-based physicians** were using **any** electronic medical record (EMR)/electronic health record (EHR) system@. However, only **20.5%** of physicians are using an EHR with specifically defined functions of a **basic EHR system** and **6.3%** of physicians are using a **fully functional EHR system**.

The Oregon Electronic Health Records (EHR) survey asked ambulatory practices and clinics about their use of EHRs and electronic practice management (EPM) systems serving their clinicians in the spring of 2009. The survey responses indicate that Oregon is ahead of the national trends in EHR adoption

Clinicians include physicians, physician assistants and nurse practitioners.

EHR System capabilities include electronic charts, test ordering and reports management, e-prescriptions, consultation referrals and reports, clinical decision support, disease management support and quality reports.

EPM System capabilities include patient scheduling, registration, eligibility, coverage contracts, billing, electronic claims submission, claims tracking, accounts receivable, workflow management tools and reports.

with an estimated **65.5% of clinicians** (physicians, nurse practitioners and physician assistants) working in practices or clinics where EHRs are present.

Highlights of the Oregon survey results include:

- Excellent survey response from Oregon practices/clinics: 57.7% overall.
- 89% of practice/clinic **entities** have less than 10 clinicians although 64.3% of **clinicians** are in practices/clinics with 10 or more clinicians,
- EHRs are present in **37.9% of the practice/clinic entities** serving **64.8% of clinicians** excluding responses from freestanding ambulatory surgery centers (ASCs).
- EPMs are present in 75.5% of the practices/clinics serving 81.3% of clinicians.
- 97% of practices/clinic with EHRs have an EPM.

Any EHR includes any type of EHR self-declared by a survey respondent. This includes self-developed systems.

A Basic EHR System is defined* as including **all** of the following functional components: patient demographics, patient problem lists, electronic medication lists, clinical notes, order entry management of prescriptions, and viewing capability of laboratory and imaging results (reports).

A Fully Functional EHR System is defined* as including the basic system functionalities as clinical notes of the medical history and follow-up, ordering of laboratory and radiology tests, electronic transmission of prescriptions and orders, and electronic return of images. Fully functional also includes clinical decision support with warnings of drug interactions or contra-indications, highlighting of out-of-range test levels and reminders regarding guideline-based interventions or screening.

Higher EHR adoption rates are associated with:

- Large health systems: Kaiser and OHSU (100%), Health System operated/affiliated practices/ clinics (70%), FQHCs (60%) and Community Hospitals (57%).
- Practices with larger numbers of clinicians ranging from 50% for practices with 5-9 clinicians to 79% for practices with 50 or more clinicians.
- Practices with more than one location (range of 40% for 2 locations to 69% for five or more locations).
- Multi specialty and mixed primary care practices (>50%).

Lower EHR adoption rates are associated with:

- Solo clinician practices (26%)
- Practices with 2 to 4 clinicians (40%)
- Freestanding ASCs (22%)
- Public/other types of clinics that are not FQHCs (23%).

EHR vendor/products: Over 80 commercial vendor/product lines are in use in Oregon.

- Eight vendor/products are used by 83% of clinicians covered by the survey responses.
- Eighty-one percent of EHR practices and clinics (88% of clinicians) are using a product where one or more versions in the product line have received certification from the Certification Commission for Healthcare Information Technology (CCHIT).

Private practices owned by physicians:
- EHRs are present in 37.6% of the practices/clinics serving 54.2% of clinicians with adoption rates range from 26.2% for solo practices to 68.4% for practices with ten or more clinicians.

Strengths and benefits of EHRs identified in the survey include improving access and tracking of patient information, no list charts, efficiency/reduce costs for transcription and filing/records management, record legibility, e-prescribing and medication lists, and better patient care/safety and coordination of care.

Challenges in implementing and using EHRs are very similar to the concerns of practices with no EHR implementation plans. The greatest concerns are about the expense of implementation, loss of productivity, ongoing costs and expense of purchase. Additional concerns include inadequate return on investment, need to customize the EHRs, staff training, interfacing data with other systems and physician resistance to change.

No EHR plans: For practices/clinics that reported they **are not** planning to implement an EHR:
- The major **barriers** are the concerns about the expense of purchase (80%) and expense of implementation (68%).
- Many practices indicated they were **satisfied with** their **paper records** systems (26%),
- Many practices expressed concerned about **retraining of staff** (31%), the inadequate return on investment (26%) and practice is too small (26%).
- The highest rated **incentives** that might convince a practice to adopt EHRs are **grants** to help with implementation costs (68%) and **tax credits** against cost of EHR investments. While not tax credits, Medicare and Medicaid incentive payments under ARRA would have a similar financial impact as tax credits.
- Many practices indicated they might be **better convinced to implement** an EHR if there were **standards** to insure that all systems can share information (34%), **evidence** that EHR will improve the **quality of care of patients** (33%) and evidence that EHRs will improve **practice operations** (33%).

* DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records in ambulatory care – a national survey of physicians. N Eng J Med 359:1 July 3, 2008, 50-60.
# Hsaio CJ, Beatty PC, Hing ES, Woodwell DA, Rechtsteiner EA, Sisk JE. Electronic medical record/electronic health record use by office-based physicians: United States, 2008 and preliminary 2009. Health E-Stat. National Center for Health Statistics, December 2009. Accessed December 23, 2009 at http://www.cdc.gov/nchs/data/hestat/emr_ehr/emr_ehr.pdf.
@ The terms electronic medical record (EMR) system and electronic health record (EHR) system are equivalent as used in the report. EHR is preferred term.

Background

Federal policy and adoption

In 1991 the Institute of Medicine (IOM) called for the elimination of paper-based records within ten years, a goal that has clearly not been reached.[1] The IOM reinforced the essential role information technologies could play in improving patient safety and quality.

In 2003, the IOM described the key capabilities of an EHR system.[2] The overall capabilities include:

- longitudinal collection of electronic health information for and about persons including information about the individual and health care provided to the individual,
- immediate electronic access to person- and population-level information by authorized, and only authorized users,
- provision of knowledge and decision-support that enhance the quality, safety, and efficiency of patient care, and
- support of efficient processes of health care delivery.

In 2004, the Federal government set a goal for most Americans to have EHRs by 2014 through the establishment of the Office of the National Coordinator for HIT (ONC).[3] The ONC, along with other Federal agencies, lead a number of initiatives to accelerate health information technology (HIT) adoption including pilot project research and development for a National Health Information Network (NHIN), grant funding for regional health information exchanges, EHR adoption in Federally Qualified Health Centers (FQHCs) and development of standards and certification processes for EHRs and HIT.

Since 2001, the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS) have tracked EMR/EHR adoption through the National Ambulatory Medical Care Survey (NAMCS). The 2006 NCHS report provides the latest comprehensive information from the NAMCS on EHR adoption showing that nationally 29.2% of nonfederal office based physicians were using some form an electronic medical records (EMR) system.[4] The Western region of the United States has the highest percentage (42.3%) of physicians reporting use of a full or partial EMR, and almost being twice the rate of other regions of the United States.

The NAMCS identified several factors related to EMR use including:

- use declined with increased physician age,
- use increased as the size of the practice (number of physicians) increased,
- use was much higher among health maintenance organizations (75.8%) compared with physicians in private practice (28.0%) and other types of ownership (33.5%).

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[1] Institute of Medicine. 1991. *The Computer-Based Patient Record; An Essential Technology for Health Care*, eds. Dick RS, Steen EB, Washington DC National Academy Press.

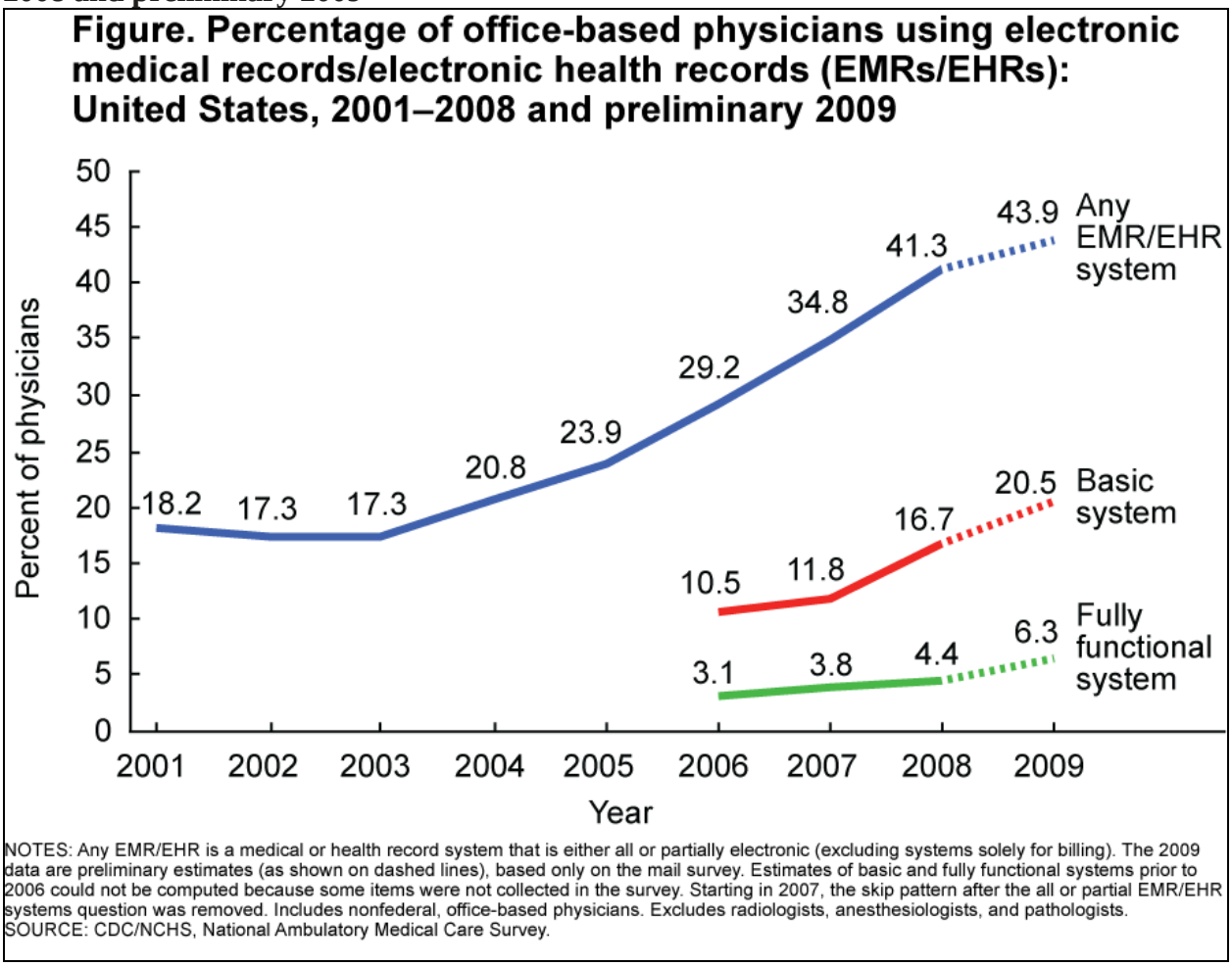
[2] Institute of Medicine. 2003. *Key Capabilities of an EHR System: Letter Report*. Committee on Data Standards for Patient Safety. Washington DC. Available at http://www.nap.edu/catalog/10781.html.

[3] White House. Executive Order: Incentives for the use of HIT and establishing the position of the National Information Technology Coordinator. (http://nodis3.gsfc.nasa.gov/displayEO.cfm?id=EO_13335), 2004.

[4] Hing E, Burt CW, Woodwell D, Electronic medical record use by office-based physicians and their practices: United States, 2006. Advance Data No. 393, October 26, 2007, Centers for Disease Control and Prevention, National Center for Health Statistical, Accessed November 8, 2007 at http://www.cdc.gov/nchs/data/ad/ad393.pdf.

- use was higher in multi-specialty practices (34.5%) than in solo and single-specialty practices (28.0%).

Figure 1. Percentage of office-based physicians using EMRs/EHRs: United States, 2001-2008 and preliminary 2009



A national survey of EHR use in an office setting in late 2007 and early 2008 examined the relationship between EHR adoption, characteristics of physicians and practices, and use of specific EHR system functionalities.[5]

This national survey defined "basic" EHR system functionality as including patient demographics, patient problem lists, electronic medication lists, clinical notes, order entry management of prescriptions, and viewing capability of laboratory and imaging results (reports). The survey defined a "fully functional" EHR system as including the basic system functionalities as clinical notes of the medical history and follow-up, ordering of laboratory and radiology tests,

[5] DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. EHRs in ambulatory care – a national survey of physicians. N Eng J Med 359:1 July 3, 2008, 50-60.

electronic transmission of prescriptions and orders, and electronic return of images. Fully functional EHRs also include clinical decision support with warnings of drug interactions or contra-indications, highlighting of out-of-range test levels and reminders regarding guideline-based interventions or screening.

The DesRoches study results reported 4% of physicians having a "fully functional" EHR systems and that 13% reported having a basic system. Initially, these rates seem low in comparison to the CDC reported results for 2006 and 2008.[6,7] However, the definitions of "basic" and "fully-functional" EHR systems have higher functional thresholds than the traditional CDC definitions. Additionally, the study results were based on the requirement that a basic system must provide all seven functionalities. An EHR system with less than all seven basic functionalities was treated the same not having any EHR system.[8]

Other DesRoches study highlights include:

- 71% of respondents with "fully-functional" EHRs reported their systems were integrated with the hospital electronic system where they admitted patients compared to 56% for respondents with a basic system.
- EHRs were more prevalent among younger physicians, larger practices, primary care practices, hospital or medical center related practices and the western region of the United States.

Appendix C, Table 2-3 shows key results from the DesRoches study. Tables 2-4 and 2-5 compare study results with Oregon 2009 results.

The enactment of the American Recovery and Reinvestment Act (ARRA) in February 2009 included major provisions to accelerate the adoption of EHRs and health information exchange (HIE) aimed at supporting health reform, maximizing the continuity and quality of care. ARRA establishes incentives payments through Medicare and Medicaid for the meaningful use of certified EHRs by eligible professionals and hospitals. The driving force behind ARRA is to leverage health information technologies to improve the quality of care, support health reform and to impact the costs of health care.

Oregon HIT policy

The Health Information Infrastructure Advisory Committee (HIIAC) was established in May 2008 by Executive Order 09-09. The HIIAC concluded its work in August 2009. It was tasked with making policy recommendations to: reduce barriers to health information exchange, while maintaining privacy and security of individuals' health information; establish an appropriate role for the state in maintaining and building health information infrastructure; facilitate the adoption of infrastructure standards and interoperability requirements; facilitate collaboration between

[6] Hing E, Burt CW, Woodwell D, Electronic medical record use by office-based physicians and their practices: United States, 2006. Advance Data No. 393, October 26, 2007, Centers for Disease Control and Prevention, National Center for Health Statistical, Accessed November 8, 2007 at http://www.cdc.gov/nchs/data/ad/ad393.pdf.
[7] Hsaio CJ, Burt CW, Rechtsteiner E, Hing E, Woodwell D, Sisk JE. Preliminary estimates of electronic medical record use by office-based physicians: United States, 2008. Health E-Stat. National Center for Health Statistics, Accessed October 7, 2009 at http://www.cdc.gov/nchs/data/hestat/physicians08/physicians08.htm.
[8] Confirmed in December 8, 2009 discussion between CM DesRoches and DM Witter.

statewide partners; and develop evaluation metrics to measure the implementation of health information technology and the efficiency of health information exchange in Oregon.

In November 2008, the HIIAC produced a report to the Governor and the Oregon Health Fund Board (OHFB) exploring challenges in the current health care system, opportunities to transform the system through wider adoption and utilization of HIT, and providing recommendations to facilitate and accelerate this transformation. Those recommendations were adopted into the OHFB plan for health reform and incorporated into legislative proposals.

The 2009 Oregon Legislature enacted House Bill 2009 aimed at accelerating health reform efforts in Oregon. A number of the HB2009 efforts support and are dependent upon the widespread adoption and use of health information technologies in Oregon. The creation of the HIT Oversight Council (HITOC) in HB2009 is directly related to supporting Oregon's health reform efforts.

The 2006 Oregon EHR Survey of Ambulatory Practices and Clinics[9] found that Oregon was ahead of national trends:

- 53% of Oregon non-federal clinicians were working in practices or clinics where EHR are present compared to national data showing the 29% of office-based physicians were using EHRs in 2006 (also see Appendix C, Table 2-2), and
- EHR systems were present in 27% of the surveyed practices and clinics.

To support the continued policy initiatives, statewide strategic planning and understand the opportunities and challenges presented by Federal policy, the Office for Oregon Health Policy and Research (OHPR) with Witter and Associates fielded a survey of Oregon ambulatory clinics in spring 2009 to understand the current Oregon landscape around EHR systems.

The 2009 EHR Survey of Ambulatory Practices and Clinics has multiple goals, including:

- Monitor progress on EHR adoption in Oregon's ambulatory practices and clinics.
- Identify the characteristics of both practices /clinics using and not using EHRs and the relationship with EPM systems.
- Identify the extent to EHR products used in Oregon are certified.
- Identify the availability and use of specific EHR functions, decision support and information exchange related to the evolving definitions of meaningful use.
- Identify barriers and concerns of practices/clinics without EHRs that effect future EHR adoption.
- Provide policy makers with information about EHR adoption.

[9] Witter DM, Pettit J, Nicholson D, Edlund T. Oregon EHR Survey, Fall 2006, Oregon Office of Health Policy and Research and Oregon Health Care Quality Corporation, November 2007. Available at http://www.oregon.gov/OHPPR/docs/OR2006EHRSurvey.pdf.

Methods

The 2009 survey was mailed in February 2009 to a list of 2,273 Oregon ambulatory clinics and physician practices. The list of ambulatory clinics and practices is maintained by the Office for Oregon Health Policy and Research (OHPR) and was created from multiple data sources. The list of 2,273 included multiple locations for clinics and practices representing 1,965 organizational entities.

The survey was fielded between February 2009 and May 2009 using a four-wave protocol:

- First mailing included a transmittal letter dated February 2, 2009 and the five-page survey form shown in Appendix B.
- Second mailing included a reminder postcard to all recipients two weeks after first mailing.
- Third mailing included a complete survey packet mailed about three weeks following the postcard reminder.
- Fourth mailing included the transmittal letter dated April 15 and another complete survey packet mailed to non-respondents.

Survey recipients had the option the option of completing the paper survey version returned by mail with a provided postage-paid return envelope or the online version of the survey using a readily available survey development tool.. Respondents were strongly encouraged to use the electronic survey version. Survey responses returned by mail were entered into the online survey application by OHPR staff. Responses received after the online survey was closed were entered directly into the data file by OHPR staff.

Several health systems were not included in the original survey mailings. Based on experience from the 2006 survey, the 2009 survey contemplated organization-wide surveys of the larger health systems. Health system responses were solicited in the summer and fall. Tribal clinics received another round of follow-up in the fall, adding several responses.

Data cleaning and editing was completed in several stages. Initial data cleaning and editing were completed by OHPR staff to identify multiple responses from the same organization and consolidate the responses. Subsequent data cleaning was completed by Witter & Associates to further eliminate/consolidate multiple responses from the same organization, follow-up on missing or inconsistent information, code variables for data analysis and parse responses covering multiple regions.

A number of multiple or duplicate responses were received from individual clinic/practice locations and/or organizations. As noted above the cleaning process identified these situations and consolidated the responses where appropriate. A number of responses were also submitted without a clinic/practice name, contact or other identifying information. Since it could not be determined if the unidentified responses duplicated an identified response or another unidentified response, they were excluded from analysis.

Unit of Analysis

The primary unit of analysis is focused on the practice/clinic organizations since they are presumed to be the primary nexus of decision making about the adoption of EHR and EPM systems. The number of clinicians, number of locations and other factors are considered to be attributes of an organizational entity. Multiple practices, clinics or locations operated by an organization (e.g., Oregon Clinic, Legacy Clinics, PeaceHealth Medical Group) are considered to be under the auspices of a single organizational entity. The number of locations for an organizational entity represents the number of separate physical locations. Multiple specialty practices operating in the same facility are considered to be operating in one location.

For organizations crossing several regions, their responses were split by those regions to provide more accurate assessments of the levels of adoption by region.

The survey focuses on clinicians providing ambulatory care in practices and clinics. Clinicians include physicians (MDs and DOs), physician assistants (PAs) and nurse practitioners (NPs). Survey results are summarized and reported for two levels of aggregation:

- **All Organizations:** All organizations include all of the practices types listed above.
- **Clinician Organizations:** Clinician Organizations are the combined results for the practices types Clinician Names and Clinic/Practice Names. This category represents clinics/practices owned and operated independently by private practicing physicians.

Table 2. Nine functional practice types used for analysis

Practice Type	Definition
Clinician Names	Practices identified by the name of individual clinicians, e.g., Joseph Doakes, MD, Drs. Smith and Jones.
Clinic/Practice Names	Practices identified other names, e.g., Albany Clinic, Pacific Medical Group.
FQHCs/Safety Net Clinics	Federally qualified health centers (FQHCs) as identified on the Office of Oregon Health Policy and Research.
Public/Other Clinics	Public health departments, school-based clinics, tribal clinics and college health centers that are not on the FQHC list.
Health System Practices	Clinics and practices identified as owned/operated or affiliated with health systems operating multiple hospitals and medical groups excluding clinics operated by Kaiser Permanente and Oregon Health & Sciences University (OHSU). The four systems in this category are Legacy Health System, PeaceHealth, Providence Health and Services and Samaritan Health System.
Kaiser/OHSU	Clinics and practices operated by Kaiser Permanente and OHSU
VA:	Clinics operated by the Veterans Administration. Data was collected for the VA in the 2006 survey but not in the 2009 EHR survey.
Community Hospitals	Community hospitals responding to the survey regarding ambulatory clinics/practices other than the larger health system-related practices.
Ambulatory Surgery Centers (ASCs):	Freestanding ASCs serving a spectrum of physicians in a community. ASCs operated in connection with the ambulatory practice of a specific physician group or practice are included within the Clinic/Practice Names practice type.
Unidentified:	Clinics and practices that submitted responses anonymously that could not be categorized. Unidentified responses were included in the 2006 EHR survey but are not included in the analysis to avoid possible double counting of multiple responses submitted by the same practice or clinic

Survey results are summarized and reported for two levels of aggregation:

- **All Organizations:** All organizations include all of the practices types listed above.
- **Clinician Organizations:** Clinician Organizations are the combined results for the practices types Clinician Names and Clinic/Practice Names. This category represents clinics/practices owned and operated independently by private practicing physicians.

Respondents were asked to indicate the specialties and sub-specialties of the clinicians in the practice or clinic using 31 check boxes or other. For the analysis by specialty mix, the following **specialty categories** were utilized (Table 3).

Table 3. Specialty categories for used for survey analysis

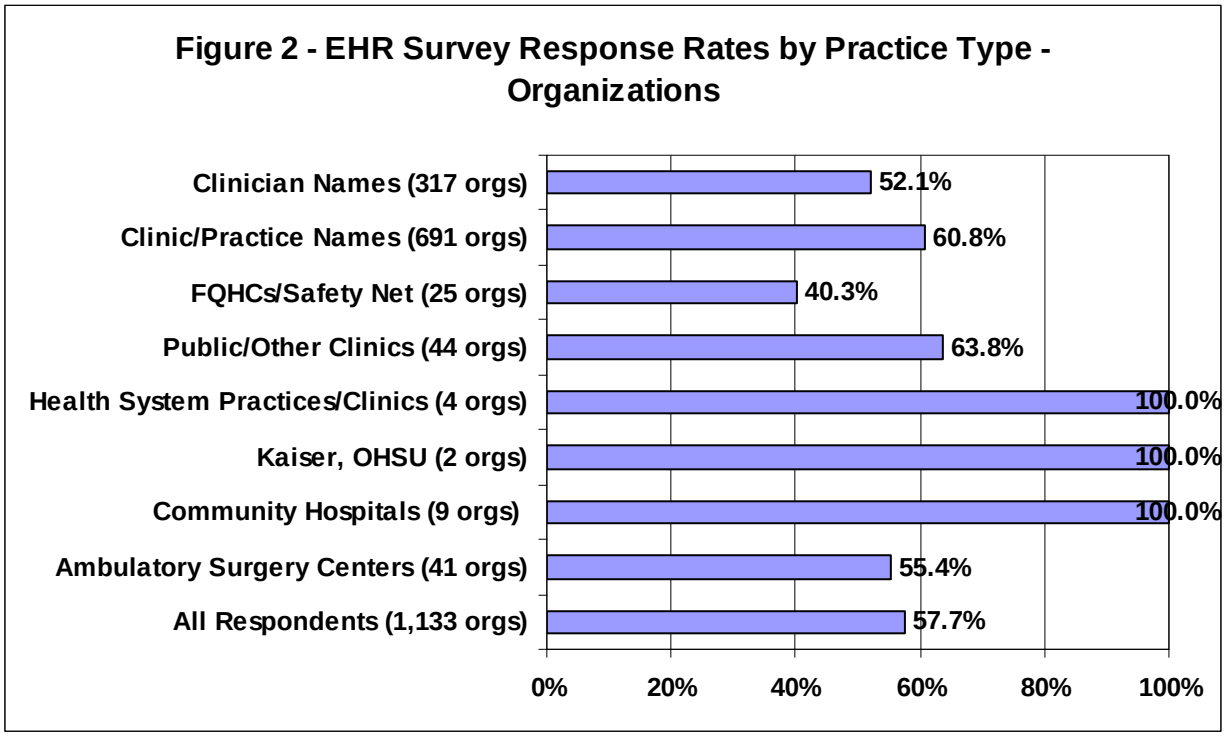
Specialty category	Definition
Mixed Primary Care	Combinations of family medicine/practice/internal medicine along with pediatrics and/or obstetrics/gynecology
Multiple/Multi-Specialty	Specialties that would include primary care specialties and other specialties
FP, IM, GP, geriatrics	Practices limited to combinations of family medicine, internal medicine, general practice and/or geriatrics
Pediatrics & specialties	Practices limited to pediatrics and pediatric specialties
Obstetrics/Gynecology	practices limited to obstetrics, gynecology and related specialties
Medicine/other specialties	Practices limited to medicine specialties (cardiology, endocrinology, nephrology, gastroenterology) along with dermatology, neurology and occupational medicine.
Psychiatry, addiction	Practices limited to psychiatry, behavioral health and addiction medicine.
Surgery & specialties	Practices limited to general surgery and surgical-related specialties including cardiac surgery, ENT, neurosurgery orthopedics, pediatric surgery, plastic surgery and urology.
Imag, path, anesth, crit care, emerg	Practices limited to imaging-diagnostic radiology, pathology, anesthesiology, critical care, hospitalists and emergency medicine
Ophthalmology, optometry	Practices limited to ophthalmology and other eye-related specialties.
Other specialties	Practices limited to physical medicine and rehabilitation, rehabilitation, physiatry and public health.

For the analysis of EHR use throughout Oregon regions and counties are reported in the following region/county groupings based on health care market areas:

- **Regions**
  - Central Oregon: Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco and Wheeler counties.
  - Eastern Oregon: Baker, Gilliam, Malheur, Morrow, Umatilla, Union and Wallowa counties.
  - Northwestern Oregon**:** Clatsop, Columbia and Tillamook counties.
  - Portland Metro Area: Clackamas, Multnomah, Washington and Yamhill counties.
- **Counties, County Clusters**
  - Coos, Curry, and Douglas counties.
  - Jackson and Josephine counties.
  - Klamath County.
  - Lane County.
  - Linn, Benton, Lincoln counties.
  - Marion and Polk counties.

Results

Survey Response Rate
Surveys were distributed to 2,273 practices and clinics representing 1,965 organizations. Responses were received from 1,676 practices/clinics for a response rate of 73.7%. Responses submitted without identification of the practice/clinics (218 responses) were excluded from the analysis, leaving 1,458 practice/clinic responses. After consolidation of multiple responses from the same organizational entity and exclusion of unidentified responses analysis was conducted on 1,133 organizations reflecting an overall response rate of 57.7%. Figure 2, based on Appendix C, Table 1-1, shows the response rates for unique organizational entities for each practice type. For practice types with more than forty (40) responses (96% of total responses), the response rates are in a relatively narrow range of 52% to 64%.



Source: Appendix C, Table 1-1.

The 1,133 unique organization responses include some health system organizations with practices/clinics in different regions in Oregon and responses for separate components of the health system. Subsequent graphics and the supporting tables in Appendix C are based on the 1,168 organizational entities associated with the 1,133 unique organization responses.

Survey Respondent Characteristics

Appendix C, Tables 1-2 to 1-7 provide summary information on the practices/clinics responding to the survey. Some selected highlights include:

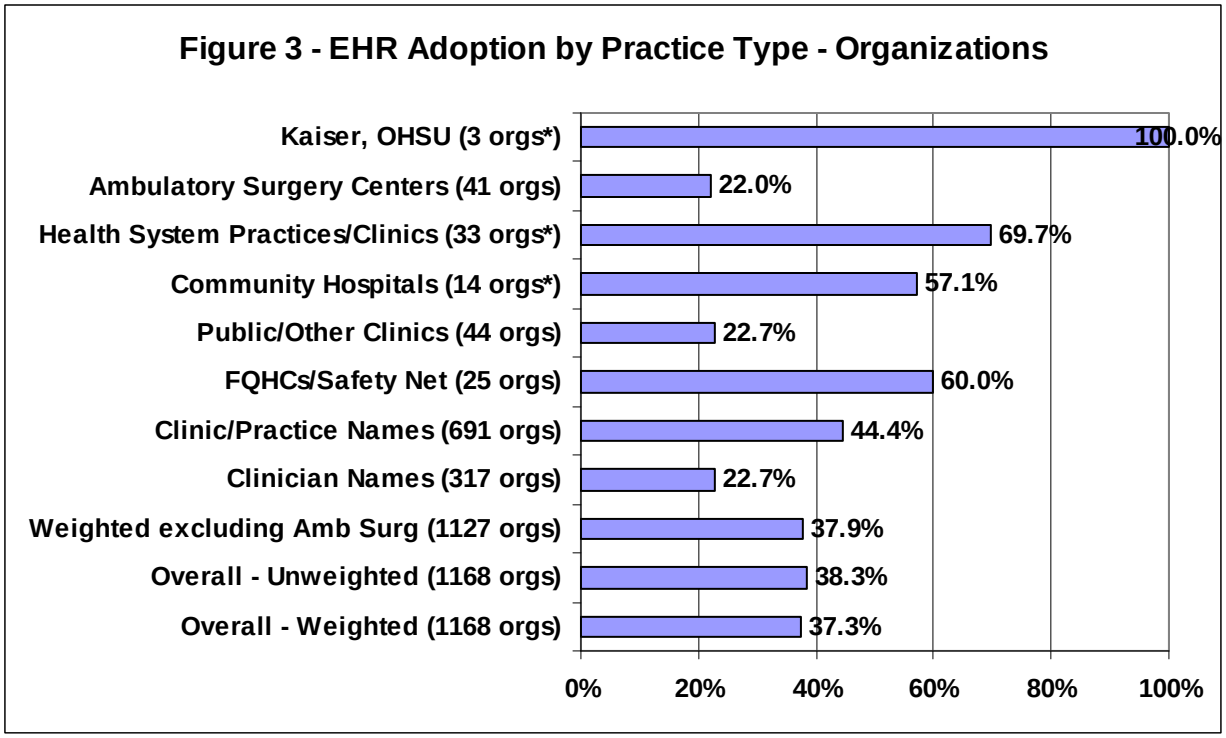
- The 1,168 practices/clinics include 7,845 clinicians at 1,782 separate practice locations.

- Of the 1,168 practices/clinics, 452 are solo practices (38.7%), 393 are practices with 2-4 clinicians (33.6%), 194 are practices have 5-9 clinicians (16.6%) and 129 are practices with 10 or more clinicians (11.0%).
- The distribution of the 7,845 clinicians by practice size is quite different with 452 clinicians in solo practices (5.8%), 1,074 in practices with 2-4 clinicians (13.7%), 1,273 in practices with 5-9 clinicians (16.2%) and 5,046 in practices with 10 or more clinicians (64.3%).

EHR Adoption – All Organizations
EHR adoption rates are shown in this section for all the practices types of organizations and the number of clinicians with the practices and clinics. Adoption rates for just the clinician organizations are shown in the next section.

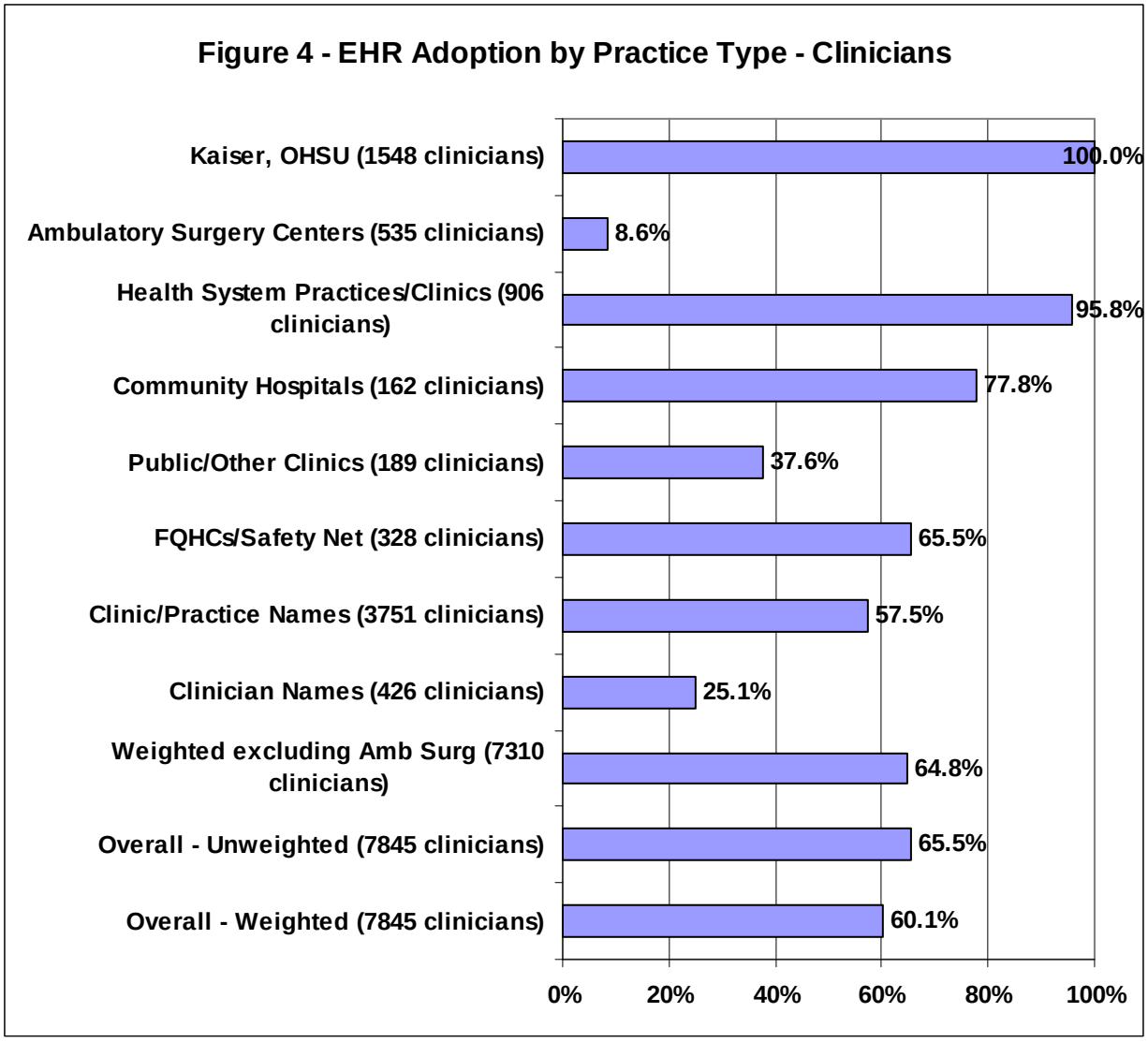
Adoption by Type of Practice Organization: Figure 3 shows that the EHR adoption rates by practice type across all organizations. The overall weighted organization adoption rate is **37.3%** (447 of 1,168 organizations) compared to 26.8% in the 2006 survey (313 of 1,123 organizations). Excluding the ambulatory surgery centers because clinicians may be double-counted, the weighted organization adoption rate is slightly higher at **37.9%**. The highest rates of organization adoption are for practices/clinics operated by health systems (69.7%) and Kaiser, OHSU (100%). The lowest adoption rates are for Ambulatory Surgery Centers (22.0%), Public/Other Clinics (22.7%) and Clinician Name practices (22.7%).

Figure 3 - EHR Adoption by Practice Type - Organizations



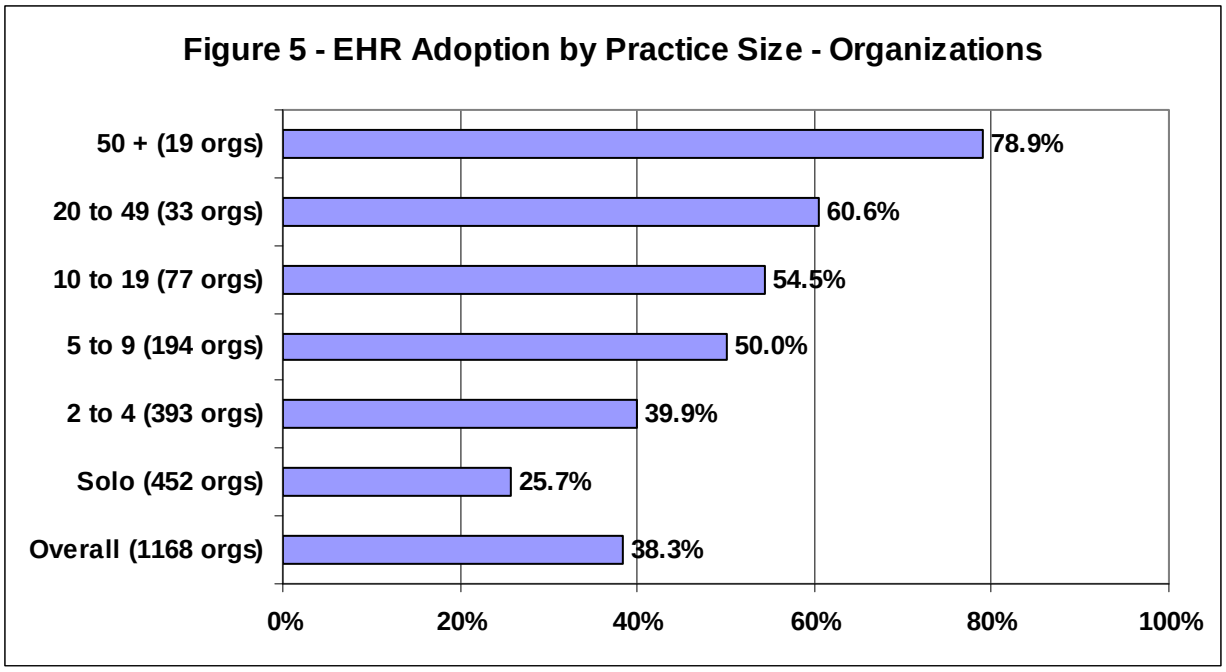
* Some organizations counted more than once in order to reflect adoption by region.
Source: Appendix C, Tables 4-1, 4-2.

Figure 4 shows that the EHR adoption rate by practice type for 7,845 clinicians covered by the survey. The overall weighted clinician adoption rate is **60.1%** compared to 55.0% from the 2006 survey. Excluding the ambulatory surgery centers because clinicians may be double-counted, the weighted organization adoption rate is slightly higher at **64.8%**.The highest rates of clinician adoption are for practices/clinics operated by health systems (95.8%) and Kaiser, OHSU (100%). The lowest clinician access to EHRs occurs in Ambulatory Care Centers (8.6% of the 535 clinicians), Clinician Name practices (25.1% of 426 clinicians) and Public/Other Clinics (37.6% of the 189 clinicians).



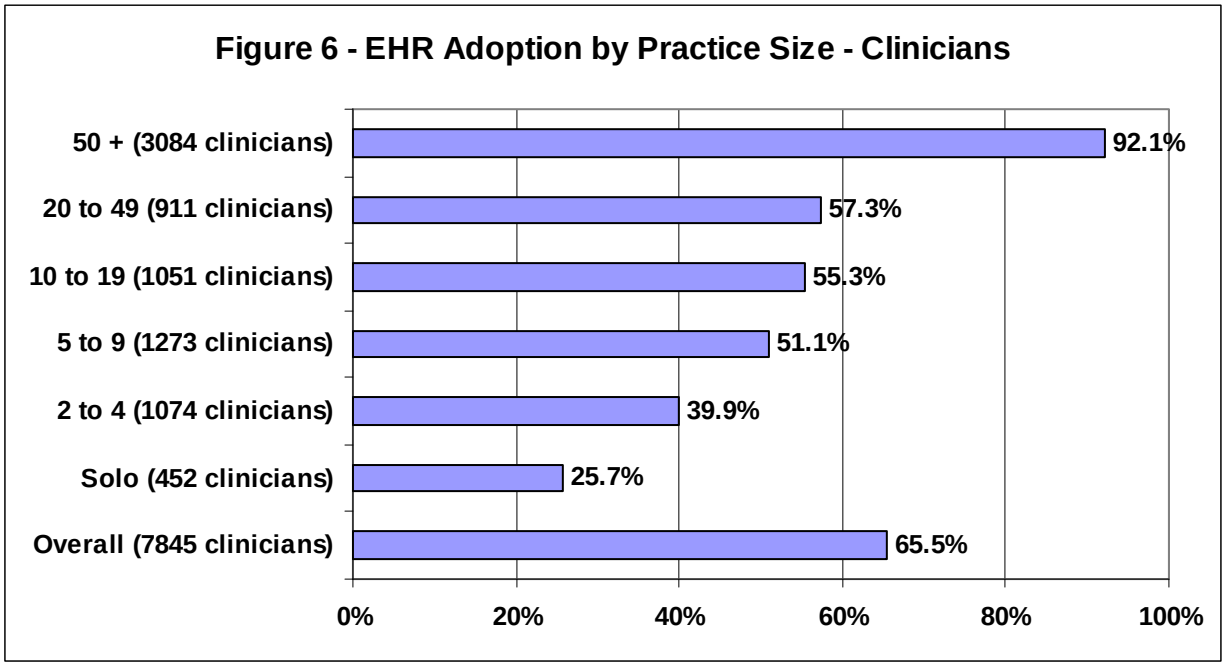
Source: Appendix C, Tables 5-1, 5-2.

Adoption by Size of Practice: Figure 5 shows EHR adoption rates by practice size. The overall organization adoption rate is **38.3%** (1,168 organizations) compared to 27.0% (1,151 organizations) in 2006. The highest rates of organization adoption are for practices/clinics with 50 or more clinicians (78.9%). The three practices size categories with 5 to 49 clinicians have adoption rates ranging from 50.0% to 60.6%. The adoption rate for solo practices is 25.7% compared to 19.3% in the 2006 survey. Generally, the adoption rate increases with practice size.



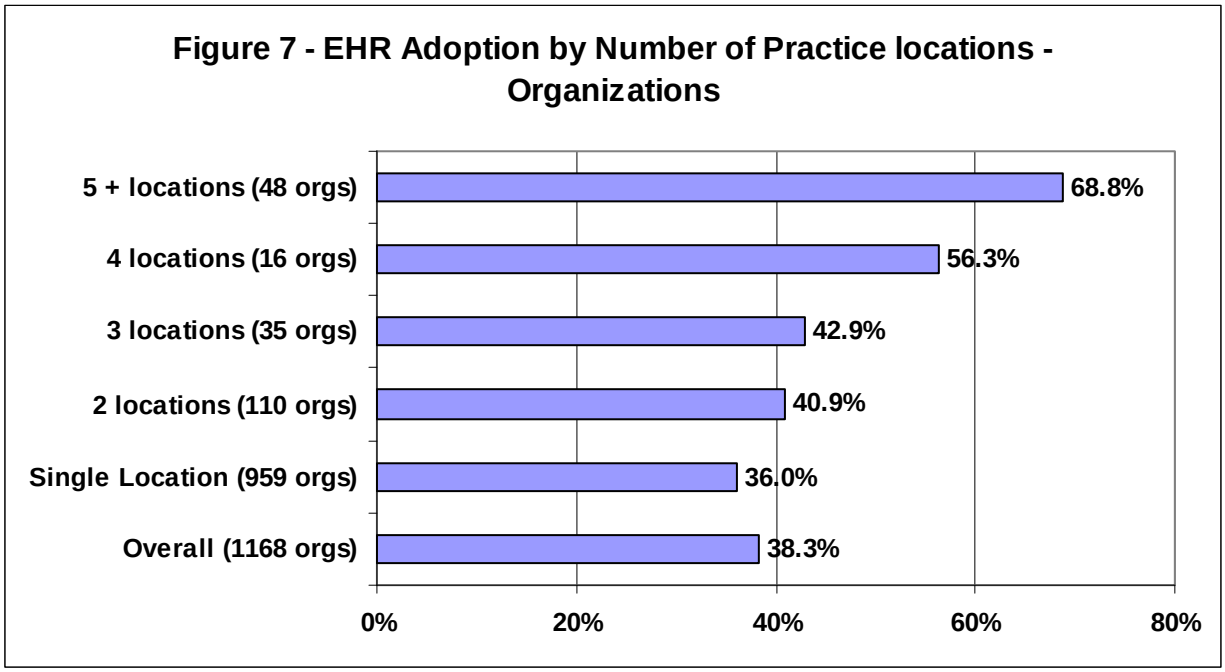
Source: Appendix C, Tables 6-1, 6-2.

Figure 6 shows EHR adoption rates by practice size for clinicians at organizations (1,168 organizations). The overall clinician adoption rate is **65.5%** (7,845 clinicians) compared to 58.4% (8,144 clinicians) in the 2006 survey. The highest rates of clinician adoption are for practices/clinics with 50 or more clinicians (92.1%). The three practices size categories with 5 to 49 clinicians have adoption rates ranging from 51.1% to 57.3%. The lowest adoption rate is for solo practices of 25.7 reflecting an increase from 19.3% in the 2006 survey. Generally, the clinician adoption rate increases with practice size.



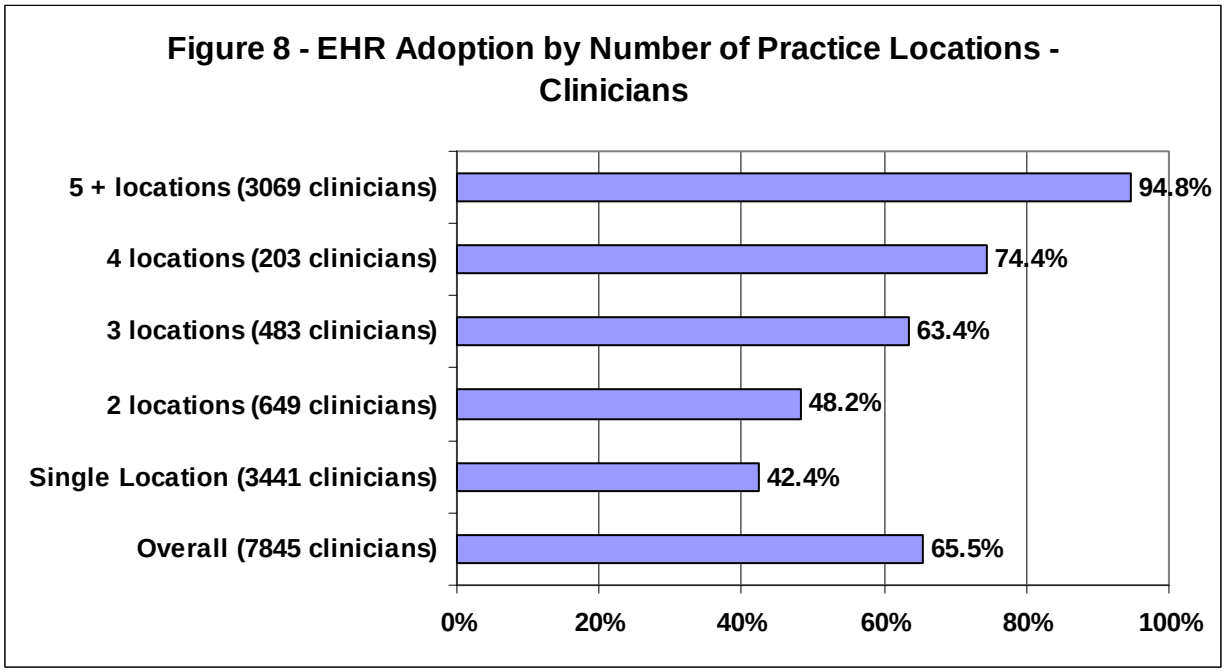
Source: Appendix C, Tables 8-1, 8-2.

Adoption by Number of Practice Locations: Figure 7 shows EHR adoption rates by number of practice locations for organizations responding to the survey. The overall organization adoption rate is **38.3%** (1,168 organizations) compared to 26.8% (1,166 organizations) in the 2006 survey. The highest rates of organization adoption are for practices/clinics with 5 or more locations (68.8%) and 4 locations (56.3%). The lowest adoption rate is for single location practices 36.0% compared to 24.9% in the 2006 survey. Single location practices represent 82.2% of surveyed practice organizations.



Source: Appendix C, Tables 7-1, 7-2.

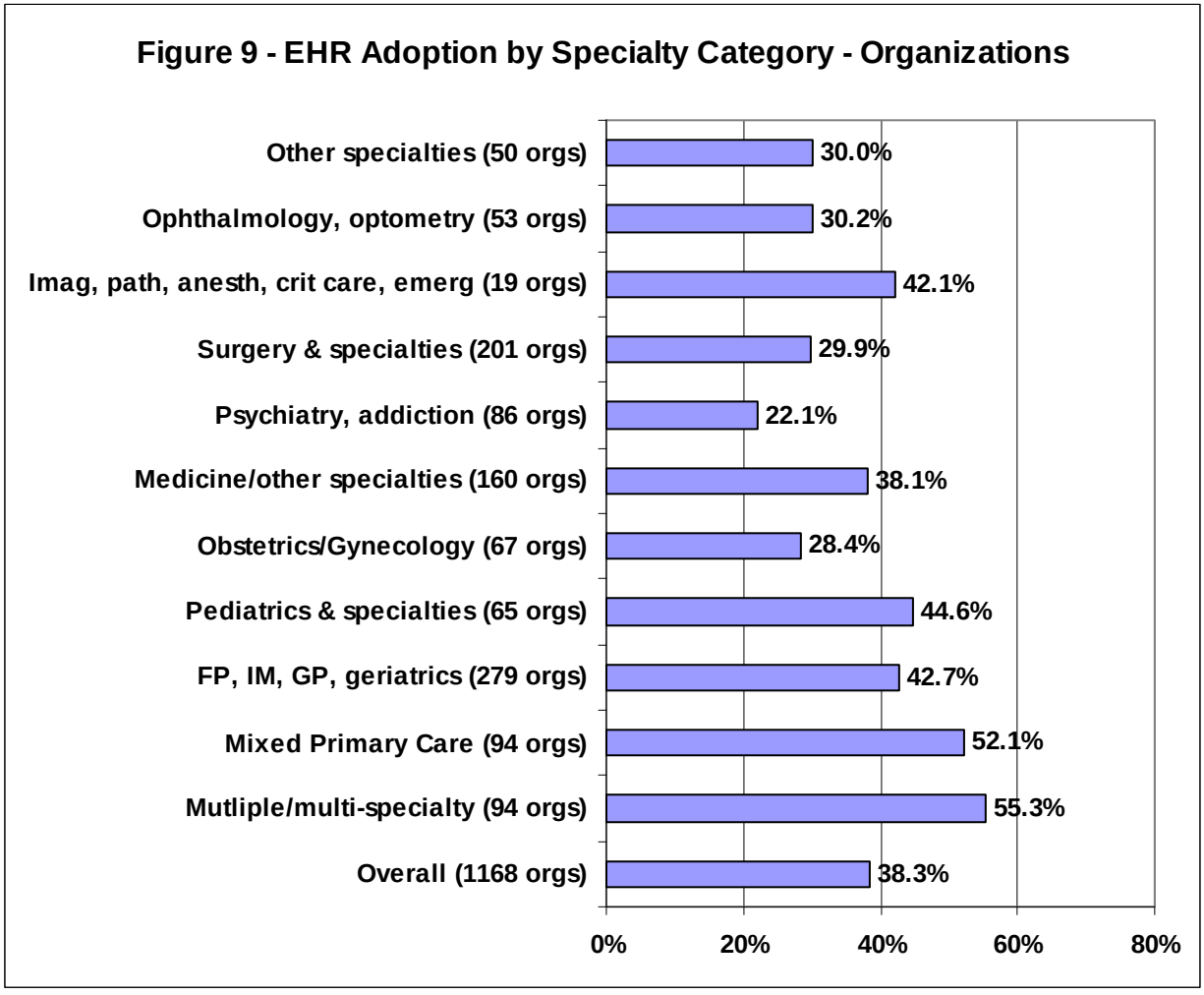
Figure 8 shows EHR adoption rates by number of practice locations for clinicians at organizations responding to the survey. The overall clinician adoption rate is **65.5%** (7,845 clinicians) compared to 58.4% (8,144 clinicians) in 2006. The highest rate of clinician adoption is for practices/clinics with 5 or more locations (94.8%). Practices with 5 or more locations represent 39.1% of clinicians covered by the survey responses. The lowest adoption rates are for practices with and single location practices of 42.4% adoption compared to 31.1% in 2006. Single location practices represent 43.9% of clinicians covered by the survey responses.



Source: Appendix C, Tables 9-1, 9-2.

Adoption by Practice Specialty Category: Figure 9 shows EHR adoption rates by specialty categories. The overall organization adoption rate is **38.3%** (1,168 organizations) compared to 27.3% (1,106 organizations) in 2006. The highest rates of organization adoption are for mixed primary care practices (52.1%) and multi-specialty practices (55.3%). The lowest adoption rates are for practices limited to psychiatry (22.1%) and limited to obstetrics/gynecology (28.4%). Adoption rates for other specialty categories range from 29.9% to 44.6%.

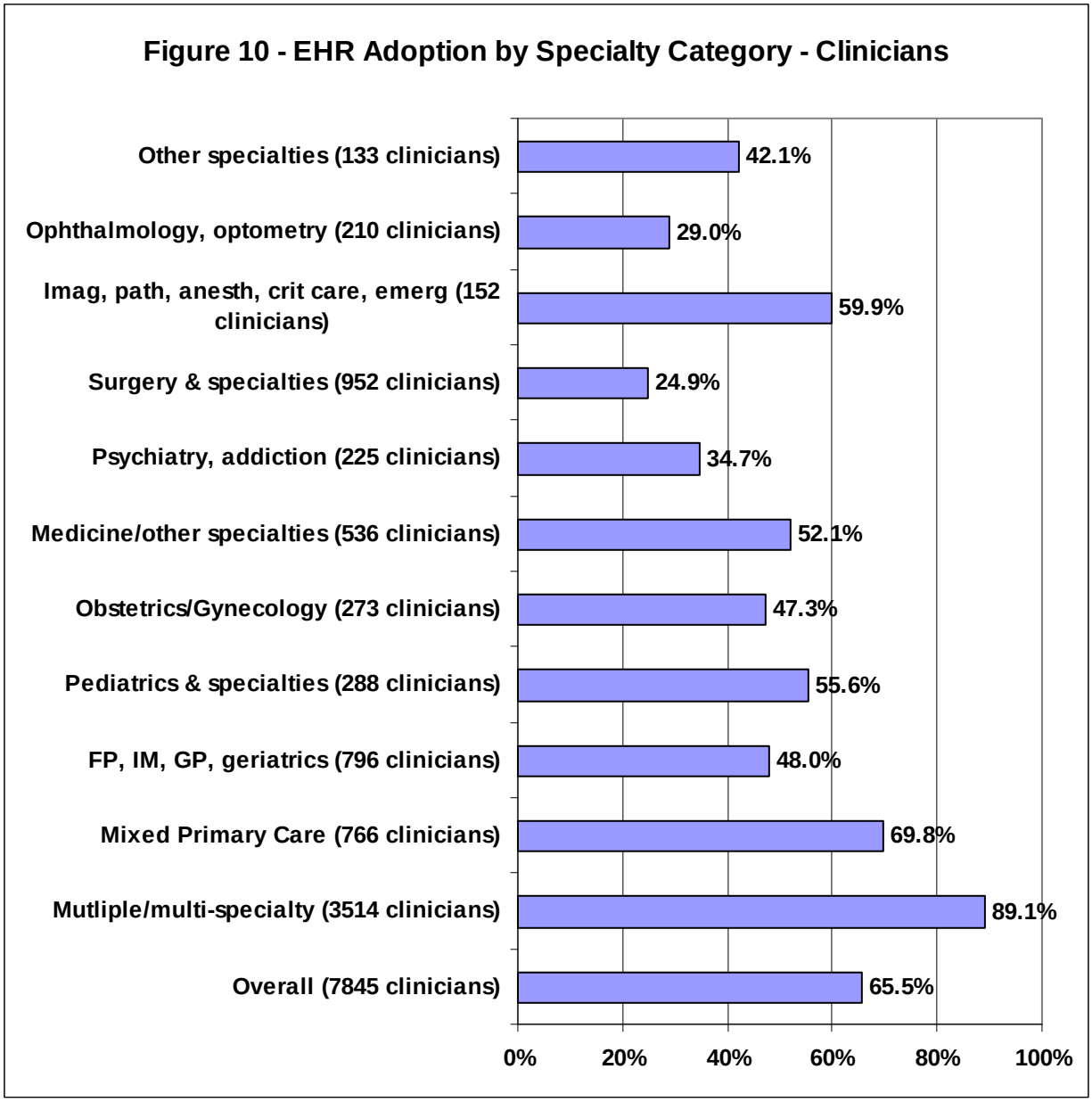
Note: Any particular specialty maybe included in up to three categories depending on the scope of practices with which they are associated.



Source: Appendix C, Tables 10-1, 10-2.

Figure 10 shows EHR adoption rates by specialty category for clinicians. The overall clinician adoption rate is **65.5%** (7,845 clinicians compared to 59.2% (7,948 clinicians at 1,106 organizations) in 2006. The highest rate of clinician adoption is for multi-specialty practices (90.1%) and mixed primary care clinics (69.8%). Multi-specialty practices and mixed primary care practices represent 54.6%% of the surveyed clinicians. The lowest adoption rates are for specialty categories of ophthalmology/optometry (29.0%) and surgery and surgical specialties (24.9%).

Note: Any particular specialty maybe included in up to three categories depending on the scope of practices with which they are associated.



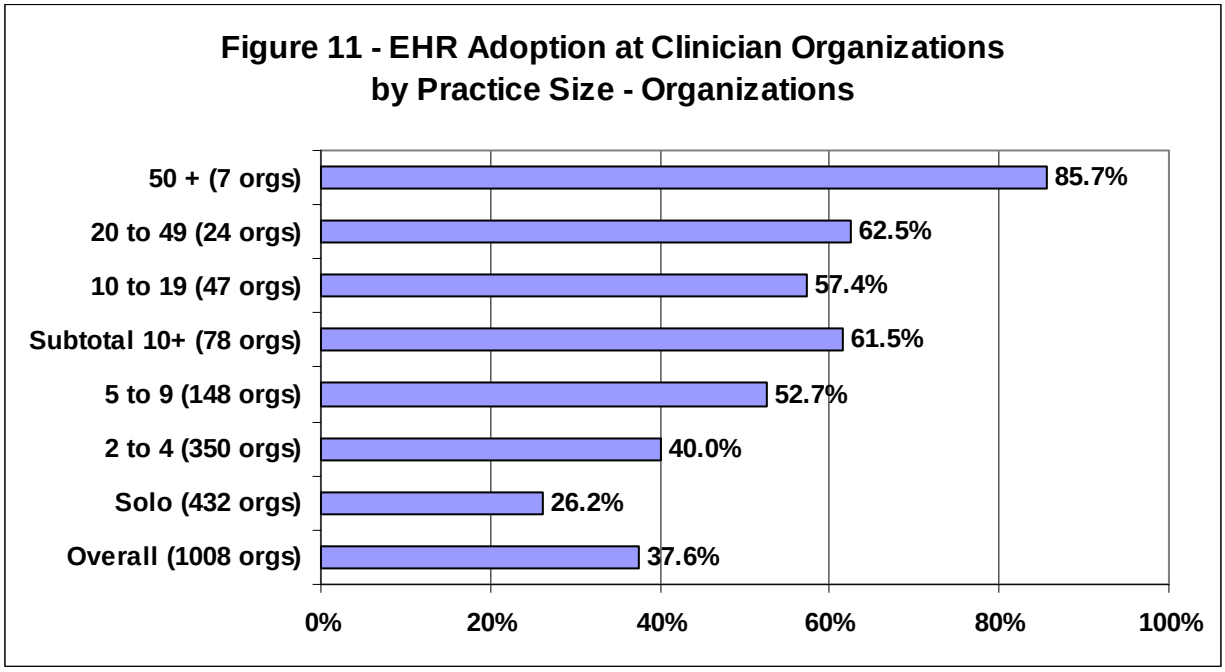
Source: Appendix C, Tables 11-1, 11-2.

Region/County Distribution: Appendix C, Tables 12-1 and 12-2 summarizes data by region/county for survey respondents. For health systems with practices and clinics in multiple counties, this report considers the activities in the separate regions as separate organizational entities. Data for the subset of just the clinical organizations by region/county is shown below in Figures 16 and 17.

EHR Adoption – Just Clinician Organizations

Clinician organizations are practices and clinics operated by independent physician practitioners or groups that are not under the ownership or auspices of hospitals or health systems nor operated by a FQHC, safety net or public clinic.

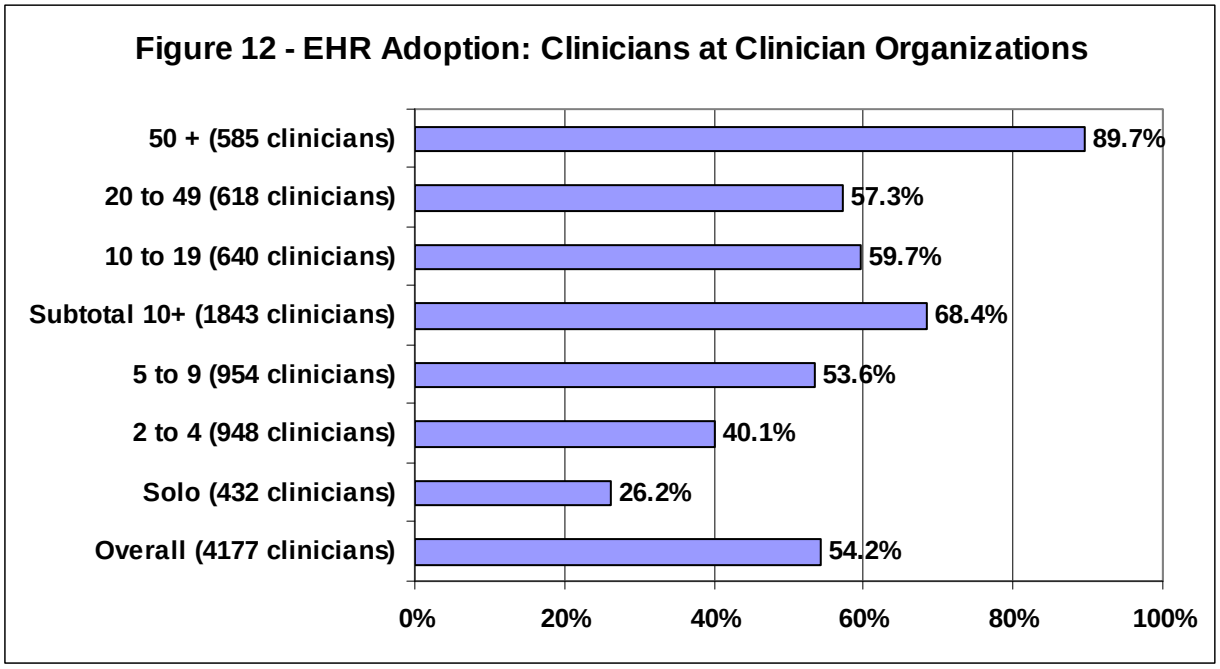
Adoption at Clinician Organizations by Practice Size: Figure 11 shows EHR adoption rates by practice size for clinician organizations. The overall organization adoption rate is **37.6%** (1,008 clinician organizations) compared to 27.1% (1,018 clinician organizations) in 2006. The highest rates of organization adoption are for practices/clinics with 50 or more clinicians (85.7%). The combined rate of adoption for practice with 10 or more clinicians in 78 practices is 61.5%. The lowest adoption rate involves solo practices (26.2%). Generally, the adoption rate increases with practice size.



Source: Appendix C, Tables 13-1, 13-2.

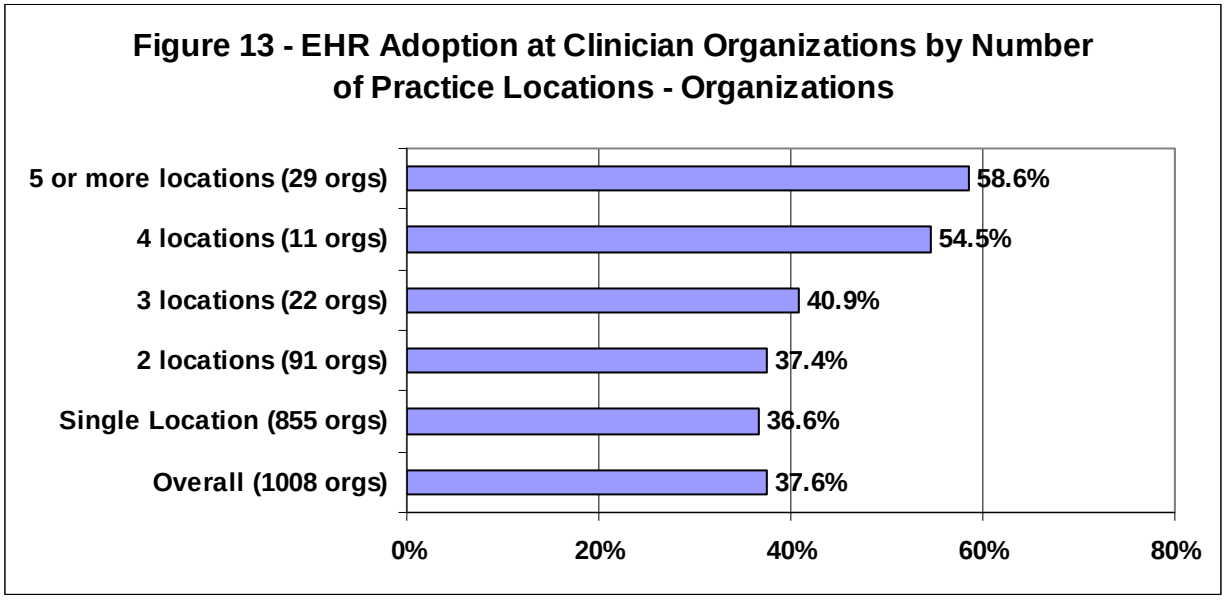
Figure 12 shows EHR adoption rates by practice size for clinicians at clinician organizations. The overall organization adoption rate is **54.2%** (4,177 clinicians at 1,008 clinician

organizations) compared to 35.6% (4,336 clinicians at 1,018 clinician organizations) in the 2006 survey. The highest rates of clinician EHR availability are for practices/clinics with 50 or more clinicians with 85.7%, up from 52.6% in 2006. The combined rate of adoption for practice with 10 or more clinicians is 61.5%, up from 43.5% in 2006. Lower adoption rates are shown for solo practices (26.2%) and practices with 2 to 4 clinicians (40.0%). Generally, the adoption rate increases with practice size.



Source: Appendix C, Tables 13-3, 13-4.

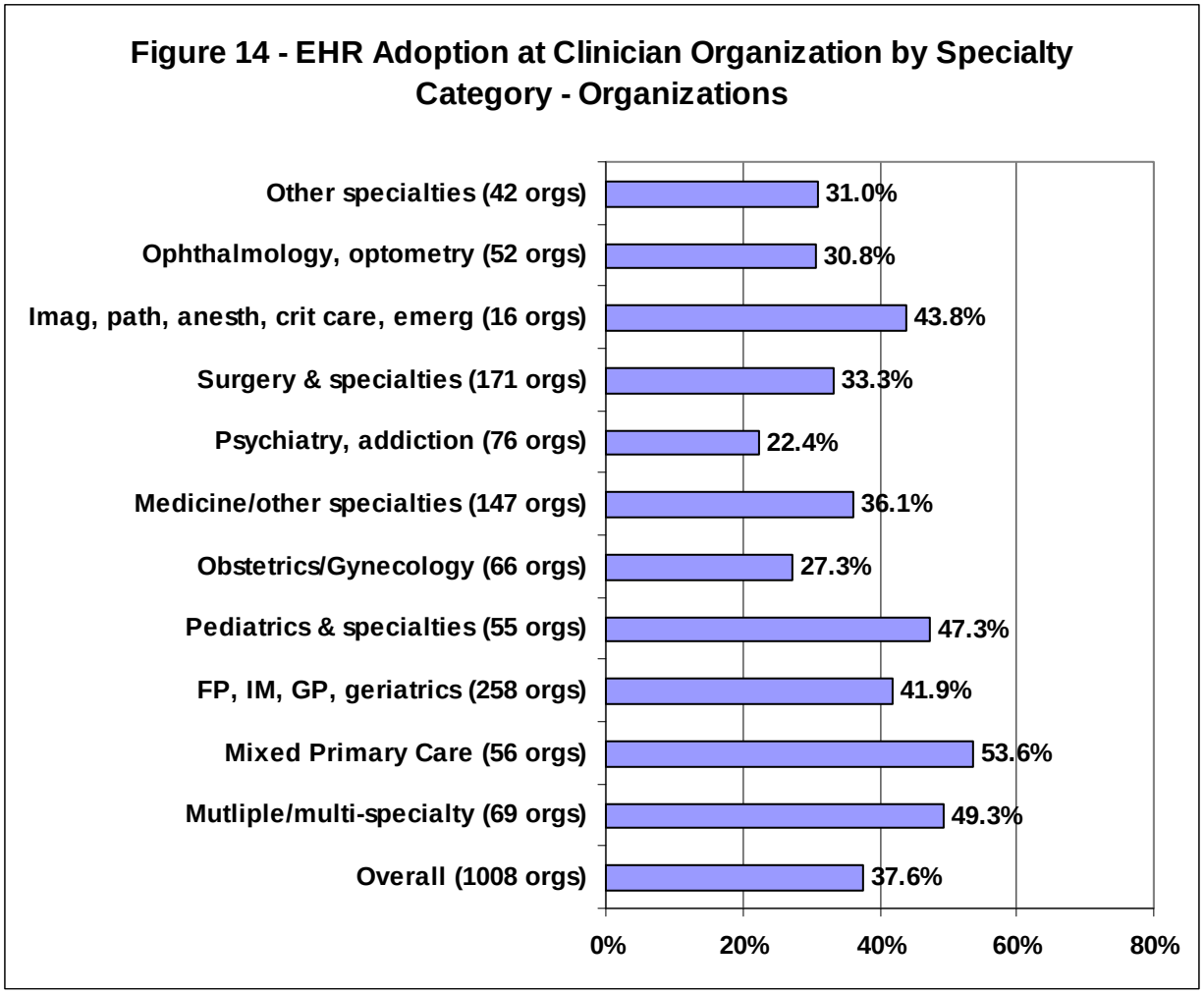
Adoption at Clinician Organization by Number of Practice Locations: Figure 13 shows EHR adoption rates by number of practice locations for clinician organizations. The overall organization adoption rate is **37.6%** (1,008 clinician organizations) compared to 27.0% (1,021 clinician organizations) in the 2006 survey. The highest rates of organization adoption are for practices/clinics with 4 locations (54.5%) and practices with 5 or more locations (58.6%). The lowest adoption rate is for single locations practices (36.6%). Single location practices represent 84.8% of surveyed clinician organizations. The adoption rate generally increases with the number of practice locations.



Source: Appendix C, Tables 14-1, 14-2.

Adoption at Clinician Organizations by Practice Specialty Category: Figure 14 shows EHR adoption rates by specialty categories for clinician organizations. The overall clinician organization adoption rate is **37.6%** (1,008 clinician organizations) compared to 27.3% (977 clinician organizations) in the 2006 survey. The highest rates of organization adoption are for mixed primary care practices (53.6%), multi-specialty practices (49.3%) and pediatrics (47.3%). The lowest adoption rate is for practices limited to psychiatry (22.4%). Adoption rates for other specialty categories range from 27.3% to 43.8%.

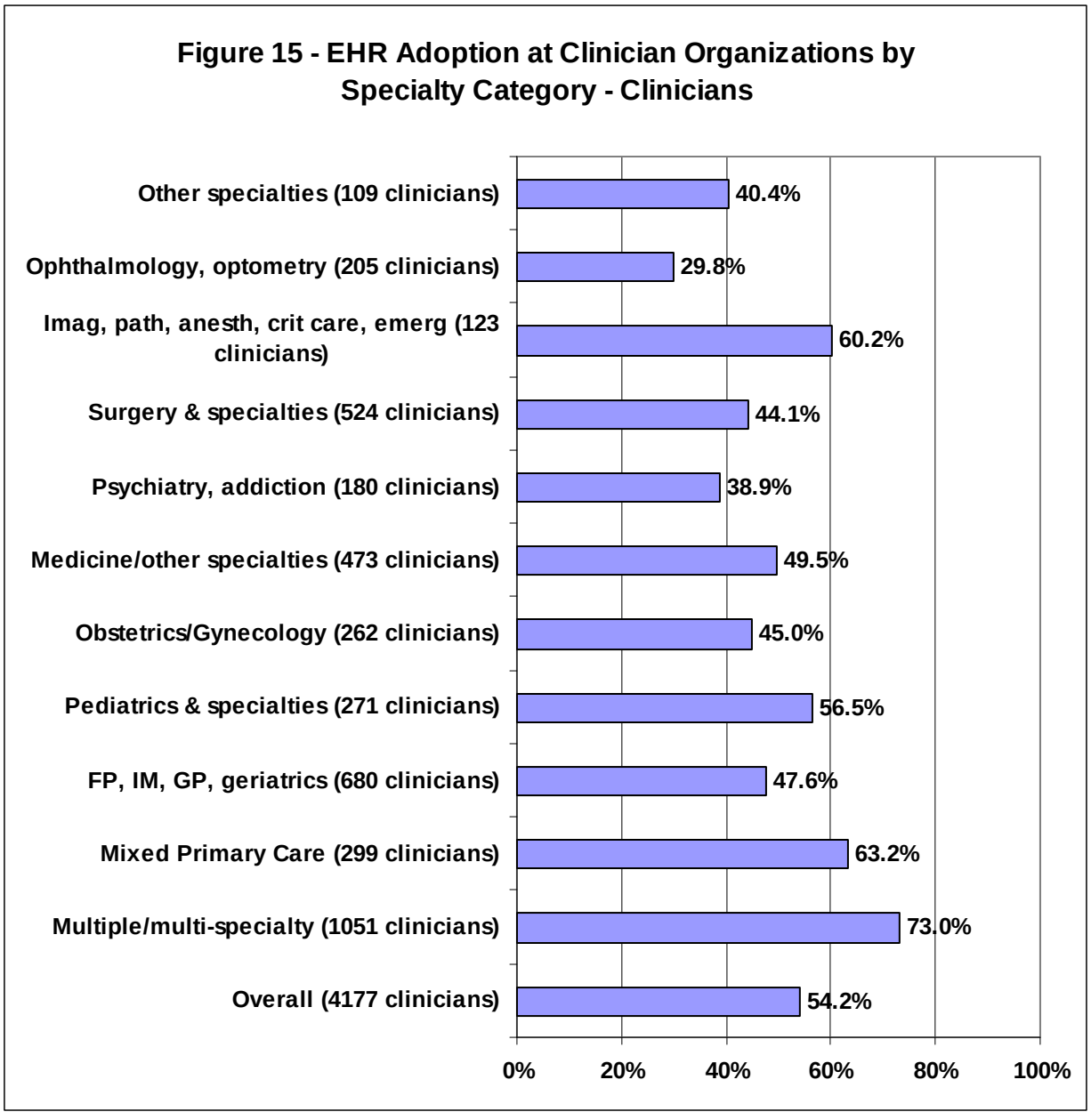
Note: Any particular specialty maybe included in up to three categories depending on the scope of practices with which they are associated.



Source: Appendix C, Tables 15-1, 15-2.

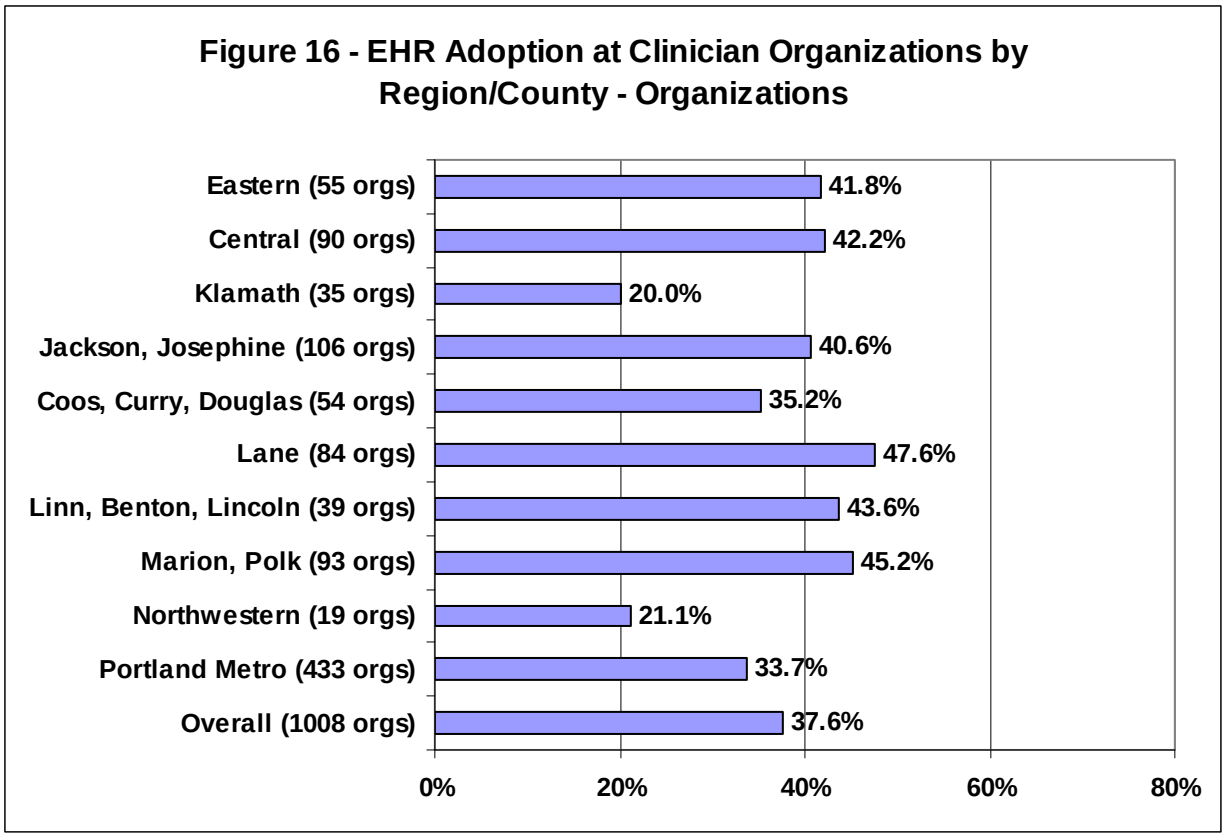
Figure 15 shows EHR adoption rates by specialty category for clinicians at 1,008 clinician organizations. The overall clinician adoption rate is **54.2%** (4,177 clinicians at clinician organizations) compared to 35.8% (4,219 clinicians) in the 2006 survey. The highest rates of clinician adoption are for multi-specialty practices (73.0%) and mixed primary care practices (63.2%). Mixed primary care and multi-specialty practice clinicians represent 38.5% of the clinicians in surveyed clinician organizations. The lowest adoption rates are for specialty categories of ophthalmology/optometry (29.8%) and psychiatry (38.9%). Other categories are in the range of 40.4% to 60.2%.

Note: Any particular specialty maybe included in up to three categories depending on the scope of practices with which they are associated.



Source: Appendix C, Tables 16-1, 16-2.

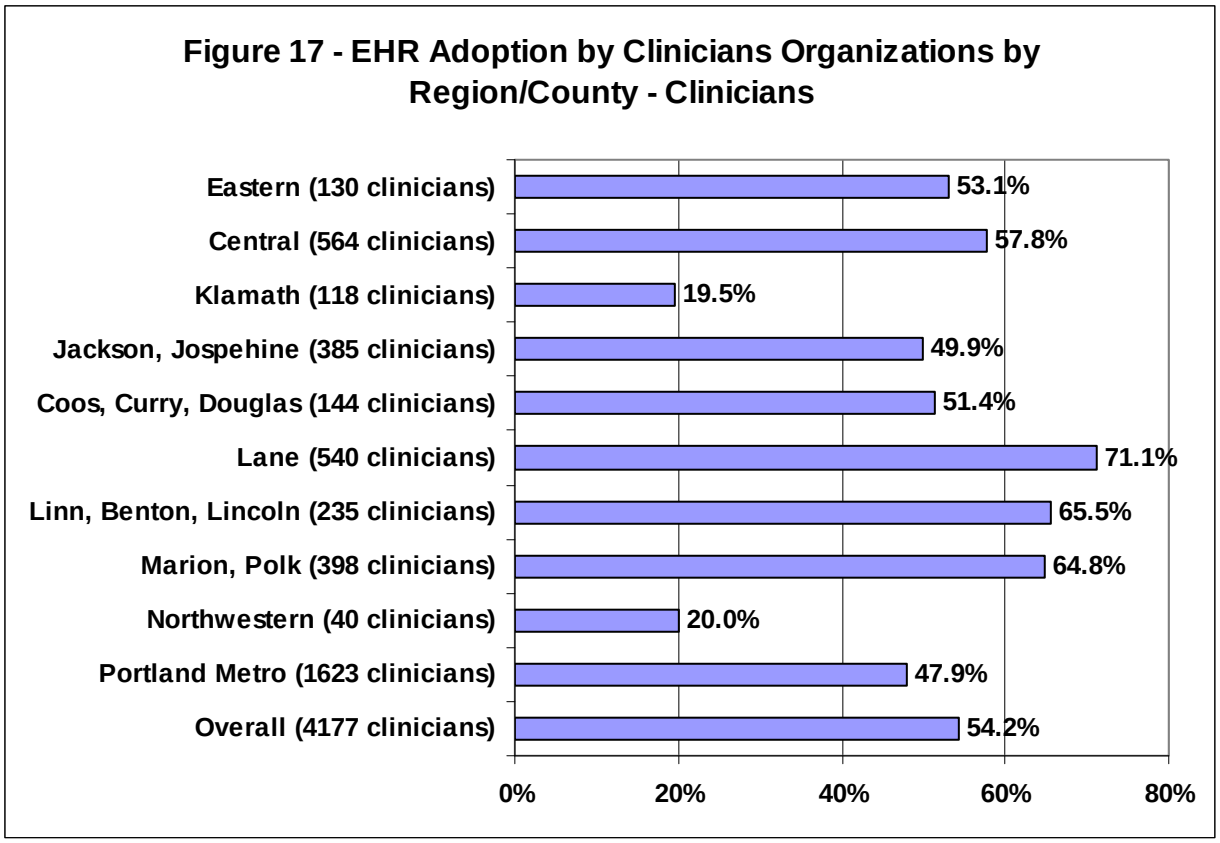
Adoption at Clinician Organization by Region/County: Figure 16 shows EHR adoption rates by region/counties across Oregon for clinician organizations. The overall clinician organization adoption rate is **37.6%** (1,008 clinician organizations) compared to 27.0% (1,018 clinician organizations) in the 2006 survey. Six regions have organization adoption rates in excess of 40% (range 40.6% to 47.6%) including Lane County (47.6%), Marion and Polk counties (45.2%), Linn, Benton, Lincoln counties (43.6%), Central Oregon counties (42.2%), and Eastern Oregon counties (41.8%). The lowest adoption rates are for Klamath County (20.0%) and Northwestern Oregon counties (21.1%). The Portland Metro area has 42.9% of clinician organizations with an adoption rate of 33.7%.



Source: Appendix C, Tables 17-1, 17-2.

Figure 17 shows EHR adoption rates by regions/counties across Oregon for clinicians at 1,008 clinician organizations. The overall adoption rate is 54.2% (4,177 clinicians at clinician organizations compared to 34.8% (4,260 clinicians at clinician organizations) in the 2006 survey. The highest rates of clinician adoption are in Lane County (71.1%), Linn, Benton, Lincoln counties (65.5%) and Marion – Polk counties (64.8%). The lowest adoption rates are for, Klamath County (19.5%), and Northwestern Oregon counties (20.0%). The Portland Metro area has 38.9% of clinicians in clinician organizations with an adoption rate of 47.9%.

Note: The region/county clinician data may be affected by variable response rates among the different sizes of practices within a region/county. The survey process could not estimate response rates by practice size across the state or within the regions/counties.



Source: Appendix C, Tables 18-1, 18-2.

Relationship of EHR and EPM Adoption

The successful adoption and use of an EHR system typically requires that there be a foundation of business and practice management systems. For most practices/clinics, the implementation of an electronic practice management system (EPM) provides that foundation and is a necessary precursor to EHR system implementation. Figures 18-1 through 18-8 show the proportion of surveyed organizations with possible combinations of EHR and EPM systems as follows

- Has an EHR system but does not have an EPM system
- Has an EHR system and an EPM system
- Does not have an EHR system but has an EPM system
- Does not have an EHR system nor an EPM system

Figures 19-1 through 19-8 show the proportion of clinicians with the same possible combinations of EHR and EPM systems.

The results of this series shows that relatively few organizations have EHRs in absence of EPMs and the proportion of clinicians using EHRs is larger than the proportion of organizations since rates of EHR adoption in small practices is much lower than the rates for large practices.

Figures 18-1a and 19-1a show the proportion of organizations and clinicians who have adopted EHR and EPM systems for **all** survey respondents. This chart pair is not weighted for variable response rates.

Figure 18-1a - Overall – Unweighted (1168 orgs)

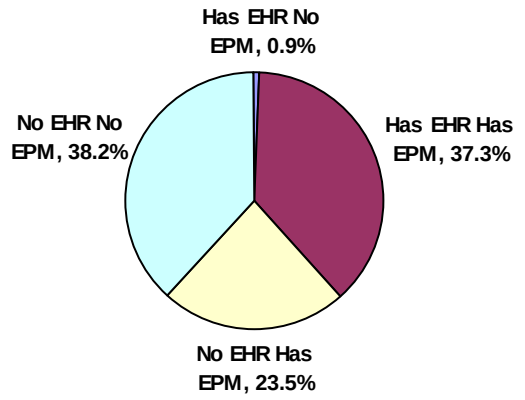
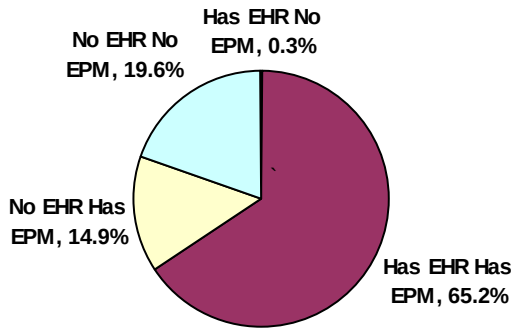


Figure 19-1a – Overall - Unweighted (7845 clinicians)



Source: Appendix C, Tables 4-1, 4-2, 5-1, 5-2.

Figures 18-1b and 19-1b show the **weighted** proportion of organization and clinicians who have adopted EHR and EPM systems for the aggregation of Practice Types excluding free-standing ambulatory surgery centers since it is likely some of those clinicians may also be included in other practice type groups. This data is weighted for the variation in the response rates among the various Practice Types.

Figure 18-1b – Weighted excluding Ambulatory Surgery Centers (1127 orgs)

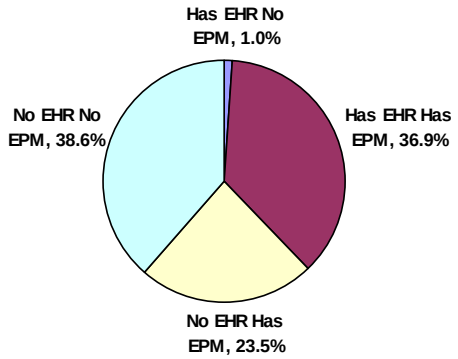
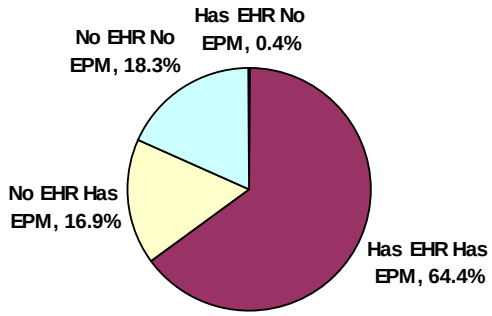


Figure 19-1b – Weighted Practice Types of Interest (7310 clinicians)



Source: Appendix C, Tables 4-1, 4-2, 5-1, 5-2.

Figures 18-2 through 18-4 and 19-2 through 19-4 show the proportion of organization and clinicians who have adopted EHR and EPM systems for all Clinician Organizations, a combined grouping of FQHC/Safety Net, Public and Other Organizations, and a combined grouping of Health System Practices/Clinics and Kaiser/OHSU.

Figure 18-2 - Clinician Orgs (1008 orgs)

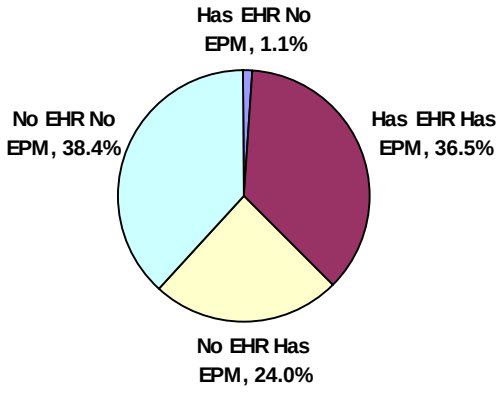


Figure 19-2 - Clinician Orgs (4117 clinicians)

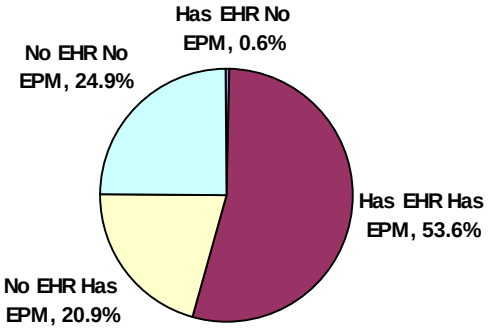


Figure 18-3 - FQHCs/Safety Net/Public/Other (69 orgs)

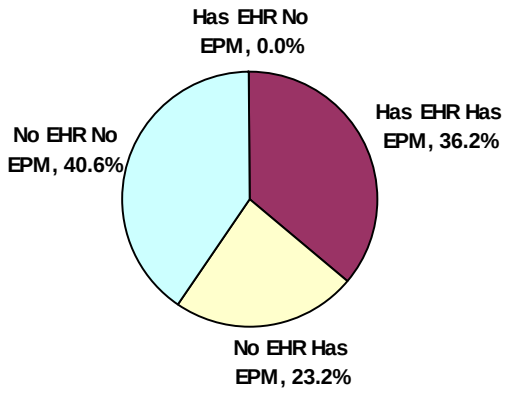


Figure 19-3 - FQHCs/Safety Net/Public/Other (517 clinicians)

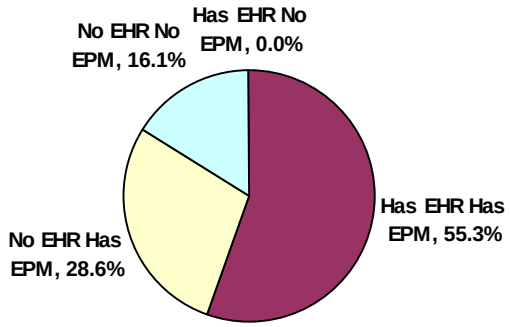


Figure 18-4 - Health Systems/Community Hospitals/Kaiser/OHSU (50 orgs)

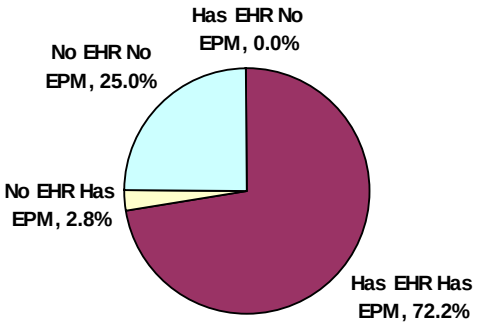
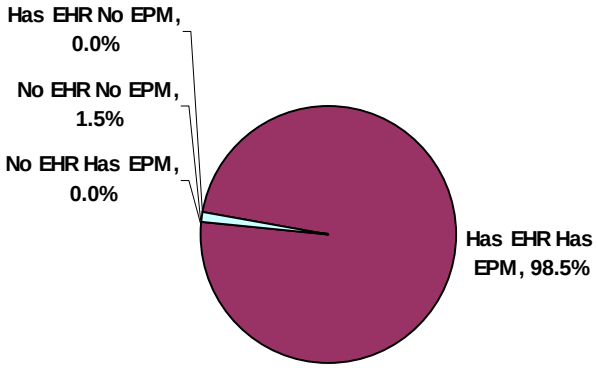


Figure 19-4 - Health Systems/Community Hospitals/Kaiser/OHSU (2616 clinicians)



Source: Appendix C, Tables 4-1, 4-2, 5-1, 5-2.

Figures 18-5, 18-6, 19-5 and 19-6 show the proportion of organization and clinicians who have adopted EHR and EPM systems for Clinician Names organizations and Clinic/Practice Names organizations.

Figure 18-5 Clinician Names (317 orgs)

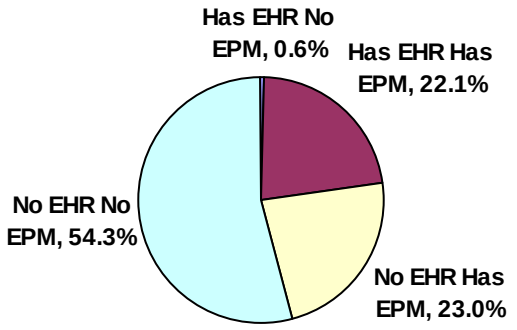


Figure 19-5 - Clinician Names (426 clinicians)

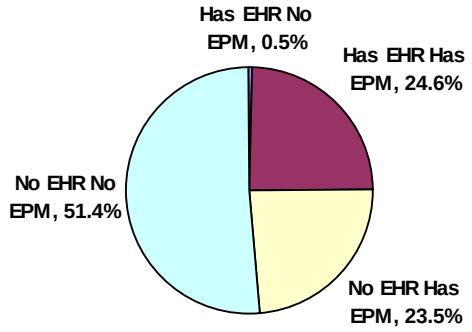


Figure 18-6 - Clinic/Practice Names (691 orgs)

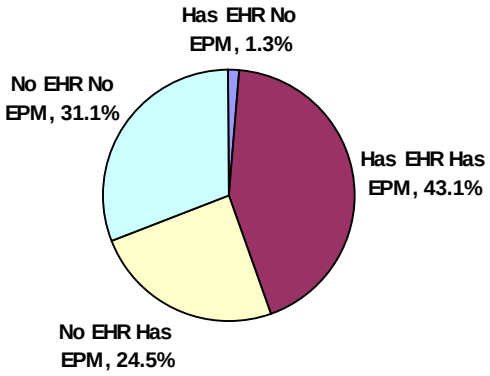
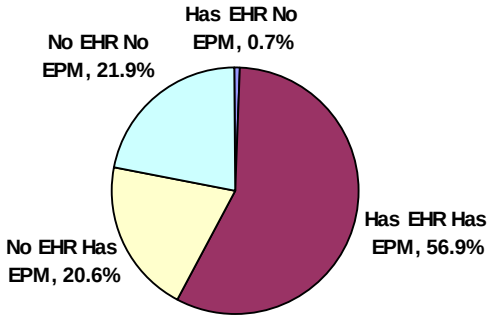


Figure 19-6 - Clinic/Practice Names (3751 clinicians)



Source: Appendix C, Tables 4-1, 4-2, 5-1, 5-2.

Figures 18-7, 18-8, 19-7 and 19-8 show the proportion of organization and clinicians who have adopted EHR and EPM systems for FQHC/Safety Net and Public/Other Clinics organizations.

Figure 18-7 - FQHCs/Safety Net (25 orgs)

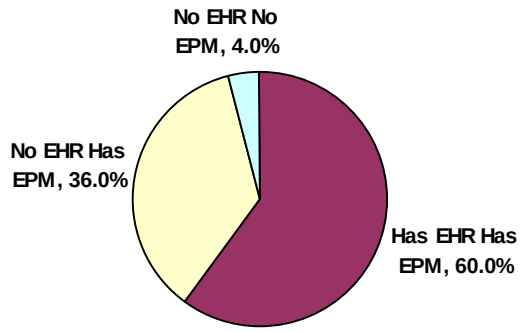


Figure 19-7 - FQHCs/Safety Net (328 clinicians)

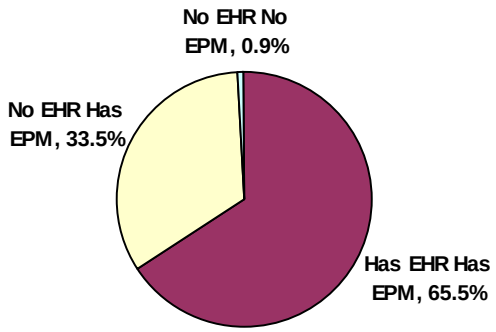


Figure 18-8 - Public/Other Clinics (44 orgs)

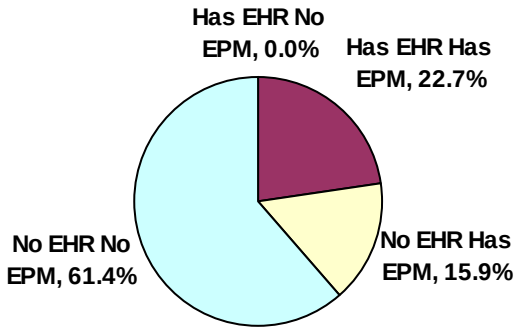
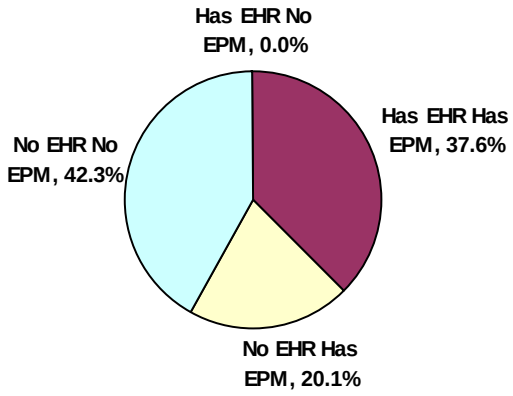
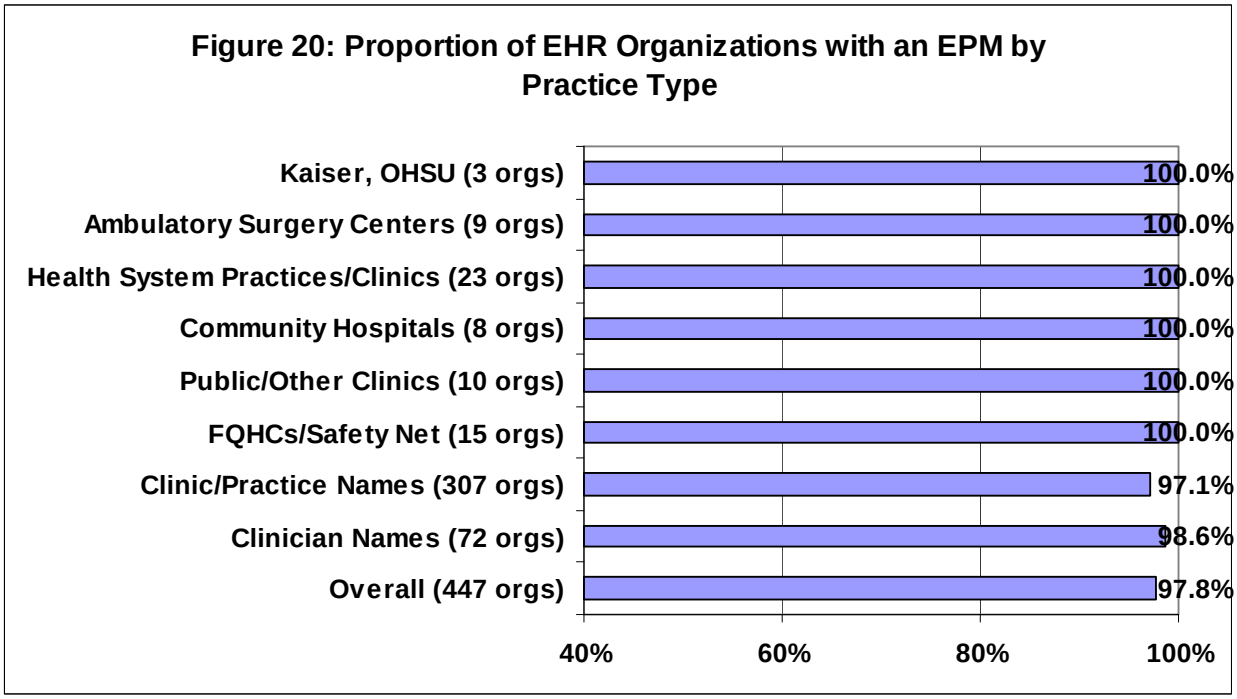


Figure 19-8 - Public/Other Clinics (189 clinicians)



Source: Appendix C, Tables 4-1, 4-2, 5-1, 5-2.

Figure 20 shows the proportion or organizations using an EHR that also have an EPM system by practice type. The only practice types with an EHR but not EPM system are in clinician owned/operated practices (Clinician Names and Clinic/Practice Names). Nearly all of the practices reporting having an EHR but not an EPM indicated that they had a self-developed EHR system. The majority of clinician organizations without an EPM system are practices reporting that they are using a self-developed EHR system.



Source: Appendix C, Tables 4-1, 4-2.

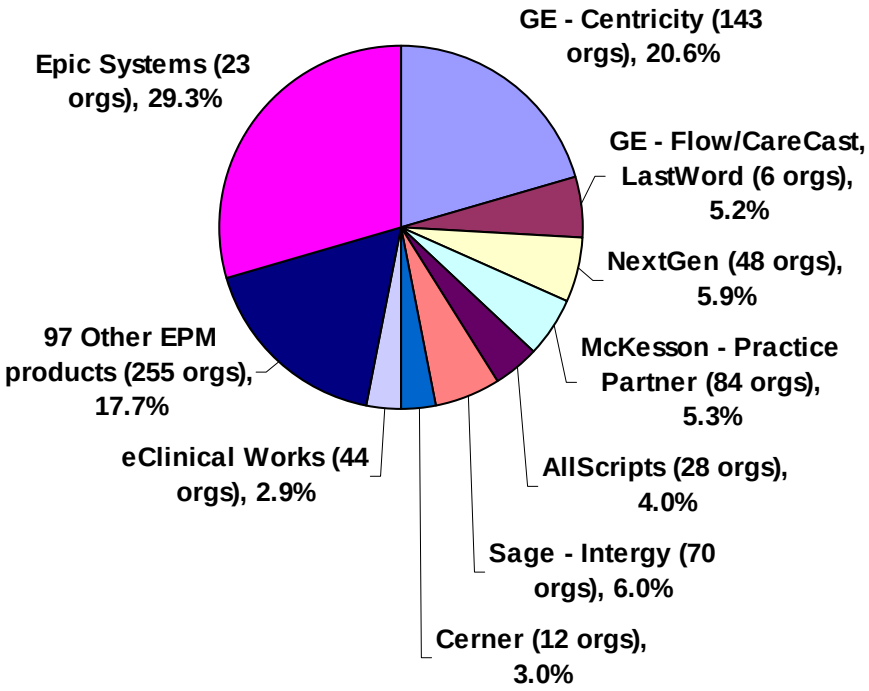
EPM Systems in Use

The survey asked respondents to identify the vendor, product and version of the EPM system used in their practice/clinic. Survey responses indicate that 713 organizations (61.0% of 1,168 organizations) use an EPM system serving 6,289 clinicians or 80.2% of 7,845 total clinicians covered by the survey. Across all practice types, respondents identified the use of 106 different vendors/products, with 96 vendors/products identified by the clinician organizations.

Figure 21 shows the market share distribution for EPM vendors/products based on the number of **clinicians** served. Nine vendors/products account for 82.3% of the clinicians served by EPM products. The largest market shares in terms of number of organizations are GE-Centricity (20% or 143 organizations), McKesson-Practice Partner (11.8% or 84 organizations) and NextGen (6.7% or 48 organizations). The largest market shares in terms of clinicians served are Epic Systems (29.3%) and GE-Centricity (20.6%). Other GE EPM products (Flowcast, CareCast and LastWord) are products acquired in the acquisition of the IDX Company several years ago involving 5.2% of clinicians at six organizations.

It should be noted that these market share indicators may be different from the real market share distributions due to variable response rates among practices with specific products. The survey process could not estimate response rates by vendor or product.

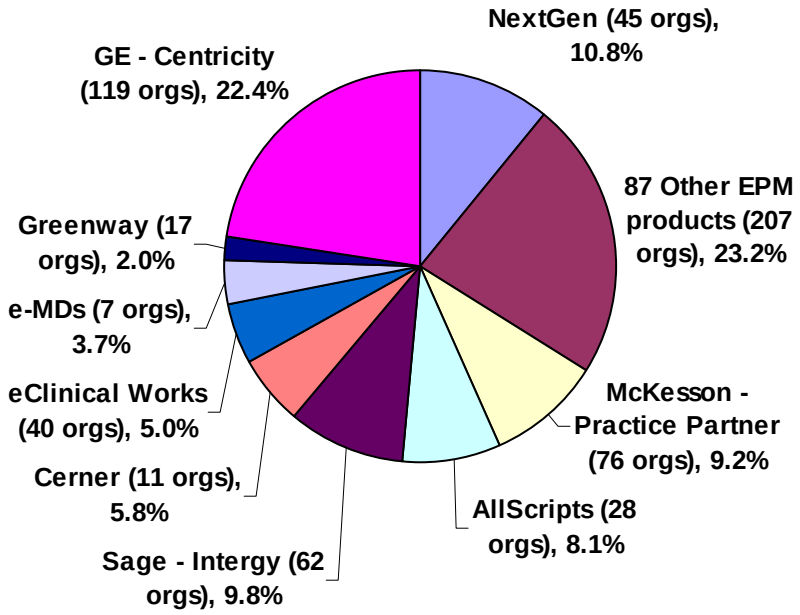
Figure 21- EPM Market Share of Clinicians - All Organizations (n = 713 orgs, 6289 clinicians)



Source: Appendix C, Table 29.

For just the 1.008 clinician organizations, 695 organizations (68.9%) indicated use of an EPM serving 3,117 clinicians (74.6% of 4,177 clinicians at clinician organizations). Figure 22 shows the market share distribution for EPM vendors/products based on the number of clinicians served. Nine vendors/products account for 76.8% of the clinicians served by EPM products. GE-Centricity has the largest market share in terms of clinician organizations (19.4% or 119 organizations) and 22.4% of clinicians using an EPM. The next largest vendors in terms of practice organizations served are McKesson-Practice Partner (76 organizations, 9.2% of clinicians) and Sage-Intergy (62 organizations, 9.8% of clinicians) and NextGen (45 organizations, 10.8% of clinicians. The other vendors shown serve twenty or more clinician organizations and 2.8% to 8.6% of clinicians.

Figure 22 - EPM Market Share of Clinicians - Clinician Organizations (n = 612 orgs, 3117 clinicians)



Source: Appendix C, Table 29.

EHR Vendors and Products

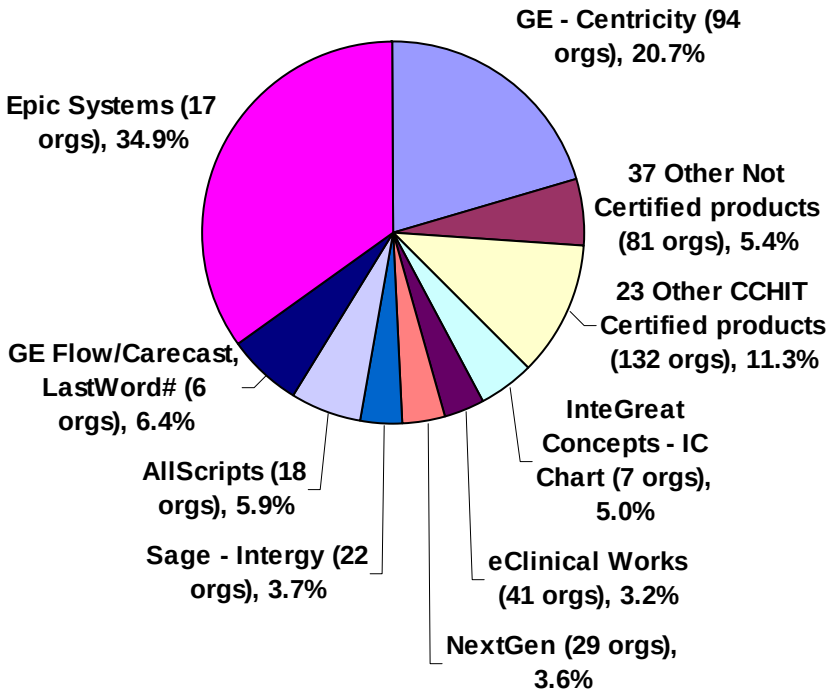
The survey asked respondents to identify the vendor, product and version of the EHR system used in their practice/clinic. Survey responses indicate that 447 organizations (38.2% of 1,168 organizations) use an EHR system serving 5,139 clinicians or 65.5% of 7,845 total clinicians covered by the survey. Across all practice types, respondents identified the use of 83 different vendors/products, with 76 vendors/products identified for just the clinician organizations. In addition, eleven organization serving 23 clinicians indicated that they were using self-developed EHR systems.

Figure 23 shows the market share distribution for EHR vendor products based on the number of clinicians served. Eight vendors/products account for 83.3% of the clinicians served by EHR products. The largest market share in terms of clinicians served are EpicCare (17 organizations with 34.9.2% of clinicians) and GE-Centricity (94 organizations with 20.7% of clinicians). Other GE EHR products (Flowcast, CareCast and LastWord) related to the acquisition of the IDX company several years ago involve 6.4% of clinicians at six organizations. These other GE EHR products are not CCHIT certified and several of the organizations are implementing replacement EHR systems that are CCHIT certified. Smaller market shares involve twenty-three vendors/products that are CCHIT certified are serving 132 organization representing 11.3% of clinicians covered by the survey. Thirty-seven vendors/products that are **not** CCHIT certified

are serving 81 organizations representing 5.4% of clinicians covered by the survey. Many of these non-certified products are focused on specific medical specialties.

It should be noted that these market share indicators may be different from the real market share distributions due to variable response rates among practices with specific products. The survey process could not estimate response rates by vendor or product.

Figure 23 - EHR Market Share of Clinicians - All Organizations (n = 447 orgs, 5139 clinicians)

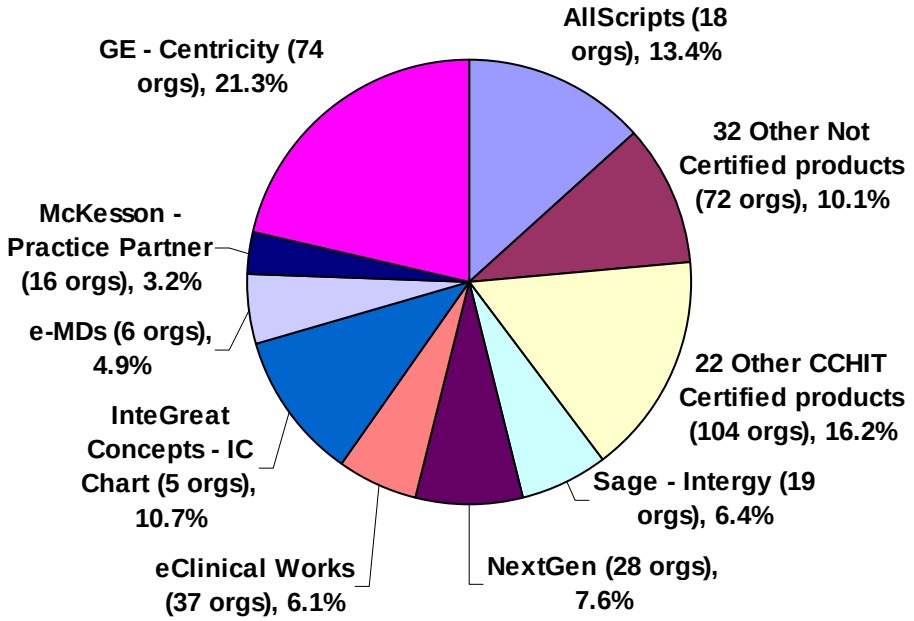


GE FlowCast, CareCast, and LastWord are not CCHIT Certified
Source: Appendix C, Table 19-3.

For just the clinician organizations, 379 clinician organizations (37.6% of 1,008 clinician organizations) indicated use of an EHR serving 2,265 clinicians (54.2% of 4,177 clinicians at clinician organizations). Figure 24 shows the market share distribution for EHR vendors/products based on the number of clinicians served. Eight vendors/products account for 74.7% of the clinicians served by EHR products. The largest market share in terms of clinician organizations and clinicians use is GE Centricity (74 organizations and 21.3% of clinicians). The next largest vendors in terms of practice organizations served are eClinicalWorks (37 clinician organizations, 6.1% of clinicians), NextGen (28 clinician organizations, 7.6% of clinicians), Sage-Intergy (19 clinician organizations with 6.4% of clinicians) and Allscripts (18 clinician organizations, 13.4% of clinicians). Smaller market shares involve twenty-two

vendors/products that are CCHIT certified are serving 104 organization representing 16.2% of clinicians in clinician organizations covered by the survey. Thirty-two vendors/products that are **not** CCHIT certified are serving 72 organizations representing 10.1% of clinicians in clinician organizations covered by the survey. Many of these non-certified products are focused on specific medical specialties.

Figure 24- EHR Market Share of Clinicians - Clinician Organizations (n = 379 orgs, 2265 clinicians)



Source: Appendix C, Table 19-3.

CCHIT Certification

The Certification Commission for Healthcare Information Technology (CCHIT[SM]) has been the only recognized certification body (RCB) for EHR systems and health information technologies. CCHIT is an independent, voluntary, private-sector initiative with a mission is to accelerate the adoption of HIT by creating an efficient, credible and sustainable certification program. The CCHIT was formed in July 2004 by three leading industry associations in healthcare information management and technology - American Health Information Management Association (AHIMA), Healthcare Information and Management Systems Society (HIMSS), and The National Alliance for Health Information Technology (Alliance).[10]

CCHIT's certification process assesses compliance of specific versions of EHR software products against CCHIT standards. The initial standards established basic requirements that ambulatory EHR products must satisfy. Standards evolve over time and escalate the functionality requirements that are expected from vendor product offerings. The certification of products offers some level of assurance to purchasing organizations that products meet the specified levels of standards and functionalities. Vendors offering products not certified by CCHIT will likely face increasing difficulties in selling those products.

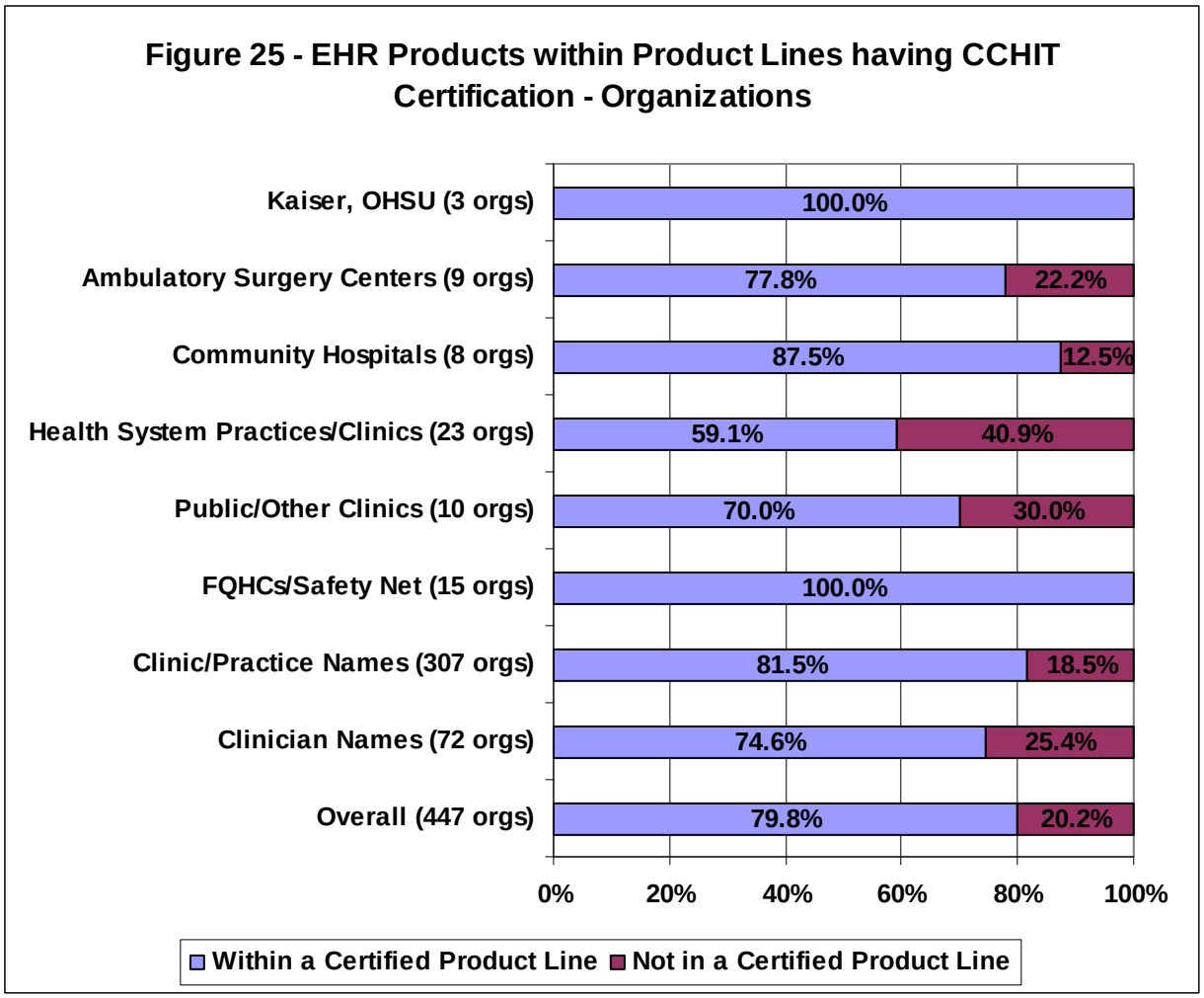
Certification under ARRA: Under the provisions of ARRA, Medicare and Medicaid will make incentive payments to eligible professionals and hospitals that demonstrate the meaningful use of certified EHR systems. The ONC in consultation with the Director of the National Institute of Standards and Technology (NIST) are responsible for establishing a voluntary certification program for EHRs that may or may not designate CCHIT as the certifying organization. Additionally, the standards for certification of EHR products will evolve to focus on the capability of EHRs and other HIT systems to meet the meaningful use criteria including HIE. Since the enactment of ARRA in February 2009, CCHIT has moved to adapt its certification program to meet the expectations of ARRA. In October 2009, CCHIT launched two new programs to address ARRA requirements.[11] The CCHIT Certified® 2011 Comprehensive is an updated comprehensive EHR certification program. A modular certification program called Preliminary ARRA 2011 is limited to standards for qualifying EHR technology under ARRA. On December 1, 2009, CCHIT announced the initial list of vendors/products achieving these certifications.

Existing CCHIT Certification as a Proxy: A number of issues regarding the certification of EHR products will remain unresolved for an extended period while the ONC finalizes the meaningful use criteria, finalizes standards for EHR product certification and designates an EHR certifying body that is able to certify EHR products. Nevertheless, the existing CCHIT certification designations can be used as a proxy and threshold for differentiating between the functions and capabilities of various EHR products.

[10] CCHIT website http://cchit.org/, accessed November 5, 2007.
[11] Various CCHIT press releases and information available at http://www.cchit.org/, accessed December 2009.

Certified Product Lines: The EHR survey requested information on the vendor, product and version of the EHRs systems being used in practices/clinics. The survey also asked respondents about CCHIT certification status of their systems although 59% of respondents did not provide an answer or answered that they did not know if their EHR was certified or not. However, it was possible to match the vendor and product responses against the list of vendors/products that have achieved CCHIT certification in the last three years. Therefore, it was possible to determine if EHR systems in use were included in vendor lines that achieved certification. However, it was not possible to determine if the currently installed and operating versions of EHR systems are certified or not. Several respondents indicated that they were not using the latest or current version of their EHR product. Upgrading an EHR system from an older version (certified or not certified) to the current version in the same product line is generally much less of a challenge than changing products or vendors. While this level of accuracy regarding certification is clearly suboptimal, it nevertheless provides some insight into the magnitude of EHR system installation or upgrade efforts that will be required to meet the ARRA requirements to receive Medicare or Medicaid incentive payments for demonstrating the meaningful use of certified EHRs.

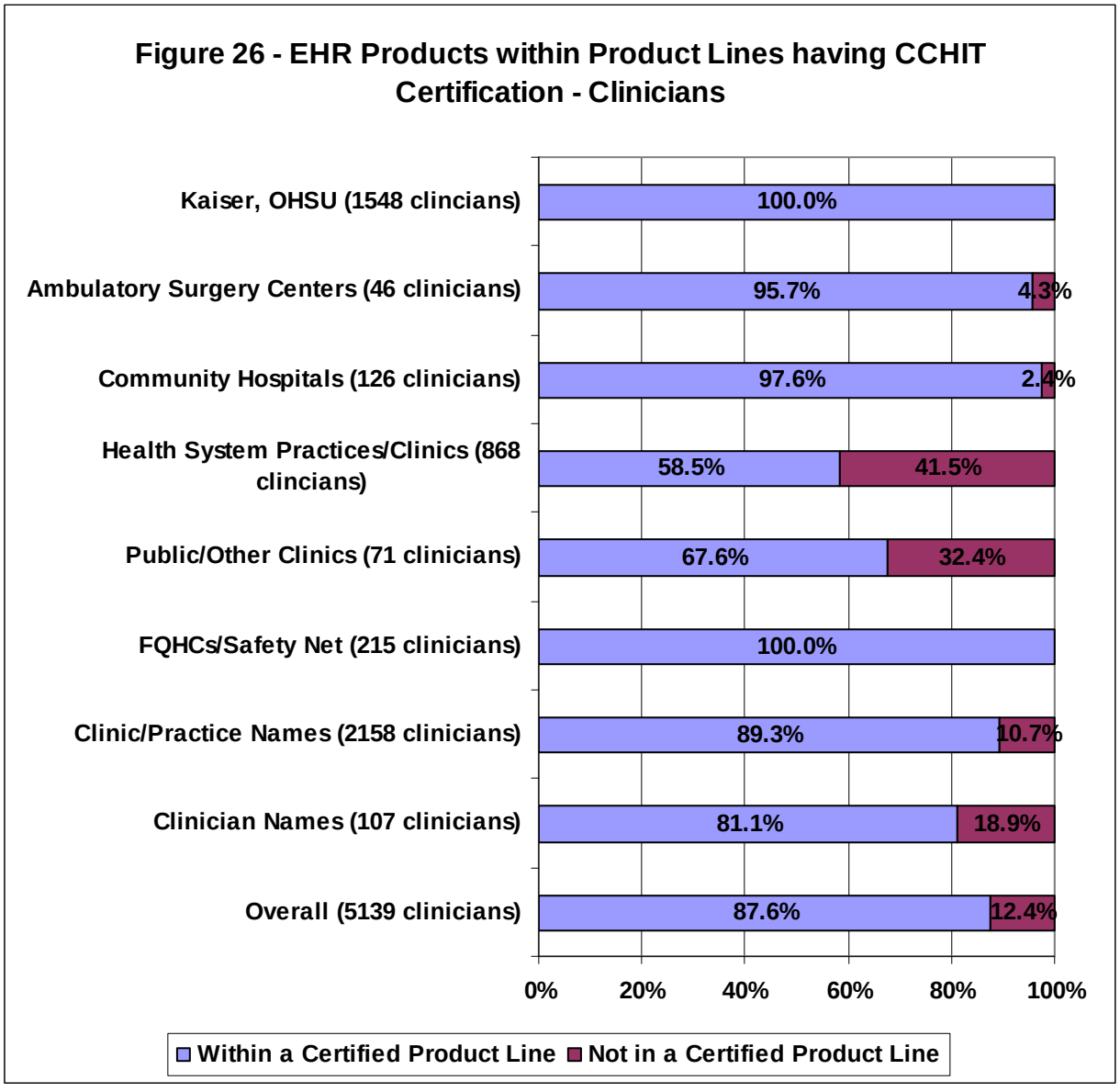
Figure 25 shows the mix of organizations by practice type from EHR vendors that appear to be using an EHR system within a vendor's product line that has received CCHIT certification. Overall 79.8% of the 447 organizations are using EHR products that are part of certified product lines. While Health System Practice/Clinics have the lowest rate of certified products (59.1%) from the survey, EHR system replacement projects currently underway will substantially increase this rate. Of greatest concern are the 74 (19.8%) of the 379 clinician organization practices that would potentially need to change EHR systems to qualify for ARRA incentive payments.



Source: Appendix C, Table 19-1.

Figure 26 follows the same conventions as Figure 25 but shows the mix of clinicians who are using EHRs products from vendors not certified by CCHIT versus products from vendors that are certified.

Overall 87.6% of the 5,139 clinicians are in organizations using EHR products that are part of certified product lines. While Health System Practice/Clinics have the lowest rate of certified products (58.5%) from the survey, EHR system replacement projects currently underway will substantially increase this rate. Of greatest concern are the 250 (11.1%) of the 2,265 clinicians at clinician organization practices that would potentially need to change EHR systems to qualify for ARRA incentive payments.



Source: Appendix C, Table 19-2.

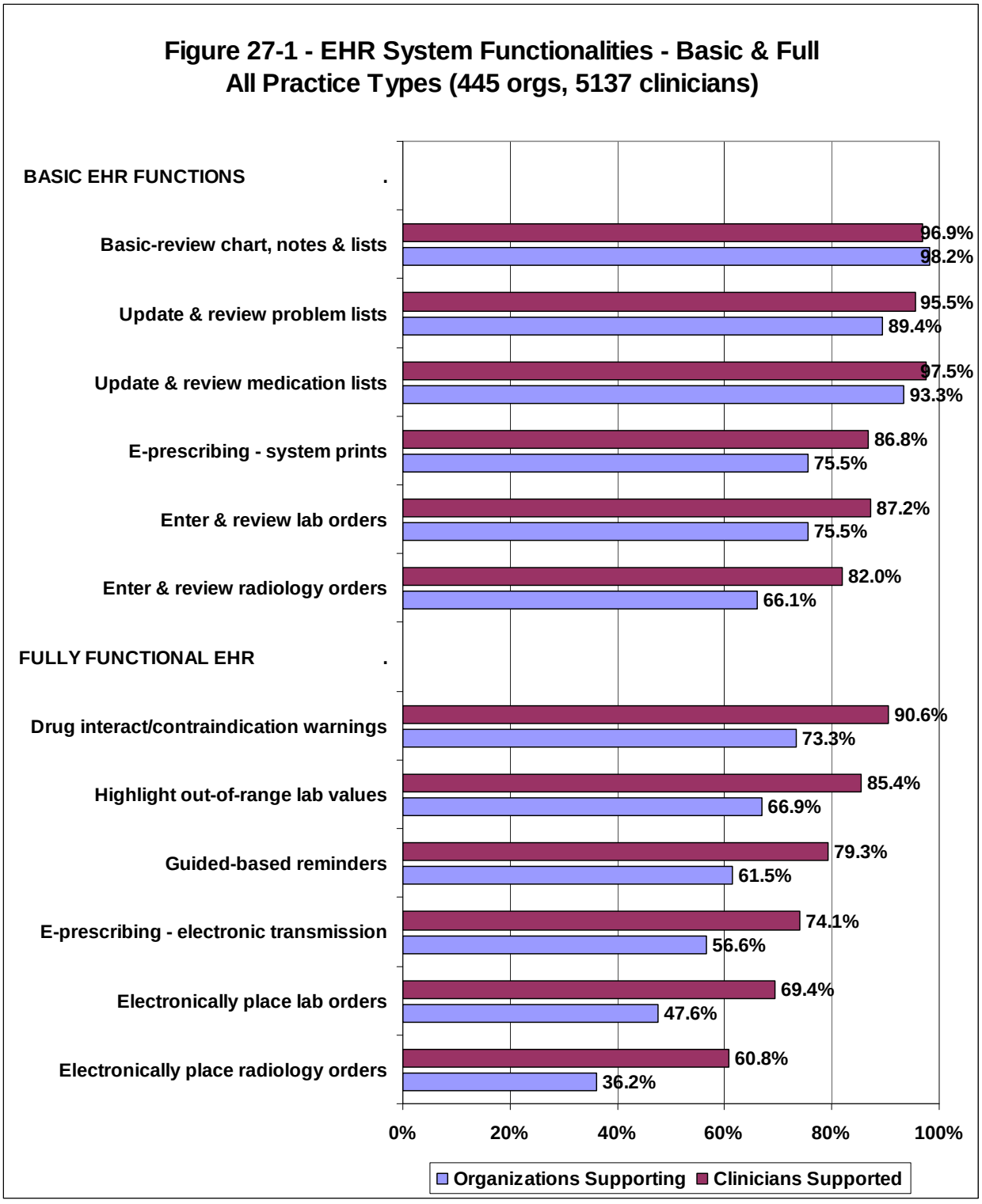
EHR System Functionalities

Levels of EHR functionality are one means of assessing the likelihood that eligible professionals using certified EHRs will be able to demonstrate meaningful use to qualify for Medicare or Medicaid incentive payments under ARRA. In a paper that has been widely cited in the last two years, DesRoches et al (2008)[12] provide definitions for Basic and Fully Functional EHRs as:

- **A Basic EHR System** is defined as including **all** of the following functional components: patient demographics, patient problem lists, electronic medication lists, clinical notes, order entry management of prescriptions, and viewing capability of laboratory and imaging results (reports).
- **A Fully Functional EHR System** is defined as including **all** the basic system functionalities and **all** of the added functions of clinical notes of medical history and follow-up, ordering of laboratory and radiology tests, electronic transmission of prescriptions and orders, and electronic return of images. Fully functional also includes clinical decision support with warnings of drug interactions or contra-indications, highlighting of out-of-range test levels and reminders regarding guideline-based interventions or screening.

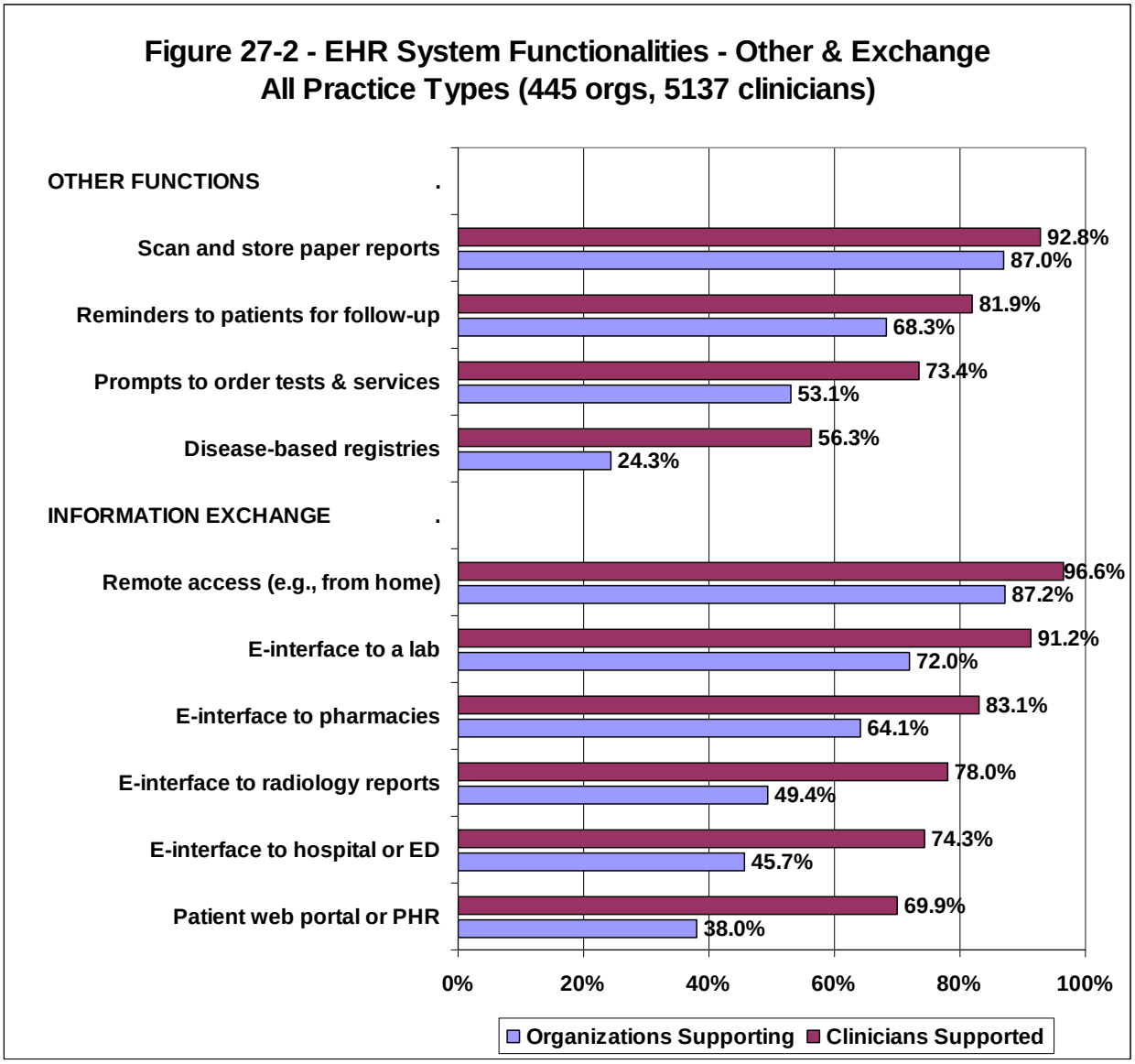
Figure 27-1 shows the number of organization and clinicians from the surveyed organizations using EHRs that report using specific functions within the defined **Basic** and **Full** functions. More than 89% of organizations covering over 95% of clinicians report that their EHRs **Basic** capabilities to support basic functions of reviewing chart information, notes and lists; update and review medication lists; and update and review problem lists. **Basic** functions related to entering and printing prescriptions, entering and reviewing laboratory and radiology orders ranged from 66% to 76% of organizations covering 82% to 87% of clinicians. **Full** EHR functionalities related to decision support functions (warnings of drug interactions and contraindications, out-of-range lab values, and reminders for guideline-based interventions and screenings) are supported by 62% to 73% of organizations covering 71% to 91% of clinicians. **Full** EHR functionalities related to enhanced electronic information exchange and connectivity between provider organizations (electronic transmission of prescriptions, electronic placement of lab and radiology orders) are supported by 36% to 57% of organizations covering 61% to 74% of clinicians.

[12] DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records in ambulatory care – a national survey of physicians. N Eng J Med 359:1 July 3, 2008, 50-60.



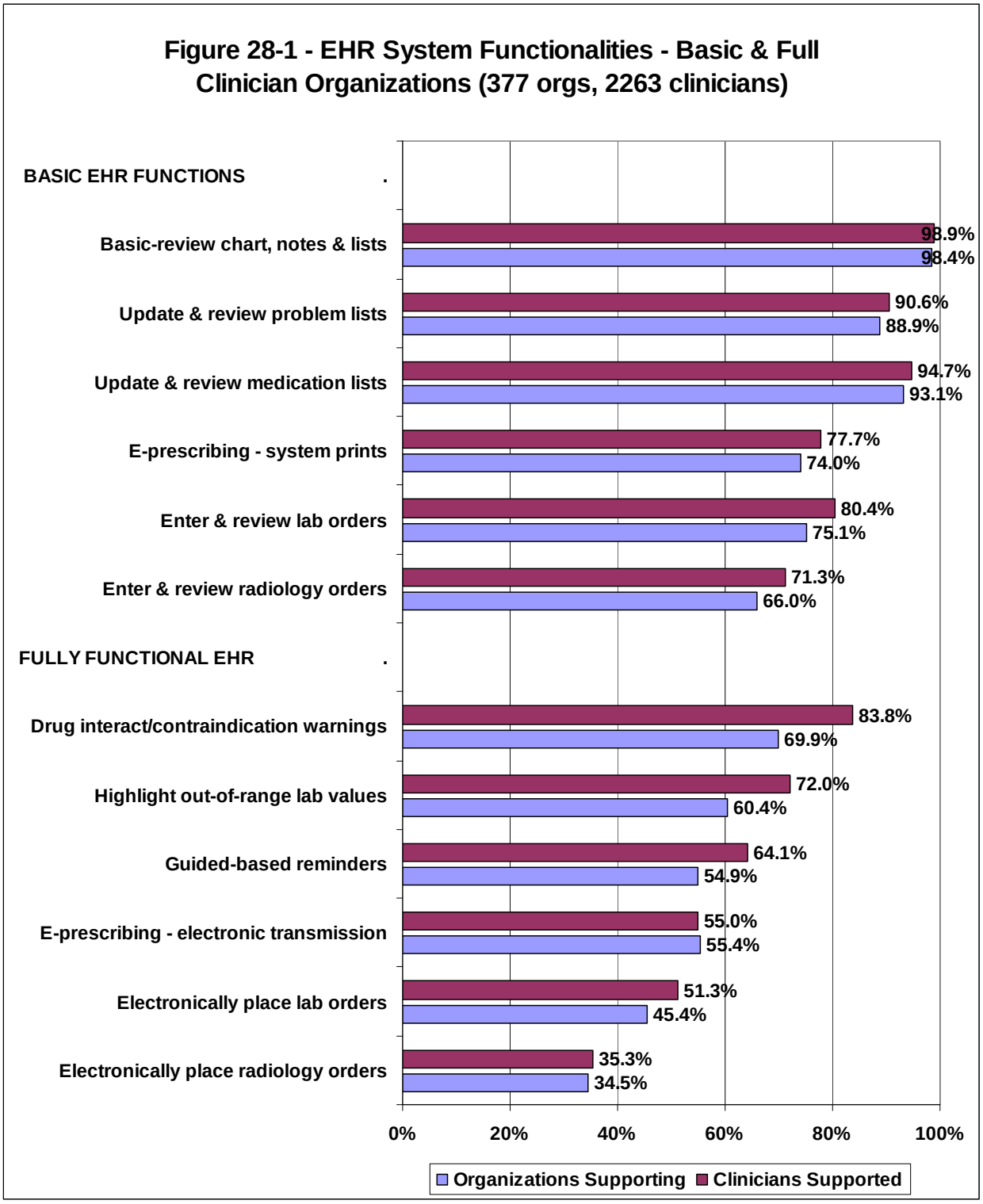
Source: Appendix C, Tables 20-1a, 20-1b, 20-2a, 20-2b.

Figure 27-2 shows the number of organization and clinicians within organizations using EHRs that report using **Other** specific functions and **Information Exchange** functions not specifically included within the Basic and Full defined functions. These **Other** functions are highly related to the how information gets integrated into EHRs (scan and store), advanced levels of decision support (reminders and prompts), sharing information with patients/consumers (reminders) and quality metrics (disease registries). The **Information Exchange** functions are related to the interoperability and exchange of information as well as increased expectations about patient electronic access to their medical information (web portals and personal health records/PHRs). Each of these functions is involved in the expected evolution of meaningful use criteria over the next several years.



Source: Appendix C, Tables 20-1a, 20-1b, 20-2a, 20-2b.

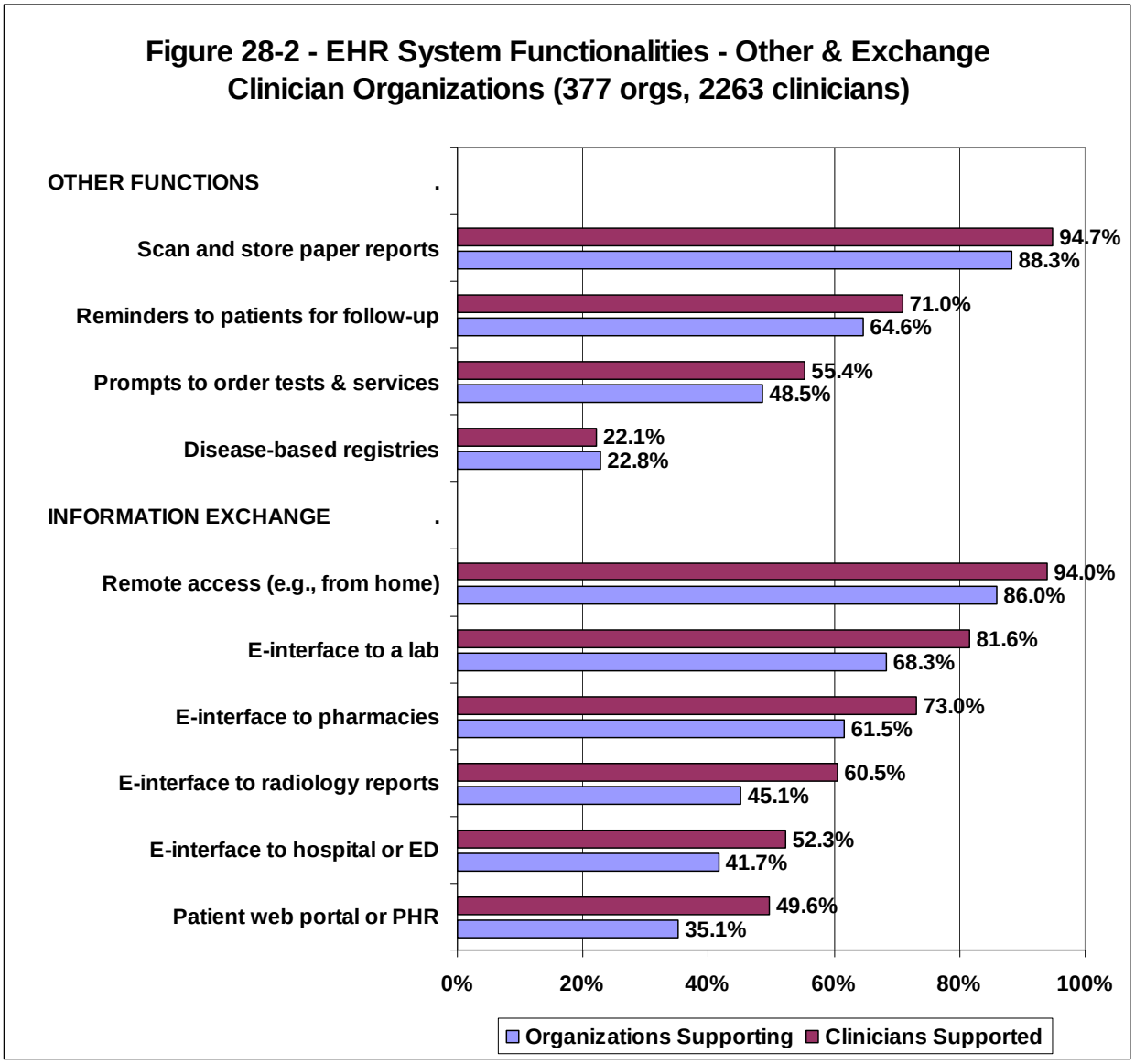
Figure 28-1 reports results comparable to Figure 27-1 for just the clinician organizations.



Source: Appendix C, Tables 20-3a, 20-3b, 20-4a, 20-4b.

Figure 28-1 shows usage rates for clinician organizations use of **Basic** functions that seem comparable to all organizations for chart review, access to notes and lists. Clinician organizations show slightly lower rates for printing prescriptions and the entering/review of lab and radiology orders. The **Full** functions for clinician organizations are lower than all organizations but not radically lower.

Figure 28-2 reports results comparable to Figure 27-2 for other and information exchange functions.



Source: Appendix C, Tables 20-3a, 20-3b, 20-4a, 20-4b.

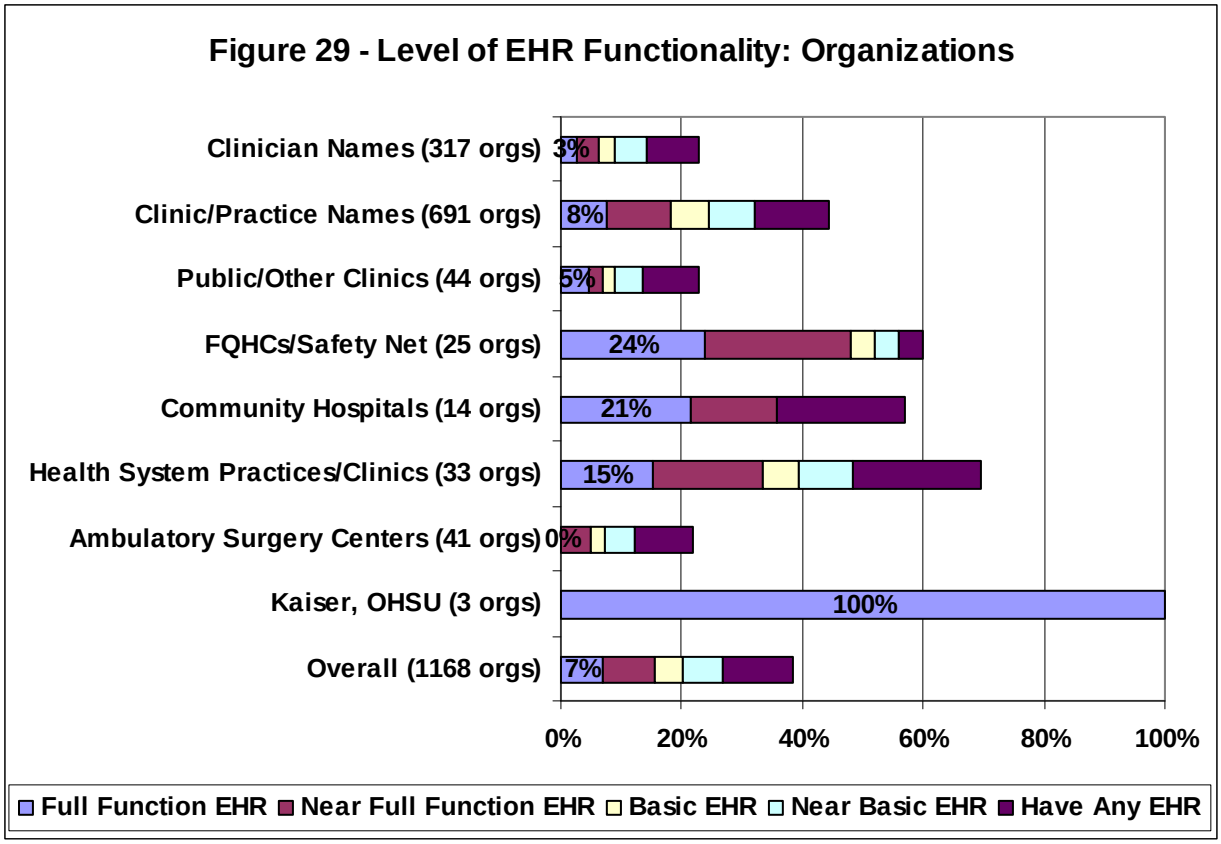
Figures 27-1 through 28-2 show data on the use rates of each separate function calculated on the basis of use at practices with EHR systems. According to DesRoches,[13] the recommendations from the expert panel used in developing the criteria were focused on the levels of functionality required to provide high quality clinical care. While these levels are highly useful in considering the levels of functionality required of EHRs to achieve long-term objectives, the results reported by DesRoches[14] and more recently by Hsaio[15] are insufficient for assessing the number of practices/clinics and their clinicians that may reasonably be expected to demonstrate meaningful use within a reasonable period. As a practical manner, practices/clinics might have robust EHR systems but not satisfy all six **Basic** or twelve **Full** functionalities due to the inabilities of other organizations to participate or the phasing for implementing system components.

To assess the achievement of **all** or **nearly all** criteria, the Oregon survey data was analyzed on the basis of meeting **all** criteria be met to qualify as **Basic** or **Fully** Functional (six criteria for **Basic** and 12 for **Fully** Functional) as well as for **Nearly Basic** and **Nearly Fully** Functional defined as meeting 5 of 6 and 10 of 12 of the criteria respectively. Appendix C. Tables 25-1 through 28-2 present adoption and functionality data as a proportion of EHR and non-EHR practices/clinics and clinicians. The overall adoption rates among all survey respondents by level of functionality are shown in the following table:

	Number of Clinicians	Level of EHR Functionality				
		Have any EHR	Near Basic or better functionality	Basic or better functionality	Near Full or better functionality	Full functionality
Clinician organizations	4,177	54.2%	40.9%	30.9%	24.9%	8.8%
All organizations	7,845	65.5%	55.4%	49.4%	45.6%	32.5%
National 2009 rates[15]		43.9%		20.5%		6.3%

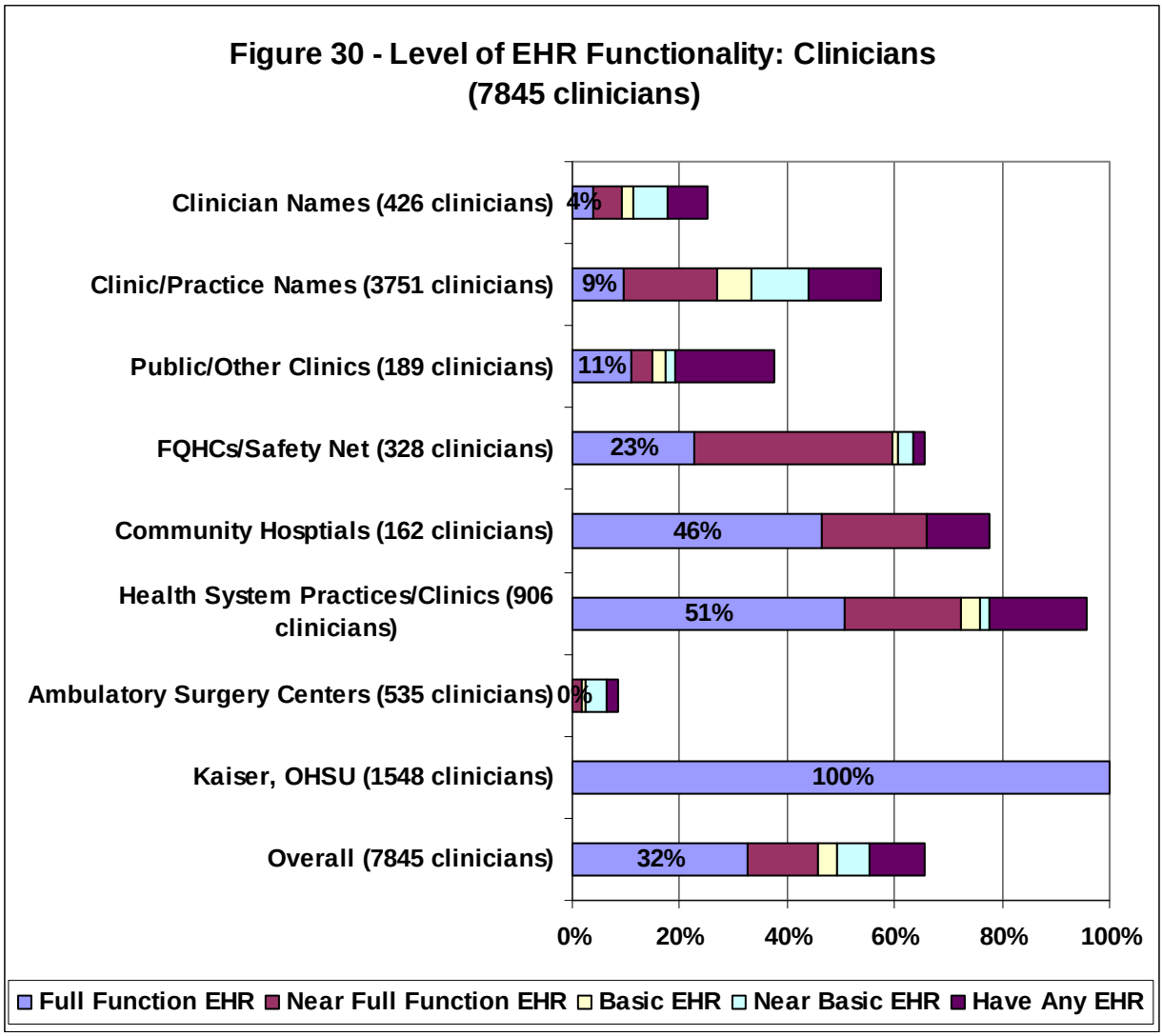
[13] Telephone conversation with Catherine DesRoches, December 8, 2009.
[14] DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records survey in ambulatory care -a national survey of physicians. NEJM, 359:1, July 3, 2008, 50-60.
[15] Hsaio CJ, Beatty PC, Hing ES, Woodwell DA, Rechtsteiner EA, Sisk JE. Electronic medical record/electronic health record use by office-based physicians: United States, 2008 and preliminary 2009. Health E-Stat. National Center for Health Statistics, December 2009. Accessed December 23, 2009 at http://www.cdc.gov/nchs/data/hestat/emr_ehr/emr_ehr.pdf

Figure 29 shows the extent of adoption and levels of functionality at practice/clinic organizations as a percentage distribution against all responding organizations. Adoption rates for each practice type are identical to results presented the overall adoption figures earlier in the report. However, there are marked differences in the levels of functionality across practice types.



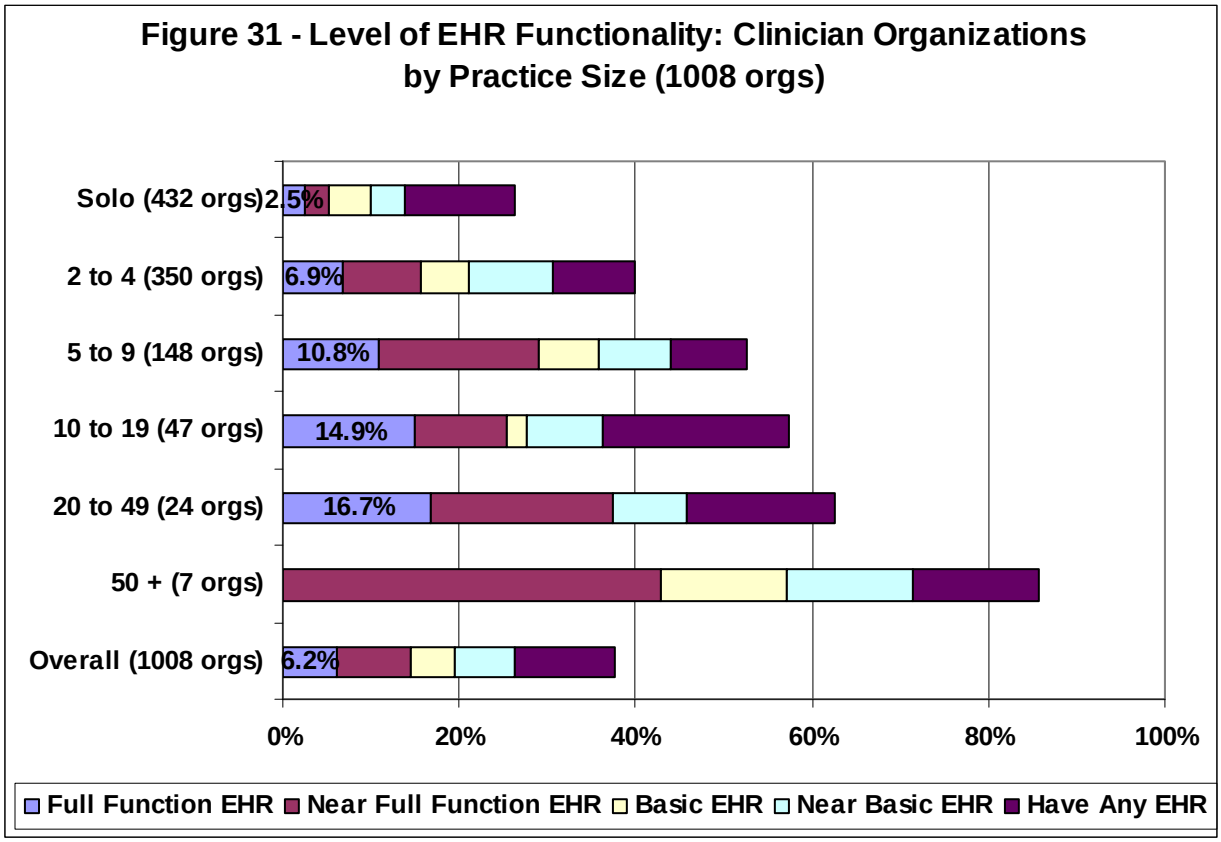
Source: Appendix C, Tables 25-1, 25-2.

Figure 30 show the extent of adoption and functionality based on the number of clinicians within the various practice types. Again the total rates of EHR adoption are identical to the clinician organization rates earlier in the report.



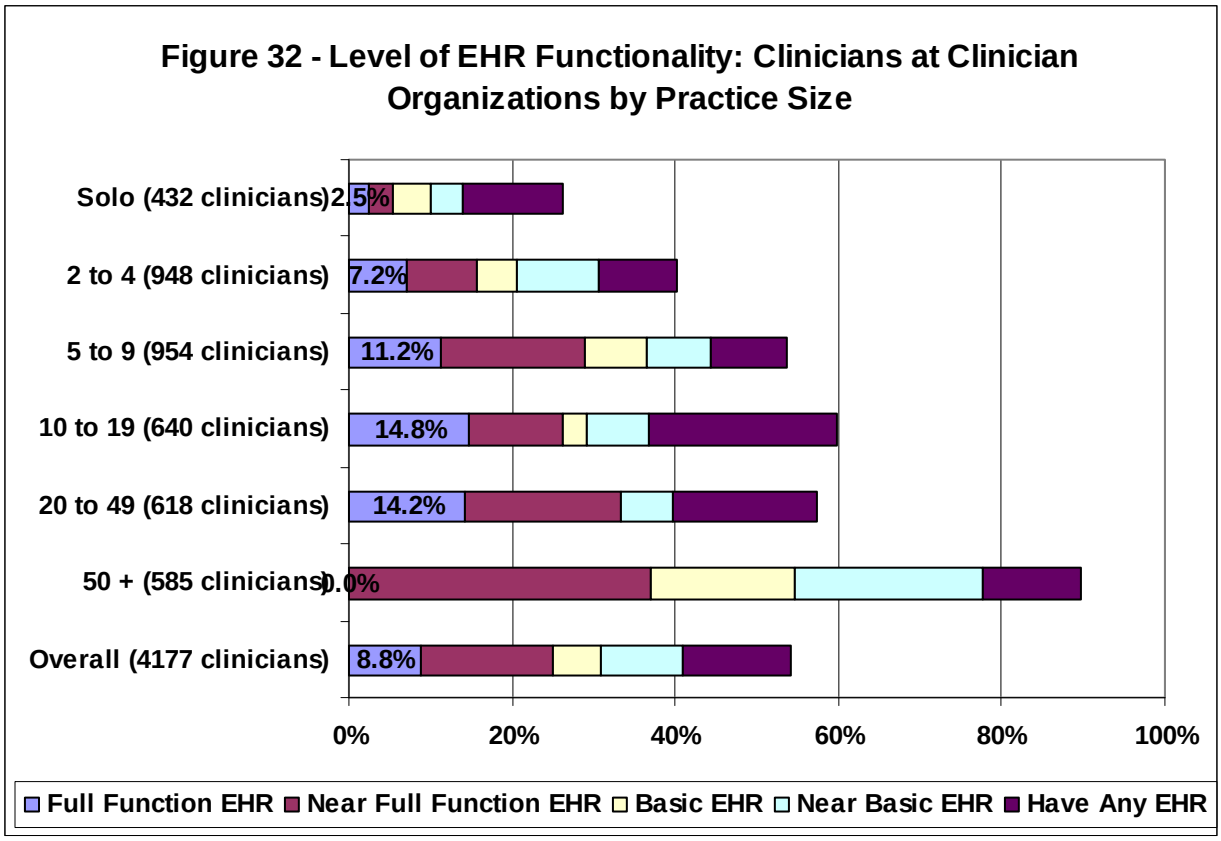
Source: Appendix C, Tables 26-1, 26-2.

Figure 31 presents adoption and levels of functionality results for just the clinician organizations by practice size. Both the level of adoption (any type of EHR) and the level of functionality seems to increase with the size of practice.



Source: Appendix C, Tables 27-1, 27-2.

Figure 32 presents adoption and levels of functionality results for based on the number of clinicians in the clinician organizations by practice size. Both the level of adoption (any type of EHR) and the level of functionality seems to increase with the size of practice.



Source: Appendix C, Tables 28-1, 28-2.

EHR System Strengths

Respondents to the survey were asked: **What have been the strengths or challenges of implementing and using an EHR/EMR in your clinic?** Of the 447 organizations using an EHR/EMR, 337 respondents provided open-ended comments about strengths and/or challenges. The most common themes of the responses (>20 comments) related to **strengths** of using EHRs were:

- Better information access, information sharing and/or data tracking 179
- Paperless, no lost charts, better data storage 92
- Data management: patient tracking, data collection/reporting, information sharing 72
- Efficiency/reduce costs (e.g. no transcription costs) 43
- E-prescribing, medication lists, drug-drug interactions, problem lists 42
- Legibility 27
- Better patient care/safety, increased coordination of care 23
- Everyone's on board 25
- Integration (internal/external) 22

Additional information on the **strengths** expressed, including selected comments from respondents are included in Appendix D.

EHR System Challenges

Respondents to the survey were asked: **What have been the strengths or challenges of implementing and using an EHR/EMR in your clinic?** Of the 447 organizations using an EHR/EMR. 337 respondents provided open-ended comments about strengths and/or challenges. The most common themes of the responses related to the **challenges** of implementing and using EHRs were:

- Expense of implementation (e.g., decreased productivity) and on going costs 171
- Expense of purchase 131
- Inadequate return on investment/lower productivity/does not increase efficiency 51
- No currently available EHR product satisfies our needs. Need for customization. 47
- Staff would require retraining/learning curve 41
- Interfacing (internal/external) 30
- Practice is too small 21
- Staff/physician resistance to change 18
- Security and privacy issues 17
- Lack of expertise to lead or organize the project/lack of IT support 16
- Confusing number of EHR choices/using system as its fullest capacity 14
- Concern the product will fail 11

These comments from practices using EHR are very similar to the barriers expressed by practice not planning to implement an EHR as further described in the section on barriers. Additional

information on the **challenges** responses, including selected comments from respondents in included in Appendix E.

Additional Comments on EHR Implementation and Adoption

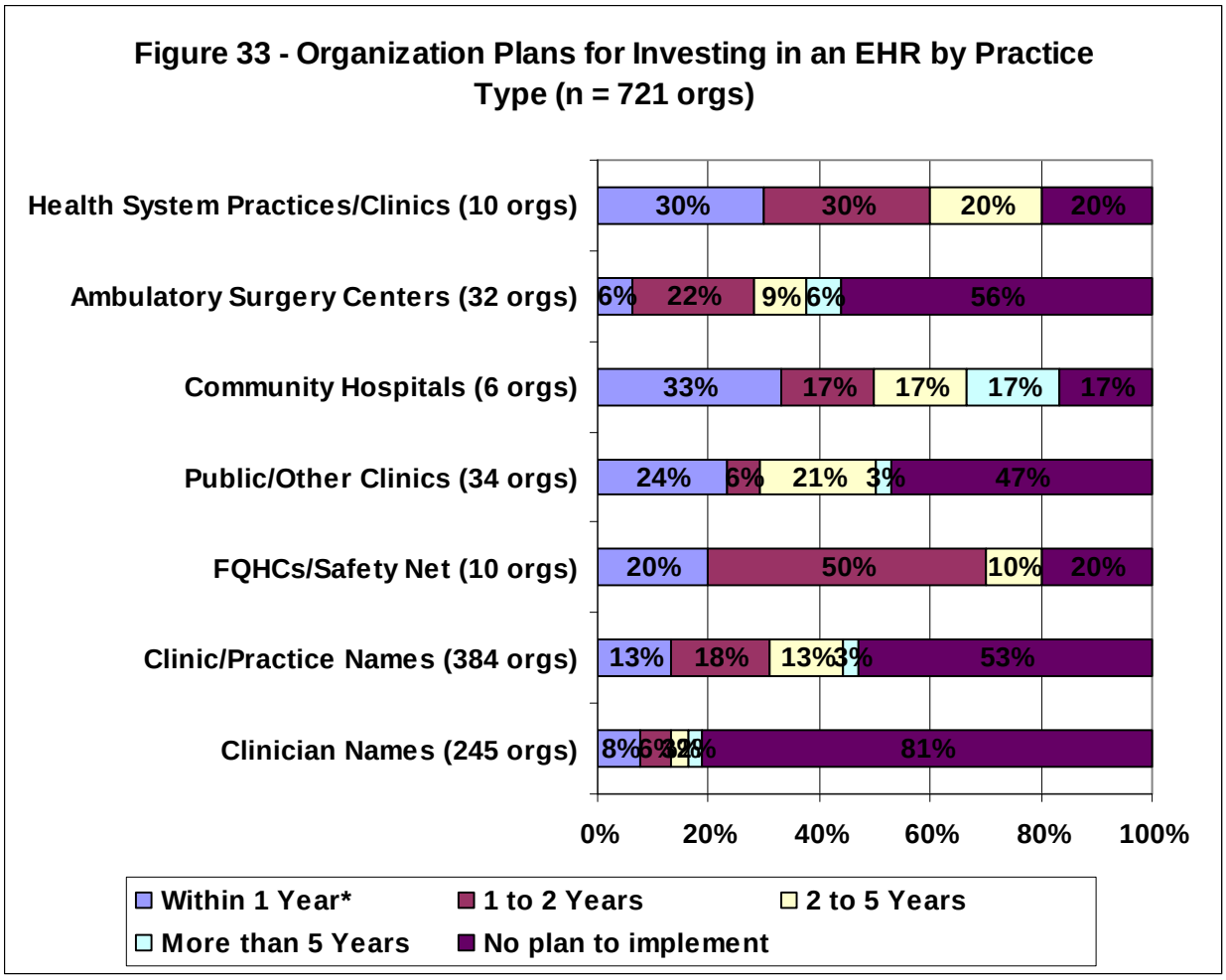
Respondents to the survey were provided the opportunity to offer additional comments related to EHR/EMR implementation and adoption. **Please provide any additional comments applicable to the implementation and adoption of EHR/EMR at your clinic.** Of the 453 respondents indicating they had an EHR/EMR within their practice, 358 respondents provided additional open-ended comments. The most common responses were:

- Time and cost intensive (cost of EHR/EMR and implementation) 82
- No return on investment 37
- Need to train staff 31
- Need for interfacing 14

Additional information on these comments responses, including selected comments from respondents in included in Appendix F.

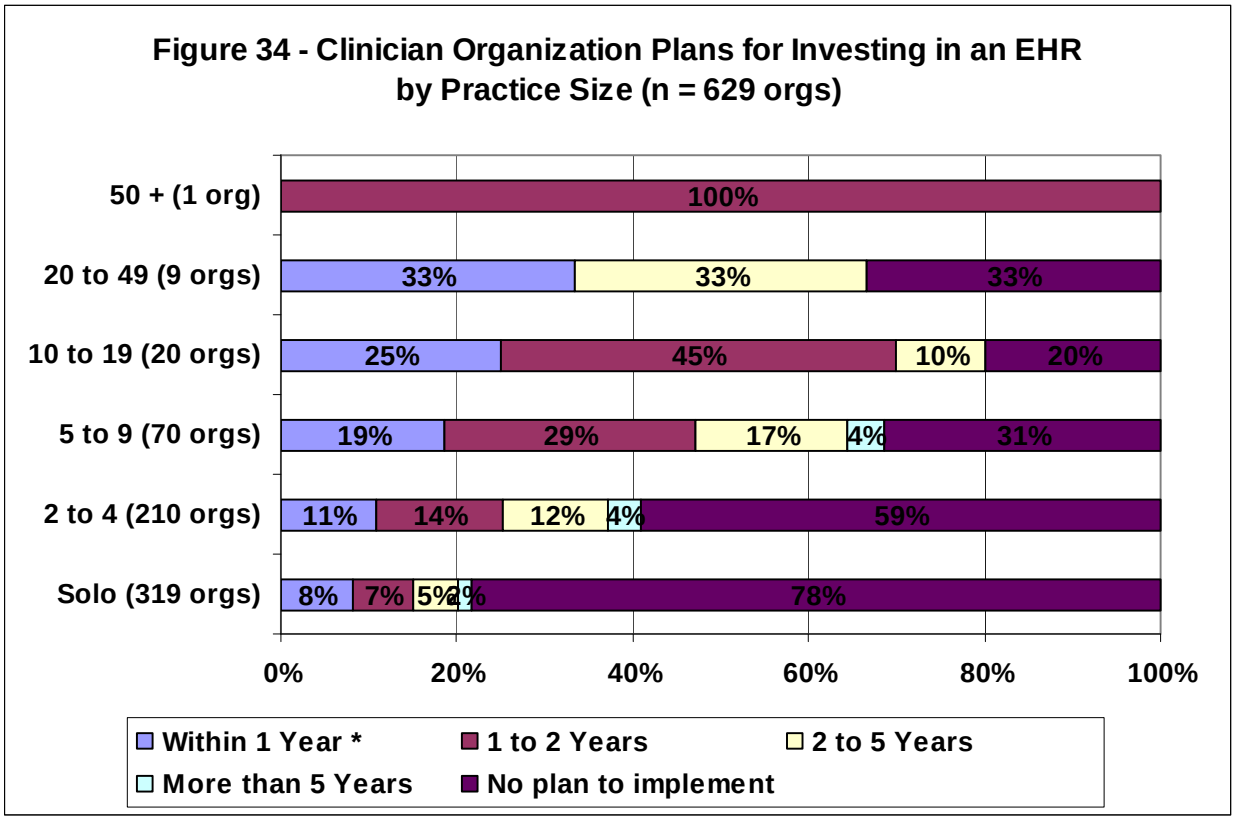
EHR Acquisition Plans

Survey respondents not currently using an EHR, were asked about their plans to implement an EHR within one year (including implementations underway), in one to two years, in two to five years, more than five years or no plans to implement an EHR. Figure 33 shows the EHR implementation plans by practice type. Community Hospital, Health System Practices/Clinics and FQHC/Safety Net organizations have the highest rates of planned implementation within the next two years. The highest rates with **no** implementation plans are Clinician Names practices (81.2% of 245 organizations) and Clinic/Practice Names organizations (53.1% of 384 organizations).



* With 1 year includes implementation underway as well as planned implementations.
Source: Appendix C, Table 30-1.

Figure 34 shows the EHR implementation plans for clinician organization by practice size. Practices with 5 or more clinicians have mixed rates of planned implementations over the next few years. The highest rates of **no** implementation plans are solo practices (78.4%) and practices with 2 to 4 clinicians (59.0%). Correspondingly the lowest rates of implementation plans with five years are solo practices (21.6%) and practices with 2-4 clinicians (41.0%).

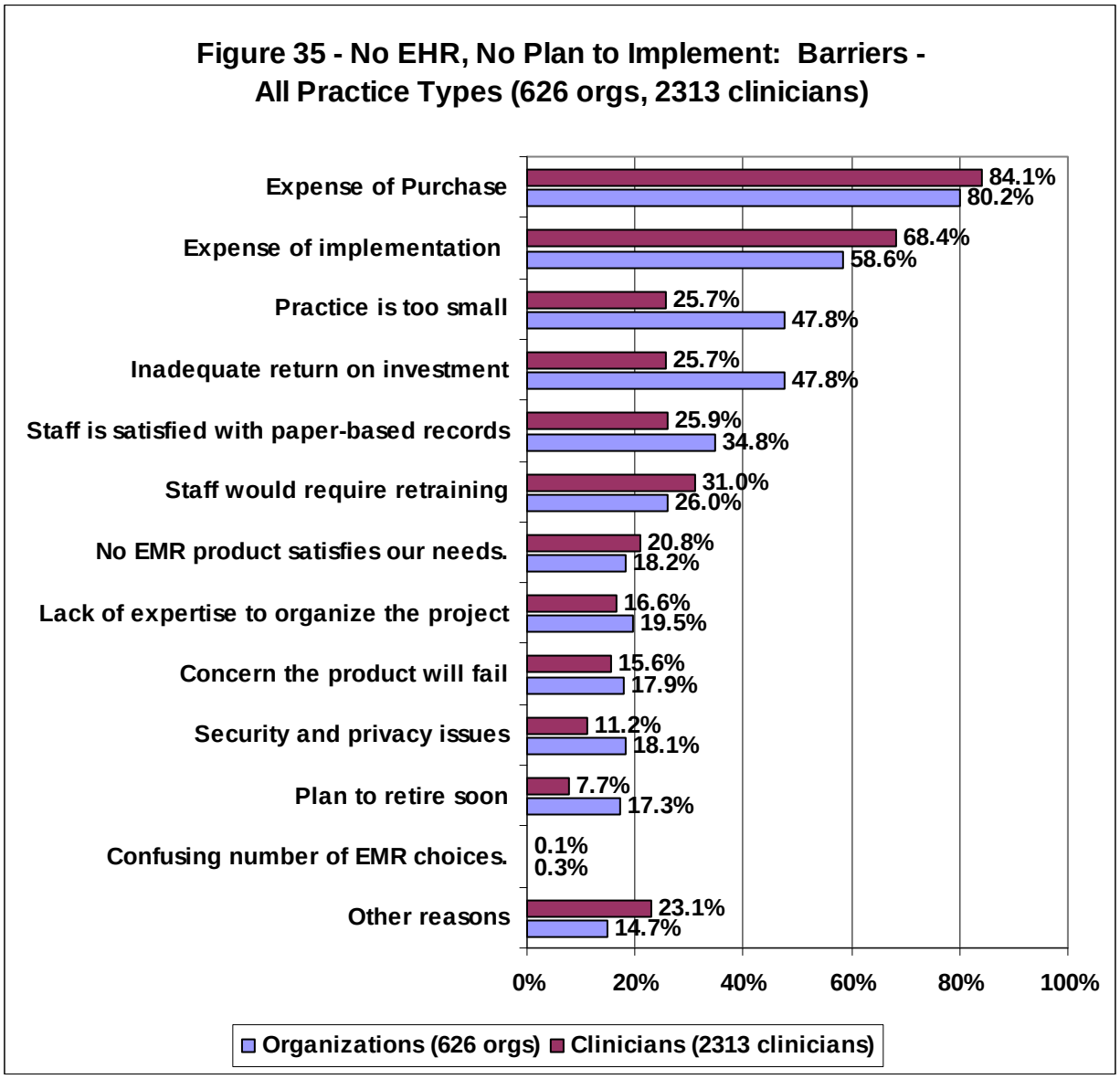


* With 1 year includes implementation underway as well as planned implementations.
Source: Appendix C, Table 30-3.

Barriers to Implementing an EHR

Respondents indicating no plans for implementing an EHR were asked to identify the **main barriers** to implementing an EHR in their practice or clinic. Respondents could check up to twelve possible reasons and/or check "other" and provide open-ended responses. Figure 35 shows the barriers indicated based on the proportion of responses of the 626 organizations serving 2,313 clinicians responding to the barriers question representing 95.6% of the 655 organization and 97.4% of clinicians with no plans for implementing an EHR. The top two barriers for not implementing an EHR systems relate to EHR costs, including the expense of purchase (84.1% of organizations representing 80.2% of clinicians) and the expense of implementation (68.4% of organizations representing 58.6% of clinicians). Other barriers with more than 25% of organizations responding include practice is too small and inadequate return on investment (both with 25.7% of organizations, 47.8% of clinicians), staff satisfied with paper-based records (25.9% of organizations, 34.8% of clinicians), and staff would require retraining

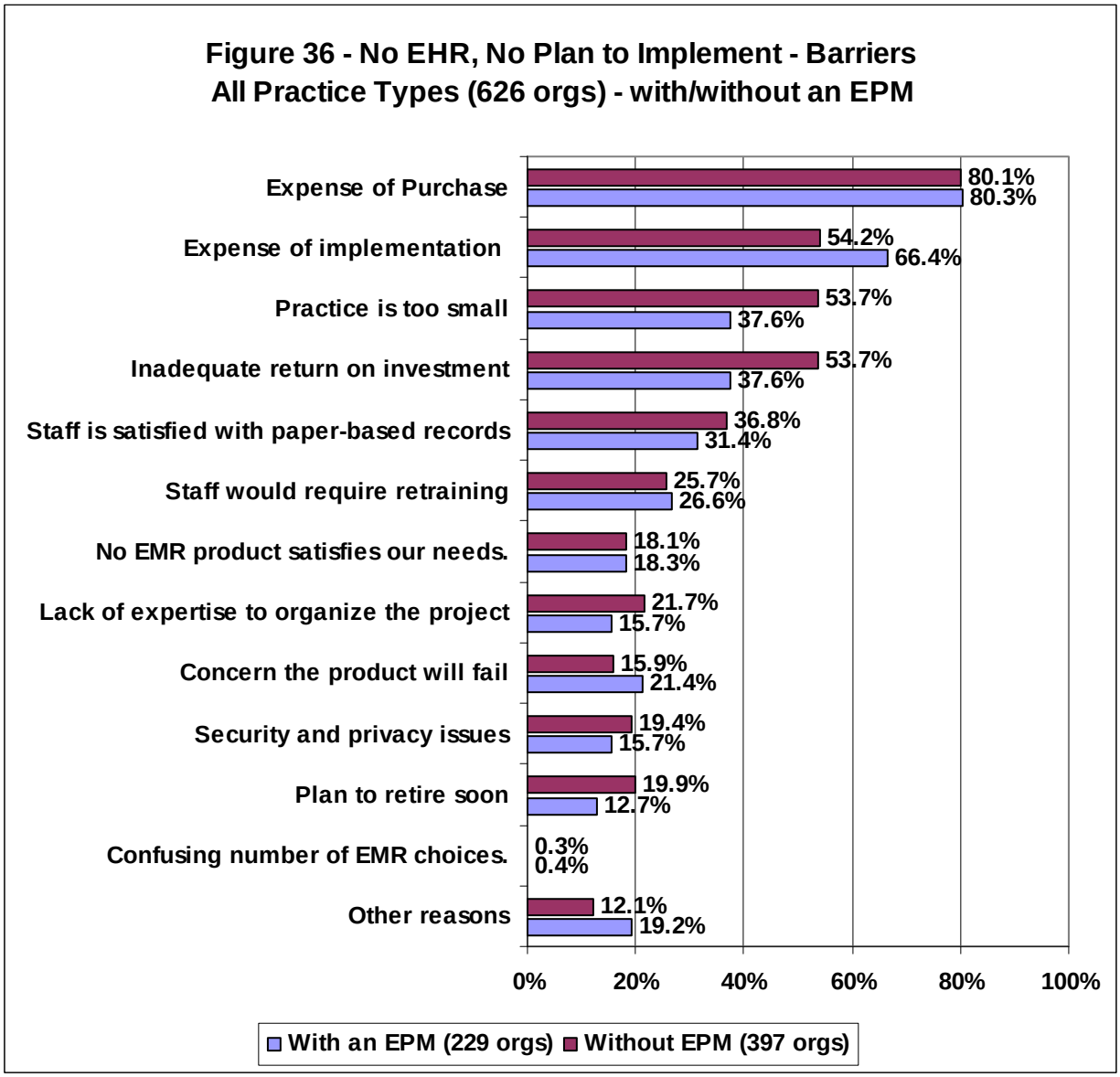
(31.0% of organizations, 26.0% of clinicians). Also of note, 7.7% of organizations and 17.3% of clinicians indicate plans to retire in the near future are a barrier to considering an EHR implementation. Other barriers comments were submitted by 92 respondents. Selected narrative comments that provide insight to organization and clinician perspectives on barriers to EHR adoption are shown in Appendix F.



Source: Appendix C, Table 31.

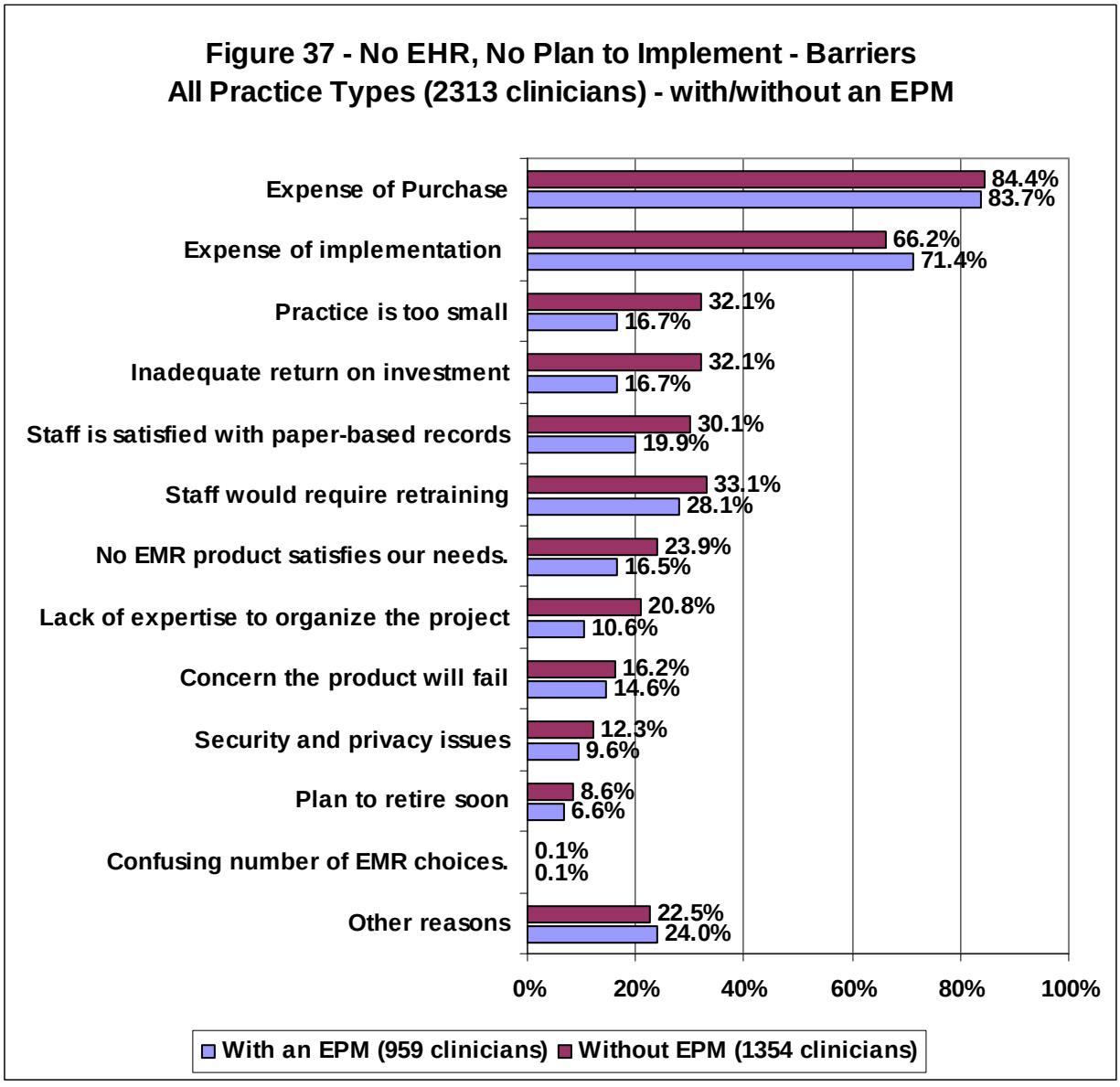
Barriers to Implementing an EHR with/without an EPM: Figure 36 shows the barriers to implementing an EHR for all Practice Types of organizations based on the presence or absence of an EPM system. Practices with an EPM system in place seem more likely to have experience in selecting, implementing and operating electronic systems. Expense of purchase is of equal concern to practice whether they use an EPM system or not. Expense of implementation is a

bigger concern to practices with an EPM (63.3%) than those without an EPM (51.8%). Concerns about the smallness of the practice and return on investment are greater concerns to practices without an EPM than those with an EPM. Practices without an EPM are slightly more satisfied with paper-based records (35.2%) than those using an EPM (30.0%).



Source: Appendix C, Table 31.

Figure 37 shows the barriers to implementing an EHR for all Practice Types of organizations based on the presence or absence of an EPM system using the proportion of clinicians in the organizations. The expense of purchase and expense of implementation are of slightly greater concern to practices with an EPM than those without an EPM. The smallness of practices and return on investment are nearly twice the level of concern (31.1%) to practices without an EPM as to practices with an EPM (16.4%). Impacted clinicians in practices without an EPM are more likely to be satisfied with paper-based records (29.1%) than those using an EPM (19.6%). Similarly, clinicians impacted in practices without an EPM express greater concern about staff retraining (32.0%) than those using an EPM (27.6%).



Source: Appendix C, Table 31.

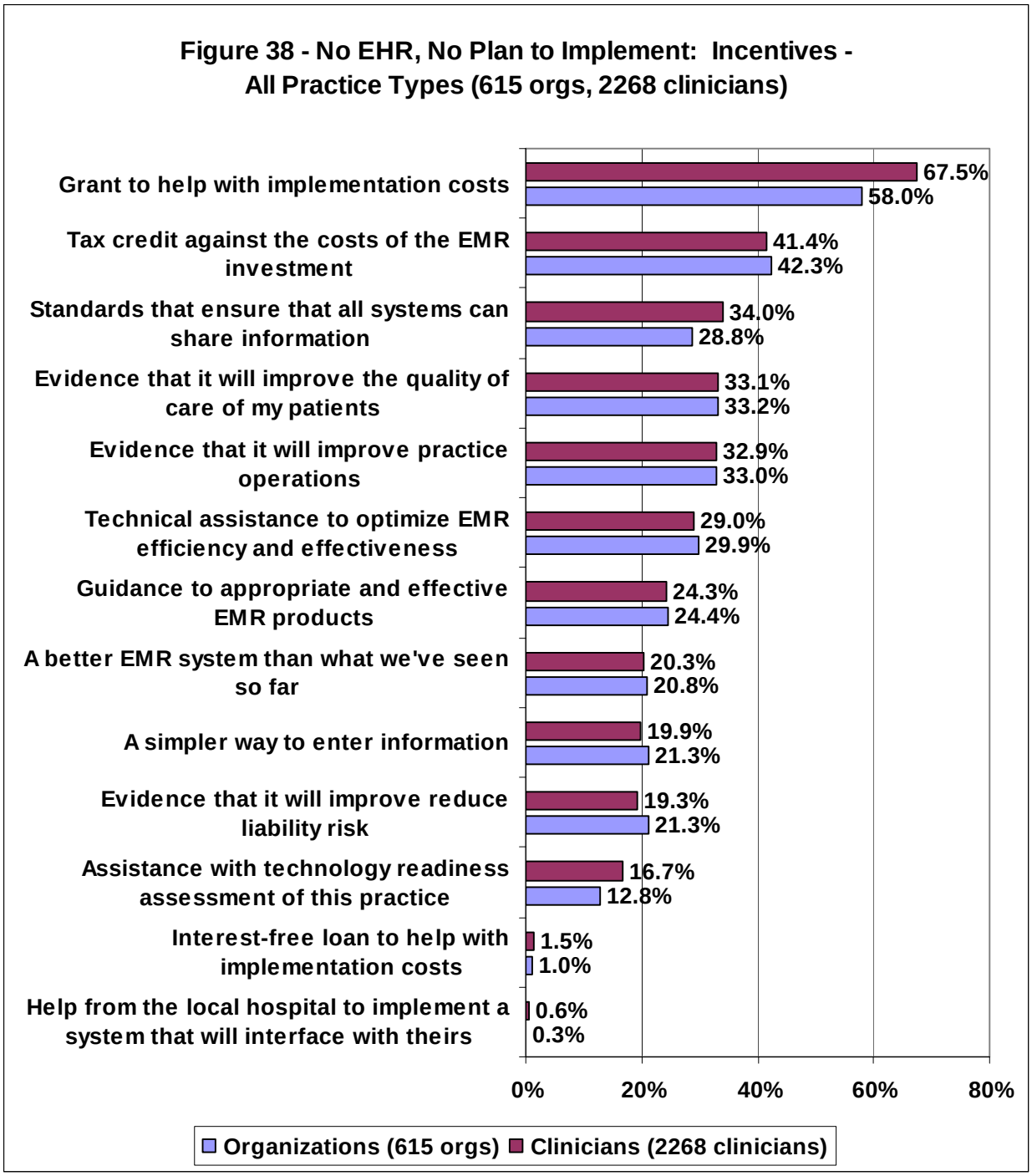
Possible Influence of Incentives on EHR Adoption

Respondents indicating no plans for implementing an EHR were asked to identify up to five incentives that might convince their practice/clinic to implement an EHR. Respondents were given fourteen options, including an option of "nothing. The survey was designed and initially distributed before the enactment of ARRA in February 2009. ARRA has several provisions related to incentives and disincentives, including:

- Incentive payments through the Medicare and Medicaid programs for eligible professionals and hospitals that demonstrate the meaningful use of certified EHR systems.
- Reduced Medicare payments rates to eligible professionals that do not demonstrate meaningful use by 2015.
- Grants to establishment loan funding programs to encourage EHR adoption.

Therefore interpretation of these survey results needs to consider that (a) the list of possible incentive options did not include ARRA incentives and (b) the overall scope and impact of ARRA provisions may affect survey responses.

Figure 38 shows the incentives indicated based on the proportion of responses of the 615 organizations serving 2,268 clinicians responding to the incentives question representing 93.8% of the 655 organizations and 95.5% of clinicians with no plans for implementing an EHR. The top rated incentive of interest relate to grants to help with implementation costs (67.5% of organizations representing 58.0% of clinicians). The second incentive of greatest interest is tax credits against the cost of the EMR investment (31.4% of organizations representing 42.3% of clinicians). While, the ARRA Medicare and Medicaid incentive payments are clearly not a tax credit mechanism, they do represent a mechanism whereby eligible professionals could receive a payment in return for demonstrating the meaningful use of certified EHRs. The third highest ranked incentive was standards that ensure that all systems can share information (34.0% of organizations representing 28.8% of clinicians). Rounding out the top five ranked incentives expressed by 33% of organization are the desire for evidence that EHRs will improve the quality of care for patients (33.2% of organizations representing 33.1% of clinicians) and evidence that EHRs will improve practice operations (33.0% of organizations representing 32.9% of clinicians). Also of interest is that the top five incentives listed by respondents included almost no interest in interest free loans or in having the local hospital provide help to implement an EHR system that will interface with the hospital system.



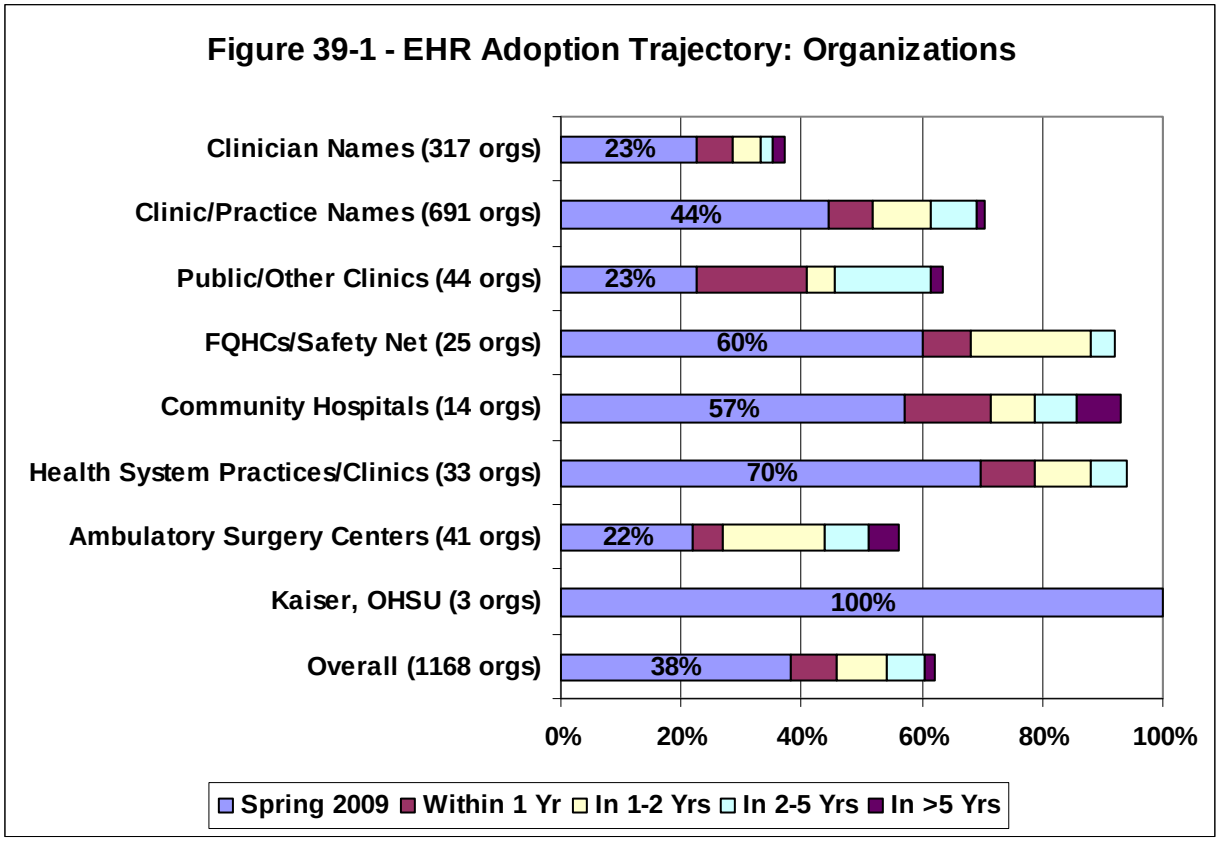
Source: Appendix C, Table 32.

EHR Adoption Trajectory

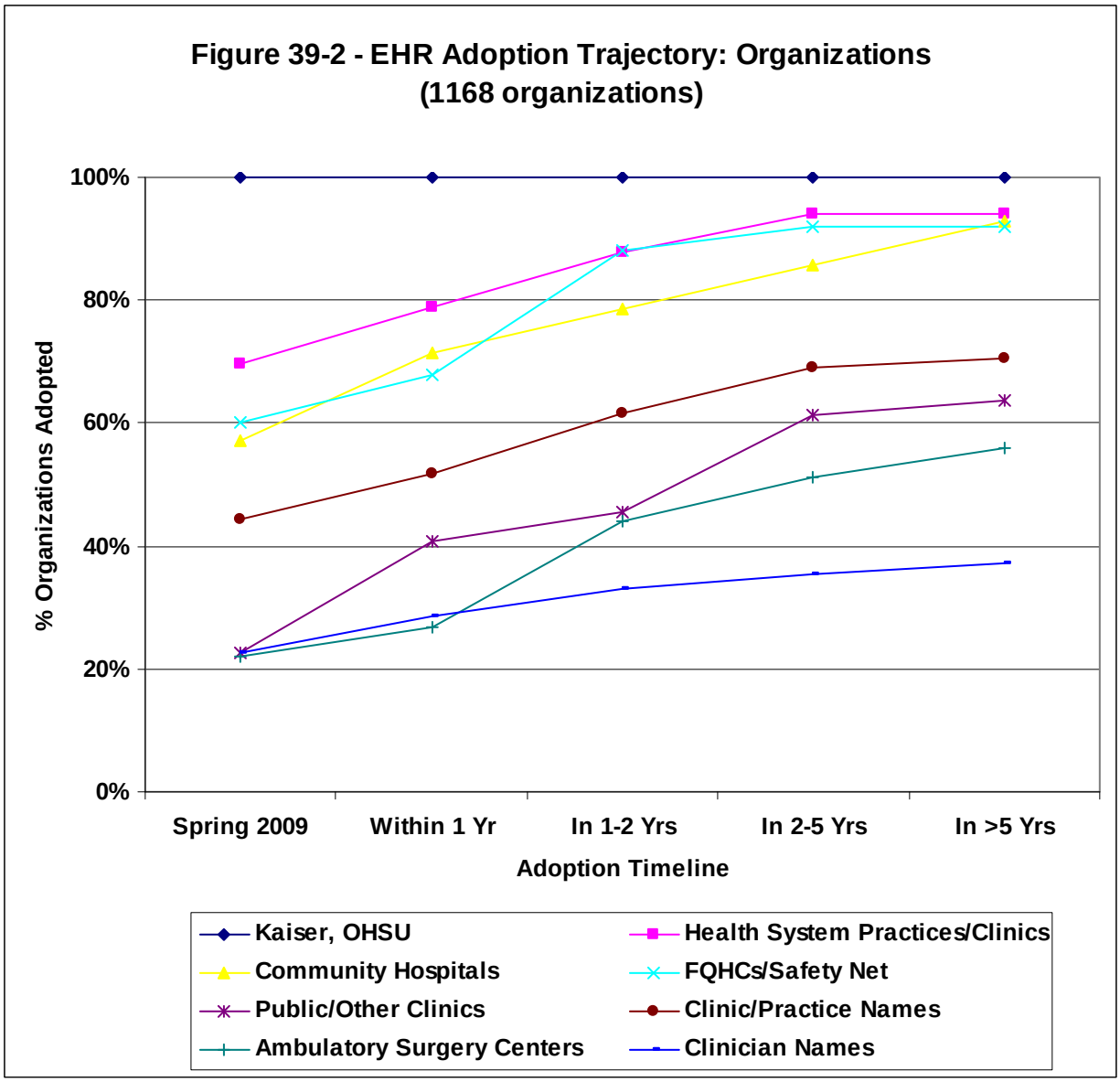
Based on the information gathered in the survey regarding existing levels of EHR adoption and future plans, it is possible to forecast the levels of EHR adoption. Appendix C, Tables 3-1 through 3-4 provide information on the forecast levels of adoption from the 2006 and 2009 surveys. Based on plans expressed in the 2006 EHR survey, 52.6% of organizations serving

82.3% of clinicians were forecast to be using an EHR. Actual adoption in 2009 is lower than the forecast adoption in every practice type and every practice size category for clinician organizations. Therefore the following forecast trajectories should probably be considered as optimistic and aspirational. While the goal of ARRA incentives payments from Medicare and Medicaid are intended to accelerate adoption, the ultimate impact of the incentives is unclear.

Trajectory for All Organizations by Practice Type: Figures 39-1 and 39-2 show alternative representations of the same data projecting the EHR adoption trajectory for organizations by practice type based on the survey responses regarding the plans of practices and clinics to implement EHR systems. Overall adoption across all practice types of organization is projected to grow from 38% in 2009 to 54% within two years and 60% within five years. The highest rates of total adoption within two years are Health System Practices/Clinics (increasing from 70% to 88%), FQHCs/Safety Net Clinics (increasing from 60% to 88%) and Community Hospitals (increasing from 59% to 79%). The lowest rates of adoption by within 2 years are the Clinic Names practice type (increasing from 23% to 33%), Ambulatory Surgery Centers (increasing from 22% to 44%) and Public/Other Clinics (increasing from 23% to 46%).

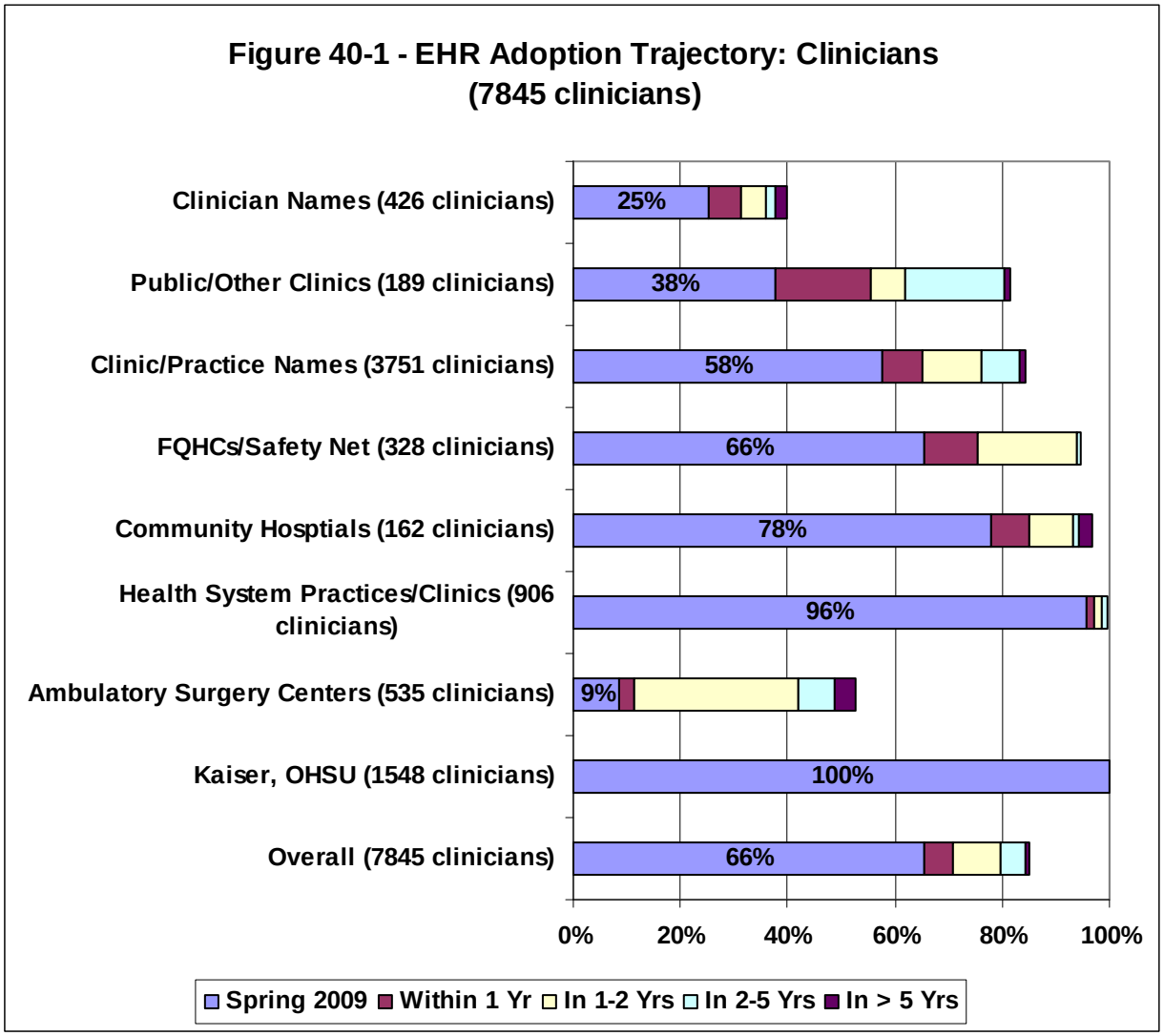


Source: Appendix C, Table 33-1.

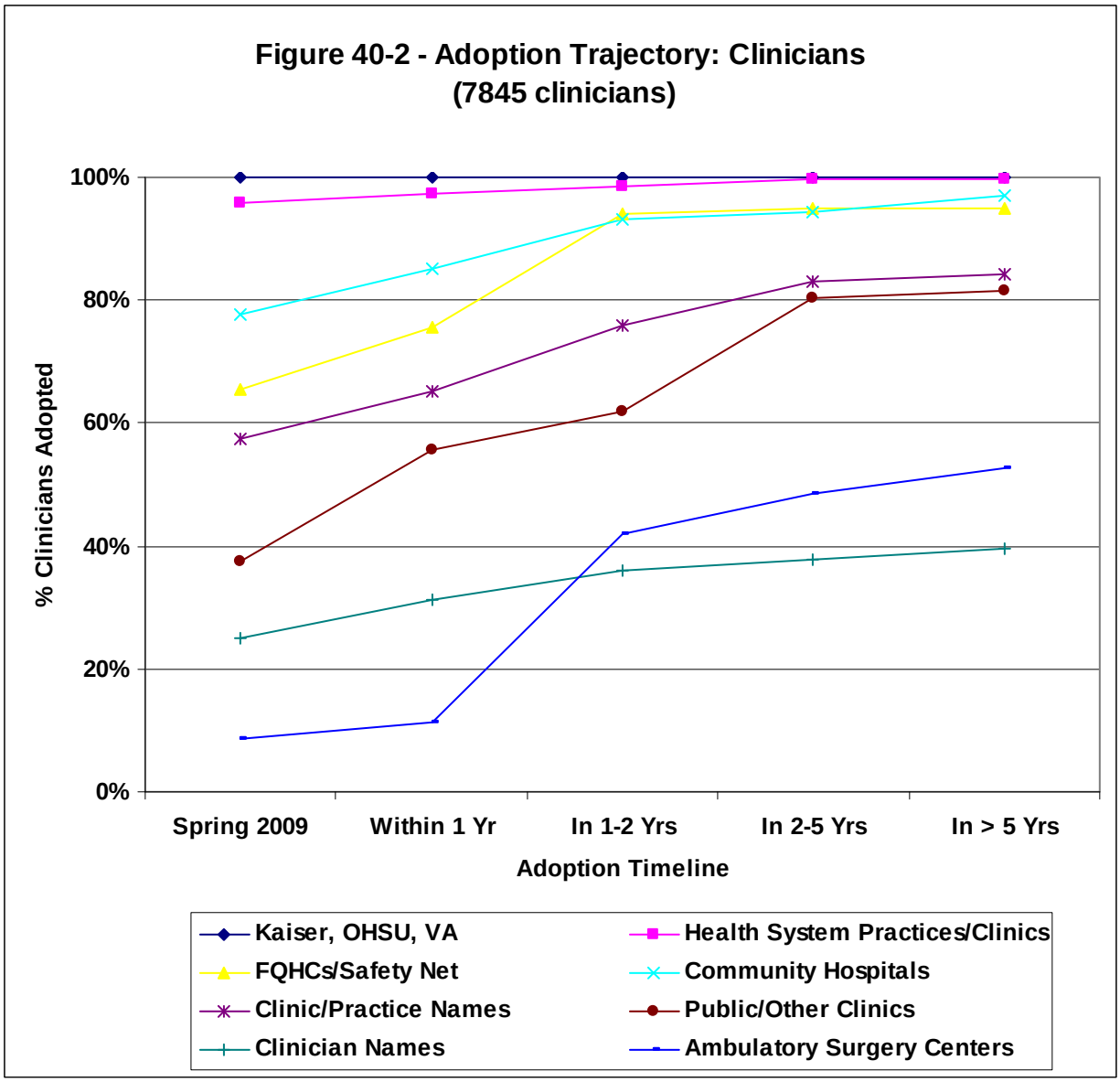


Source: Appendix C, Table 33-1.

Figures 40-1 and 40-2 show alternative representations of the same data projecting the EHR adoption trajectory for the number of clinicians affected at organizations by practice type based on the survey responses regarding the plans of practices and clinics to implement EHR systems. Overall adoption across all practice types of organization is projected to grow from 66% of clinicians in 2009 to 80% within two years and 84% within five years. The highest rates of total adoption within two years are Health System Practices/Clinics (increasing from96% to 99%), FQHCs/Safety Net Clinics (increasing from 66% to 94%) and Community Hospitals (increasing from 78% to 93%). The lowest rates of adoption by within 2 years are the Clinic Names practice type (increasing from 25% to 36%) and Ambulatory Surgery Centers (increasing from 9% to 42%).

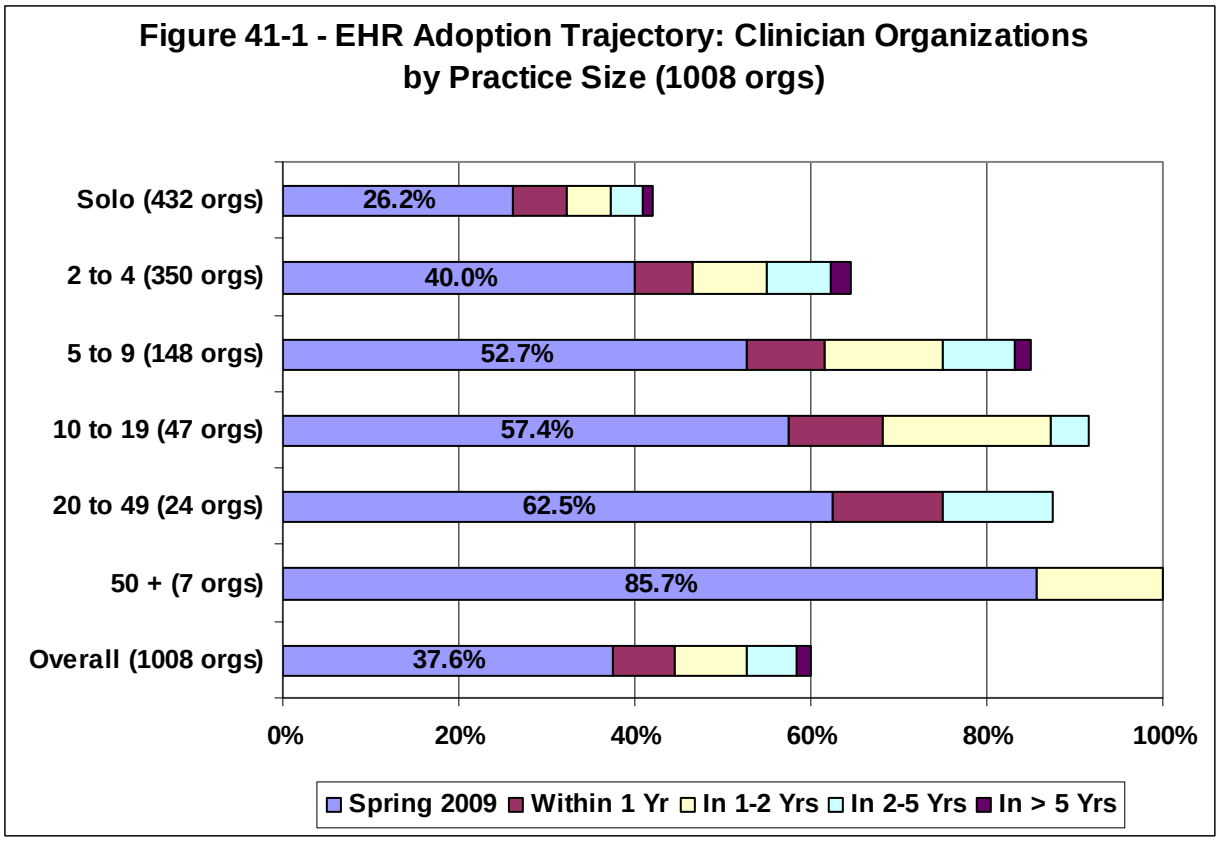


Source: Appendix C, Table 33-2.

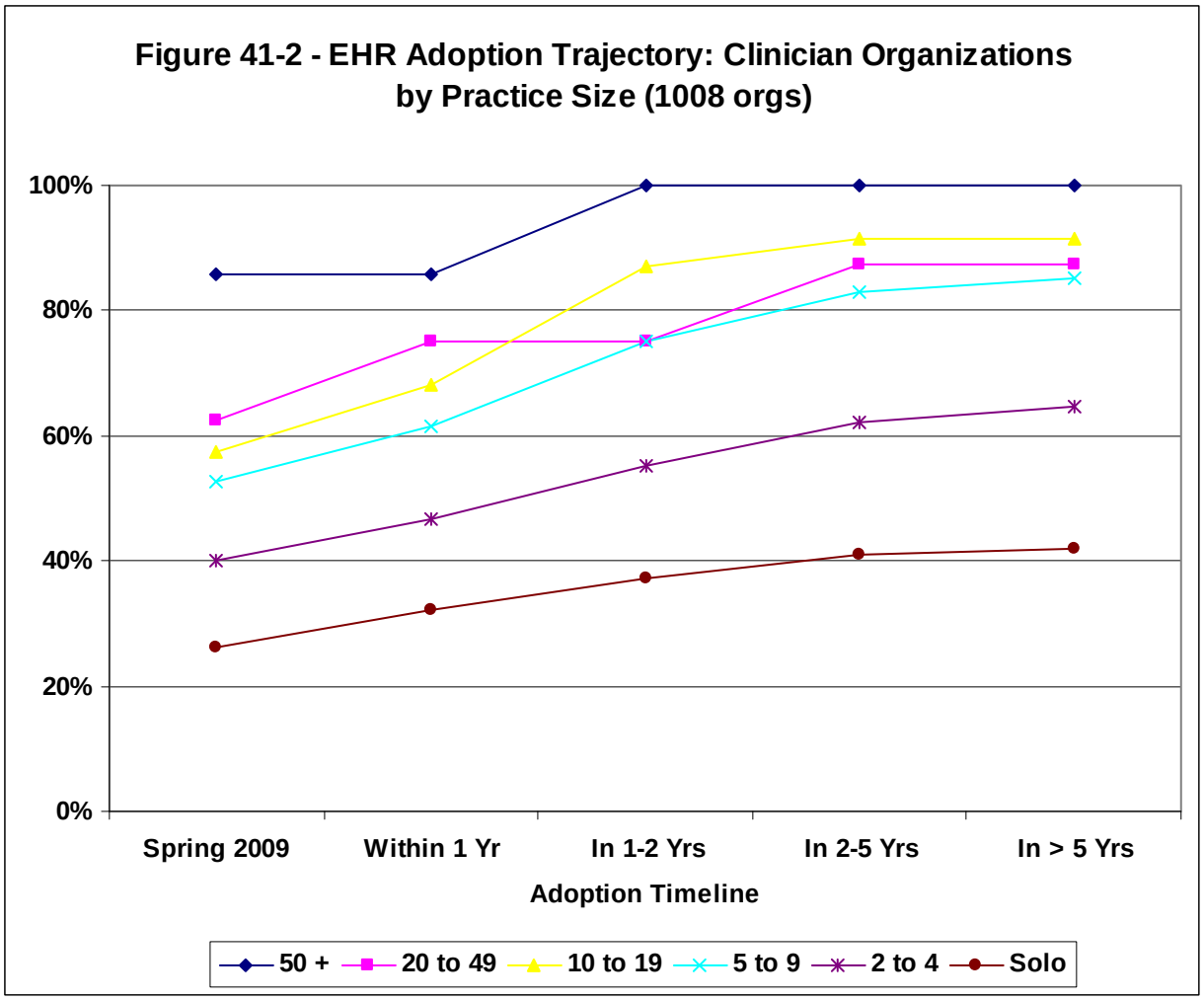


Source: Appendix C, Table 33-2.

Trajectory for Clinician Organizations by Practice Size: Figures 41-1 and 41-2 show alternative representations of the same data projecting the EHR adoption trajectory for clinician organizations by practice size based on the survey responses regarding the plans of practices and clinics to implement EHR systems. Overall adoption across clinician organizations is projected to grow from 38% of organizations in 2009 to 53% within two years and 58% within five years. The practice size categories with five or more clinicians are project having 75% or more organization with EHRs within two years. The lowest rates of adoption by within 2 years are solo practices (increasing from 26% to 37%) and practices with two to four clinicians (increasing from 40% to 55%).

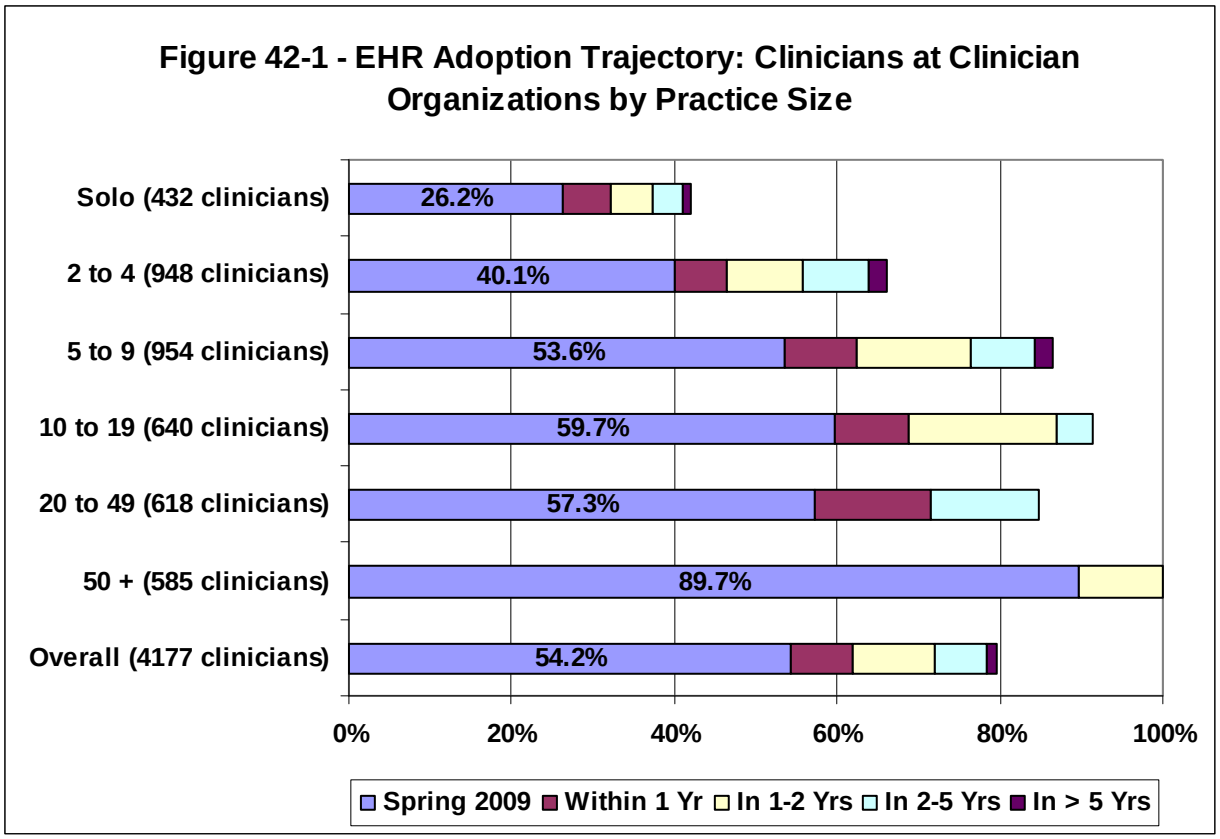


Source: Appendix C, Table 34-1.

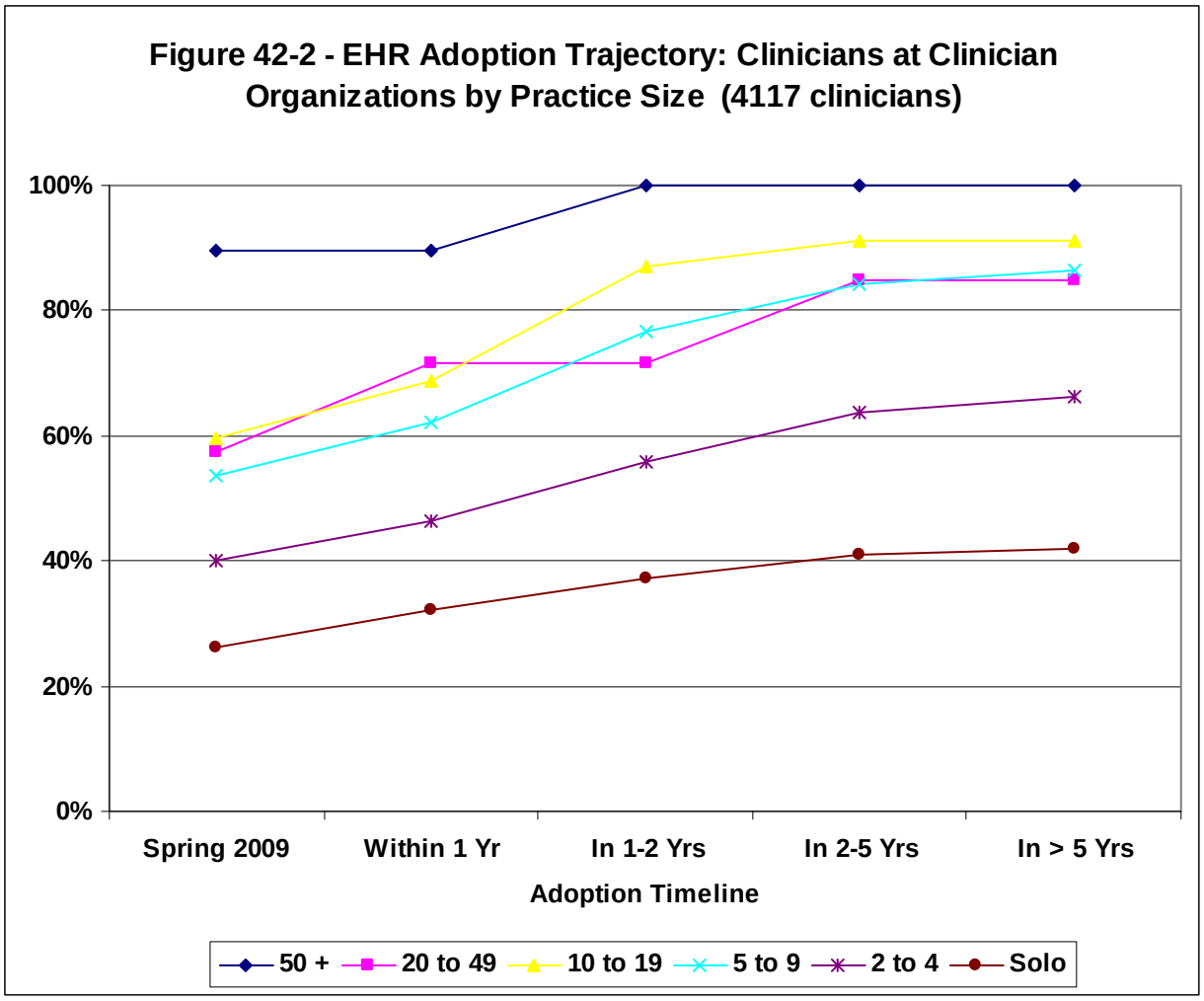


Source: Appendix C, Table 34-1.

Figures 42-1 and 42-2 show alternative representations of the same data projecting the EHR adoption trajectory for the number of clinicians at clinician organizations by practice size based on the survey responses regarding the plans of practices and clinics to implement EHR systems. Overall adoption across clinician organizations is projected to grow from 54% of clinicians in 2009 to 72% within two years and 79% within five years. The practice size categories with five or more clinicians are project having 71% or more (range 71.5% to 100%) of clinicians in clinician organizations with EHRs within two years. The lowest rates of adoption by within 2 years are solo practices (increasing from 26% to 37%) and practices with two to four clinicians (increasing from 40% to 56%).



Source: Appendix C, Table 34-2.



Source: Appendix C, Table 34-2.

Limitations

There are a number of limitations to 2009 EHR Survey and this analysis.

ARRA Impacts: The American Recovery and Reinvestment Act (ARRA) was passed in February 2009, a few weeks after the EHR survey was distributed. ARRA includes a number of provisions intended to accelerate the adoption of EHRs and the meaningful use of EHRs including HIE. Survey responses may or may not have been affected by the passage of ARRA and preliminary information available in early 2009 about how ARRA's HIT provisions would be implemented.

Possible Missing Organizations: It is possible that some practice/clinic organizations were not included in mailing list used to distribute the survey.

Differential Response Rates: It is possible that response rates between practice/clinic organizations with and without EHRs may differ, especially among clinician organizations. A material difference in the response rates between organizations with and without EHRs, would affect the EHR adoption results. Information is not available to assess the possible impacts of differential response rates.

Under Counted Clinicians: The survey defined "clinicians: as physicians (MD/DO), physician assistant and nurse practitioners as a way to focus EHR use on the principal clinicians responsible for the care of patients. Other clinicians with similar roles not covered by the survey scope might include podiatrists (DPM), mental health professionals and others.

Over Counted Clinicians: The survey makes the assumption that all clinicians in a practice/clinic use the EHR system and that the system is fully implemented at all the practice locations and units of the organization. Not all clinicians may use the system because they are unwilling or it is not relevant to their practice. In some instances, organizations may still be in the implementation process and not have fully deployed their systems at the time of the survey. In such cases, the survey results would over estimate the number of clinicians using the system.

In addition, because the survey responses were received from practices and clinic organizations it is possible that some clinicians may have been counted more than once. Community clinics frequently rely on volunteer clinicians from their local area. It is possible that the number of clinicians reported by community clinics could be volunteer clinicians who were also reported in their own practices. Free-standing ambulatory surgery centers provide a facility in which physicians can perform procedures separate from their office-based practices. The freestanding ASC issue is addressed by excluding ASCs from the calculation of the overall weighted adoption rate for clinicians.

Appendix A: Funding Sources and Acknowledgements

Funding Sources: The 2009 Oregon EHR Survey of Ambulatory Practices and Clinics was undertaken by the Office for Oregon Health Policy and Research (OHPR). Resources for the conduct of the study and data analysis were provided by OHPR, Regence BlueCross BlueShield of Oregon and Witter & Associates.

Acknowledgements:
The survey could not have been completed without the willingness of the survey participants to complete the EHR survey in a timely manner and respond promptly to many follow-up inquiries. Support of OHPR staff is also appreciated. Tina Edlund and Sean Kolmer led the efforts to design the survey instrument and coordinate efforts to initiate the survey process, especially in light of the need for an updated survey to inform planning efforts in response to the American Recovery and Reinvestment Act. Additional OHPR staff including Breckon Neat and Shawna Kennedy-Walters provided administrative and operational support in fielding the survey, survey follow-up, data entry and initial data cleaning. Jeannette Nguyen-Johnson analyzed the narrative comments and developed the comment summaries.

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Appendix B: Survey Instrument

The survey transmittal letter and survey instrument are shown on the following eight pages.

Oregon

Office for
Oregon Health Policy and Research
General Services Building
1225 Ferry St SE, 1st Floor
Salem, OR 97301
503-373-1779
Fax 503-378-5511

February 2, 2009

Dear Colleagues;

The Office for Oregon Health Policy and Research (OHPR) is conducting an inventory of all ambulatory medical clinics in the state of Oregon regarding use of electronic health records (EHRs). The purpose of this inventory is to determine what percentages of Oregon's ambulatory clinics utilize an EHR and the results will be used to guide state policy development.

There are two ways to complete the survey. The preferred method is to complete the electronic survey online by going to our website at http://www.oregon.gov/OHPPR/RSCH/ and following the EHR Survey link under Forms/Resources.

You may also complete the paper survey enclosed with this letter. Once you have completed the survey, simply drop the postage-paid return envelope in the mail.

By responding, you are helping us better understand success and barriers of adoption of ambulatory clinics of varying sizes with regard to electronic health records. It is very important to get responses from as many clinics as possible, so please take the time to complete these few questions. Your individual responses to the inventory will only be published as aggregate data. The 2006 Oregon EHR report can be found on our website at:
http://www.oregon.gov/OHPPR/HPC/docs/2005/EHR_LegReport_March05.pdf

If you have any questions or comments please contact Breckon Neat at Breckon.Neat@state.or.us or 503-373-2287.

Thank you in advance for your participation.

Sincerely,

Sean Kolmer

Office for Oregon Health Policy & Research

Oregon Electronic Health Record Inventory
Of Ambulatory Health Care Clinics

To complete this survey online go to our website at http://www.oregon.gov/OHPPR/RSCH/ and follow the EHR Survey link under Forms/Resources.

SECTION 1

1. **In answering these questions, are you responding for a single clinic site or for multiple clinic sites within the same organization?**

   [1] ❑ Single site ➲ GO TO QUESTION 3
   [2] ❑ Multiple sites

2. **For how many sites are you responding? _____Clinic Sites**

3. **Does this clinic site(s) have an electronic practice management system?**

   [1] ❑ Yes
   [2] ❑ No ➲GO TO QUESTION 5

4. **What is the vendor and/or the product name of the electronic practice management system installed at this clinic site(s)?**

   a. Vendor and/or product name_____

5. **Does your practice currently use an electronic medical record (EMR) or an electronic health record (EHR) at your site(s)? *(Mark only one)***

   [1] ❑ Yes, it is installed and in operation ➲ **GO TO SECTION 2, QUESTION 10**
   [2] ❑ No, but implementation is underway ➲ **GO TO SECTION 3, QUESTION 16**
   [3] ❑ No, but we have signed a contract ➲ **GO TO SECTION 3, QUESTION 16**
   [4] ❑ No

6. **Does your clinic plan to implement an EHR/EMR?**

   [1] ❑ Yes
   [2] ❑ No ➲ **GO TO QUESTION 8**

7. **Do you think your clinic will implement an electronic medical record (EMR) or an electronic health record (EHR) in: *(Mark only one)***

   [1] ❑ Less than a 1 year
   [2] ❑ 1 to 2 years
   [3] ❑ More than 2 and less than 5 years
   [4] ❑ More than 5 years

Office for Oregon Health Policy & Research

8. **What are the <u>main barriers</u> to implementing an EHR/EMR in your clinic?** ***(Mark all that apply)***

[1]❑Security and privacy issues

[2]❑Confusing number of EMR choices

[3]❑Lack the expertise to lead or organize the project

[4]❑No currently available EMR product satisfies our needs

[5]❑Staff would require retraining

[6]❑Expense of purchase

[7]❑Expense of implementation (e.g., decreased productivity during implementation)

[8]❑Inadequate return on investment

[9]❑Concern that product will fail

[10]❑Staff is satisfied with paper-based records

[11]❑Practice is too small

[12]❑Plan to retire soon

[13]❑Other(s) – Please specify _____

9. **Which of the following incentives might convince your clinic to implement an EHR/EMR? (*Select five)***

[1]❑ Guidance to appropriate and effective EMR products
[2]❑ Technical assistance to optimize EMR efficiency and effectiveness
[3]❑ Evidence that it will improve the quality of care for my patients
[4]❑ Evidence that it will improve reduce liability risk
[5]❑ Evidence that it will improve practice operations
[6]❑ A better EMR system than what we've seen so far
[7]❑ A simpler way to enter information
[8]❑ Standards that ensure that all systems can share information
[9]❑ Help from the local hospital to implement a system that will interface with theirs
[10]❑ Assistance with a technology readiness assessment of this practice
[11]❑ Grant to help with implementation costs
[12]❑ Interest-free loan to help with implementation costs
[13]❑ Tax credit against the cost of the EMR investment
[14]❑ Nothing

GO TO SECTION 3

SECTION 2

10. **How long have you had <u>ANY EHR/EMR</u> in this practice?** ***(Mark only one.)***

    [1]❑ Less than a 1 year
    [2]❑ 1 to 2 years
    [3]❑ More than 2 and less than 5 years
    [4]❑ More than 5 years

11. **What is the name and version number of the EHR/EMR system you use at your practice site?**

    a. Vendor/product: _____

    b. Version Number (if known): _____

    c. Is the product CCHIT certified? [1]❑ Yes [2]❑ No [3]❑ Don't know

    The Certification Commission for Healthcare Information Technology (CCHIT) is a recognized certification body for electronic health records and their networks, and an independent, voluntary, private-sector initiative. www.cchit.org

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12. **Does your EHR/EMR allow your providers to perform the following functions?**

Function	Function used	Function available, but not used	Function not in EHR system	Don't know
a. Basic functions (i.e., review chart information, create visit notes, update and review problem and medication lists)	1❑	2❑	3❑	4❑
b. Scan & store paper reports	1❑	2❑	3❑	4❑
c. Update and review				
1. Problem lists	1❑	2❑	3❑	4❑
2. Medication lists	1❑	2❑	3❑	4❑
d. E-prescribing				
1. System prints	1❑	2❑	3❑	4❑
2. System electronically transmits	1❑	2❑	3❑	4❑
e. Enter and review				
1. Lab orders	1❑	2❑	3❑	4❑
2. Radiology order	1❑	2❑	3❑	4❑
f. Electronically place				
1. Lab orders	1❑	2❑	3❑	4❑
2. Radiology orders	1❑	2❑	3❑	4❑
g. Disease-based registries (built or fed into your EHR)	1❑	2❑	3❑	4❑

13. **Does your clinic's EHR/EMR provide the following decision support tools?**

Function	Yes	No
a. Warnings of drug interactions or contraindications?	1❑	2❑
b. Highlighting out-of-range lab levels	1❑	2❑
c. Reminders for guideline-based interventions and screenings	1❑	2❑
d. Reminders to notify patients for follow-up	1❑	2❑
e. Prompts to order tests, studies or other services	1❑	2❑

14. **Does your EHR/EMR have the ability to exchange information with any of the following information systems?**

Information system	Yes	No
a. An electronic interface to a hospital or hospital ED?	1❑	2❑
b. An electronic interface to a lab?	1❑	2❑
c. An electronic interface to pharmacies for electronic transmission of prescriptions?	1❑	2❑
d. An electronic interface to a radiology system (for reports, not images)?	1❑	2❑
f. Remote access capabilities (e.g., from your home)?	1❑	2❑
e. Connection to a patient Web portal or Personal Health Record (PHR)?	1❑	2❑

15. **How satisfied have you been with your EHR/EMR overall?**

5❑ Very Satisfied
4❑ Somewhat Satisfied
3❑ Neutral
2❑ Somewhat Dissatisfied
1❑ Very Dissatisfied

SECTION 3

16. **How many practicing providers (MD, DO, NP, PA) are in your clinic or clinics for which you are reporting? *(Number of people – not FTEs)***

Type	Number	Type	Number	Type	Number
a. MD/DO		**b. NP**		**c. PA**	

Office for Oregon Health Policy & Research

17. **In what specialties or subspecialties do your clinicians practice? *(Mark all that apply)***

❑Adolescent Health	❑Dermatology	❑General Surgery	❑Maxillofacial Surgery	❑Ob/Gyn	❑Pediatrics	❑Radiology
❑Allergy/Immunology	❑Emergency Med	❑Geriatrics	❑Neo/Perinatal Med	❑Occupational Med	❑Pediatric Surgery	❑Sports Medicine
❑Anesthesiology	❑Endocrinology	❑Gynecology	❑Nephrology	❑Oncology	❑Physical Health and Rehabilitation	❑Urgent Care
❑Cardiology	❑ENT	❑Hematology	❑Neurology	❑Ophthalmology	❑Plastic Surgery	❑Urology
❑Cardiovasc. Surgery	❑Family Practice	❑Hospitalist	❑Neuro. Surgery	❑Ortho. Surgery	❑Psychiatry	❑Vascular Surgery
❑Critical Care Med	❑GI	❑Internal Med	❑Nuclear Medicine	❑Pain Mgmnt	❑Pulmonology	❑Other

18. **What have been the strengths or challenges of implementing and using an EHR/EMR in your clinic?**

a. Strengths:_____

b. Challenges:_____

19. **Please provide any additional comments applicable to the implementation and adoption of EHR/EMR at your clinic.** _____

_____

_____

_____

_____

_____

_____

20. **Please provide the following information about the clinic(s) you are reporting for.** *(If reporting for more than one clinic, please submit each clinic name, NPI and zip code)*

    Name of clinic(s):

    _____

    Clinic(s) NPI (if known):

    _____

    Clinic(s) zip code:

    _____

21. **In order to follow-up with any questions about your clinic's responses, please provide the following contact information.**

    Name:

    _____

    Title:

    _____

    Phone:

    _____

    Email address:

    _____

Thank you for your time!

Appendix C: 2009 EHR Survey Data Tables

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SURVEY CHARACTERISTICS

Table 1-1: Survey Response Rates by Practice Type

RESPONSE RATES BY PRACTICE TYPE	Surveys Mailed	Responses Received	Response Rate	Entities Mailed	Entities with a Response	Entity Response Rate	Responses included in Analysis	
Clinician Names	612	384	62.7%	609	317	52.1%	317	(1)
Clinic/Practice Names	1,280	863	67.4%	1,136	691	60.8%	691	(1)
Subtotal	1,892	1,247	65.9%	1,745	1,008	57.8%	1,008	
FQHCs/Safety Net	87	46	52.9%	62	25	40.3%	25	(1)
Public/Other Clinics	84	51	60.7%	69	44	63.8%	44	(1)
Health System Practices/Clinics	98	39	39.8%	4	4	100.0%	33	(2)
Community Hospitals	35	24	68.6%	9	9	100.0%	14	(2)
Ambulatory Surgery Centers	75	49	65.3%	74	41	55.4%	41	(1)
Kaiser, OHSU	2	2	100.0%	2	2	100.0%	3	(2)
Subtotal - Indentified Responses	2,273	1,458	64.1%	1,965	1,133	57.7%	1,168	
No clinic name or identifying information	-	218		-	-	-	-	
Total	2,273	1,676	73.7%	1,965	1,133	57.7%	1,168	

(1) Responses used in Analysis are for single organizational entities.

(2) Responses used in Analysis include multiple response for a single organization in order to capture EHR adoption by regions.

KEY: PRACTICE TYPES

Clinician Names	Practices with the names of individual clinicians, e.g., Joseph Doakes, MD, Drs. Smith & Jones
Clinic/Practice Names	Practices with other names, e.g., Albany Clinic, Pacific Medical Group
FQHCs/Safety Net	Federally qualified health centers matched to OHPR list of FQHCs
Public/Other Clinics	Public health departments, school-based clinics, tribal clinics and college health centers
Health System Practices/Clinics	Practices and clinics associated with hospitals and health systems (includes system name)
Community Hospitals	Community hospitals that did not have specifically identified ambulatory clinics or practices
Ambulatory Surgery Centers	Free-standing ambulatory surgery centers
Kaiser, OHSU	Kaiser, OHSU clinics
VA	VA clinics
No Name/info	Responses submitted without clinician or practice name

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SURVEY CHARACTERISTICS (cont.)

Table 1-2: Survey Responses by Practice Type: Entities, Locations, Clinicians

RESPONSES BY PRACTICE TYPE	**Entities (1)**	Locations	**Clinicians**	% Entities	% Clinicians	Clinicians per Entity	Locations per Entity
Clinician Names	**317**	329	**426**	27.1%	5.4%	1.3	1.0
Clinic/Practice Names	**691**	1,038	**3,751**	59.2%	47.8%	5.4	1.5
Subtotal	**1,008**	1,367	**4,177**	86.3%	53.2%	4.1	1.4
FQHCs/Safety Net	**25**	93	**328**	2.1%	4.2%	13.1	3.7
Public/Other Clinics	**44**	71	**189**	3.8%	2.4%	4.3	1.6
Health System Practices/Clinics	**33**	123	**906**	2.8%	11.5%	27.5	3.7
Community Hospitals	**14**	50	**162**	1.2%	2.1%	11.6	3.6
Ambulatory Surgery Centers	**41**	44	**535**	3.5%	6.8%	13.0	1.1
Kaiser, OHSU	**3**	34	**1,548**	0.3%	19.7%	516.0	11.3
Total	**1,168**	1,782	**7,845**	100.0%	100.0%	6.7	1.5

(1) In this and remaining tables the term "Entities" or organizations refers to organizational units used in the analysis. As noted in Table 1-1, health system organization covering multiple regions are split into regional components.

Table 1-3: Type of Clinicians by Practice Type

CLINICIANS BY PRACTICE TYPE	Physicians	Nurse Practitioner	Physician Assistants	Total	% Physicians	% Nurse Practitioner	% Phys. Assistants
Clinician Names	375	32	19	426	88.0%	7.5%	4.5%
Clinic/Practice Names	2,970	435	346	3,751	79.2%	11.6%	9.2%
Subtotal	3,345	467	365	4,177	80.1%	11.2%	8.7%
FQHCs/Safety Net	173	118	37	328	52.7%	36.0%	11.3%
Public/Other Clinics	103	79	7	189	54.5%	41.8%	3.7%
Health System Practices/Clinics	763	111	32	906	84.2%	12.3%	3.5%
Community Hospitals	131	19	12	162	80.9%	11.7%	7.4%
Ambulatory Surgery Centers	479	4	52	535	89.5%	0.7%	9.7%
Kaiser, OHSU	1,279	197	72	1,548	82.6%	12.7%	4.7%
Total	6,273	995	577	7,845	80.0%	12.7%	7.4%

2009 Oregon Ambulatory EHR Survey

SURVEY CHARACTERISTICS (cont.)

Table 1-4: Survey Responses (organizations) by Practice Size and Practice Type - data

NUMBER OF PRACTICES BY SIZE CATEGORY	Solo Practices	2 to 4 Clinicians	5 to 9 Clinicians	10 to 19 Clinicians	20 to 49 Clinicians	50 + Clinicians	Total Practices
Clinician Names	244	71	2	-	-	-	317
Clinic/Practice Names	188	279	146	47	24	7	691
Subtotal	432	350	148	47	24	7	1,008
FQHCs/Safety Net	-	3	8	11	2	1	25
Public/Other Clinics	13	14	13	4	-	-	44
Health System Practices/Clinics	2	13	5	6	3	4	33
Community Hospitals	-	6	5	1	1	1	14
Ambulatory Surgery Centers	5	7	15	8	3	3	41
Kaiser, OHSU	-	-	-	-	-	3	3
Total	452	393	194	77	33	19	1,168

Table 1-5: Survey Responses (organizations) by Practice Size within Practice Type - distribution

PERCENTAGE OF PRACTICES BY SIZE CATEGORY	Solo Practices	2 to 4 Clinicians	5 to 9 Clinicians	10 to 19 Clinicians	20 to 49 Clinicians	50 + Clinicians	Total Practices
Clinician Names	77.0%	22.4%	0.6%	0.0%	0.0%	0.0%	100.0%
Clinic/Practice Names	27.2%	40.4%	21.1%	6.8%	3.5%	1.0%	100.0%
Subtotal	42.9%	34.7%	14.7%	4.7%	2.4%	0.7%	100.0%
FQHCs/Safety Net	0.0%	12.0%	32.0%	44.0%	8.0%	4.0%	100.0%
Public/Other Clinics	29.5%	31.8%	29.5%	9.1%	0.0%	0.0%	100.0%
Health System Practices/Clinics	6.1%	39.4%	15.2%	18.2%	9.1%	12.1%	100.0%
Community Hospitals	0.0%	42.9%	35.7%	7.1%	7.1%	7.1%	100.0%
Ambulatory Surgery Centers	12.2%	17.1%	36.6%	19.5%	7.3%	7.3%	100.0%
Kaiser, OHSU	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	38.7%	33.6%	16.6%	6.6%	2.8%	1.6%	100.0%

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SURVEY CHARACTERISTICS (cont.)

Table 1-6: Distribution of Clinicians for Responses by Practice Size and Practice Type

NUMBER OF PRACTICES BY SIZE CATEGORY	Solo Practices	2 to 4 Clinicians	5 to 9 Clinicians	10 to 19 Clinicians	20 to 49 Clinicians	50 + Clinicians	Total Practices
Clinician Names	244	172	10	-	-	-	426
Clinic/Practice Names	188	776	944	640	618	585	3,751
Subtotal	432	948	954	640	618	585	4,177
FQHCs/Safety Net	-	9	66	137	57	59	328
Public/Other Clinics	13	42	82	52	-	-	189
Health System Practices/Clinics	2	36	39	83	104	642	906
Community Hospitals	-	19	34	13	29	67	162
Ambulatory Surgery Centers	5	20	98	126	103	183	535
Kaiser, OHSU	-	-	-	-	-	1,548	1,548
Total	452	1,074	1,273	1,051	911	3,084	7,845

Table 1-7: Distribution of Clinicians for Responses by Practice Size within Practice Type

PERCENTAGE OF PRACTICES BY SIZE CATEGORY	Solo Practices	2 to 4 Clinicians	5 to 9 Clinicians	10 to 19 Clinicians	20 to 49 Clinicians	50 + Clinicians	Total Practices
Clinician Names	57.3%	40.4%	2.3%	0.0%	0.0%	0.0%	100.0%
Clinic/Practice Names	5.0%	20.7%	25.2%	17.1%	16.5%	15.6%	100.0%
Subtotal	10.3%	22.7%	22.8%	15.3%	14.8%	14.0%	100.0%
FQHCs/Safety Net	0.0%	2.7%	20.1%	41.8%	17.4%	18.0%	100.0%
Public/Other Clinics	6.9%	22.2%	43.4%	27.5%	0.0%	0.0%	100.0%
Health System Practices/Clinics	0.2%	4.0%	4.3%	9.2%	11.5%	70.9%	100.0%
Community Hospitals	0.0%	11.7%	21.0%	8.0%	17.9%	41.4%	100.0%
Ambulatory Surgery Centers	0.9%	3.7%	18.3%	23.6%	19.3%	34.2%	100.0%
Kaiser, OHSU	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Total	5.8%	13.7%	16.2%	13.4%	11.6%	39.3%	100.0%

2009 Oregon Ambulatory EHR Survey

NATIONAL EHR ADOPTION CONTEXT

Table 2-1 National EHR Adoption: Office-Based Physicians 2003-2008

PERCENTAGE OF PHYSICIANS USING EMRs BASED ON CDC SURVEYS	2003 (1)	2004 (1)	2005 (1)	2006 (1)	2007	2008 (2)	2009
Any EMR	17.3%	20.8%	23.9%	29.2%		38.4%	
Comprehensive EMR			9.3%	12.4%		20.4%	

(1) Rates for 2002 to 2006: Hing E, Burt CW, Woodwell D, Electronic medical record use by office-based physicians and their practices: United States, 2006. Advance Data No. 393, October 26, 2007, Centers for Disease Control and Prevention, National Center for Health Statistical, Accessed November 8, 2007 at http://www.cdc.gov/nchs/data/ad/ad393.pdf.
(2) Rates for 2008: Hsaio CJ, Burt CW, Rechtsteiner E et al, Preliminary estimates of electronic medical record use by office-based physicians: United States, 2008. Health E-Stat. National Center for Health Statistics, Accessed December 13, 2008 at http://www.cdc.gov/nchs/products/pubs/pubd/hestats/hestats.htm.

Table 2-2 EHR Adoption Comparison in 2006: National (Physicians) and Oregon Survey (Clinicians)

PERCENTAGE OF PHYSICIANS USING ANY EMR BY PHYSICIANS (NATIONAL) AND OREGON CLINICIANS BY PRACTICE SIZE	National Survey 2006 (1) - Hing et al)		Oregon - All Practice Types 2006 (3)	Oregon - Clinician Practices 2006 (3)
Overall	29.2%		52.8%	35.6%
Solo practice	24.0%		19.3%	21.0%
Partner	28.0%			
2 - 4 clinicians			25.4%	26.7%
3 - 5 physicians	30.0%			
5 - 9 clinicians			35.9%	35.0%
6 - 10 physicians	30.9%			
10 - 19 clinicians			54.7%	53.3%
11 or more physicians	46.5%			
20 - 49 clinicians			21.3%	22.6%
50 or more clinicians			88.6%	52.6%

(1) Rates for 2002 to 2006: Hing E, Burt CW, Woodwell D, Electronic medical record use by office-based physicians and their practices: United States, 2006. Advance Data No. 393, October 26, 2007, Centers for Disease Control and Prevention, National Center for Health Statistical, Accessed November 8, 2007 at http://www.cdc.gov/nchs/data/ad/ad393.pdf.
(3) Oregon EHR Survey, Ambulatory Practices and Clinics, Fall 2006. Available at http://www.oregon.gov/OHPPR/docs/OR2006EHRSurvey.pdf.

2009 Oregon Ambulatory EHR Survey

NATIONAL EHR ADOPTION CONTEXT (cont.)

Table 2-3 EHR Adoption: National Survey of Physicians - late 2007 - early 2008 (1)

PERCENTAGE OF SURVEYED PHYSICIANS	Basic EHR System	Fully Functional EHR System	No Basic or Fully Functional System	Total
All Physicians - sample	n = 330	n = 117	n = 2160	n = 2607
All Physicians	**13%**	**4%**	**83%**	**100%**
Medical Specialty				
Primary Care (47%)	15%	6%	80%	101%
Not Primary Care (53%)	11%	4%	86%	101%
Practice Size				
1 - 3 physicians (44%)	7%	2%	91%	100%
4 - 5 physicians (17%)	11%	3%	86%	100%
6 - 10 physicians (17%)	17%	6%	77%	100%
11 - 50 physicians (13%)	22%	8%	71%	101%
>50 physicians (4%)	33%	18%	50%	101%
Practice Setting				
Hospital or medical center (32%)	15%	5%	80%	100%
Office not attached to hospital of MC (63%)	12%	4%	85%	101%
Other (3%)	13%	4%	83%	100%
Location				
Urban (83%)	13%	4%	83%	100%
Rural (17%)	13%	4%	83%	100%
Region				
Northeast (19%)	11%	4%	86%	101%
Midwest (23%)	13%	4%	83%	100%
South (34%)	12%	4%	84%	100%
West (23%)	16%	6%	78%	100%

(1) DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records survey in ambulatory care -a national survey of physicians. NEJM, 359:1, July 3, 2008, 50-60.

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NATIONAL EHR ADOPTION CONTEXT (cont.)

Table 2-4 National EHR Adoption: Office-Based Physicians 2003-2008 and Preliminary 2009 (1)

PERCENTAGE OF PHYSICIANS USING EMRs BASED ON CDC SURVEYS	2003	2004	2005	2006	2007	2008	2009 Preliminary
Any EMR/EHR System	17.3%	20.8%	23.9%	**29.2%**	3.5%	41.3%	**43.9%**
Basic EMR/EHR System				**10.3%**	11.8%	16.7%	**20.5%**
Fully Functional EMR/EHR System				**3.1%**	3.8%	4.4%	**6.3%**

(1) Hsaio CJ, Beatty PC, Hing ES, Woodwell DA, Rechtsteiner EA, Sisk JE. Electronic medical record/electronic health record use by office-based physicians: United States, 2008 and preliminary 2009. Health E-Stat. National Center for Health Statistics, December 2009. Accessed December 23, 2009 at http://www.cdc.gov/nchs/data/hestat/emr_ehr/emr_ehr.pdf.

Table 2-5 Overall 2009 Oregon EHR Adoption: Clinicians at All Organizations and Clinician Organizations

PERCENTAGE OF CLINICIANS USING EMRs BASED ON OREGON SURVEYS			2006 Oregon - All Practice Types (2)	2006 Oregon - Clinician Organizations (2)		2009 Oregon - All Practice Types (3)	2009 Oregon - Clinician Organizations (3)
Any EMR/EHR System			52.8%	35.6%		65.5%	54.2%
Basic EMR/EHR System						49.4%	30.9%
Fully Functional EMR/EHR System						32.5%	8.8%

(2) Oregon EHR Survey, Ambulatory Practices and Clinics, Fall 2006. Available at http://www.oregon.gov/OHPPR/docs/OR2006EHRSurvey.pdf.
(3) See Tables 2-6, 26-1, 26-2, 28-1, 28-2.

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NATIONAL EHR ADOPTION CONTEXT (cont.)

Table 2-6 Comparison: 2009 Oregon Survey to 2007/2008 National EHR Adoption by Practice Type

PERCENTAGE OF NATIONAL SURVEYED PHYSICIANS & OREGON COVERED CLINICIANS	National CDC Survey 2008 - Any EMR (1)	National Survey 2007/2008 Basic EHR (NEJM) (2)	National Survey 2007/2008 Fully Functional EHR (NEJM) (2)		Oregon 2009 Survey - Clinician Practices - Any EHR (3)	Oregon 2009 Survey - Clinician Practices - Basic EHR (3)	Oregon 2009 Survey - Clinician Practices - Fully Functional EHR (3)
Overall	38.4%	13.0%	4.0%		65.5%	49.4%	32.5%
Clinician Names		12%			25.1%	11.5%	4.1%
Clinic/Practice Names					57.5%	33.1%	9.4%
Subtotal		12%			54.2%	30.9%	8.8%
FQHCs/Safety Net		4%			65.5%	60.7%	22.6%
Health Systems		15%			95.8%	75.8%	50.8%
Community Hospitals					77.8%	66.0%	46.3%
Ambulatory Surgery Centers					8.6%	2.4%	0.0%
Kaiser, OHSU		15%			100.0%	100.0%	100.0%
County health, school districts & college health services		4%			37.6%	17.5%	11.1%
Total	38.4%	13.0%	4.0%		65.5%	49.4%	32.5%

(1) Rates for 2008: Hsaio CJ, Burt CW, Rechtsteiner E et al, Preliminary estimates of electronic medical record use by office-based physicians: United States, 2008. Health E-Stat. National Center for Health Statistics, Accessed December 13, 2008 at http://www.cdc.gov/nchs/products/pubs/pubd/hestats/hestats.htm.

(2) DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records survey in ambulatory care -a national survey of physicians. NEJM, 359:1, July 3, 2008, 50-60.

(3) See Tables 26-1 and 26-2.

2009 Oregon Ambulatory EHR Survey

NATIONAL EHR ADOPTION CONTEXT (cont.)

Table 2-7 Comparison: 2009 Oregon Clinician Practices to 2007/2008 National EHR Adoption by Practice Size

PERCENTAGE OF NATIONAL SURVEYED PHYSICIANS & OREGON COVERED PHYSICIANS		National Survey 2007/2008 Basic EHR (NEJM) (1)	National Survey 2007/2008 Fully Functional EHR (NEJM) (1)		Oregon 2009 Survey - Clinician Practices - Any EHR (2)	Oregon 2009 Survey - Clinician Practices - Basic EHR (2)	Oregon 2009 Survey - Clinician Practices - Fully Functional EHR (2)
Overall		13%	4%		54.2%	30.9%	8.8%
Solo practices					26.2%	10.1%	2.6%
1 - 3 physicians		7%	2%				
2 - 4 clinicians					40.1%	20.6%	7.2%
4 - 5 physicians		11%	3%				
5 - 9 clinicians					53.6%	36.4%	11.2%
6 - 10 physicians		17%	6%				
10 - 19 clinicians					59.7%	29.1%	14.8%
20 - 49 clinicians					57.3%	32.2%	14.2%
11 - 50 physicians		22%	8%				
50 or more clinicians					89.7%	54.7%	0.0%
>50 physicians		33%	18%				

(1) DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records survey in ambulatory care -a national survey of physicians. NEJM, 359:1, July 3, 2008, 50-60.
(2) See Tables

2009 Oregon Ambulatory EHR Survey

COMPARISON: 2009 AND 2006 SURVEYS

Table 3-1 ACTUAL AND FORECAST EHR ADOPTION BY SURVEY RESPONDENTS: Organizations

ACTUAL AND FORECAST LEVELS OF EHR ADOPTION BASED ON SURVEY RESPONSES	2006 Survey 2006 Responses	2009 Survey 2009 Responses	2006 Survey **2006 Actual**	2006 Survey 2007 Forecast	2006 Survey 2008 Forecast	2009 Survey **2009 Actual**	2009 Survey 2010 Forecast	2009 Survey 2011 Forecast
Clinician Names	324	317	**16.0%**	21.0%	31.2%	**22.7%**	28.7%	33.1%
Clinic/Practice Names	697	691	**32.1%**	46.2%	62.1%	**44.4%**	51.8%	61.6%
Subtotal	1,021	1,008	**27.0%**	38.2%	52.3%	**37.6%**	44.5%	52.7%
FQHCs/Safety Net	27	25	**29.6%**	44.4%	70.4%	**60.0%**	68.0%	88.0%
Health Systems	23	33	**52.2%**	78.3%	91.3%	**69.7%**	78.8%	87.9%
Community Hospitals	2	14	**50.0%**	50.0%	50.0%	**57.1%**	71.4%	78.6%
Ambulatory Surgery Centers	7	41	**14.3%**	14.3%	28.6%	**22.0%**	26.8%	43.9%
Kaiser, OHSU	2	3	**100.0%**	100.0%	100.0%	**100.0%**	100.0%	100.0%
VA	1	-	**100.0%**	100.0%	100.0%	not included in 2009 survey		
County public health departments, school districts	49	44	**20.4%**	28.6%	46.9%	**22.7%**	40.9%	45.5%
No Name/info	34	-	**5.9%**	11.8%	29.4%	not included in 2009 survey		
Total	1,166	1,168	**26.8%**	38.0%	52.6%	**38.3%**	45.7%	54.3%

Table 3-2 ACTUAL AND FORECAST EHR ADOPTION BY SURVEY RESPONDENTS: Clinicians

ACTUAL AND FORECAST LEVELS OF EHR ADOPTION BASED ON SURVEY RESPONSES	2006 Survey 2006 Responses	2009 Survey 2009 Responses	2006 Survey **2006 Actual**	2006 Survey 2007 Forecast	2006 Survey 2008 Forecast	2009 Survey **2009 Actual**	2009 Survey 2010 Forecast	2009 Survey 2011 Forecast
Clinician Names	428	426	**16.8%**	22.7%	34.6%	**25.1%**	31.2%	35.9%
Clinic/Practice Names	3,908	3,751	**37.7%**	56.7%	75.7%	**57.5%**	65.3%	76.0%
Subtotal	4,336	4,177	**35.6%**	53.4%	71.6%	**54.2%**	61.8%	71.9%
FQHCs/Safety Net	237	328	**34.6%**	38.8%	76.8%	**65.5%**	75.6%	93.9%
Health Systems	917	906	**95.1%**	97.6%	98.6%	**95.8%**	97.2%	98.5%
Community Hospitals	15	162	**53.3%**	53.3%	100.0%	**77.8%**	85.2%	93.2%
Ambulatory Surgery Centers	121	535	**7.4%**	7.4%	47.1%	**8.6%**	11.4%	42.1%
Kaiser, OHSU	1,557	1,548	**100.0%**	100.0%	100.0%	**100.0%**	100.0%	100.0%
VA	547	-	**100.0%**	100.0%	100.0%	not included in 2009 survey		
County public health departments, school districts	313	189	**42.2%**	47.0%	83.4%	**37.6%**	55.6%	61.9%
No Name/info	102	-	**5.9%**	54.9%	69.6%	not included in 2009 survey		
Total	8,145	7,845	**58.4%**	69.1%	82.3%	**65.5%**	70.9%	79.6%

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COMPARISON: 2009 AND 2006 SURVEYS (cont.)

Table 3-3 ACTUAL AND FORECAST EHR ADOPTION BY SURVEY RESPONDENTS: Clinician Organizations

ACTUAL AND FORECAST LEVELS OF EHR ADOPTION BASED ON SURVEY RESPONSES	2006 Survey 2006 Responses	2009 Survey 2009 Responses	2006 Survey **2006 Actual**	2006 Survey 2007 Forecast	2006 Survey 2008 Forecast	2009 Survey **2009 Actual**	2009 Survey 2010 Forecast	2009 Survey 2011 Forecast
Unidentified size	3	-	**0.0%**	33.3%	66.7%	not included in 2009 survey		
Solo	414	432	**21.0%**	25.8%	33.6%	**26.2%**	27.5%	32.6%
2 to 4	366	350	**26.2%**	39.6%	55.2%	**40.0%**	42.0%	50.6%
5 to 9	150	148	**34.7%**	52.7%	78.0%	**52.7%**	56.8%	70.3%
10 to 19	58	47	**53.4%**	69.0%	84.5%	**57.4%**	57.4%	76.6%
20 to 49	22	24	**27.3%**	59.1%	81.8%	**62.5%**	66.7%	66.7%
50 +	8	7	**50.0%**	62.5%	87.5%	**85.7%**	85.7%	100.0%
Total	1,021	1,008	**27.0%**	38.2%	52.3%	**37.6%**	39.6%	47.7%

Table 3-4 ACTUAL AND FORECAST EHR ADOPTION BY SURVEY RESPONDENTS: Clinicians at Clinician Organizations

ACTUAL AND FORECAST LEVELS OF EHR ADOPTION BASED ON SURVEY RESPONSES	2006 Survey 2006 Responses	2009 Survey 2009 Responses	2006 Survey **2006 Actual**	2006 Survey 2007 Forecast	2006 Survey 2008 Forecast	2009 Survey **2009 Actual**	2009 Survey 2010 Forecast	2009 Survey 2011 Forecast
Unidentified size	-	-	not applicable			not included in 2009 survey		
Solo	414	432	**21.0%**	25.8%	33.6%	**26.2%**	32.2%	37.3%
2 to 4	994	948	**26.7%**	40.3%	56.6%	**40.1%**	46.5%	55.7%
5 to 9	942	954	**35.0%**	53.7%	78.2%	**53.6%**	62.3%	76.5%
10 to 19	762	640	**53.3%**	69.0%	83.3%	**59.7%**	68.9%	87.0%
20 to 49	623	618	**22.6%**	62.3%	84.4%	**57.3%**	71.5%	71.5%
50 +	601	585	**52.6%**	64.2%	84.2%	**89.7%**	89.7%	100.0%
Total	4,336	4,177	**35.6%**	53.4%	71.6%	**54.2%**	61.8%	71.9%

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EHR & EPM - ALL PRACTICE TYPES

Table 4-1: EHR & EPM BY PRACTICE TYPE: Organizations

ENTITIES WITH EHR & EPM BY PRACTICE TYPE	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clinician Names	317	71	1	**72**	73	**144**	172
Clinic/Practice Names	691	298	9	**307**	170	**468**	214
Subtotal	1,008	369	10	**379**	243	**612**	386
FQHCs/Safety Net	25	15	-	**15**	9	**24**	1
Public/Other Clinics	44	10	-	**10**	7	**17**	27
Health System Practices/Clinics	33	23	-	**23**	1	**24**	9
Community Hospitals	14	8	-	**8**	1	**9**	5
Ambulatory Surgery Centers	41	9	-	**9**	15	**24**	17
Kaiser, OHSU	3	3	-	**3**	-	3	-
Total - All Responses	1,168	437	10	**447**	276	**713**	445
% Distribution - All Responses	**100.0%**	**37.4%**	**0.9%**	**38.3%**	**23.6%**	**61.0%**	**38.1%**

Table 4-2: EHR & EPM BY PRACTICE TYPE: Organizations

ENTITIES WITH EHR & EPM BY PRACTICE TYPE	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clinician Names	317	22.4%	0.3%	**22.7%**	23.0%	**45.4%**	54.3%
Clinic/Practice Names	691	43.1%	1.3%	**44.4%**	24.6%	**67.7%**	31.0%
Subtotal	1,008	36.6%	1.0%	**37.6%**	24.1%	**60.7%**	38.3%
FQHCs/Safety Net	25	60.0%	0.0%	**60.0%**	36.0%	**96.0%**	4.0%
Public/Other Clinics	44	22.7%	0.0%	**22.7%**	15.9%	**38.6%**	61.4%
Health System Practices/Clinics	33	69.7%	0.0%	**69.7%**	3.0%	**72.7%**	27.3%
Community Hospitals	14	57.1%	0.0%	**57.1%**	7.1%	**64.3%**	35.7%
Ambulatory Surgery Centers	41	22.0%	0.0%	**22.0%**	36.6%	**58.5%**	41.5%
Kaiser, OHSU	3	100.0%	0.0%	**100.0%**	0.0%	**100.0%**	0.0%
Overall: Unweighted - All Responses	**1,168**	**37.4%**	**0.9%**	**38.3%**	**23.6%**	**61.0%**	**38.1%**
Overall: Weighted All Responses	**1,168**	**36.5%**	**0.8%**	**37.3%**	**24.1%**	**60.6%**	**38.6%**
Unweighted excluding Amb Surgery Centers	**1,127**	**38.0%**	**0.9%**	**38.9%**	**23.2%**	**61.1%**	**38.0%**
Weighted excluding Amb Surgery Cntrs	**1,127**	**37.0%**	**0.9%**	**37.9%**	**23.6%**	**60.7%**	**38.5%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 5-1: EHR & EPM BY PRACTICE TYPE: Clinicians

CLINICIANS WITH EHR & EPM BY PRACTICE TYPE	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clinician Names	426	106	1	**107**	100	**206**	219
Clinic/Practice Names	3,751	2,133	25	**2,158**	778	**2,911**	815
Subtotal	4,177	2,239	26	**2,265**	878	**3,117**	1,034
FQHCs/Safety Net	328	215	-	**215**	110	**325**	3
Public/Other Clinics	189	71	-	**71**	38	**109**	80
Health System Practices/Clinics	906	868	-	**868**	1	**869**	37
Community Hospitals	162	126	-	**126**	13	**139**	23
Ambulatory Surgery Centers	535	46	-	**46**	136	**182**	353
Kaiser, OHSU	1,548	1,548	-	**1,548**	-	**1,548**	-
Total	7,845	5,113	26	**5,139**	1,176	6,289	**1,530**
% Distribution	**100.0%**	**65.2%**	**0.3%**	**65.5%**	**15.0%**	**80.2%**	**19.5%**

Table 5-2: EHR & EPM BY PRACTICE TYPE: Clinicians

CLINICIANS WITH EHR & EPM BY PRACTICE TYPE	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clinician Names	426	24.9%	0.2%	**25.1%**	23.5%	**48.4%**	51.4%
Clinic/Practice Names	3,751	56.9%	0.7%	**57.5%**	20.7%	**77.6%**	21.7%
Subtotal	4,177	53.6%	0.6%	**54.2%**	21.0%	**74.6%**	24.8%
FQHCs/Safety Net	328	65.5%	0.0%	**65.5%**	33.5%	**99.1%**	0.9%
Public/Other Clinics	189	37.6%	0.0%	**37.6%**	20.1%	**57.7%**	42.3%
Health System Practices/Clinics	906	95.8%	0.0%	**95.8%**	0.1%	**95.9%**	4.1%
Community Hospitals	162	77.8%	0.0%	**77.8%**	8.0%	**85.8%**	14.2%
Ambulatory Surgery Centers	535	8.6%	0.0%	**8.6%**	25.4%	**34.0%**	66.0%
Kaiser, OHSU	1,548	100.0%	0.0%	**100.0%**	0.0%	**100.0%**	0.0%
Overall: Unweighted - All Responses	**7,845**	**65.2%**	**0.3%**	**65.5%**	**15.0%**	**80.2%**	**19.5%**
Overall: Weighted All Responses	**7,845**	**59.8%**	**0.4%**	**60.1%**	**17.7%**	**77.4%**	**22.2%**
Unweighted excluding Amb Surgery Centers	**7,310**	**69.3%**	**0.4%**	**69.7%**	**14.2%**	**83.5%**	**16.1%**
Weighted excluding Amb Surgery Cntrs	**7,310**	**64.4%**	**0.4%**	**64.8%**	**17.0%**	**81.4%**	**18.2%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 6-1: EHR & EPM BY PRACTICE SIZE: All Organizations

ALL ENTITIES WITH EHR & EPM BY PRACTICE SIZE	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Unidentified size	-	-	-	**-**	-	**-**	-
Solo	452	110	6	**116**	97	**207**	239
2 to 4	393	155	2	**157**	99	**254**	137
5 to 9	194	95	2	**97**	51	**146**	46
10 to 19	77	42	-	**42**	23	**65**	12
20 to 49	33	20	-	**20**	6	**26**	7
50 +	19	15	-	**15**	-	**15**	4
Total - All Responses	**1,168**	**437**	**10**	**447**	**276**	**713**	**445**
Total - Identified	**1,168**	**437**	**10**	**447**	**276**	**713**	**445**

Table 6-2: EHR & EPM BY PRACTICE SIZE: All Organizations

ALL ENTITIES WITH EHR & EPM BY PRACTICE SIZE	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	Total with EPM	No EHR No EPM
Unidentified size	-						
Solo	452	24.3%	1.3%	**25.7%**	21.5%	45.8%	52.9%
2 to 4	393	39.4%	0.5%	**39.9%**	25.2%	64.6%	34.9%
5 to 9	194	49.0%	1.0%	**50.0%**	26.3%	75.3%	23.7%
10 top 19	77	54.5%	0.0%	**54.5%**	29.9%	84.4%	15.6%
20 to 49	33	60.6%	0.0%	**60.6%**	18.2%	78.8%	21.2%
50 +	19	78.9%	0.0%	**78.9%**	0.0%	78.9%	21.1%
Total - All Responses	**1,168**	**37.4%**	**0.9%**	**38.3%**	**23.6%**	**61.0%**	**38.1%**
Total - Identified	**1,168**	**37.4%**	**0.9%**	**38.3%**	**23.6%**	**61.0%**	**38.1%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 7-1: EHR & EPM BY PRACTICE LOCATIONS: All Organizations

ALL ENTITIES WITH EHR & EPM BY NUMBER OF PRACTICE LOCATIONS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Single Location	959	337	8	**345**	222	**559**	392
2 locations	110	44	1	**45**	28	**72**	37
3 locations	35	15	-	**15**	12	**27**	8
4 locations	16	9	-	**9**	6	**15**	1
5 or more locations	48	32	1	**33**	8	**40**	7
Total - All Responses	**1,168**	**437**	**10**	**447**	**276**	**713**	**445**

Table 7-2: EHR & EPM BY PRACTICE LOCATIONS: All Organizations

ALL ENTITIES WITH EHR & EPM BY NUMBER OF PRACTICE LOCATIONS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Single Location	959	35.1%	0.8%	**36.0%**	23.1%	**58.3%**	40.9%
2 locations	110	40.0%	0.9%	**40.9%**	25.5%	**65.5%**	33.6%
3 locations	35	42.9%	0.0%	**42.9%**	34.3%	**77.1%**	22.9%
4 locations	16	56.3%	0.0%	**56.3%**	37.5%	**93.8%**	6.3%
5 or more locations	48	66.7%	2.1%	**68.8%**	16.7%	**83.3%**	14.6%
Total - All Responses	**1,168**	**37.4%**	**0.9%**	**38.3%**	**23.6%**	**61.0%**	**38.1%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 8-1: EHR & EPM BY PRACTICE SIZE: Clinicians at All Organizations

ALL ENTITIES WITH EHR & EPM BY PRACTICE SIZE	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Solo	452	110	6	**116**	97	**207**	239
2 to 4	1,074	423	6	**429**	278	**701**	367
5 to 9	1,273	636	14	**650**	333	**969**	290
10 to 19	1,051	581	-	**581**	305	**886**	165
20 to 49	911	522	-	**522**	163	**685**	226
50 +	3,084	2,841	-	**2,841**	-	**2,841**	243
Total - All Responses	**7,845**	**5,113**	**26**	**5,139**	**1,176**	**6,289**	**1,530**

Table 8-2: EHR & EPM BY PRACTICE SIZE: Clinicians at All Organizations

ALL ENTITIES WITH EHR & EPM BY PRACTICE SIZE	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Solo	452	24.3%	1.3%	**25.7%**	21.5%	**45.8%**	52.9%
2 to 4	1,074	39.4%	0.6%	**39.9%**	25.9%	**65.3%**	34.2%
5 to 9	1,273	50.0%	1.1%	**51.1%**	26.2%	**76.1%**	22.8%
10 to 19	1,051	55.3%	0.0%	**55.3%**	29.0%	**84.3%**	15.7%
20 to 49	911	57.3%	0.0%	**57.3%**	17.9%	**75.2%**	24.8%
50 +	3,084	92.1%	0.0%	**92.1%**	0.0%	**92.1%**	7.9%
Total - All Responses	**7,845**	**65.2%**	**0.3%**	**65.5%**	**15.0%**	**80.2%**	**19.5%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 9-1: EHR & EPM BY PRACTICE LOCATIONS: All Organizations

ALL ENTITIES WITH EHR & EPM BY NUMBER OF PRACTICE LOCATIONS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Single Location	3,441	1,446	14	**1,460**	758	**2,204**	1,223
2 locations	649	304	9	**313**	176	**480**	160
3 locations	483	306	-	**306**	112	**418**	65
4 locations	203	151	-	**151**	47	**198**	5
5 or more locations	3,069	2,906	3	**2,909**	83	**2,989**	77
Total - All Responses	**7,845**	**5,113**	**26**	**5,139**	**1,176**	**6,289**	**1,530**

Table 9-2: EHR & EPM BY PRACTICE LOCATIONS: All Organizations

ALL ENTITIES WITH EHR & EPM BY NUMBER OF PRACTICE LOCATIONS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Single Location	3,441	42.0%	0.4%	**42.4%**	22.0%	**64.1%**	35.5%
2 locations	649	46.8%	1.4%	**48.2%**	27.1%	**74.0%**	24.7%
3 locations	483	63.4%	0.0%	**63.4%**	23.2%	**86.5%**	13.5%
4 locations	203	74.4%	0.0%	**74.4%**	23.2%	**97.5%**	2.5%
5 or more locations	3,069	94.7%	0.1%	**94.8%**	2.7%	**97.4%**	2.5%
Total - All Responses	**7,845**	**65.2%**	**0.3%**	**65.5%**	**15.0%**	**80.2%**	**19.5%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

KEY: SPECIALTY CATEGORIES: Tables 10-1, 10-2, 11-1, 11-2, 15-1, 15-2, 16-2, 16-2

Question 17: In what specialties or subspecialties do your clinicians practice? (Mark all that apply)

Check box options included: Allergy/Immunology, Anesthesiology, Cardiology, Cardiovasc. Surgery, Critical Care Med., Dermatology, Emergency Med., Endocrinology, ENT, FamilyPractice, Gastroenterology, General Surgery, Geriatrics, Hematology, Internal Medicine, Maxiliofacial Surgery, Neo/Perinatal Medicine, Nephrology, Neurology, Neuro. Surgery, Nuclear Medicine, Bb/Gyn, Occupational Med., Oncology, Ophthalmology, Ortho. Surgery, Pediatrics, Pediatric Surgery, Psychiatry, Radiology, Sports Medicine, Urology, Other

Results by Specialty Category are group in the following categories.

Multiple/multi-specialty	Practices listing multiple specialties of their clinicians
Mixed Primary Care	Mixed primary care practices with combinations of family medicine, internal medicine, general practice, pediatrics, obstetrics/gynecology
FP, IM, GP, geriatrics	Practices with only specialties of family (practice) medicine, internal medicine, general practice, and/or geriatrics
Peds & peds specialties	Practices with only specialties of pediatrics and/or pediatric specialties
OB/Gyn	Practices with only obstetrics and gynecology
Med spec, derm, neurology, occupational med	Practices with only medicine specialties identified (allergy/immunology, cardiology, endocrinology, gastroenterology, nephrology) or dermatology, neurology, or occupational medicine
Psychiatry, etc.	Practice with only specialties of psychiatry, behavioral health, or addiction medicine
Gen & surg specialties	Practices with only general surgery and/or surgery specialties (cardiac, ENT, orthopedics, pediatric, plastic, urology)
Radiology, path, anesthesia, critical care, emergency	Practices with only hospital/other related specialties: radiology, pathology, anesthesia, critical care, emergency medicine
Ophthalmology, optometry	Practices with only ophthalmology and/or optometry
Other specialties	Includes physical medicine and rehabilitation, physiatry, public health
Unidentified/no response	Practices not indicating any specialty in response to question 17.

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 10-1: EHR & EPM BY SPECIALTY CATEGORY: All Organizations

ALL ENTITIES WITH EHR & EPM BY SPECIALTY	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	94	52	-	**52**	14	**66**	28
Mixed Primary Care	94	48	1	**49**	26	**74**	19
FP, IM, GP, geriatrics	279	118	1	**119**	54	**172**	106
Peds & peds specialties	65	29	-	**29**	13	**42**	23
OB/Gyn	67	19	-	**19**	24	**43**	24
Med spec, derm, neurology, occupational med	160	61	-	**61**	39	**100**	60
Psychiatry, etc.	86	17	2	**19**	8	**25**	59
Gen & surg specialties	201	57	3	**60**	60	**117**	81
Radiology, path, anesthesia, critical care, emerge	19	8	-	**8**	4	**12**	7
Ophthalmology, optometry	53	16	-	**16**	17	**33**	20
Other specialties	50	12	3	**15**	17	**29**	18
Total - All Responses	**1,168**	**437**	**10**	**447**	**276**	**713**	**445**

Table 10-2: EHR & EPM BY SPECIALTY CATEGORY: All Organizations

ALL ENTITIES WITH EHR & EPM BY SPECIALTY	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	94	55.3%	0.0%	**55.3%**	14.9%	**70.2%**	29.8%
Mixed Primary Care	94	51.1%	1.1%	**52.1%**	27.7%	**78.7%**	20.2%
FP, IM, GP, geriatrics	279	42.3%	0.4%	**42.7%**	19.4%	**61.6%**	38.0%
Peds & peds specialties	65	44.6%	0.0%	**44.6%**	20.0%	**64.6%**	35.4%
OB/Gyn	67	28.4%	0.0%	**28.4%**	35.8%	**64.2%**	35.8%
Med spec, derm, neurology, occupational med	160	38.1%	0.0%	**38.1%**	24.4%	**62.5%**	37.5%
Psychiatry, etc.	86	19.8%	2.3%	**22.1%**	9.3%	**29.1%**	68.6%
Gen & surg specialties	201	28.4%	1.5%	**29.9%**	29.9%	**58.2%**	40.3%
Radiology, path, anesthesia, critical care, emerge	19	42.1%	0.0%	**42.1%**	21.1%	**63.2%**	36.8%
Ophthalmology, optometry	53	30.2%	0.0%	**30.2%**	32.1%	**62.3%**	37.7%
Other specialties	50	24.0%	6.0%	**30.0%**	34.0%	**58.0%**	36.0%
Total - All Responses	**1,168**	**37.4%**	**0.9%**	**38.3%**	**23.6%**	**61.0%**	**38.1%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 11-1: EHR & EPM BY SPECIALTY CATEGORY: Clinicians at All Organizations

ALL ENTITIES WITH EHR & EPM BY SPECIALTY	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	3,514	3,131	-	**3,131**	151	**3,282**	232
Mixed Primary Care	766	534	1	**535**	180	**714**	51
FP, IM, GP, geriatrics	796	379	3	**382**	172	**551**	242
Peds & peds specialties	288	160	-	**160**	72	**232**	56
OB/Gyn	273	129	-	**129**	88	**217**	56
Med spec, derm, neurology, occupational med	536	279	-	**279**	114	**393**	143
Psychiatry, etc.	225	64	14	**78**	30	**94**	117
Gen & surg specialties	952	234	3	**237**	247	**481**	468
Radiology, path, anesthesia, critical care, emerge	152	91	-	**91**	34	**125**	27
Ophthalmology, optometry	210	61	-	**61**	52	**113**	97
Other specialties	133	51	5	**56**	36	**87**	41
Total - All Responses	**7,845**	**5,113**	**26**	**5,139**	**1,176**	**6,289**	**1,530**

Table 11-2: EHR & EPM BY SPECIALTY CATEGORY: Clinicians at All Organizations

ALL ENTITIES WITH EHR & EPM BY SPECIALTY	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	3,514	89.1%	0.0%	**89.1%**	4.3%	**93.4%**	6.6%
Mixed Primary Care	766	69.7%	0.1%	**69.8%**	23.5%	**93.2%**	6.7%
FP, IM, GP, geriatrics	796	47.6%	0.4%	**48.0%**	21.6%	**69.2%**	30.4%
Peds & peds specialties	288	55.6%	0.0%	**55.6%**	25.0%	**80.6%**	19.4%
OB/Gyn	273	47.3%	0.0%	**47.3%**	32.2%	**79.5%**	20.5%
Med spec, derm, neurology, occupational med	536	52.1%	0.0%	**52.1%**	21.3%	**73.3%**	26.7%
Psychiatry, etc.	225	28.4%	6.2%	**34.7%**	13.3%	**41.8%**	52.0%
Gen & surg specialties	952	24.6%	0.3%	**24.9%**	25.9%	**50.5%**	49.2%
Radiology, path, anesthesia, critical care, emerge	152	59.9%	0.0%	**59.9%**	22.4%	**82.2%**	17.8%
Ophthalmology, optometry	210	29.0%	0.0%	**29.0%**	24.8%	**53.8%**	46.2%
Other specialties	133	38.3%	3.8%	**42.1%**	27.1%	**65.4%**	30.8%
Total - All Responses	**7,845**	**65.2%**	**0.3%**	**65.5%**	**15.0%**	**80.2%**	**19.5%**

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EHR & EPM - ALL PRACTICE TYPES (cont.)

Table 12-1: EHR & EPM BY COUNTY CLUSTERS - All Organizations

ALL ENTITIES WITH EHR & EPM BY COUNTY CLUSTERS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clackamas, Multnomah, Washington, Yamhill	479	165	5	**170**	113	**278**	196
Clatsop, Columbia, Tillamook	21	6	-	**6**	7	**13**	8
Marion, Polk	106	48	-	**48**	24	**72**	34
Linn, Benton, Lincoln	60	31	1	**32**	8	**39**	20
Lane	101	44	1	**45**	21	**65**	35
Coos, Curry, Douglas	67	23	-	**23**	13	**36**	31
Jackson, Josephine	122	45	1	**46**	37	**82**	39
Klamath	40	9	1	**10**	8	**17**	22
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	104	39	1	**40**	28	**67**	36
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	68	27	-	**27**	17	**44**	24
Total - All Responses	**1,168**	**437**	**10**	**447**	**276**	**713**	**445**

Table 12-2: EHR & EPM BY COUNTY CLUSTERS - All Organizations

ALL ENTITIES WITH EHR & EPM BY COUNTY CLUSTERS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clackamas, Multnomah, Washington, Yamhill	479	34.4%	1.0%	**35.5%**	23.6%	**58.0%**	40.9%
Clatsop, Columbia, Tillamook	21	28.6%	0.0%	**28.6%**	33.3%	**61.9%**	38.1%
Marion, Polk	106	45.3%	0.0%	**45.3%**	22.6%	**67.9%**	32.1%
Linn, Benton, Lincoln	60	51.7%	1.7%	**53.3%**	13.3%	**65.0%**	33.3%
Lane	101	43.6%	1.0%	**44.6%**	20.8%	**64.4%**	34.7%
Coos, Curry, Douglas	67	34.3%	0.0%	**34.3%**	19.4%	**53.7%**	46.3%
Jackson, Josephine	122	36.9%	0.8%	**37.7%**	30.3%	**67.2%**	32.0%
Klamath	40	22.5%	2.5%	**25.0%**	20.0%	**42.5%**	55.0%
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	104	37.5%	1.0%	**38.5%**	26.9%	**64.4%**	34.6%
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	68	39.7%	0.0%	**39.7%**	25.0%	**64.7%**	35.3%
Total - All Responses	**1,168**	**37.4%**	**0.9%**	**38.3%**	**23.6%**	**61.0%**	**38.1%**

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EHR & EPM - ONLY CLINICIAN ORGANIZATIONS

Table 13-1: EHR & EPM BY PRACTICE SIZE: Clinician Organizations

CLIN ORGS WITH EHR & EPM BY PRACTICE SIZE	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Solo	432	107	6	**113**	94	**201**	225
2 to 4	350	138	2	**140**	95	**233**	115
5 to 9	148	76	2	**78**	37	**113**	33
10 to 19	47	27	-	**27**	13	**40**	7
20 to 49	24	15	-	**15**	4	**19**	5
50 +	7	6	-	**6**	-	**6**	1
Total	**1,008**	**369**	**10**	**379**	**243**	**612**	**386**

Table 13-2: EHR & EPM BY PRACTICE SIZE: Clinician Organizations

CLIN ORGS WITH EHR & EPM BY PRACTICE SIZE	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Solo	432	24.8%	1.4%	**26.2%**	21.8%	**46.5%**	52.1%
2 to 4	350	39.4%	0.6%	**40.0%**	27.1%	**66.6%**	32.9%
5 to 9	148	51.4%	1.4%	**52.7%**	25.0%	**76.4%**	22.3%
10 to 19	47	57.4%	0.0%	**57.4%**	27.7%	**85.1%**	14.9%
20 to 49	24	62.5%	0.0%	**62.5%**	16.7%	**79.2%**	20.8%
50 +	7	85.7%	0.0%	**85.7%**	0.0%	**85.7%**	14.3%
Total	**1,008**	**36.6%**	**1.0%**	**37.6%**	**24.1%**	**60.7%**	**38.3%**

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EHR & EPM - ONLY CLINICIAN ORGANIZATIONS (cont.)

Table 13-3: EHR & EPM BY PRACTICE SIZE: Clinicians at Clinician Organizations

CLIN ORGS WITH EHR & EPM BY PRACTICE SIZE	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Solo	432	107	6	113	94	201	225
2 to 4	948	374	6	380	269	643	299
5 to 9	954	497	14	511	239	736	204
10 to 19	640	382	-	382	170	552	88
20 to 49	618	354	-	354	106	460	158
50 +	585	525	-	525	-	525	60
Total	**4,177**	**2,239**	**26**	**2,265**	**878**	**3,117**	**1,034**

Table 13-4: EHR & EPM BY PRACTICE SIZE: Clinicians at Clinician Organizations

CLIN ORGS WITH EHR & EPM BY PRACTICE SIZE	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Solo	432	24.8%	1.4%	26.2%	21.8%	46.5%	52.1%
2 to 4	948	39.5%	0.6%	40.1%	28.4%	67.8%	31.5%
5 to 9	954	52.1%	1.5%	53.6%	25.1%	77.1%	21.4%
10 to 19	640	59.7%	0.0%	59.7%	26.6%	86.3%	13.8%
20 to 49	618	57.3%	0.0%	57.3%	17.2%	74.4%	25.6%
50 +	585	89.7%	0.0%	89.7%	0.0%	89.7%	10.3%
Total	**4,177**	**53.6%**	**0.6%**	**54.2%**	**21.0%**	**74.6%**	**24.8%**

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EHR & EPM - ONLY CLINICIAN ORGANIZATIONS (cont.)

Table 14-1: EHR & EPM BY PRACTICE LOCATIONS: Clinician Organizations

CLIN ORGS WITH EHR & EPM BY NUMBER OF LOCATIONS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Single Location	855	305	8	**313**	200	**505**	342
2 locations	91	33	1	**34**	26	**59**	31
3 locations	22	9	-	**9**	8	**17**	5
4 locations	11	6	-	**6**	4	**10**	1
5 or more locations	29	16	1	**17**	5	**21**	7
Total	**1,008**	**369**	**10**	**379**	**243**	**612**	**386**

Table 14-2: EHR & EPM BY PRACTICE LOCATIONS: Clinician Organizations

CLIN ORGS WITH EHR & EPM BY NUMBER OF LOCATIONS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Single Location	855	35.7%	0.9%	**36.6%**	23.4%	**59.1%**	40.0%
2 locations	91	36.3%	1.1%	**37.4%**	28.6%	**64.8%**	34.1%
3 locations	22	40.9%	0.0%	**40.9%**	36.4%	**77.3%**	22.7%
4 locations	11	54.5%	0.0%	**54.5%**	36.4%	**90.9%**	9.1%
5 or more locations	29	55.2%	3.4%	**58.6%**	17.2%	**72.4%**	24.1%
Total	**1,008**	**36.6%**	**1.0%**	**37.6%**	**24.1%**	**60.7%**	**38.3%**

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EHR & EPM - ONLY CLINICIAN ORGANIZATIONS (cont.)

Table 15-1: EHR & EPM BY SPECIALTY CATEGORY: Clinician Organizations

CLIN ORGS WITH EHR & EPM BY SPECIALTY	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	69	34	-	**34**	10	**44**	25
Mixed Primary Care	56	29	1	**30**	16	**45**	10
FP, IM, GP, geriatrics	258	107	1	**108**	50	**157**	100
Peds & peds specialties	55	26	-	**26**	13	**39**	16
OB/Gyn	66	18	-	**18**	24	**42**	24
Med spec, derm, neurology, occupational med	147	53	-	**53**	38	**91**	56
Psychiatry, etc.	76	15	2	**17**	8	**23**	51
Gen & surg specialties	171	54	3	**57**	49	**103**	65
Radiology, path, anesthesia, critical care, emerge	16	7	-	**7**	4	**11**	5
Ophthalmology, optometry	52	16	-	**16**	17	**33**	19
Other specialties	42	10	3	**13**	14	**24**	15
Total	**1,008**	**369**	**10**	**379**	**243**	**612**	**386**

Table 15-2: EHR & EPM BY SPECIALTY CATEGORY: Clinician Organizations

CLIN ORGS WITH EHR & EPM BY SPECIALTY	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	69	49.3%	0.0%	**49.3%**	14.5%	**63.8%**	36.2%
Mixed Primary Care	56	51.8%	1.8%	**53.6%**	28.6%	**80.4%**	17.9%
FP, IM, GP, geriatrics	258	41.5%	0.4%	**41.9%**	19.4%	**60.9%**	38.8%
Peds & peds specialties	55	47.3%	0.0%	**47.3%**	23.6%	**70.9%**	29.1%
OB/Gyn	66	27.3%	0.0%	**27.3%**	36.4%	**63.6%**	36.4%
Med spec, derm, neurology, occupational med	147	36.1%	0.0%	**36.1%**	25.9%	**61.9%**	38.1%
Psychiatry, etc.	76	19.7%	2.6%	**22.4%**	10.5%	**30.3%**	67.1%
Gen & surg specialties	171	31.6%	1.8%	**33.3%**	28.7%	**60.2%**	38.0%
Radiology, path, anesthesia, critical care, emerge	16	43.8%	0.0%	**43.8%**	25.0%	**68.8%**	31.3%
Ophthalmology, optometry	52	30.8%	0.0%	**30.8%**	32.7%	**63.5%**	36.5%
Other specialties	42	23.8%	7.1%	**31.0%**	33.3%	**57.1%**	35.7%
Total	**1,008**	**36.6%**	**1.0%**	**37.6%**	**24.1%**	**60.7%**	**38.3%**

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EHR & EPM - ONLY CLINICIAN ORGANIZATIONS (cont.)

Table 16-1: SPECIALTY CATEGORY RECAP: Clinicians at Clinician Organizations

ALL ENTITIES WITH EHR & EPM BY SPECIALTY	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	1,051	767	-	**767**	76	**843**	208
Mixed Primary Care	299	188	1	**189**	84	**272**	26
FP, IM, GP, geriatrics	680	321	3	**324**	145	**466**	211
Peds & peds specialties	271	153	-	**153**	72	**225**	46
OB/Gyn	262	118	-	**118**	88	**206**	56
Med spec, derm, neurology, occupational med	473	234	-	**234**	106	**340**	133
Psychiatry, etc.	180	56	14	**70**	30	**86**	80
Gen & surg specialties	524	228	3	**231**	161	**389**	132
Radiology, path, anesthesia, critical care, emerge	123	74	-	**74**	34	**108**	15
Ophthalmology, optometry	205	61	-	**61**	52	**113**	92
Other specialties	109	39	5	**44**	30	**69**	35
Total	**4,177**	**2,239**	**26**	**2,265**	**878**	**3,117**	**1,034**

Table 16-2: SPECIALTY CATEGORY RECAP: Clinicians at Clinician Organizations

ALL ENTITIES WITH EHR & EPM BY SPECIALTY	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Multiple/multi-specialty	1,051	73.0%	0.0%	**73.0%**	7.2%	**80.2%**	19.8%
Mixed Primary Care	299	62.9%	0.3%	**63.2%**	28.1%	**91.0%**	8.7%
FP, IM, GP, geriatrics	680	47.2%	0.4%	**47.6%**	21.3%	**68.5%**	31.0%
Peds & peds specialties	271	56.5%	0.0%	**56.5%**	26.6%	**83.0%**	17.0%
OB/Gyn	262	45.0%	0.0%	**45.0%**	33.6%	**78.6%**	21.4%
Med spec, derm, neurology, occupational med	473	49.5%	0.0%	**49.5%**	22.4%	**71.9%**	28.1%
Psychiatry, etc.	180	31.1%	7.8%	**38.9%**	16.7%	**47.8%**	44.4%
Gen & surg specialties	524	43.5%	0.6%	**44.1%**	30.7%	**74.2%**	25.2%
Radiology, path, anesthesia, critical care, emerge	123	60.2%	0.0%	**60.2%**	27.6%	**87.8%**	12.2%
Ophthalmology, optometry	205	29.8%	0.0%	**29.8%**	25.4%	**55.1%**	44.9%
Other specialties	109	35.8%	4.6%	**40.4%**	27.5%	**63.3%**	32.1%
Total	**4,177**	**53.6%**	**0.6%**	**54.2%**	**21.0%**	**74.6%**	**24.8%**

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EHR & EPM - ONLY CLINICIAN ORGANIZATIONS (cont.)

Table 17-1: COUNTY CLUSTERS - Clinician Organizations

CLIN ORGS WITH EHR & EPM BY COUNTY CLUSTERS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clackamas, Multnomah, Washington, Yamhill	433	141	5	**146**	105	**246**	182
Clatsop, Columbia, Tillamook	19	4	-	**4**	7	**11**	8
Marion, Polk	93	42	-	**42**	23	**65**	28
Linn, Benton, Lincoln	39	16	1	**17**	7	**23**	15
Lane	84	39	1	**40**	15	**54**	29
Coos, Curry, Douglas	54	19	-	**19**	11	**30**	24
Jackson, Josephine	106	42	1	**43**	30	**72**	33
Klamath	35	6	1	**7**	7	**13**	21
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	90	37	1	**38**	24	**61**	28
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	55	23	-	**23**	14	**37**	18
Total	**1,008**	**369**	**10**	**379**	**243**	**612**	**386**

Table 17-2: COUNTY CLUSTERS - Clinician Organizations

CLIN ORGS WITH EHR & EPM BY COUNTY CLUSTERS	Total Entities	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clackamas, Multnomah, Washington, Yamhill	433	32.6%	1.2%	**33.7%**	24.2%	**56.8%**	42.0%
Clatsop, Columbia, Tillamook	19	21.1%	0.0%	**21.1%**	36.8%	**57.9%**	42.1%
Marion, Polk	93	45.2%	0.0%	**45.2%**	24.7%	**69.9%**	30.1%
Linn, Benton, Lincoln	39	41.0%	2.6%	**43.6%**	**17.9%**	**59.0%**	38.5%
Lane	84	46.4%	1.2%	**47.6%**	17.9%	**64.3%**	34.5%
Coos, Curry, Douglas	54	35.2%	0.0%	**35.2%**	**20.4%**	**55.6%**	44.4%
Jackson, Josephine	106	39.6%	0.9%	**40.6%**	**28.3%**	**67.9%**	31.1%
Klamath	35	17.1%	2.9%	**20.0%**	20.0%	**37.1%**	60.0%
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	90	41.1%	1.1%	**42.2%**	26.7%	**67.8%**	31.1%
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	55	41.8%	0.0%	**41.8%**	25.5%	**67.3%**	32.7%
Total	**1,008**	**36.6%**	**1.0%**	**37.6%**	**24.1%**	**60.7%**	**38.3%**

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EHR & EPM - ONLY CLINICIAN ORGANIZATIONS (cont.)

Table 18-1: COUNTY CLUSTERS - Clinicians at Clinician Organizations

CLIN ORGS WITH EHR & EPM BY COUNTY CLUSTERS	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clackamas, Multnomah, Washington, Yamhill	1,623	768	9	**777**	384	**1,152**	462
Clatsop, Columbia, Tillamook	40	8	-	**8**	17	**25**	15
Marion, Polk	398	258	-	**258**	81	**339**	59
Linn, Benton, Lincoln	235	145	9	**154**	12	**157**	69
Lane	540	381	3	**384**	38	**419**	118
Coos, Curry, Douglas	144	74	-	**74**	27	**101**	43
Jackson, Josephine	385	191	1	**192**	105	**296**	88
Klamath	118	20	3	**23**	21	**41**	74
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	564	325	1	**326**	161	**486**	77
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	130	69	-	**69**	32	**101**	29
Total	**4,177**	**2,239**	**26**	**2,265**	**878**	**3,117**	**1,034**

Table 18-2: COUNTY CLUSTERS - Clinicians at Clinician Organizations

CLIN ORGS WITH EHR & EPM BY COUNTY CLUSTERS	Total Clinicians	Has EHR Has EPM	Has EHR No EPM	**Total with EHR**	No EHR Has EPM	**Total with EPM**	No EHR No EPM
Clackamas, Multnomah, Washington, Yamhill	1,623	47.3%	0.6%	**47.9%**	23.7%	**71.0%**	28.5%
Clatsop, Columbia, Tillamook	40	20.0%	0.0%	**20.0%**	42.5%	**62.5%**	37.5%
Marion, Polk	398	64.8%	0.0%	**64.8%**	**20.4%**	**85.2%**	14.8%
Linn, Benton, Lincoln	235	61.7%	3.8%	**65.5%**	**5.1%**	**66.8%**	29.4%
Lane	540	70.6%	0.6%	**71.1%**	7.0%	**77.6%**	21.9%
Coos, Curry, Douglas	144	51.4%	0.0%	**51.4%**	**18.8%**	**70.1%**	29.9%
Jackson, Josephine	385	49.6%	0.3%	**49.9%**	27.3%	**76.9%**	22.9%
Klamath	118	16.9%	2.5%	**19.5%**	17.8%	**34.7%**	62.7%
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	564	57.6%	0.2%	**57.8%**	**28.5%**	**86.2%**	13.7%
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	130	53.1%	0.0%	**53.1%**	24.6%	**77.7%**	22.3%
Total	**4,177**	**53.6%**	**0.6%**	**54.2%**	**21.0%**	**74.6%**	**24.8%**

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ORGANIZATIONS WITH EHR SYSTEMS

Table 19-1: CCHIT VENDOR STATUS - EHR PRODUCTS BY PRACTICE TYPE: Organizations

CCHIT VENDOR STATUS: ALL ORGANIZATIONS WITH EHR SYSTEMS	Certified Vendor & Product Line	Certified Vendor but Not Product Line	Vendor Not Certified	Unknown Status - Product Not Specified	Total		% Certified of Specified Products	% Not Certified of Specified Products
Clinician Names	53	1	17	1	72		74.6%	25.4%
Clinic/Practice Names	247	6	50	4	307		81.5%	18.5%
Subtotal	300	7	67	5	379		80.2%	19.8%
FQHCs/Safety Net	15	-	-	-	15		100.0%	0.0%
Public/Other Clinics	7	-	3	-	10		70.0%	30.0%
Health System Practices/Clinics	13	5	4	1	23		59.1%	40.9%
Community Hospitals	7	-	1	-	8		87.5%	12.5%
Ambulatory Surgery Centers	7	-	2	-	9		77.8%	22.2%
Kaiser, OHSU	3	-	-	-	3		100.0%	0.0%
Total	**352**	**12**	**77**	**6**	**447**		79.8%	20.2%

Table 19-2: CCHIT VENDOR STATUS - EHR PRODUCTS BY PRACTICE TYPE: Clinicians

CCHIT VENDOR STATUS: CLINICIANS WITH EHR SYSTEMS	Certified Vendor & Product Line	Certified Vendor but Not Product Line	Vendor Not Certified	Unknown Status - Product Not Specified	Total		% Certified of Specified Products	% Not Certified of Specified Products
Clinician Names	86	3	17	1	107		81.1%	18.9%
Clinic/Practice Names	1,919	22	208	9	2,158		89.3%	10.7%
Subtotal	2,005	25	225	10	2,265		88.9%	11.1%
FQHCs/Safety Net	215	-	-	-	215		100.0%	0.0%
Public/Other Clinics	48	-	23	-	74		67.6%	32.4%
Health System Practices/Clinics	507	328	31	2	868		58.5%	41.5%
Community Hospitals	123	-	3	-	126		97.6%	2.4%
Ambulatory Surgery Centers	44	-	2	-	46		95.7%	4.3%
Kaiser, OHSU	1,548	-	-	-	1,548		100.0%	0.0%
Total	**4,490**	**353**	**284**	**12**	**5,142**		87.6%	12.4%

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ORGANIZATIONS WITH EHR SYSTEMS (cont.)

Table 19-3: EHR VENDOR PRODUCTS*

CCHIT STATUS, ORGANIZATIONS AND CLINICIANS FOR EHR VENDORS	CCHIT Certified *	All Organizations			Clinician Organizations		
		Organization	Clinicians	Clin./Org	Organization	Clinicians	Clin./Org
Epic Systems	Yes	17	1,793	105.5	2	13	6.5
GE Healthcare - Centricity	Yes	94	1,063	11.3	74	482	6.5
GE Healthcare - Flowcast,CareCast,LastWord	No	6	328	54.7	2	14	7.0
AllScripts	Yes	18	303	16.8	18	303	16.8
InteGreat Concepts - IC Chart	Yes	7	258	36.9	5	242	48.4
Sage - Intergy	Yes	22	189	8.6	19	146	7.7
Sage - other	No	5	8	1.6	5	8	1.6
NextGen	Yes	29	185	6.4	28	173	6.2
eClinical Works	Yes	41	163	4.0	37	138	3.7
e-MDs	Yes	6	111	18.5	6	111	18.5
McKesson - Practice Partner	Yes	18	85	4.7	16	73	4.6
Greenway	Yes	14	52	3.7	14	52	3.7
SOAPware	Yes	20	33	1.7	19	31	1.6
MediNotes	Yes	8	27	3.4	8	27	3.4
AMICAS	Yes	3	24	8.0	3	24	8.0
Netsmart Technologies	Yes	3	21	7.0	3	21	7.0
Gateway Electronic Med Mgmt System	Yes	2	28	14.0	2	28	14.0
Infor-Med Corporation	Yes	2	22	11.0	2	22	11.0
Lavender and Wyatt Systems	No	1	22	22.0	1	22	22.0
Indian Health Service	Yes	3	19	6.3	-	-	
self developed	No	11	23	2.1	11	23	2.1
Subtotal		330	4,757	14.4	275	1,953	7.1
Other products - certified	Yes	53	159	3.0	51	150	2.9
Other products - not certified	No	64	223	3.5	53	162	3.1
Total		447	5,139	11.5	379	2,265	6.0

Subtotal CCHIT Certified	Yes	360	4,535	12.6	307	2,036	6.6
Subtotal Not CCHIT Certified	No	87	604	6.9	72	229	3.2
Total		447	5,139	11.5	379	2,265	6.0

*Vendors serving >20 clinicians, Indian Health Service and self-developed.

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CLINICIAN ORGANIZATIONS WITH EHR SYSTEMS BY REGION - COUNTY

Table 19-4a: CCHIT VENDOR STATUS - EHR PRODUCTS BY REGION: Clinician Organizations

CCHIT VENDOR STATUS: CLINICIAN ORGANIZATIONS WITH EHR SYSTEMS	Certified Vendor & Product Line	Certified Vendor but Not Product Line	Vendor Not Certified	Unknown Status - Product Not Specified	Total		% Certified of Specified Products	% Not Certified of Specified Products
Clackamas, Multnomah, Washington, Yamhill	113	2	29	2	146		78.5%	21.5%
Clatsop, Columbia, Tillamook	3	-	1	-	4		75.0%	25.0%
Marion, Polk	37	1	4	-	42		88.1%	11.9%
Linn, Benton, Lincoln	14	1	2	-	17		82.4%	17.6%
Lane	30	1	8	1	40		76.9%	23.1%
Coos, Curry, Douglas	15	-	3	1	19		83.3%	16.7%
Jackson, Josephine	36	1	6	-	43		83.7%	16.3%
Klamath	6	1	-	-	7		85.7%	14.3%
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	28	-	9	1	38		75.7%	24.3%
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	18	-	5	-	23		78.3%	21.7%
Total	300	7	67	5	379		80.2%	19.8%

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CLINICIAN ORGANIZATIONS WITH EHR SYSTEMS BY REGION - COUNTY (cont.)

Table 19-4b: CCHIT VENDOR STATUS - EHR PRODUCTS BY REGION: Clinicians at Clinician Organizations

CCHIT VENDOR STATUS: CLINICIAN ORGANIZATIONS WITH EHR SYSTEMS	Certified Vendor & Product Line	Certified Vendor but Not Product Line	Vendor Not Certified	Unknown Status - Product Not Specified	Total		% Certified of Specified Products	% Not Certified of Specified Products
Clackamas, Multnomah, Washington, Yamhill	668	5	101	3	777		86.3%	13.7%
Clatsop, Columbia, Tillamook	7	-	1	-	8		87.5%	12.5%
Marion, Polk	234	2	22	-	258		90.7%	9.3%
Linn, Benton, Lincoln	142	2	10	-	154		92.2%	7.8%
Lane	344	12	27	1	384		89.8%	10.2%
Coos, Curry, Douglas	65	-	7	2	74		90.3%	9.7%
Jackson, Josephine	167	3	22	-	192		87.0%	13.0%
Klamath	22	1	-	-	23		95.7%	4.3%
Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Lake, Sherman, Wasco, Wheeler	295	-	27	4	326		91.6%	8.4%
Baker, Gilliam, Malheur, Morrow, Umatilla, Union, Wallowa	61	-	8	-	69		88.4%	11.6%
Total	2,005	25	225	10	2,265		88.9%	11.1%

2009 Oregon Ambulatory EHR Survey

EHR SYSTEM FUNCTIONALITIES

Question 12: Does your EHR/EMR allow providers to perform the following functions:

Functions	Abbreviation	Level of Functionality *
a. Basic functions (review chart, visit notes, prob & med lists)	**Basic**	Basic
b. Scan and store paper reports	**S/S Paper**	
c.1. Update and review problem lists	**Prob lists**	Basic
c.2. Update and review medication lists	**Med lists**	Basic
d.1. E-prescribing - system prints	**ePres print**	Basic
d.2. E-prescribing - system electronically transmits	**ePres trans**	Full
e.1. Enter and review lab orders	**Review lab**	Basic
e.2. Enter and review radiology orders	**Review rad**	Basic
f.1. Electronically place lab orders	**Order lab**	Full
f.2. Electronically place radiology orders	**Order rad**	Full
g. Disease-based registries (built or fed into your EHR)	**Registry**	

* as defined in DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records survey in ambulatory care - a national survey of physicians. NEJM, 359:1, July 3, 2008.

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EHR SYSTEM FUNCTIONALITIES (cont.)

Table 20-1a : EHR System Functions: % Used by Organizations by Practice Type

Function	Entity	Basic	Prob lists	Med lists	ePres printed	Review lab	Review rad
Level of Functionality ==>	**Responses**	**Basic**	**Basic**	**Basic**	**Basic**	**Basic**	**Basic**
Clinician Names	70	100.0%	84.3%	91.4%	65.7%	71.4%	57.1%
Clinic/Practice Names	307	98.0%	89.9%	93.5%	75.9%	75.9%	68.1%
Subtotal	377	97.9%	88.4%	92.6%	73.6%	74.7%	65.7%
FQHCs/Safety Net	15	100.0%	100.0%	100.0%	100.0%	93.3%	86.7%
Health Systems	23	95.7%	95.7%	95.7%	82.6%	73.9%	65.2%
Community Hospitals	8	100.0%	87.5%	87.5%	87.5%	75.0%	75.0%
Ambulatory Surgery Centers	9	88.9%	77.8%	77.8%	55.6%	55.6%	44.4%
Kaiser, OHSU	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	10	100.0%	90.0%	100.0%	80.0%	80.0%	40.0%
Total	445	98.2%	89.4%	93.3%	75.5%	75.5%	66.1%

Table 20-1b: EHR System Functions: % Used by Organizations by Practice Type

Function	Entity	ePres transmits	Order lab	Order rad	S/S Paper	Registry
Level of Functionality ==>	**Responses**	**Full**	**Full**	**Full**	**Other**	**Other**
Clinician Names	70	48.6%	34.3%	22.9%	78.6%	17.1%
Clinic/Practice Names	307	57.0%	47.9%	37.1%	90.6%	24.1%
Subtotal	377	55.1%	45.1%	34.3%	87.9%	22.7%
FQHCs/Safety Net	15	73.3%	86.7%	60.0%	86.7%	40.0%
Health Systems	23	73.9%	52.2%	43.5%	73.9%	39.1%
Community Hospitals	8	75.0%	62.5%	50.0%	87.5%	25.0%
Ambulatory Surgery Centers	9	33.3%	33.3%	22.2%	88.9%	0.0%
Kaiser, OHSU	3	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	10	30.0%	50.0%	30.0%	60.0%	20.0%
Total	445	56.6%	47.6%	36.2%	87.0%	24.3%

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EHR SYSTEM FUNCTIONALITIES (cont.)

Table 20-2a: EHR System Functions: % Used by Clinicians by Practice Type

Function	Clinicians	Basic	Prob lists	Med lists	ePres printed	Review lab	Review rad
Level of Functionality ==>	Covered	Basic	Basic	Basic	Basic	Basic	Basic
Clinician Names	105	100.0%	87.6%	94.3%	67.6%	78.1%	63.8%
Clinic/Practice Names	2,158	98.8%	90.7%	94.7%	78.2%	80.5%	71.7%
Subtotal	2,263	98.8%	90.5%	94.6%	77.7%	80.4%	71.3%
FQHCs/Safety Net	215	100.0%	100.0%	100.0%	100.0%	96.7%	92.6%
Health Systems	868	85.1%	99.8%	99.8%	84.3%	81.3%	79.7%
Community Hospitals	126	100.0%	97.6%	97.6%	97.6%	87.3%	87.3%
Ambulatory Surgery Centers	46	91.3%	89.1%	89.1%	65.2%	73.9%	39.1%
Kaiser, OHSU	1,548	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	71	100.0%	88.7%	100.0%	76.1%	74.6%	46.5%
Total	5,137	96.9%	95.5%	97.5%	86.8%	87.2%	82.0%

Table 20-2b: EHR System Functions: % Used by Clinicians by Practice Type

Function	Clinicians	ePres trans	Order lab	Order rad	S/S Paper	Registry
Level of Functionality ==>	Covered	Full	Full	Full	Other	Other
Clinician Names	105	52.4%	43.8%	32.4%	82.9%	18.1%
Clinic/Practice Names	2,158	55.1%	51.7%	35.4%	95.3%	22.3%
Subtotal	2,263	55.0%	51.3%	35.3%	94.7%	22.1%
FQHCs/Safety Net	215	63.3%	92.6%	67.0%	92.6%	55.8%
Health Systems	868	80.9%	57.0%	58.6%	76.8%	73.5%
Community Hospitals	126	92.1%	84.9%	61.9%	97.6%	57.1%
Ambulatory Surgery Centers	46	54.3%	54.3%	39.1%	91.3%	0.0%
Kaiser, OHSU	1,548	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	71	46.5%	43.7%	39.4%	60.6%	19.7%
Total	5,137	74.1%	69.4%	60.8%	92.8%	56.3%

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EHR SYSTEM FUNCTIONALITIES (cont.)

Table 20-3a: EHR System Functions: % Used by Clinician Organizations by Practice Size

Function	Entity	Basic	Prob lists	Med lists	ePres printed	Review lab	Review rad
Level of Functionality ==>	Responses	Basic	Basic	Basic	Basic	Basic	Basic
Solo	111	98.2%	82.0%	89.2%	64.9%	59.5%	50.5%
2 to 4	140	97.9%	90.7%	93.6%	71.4%	82.1%	72.9%
5 to 9	78	100.0%	94.9%	100.0%	87.2%	84.6%	78.2%
10 to 19	27	96.3%	85.2%	85.2%	81.5%	66.7%	59.3%
20 to 49	15	100.0%	100.0%	93.3%	80.0%	86.7%	60.0%
50 +	6	100.0%	83.3%	100.0%	83.3%	83.3%	83.3%
Total	377	98.4%	88.9%	93.1%	74.0%	75.1%	66.0%

Table 20-3b: EHR System Functions: % Used by Clinician Organizations by Practice Size

Function	Entity	ePres trans	Order lab	Order rad	S/S Paper	Registry
Level of Functionality ==>	Responses	Full	Full	Full		
Solo	111	43.2%	27.0%	18.0%	79.3%	20.7%
2 to 4	140	57.1%	50.0%	38.6%	88.6%	25.7%
5 to 9	78	62.8%	55.1%	46.2%	96.2%	21.8%
10 to 19	27	70.4%	55.6%	44.4%	92.6%	22.2%
20 to 49	15	73.3%	66.7%	46.7%	100.0%	20.0%
50 +	6	33.3%	50.0%	16.7%	100.0%	16.7%
Total	377	55.4%	45.4%	34.5%	88.3%	22.8%

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EHR SYSTEM FUNCTIONALITIES (cont.)

Table 20-4a: EHR System Functions: % Used by Clinicians at Clinician Organizations by Practice Size

Function	Clinicians Covered	Basic	Prob lists	Med lists	ePres printed	Review lab	Review rad
Level of Functionality ==>		Basic	Basic	Basic	Basic	Basic	Basic
Solo	111	98.2%	82.0%	89.2%	64.9%	59.5%	50.5%
2 to 4	380	97.9%	91.3%	93.4%	71.1%	81.8%	72.6%
5 to 9	511	100.0%	94.1%	100.0%	87.1%	84.3%	78.5%
10 to 19	382	95.8%	84.6%	83.5%	81.9%	64.4%	59.7%
20 to 49	354	100.0%	100.0%	94.4%	75.7%	88.1%	56.2%
50 +	525	100.0%	86.5%	100.0%	74.5%	86.5%	86.5%
Total	2,263	98.9%	90.6%	94.7%	77.7%	80.4%	71.3%

Table 20-4b: EHR System Functions: % Used by Clinicians at Clinician Organizations by Practice Size

Function	Clinicians Covered	ePres trans	Order lab	Order rad	S/S Paper	Registry
Level of Functionality ==>		Full	Full	Full		
Solo	111	43.2%	27.0%	18.0%	79.3%	20.7%
2 to 4	380	56.8%	50.0%	38.4%	89.2%	27.9%
5 to 9	511	61.6%	53.6%	46.0%	96.1%	20.7%
10 to 19	382	70.2%	51.8%	45.5%	90.8%	23.6%
20 to 49	354	71.2%	71.2%	43.2%	100.0%	20.3%
50 +	525	27.8%	41.3%	13.5%	100.0%	19.6%
Total	2,263	55.0%	51.3%	35.3%	94.7%	22.1%

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EHR SYSTEM DECISION SUPPORT TOOLS

Question 13: Does your clinic's EHR/EMR provide the following decision support tools?

Function	Abbreviation	Level of Functionality *
a. Warnings of drug interactions or contraindications	**Drug warnings**	Full
b. Highlight out-of-range lab values	**Lab out range**	Full
c. Reminders for guideline-based interventions and screenings	**Guideline reminders**	Full
d. Reminders to notify patients for follow-up	**Notify patients**	
e. Prompts to order tests, studies or other services	**Order prompts**	

* as defined in DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records survey in ambulatory care -a national survey of physicians. NEJM, 359:1, July 3, 2008.

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EHR SYSTEM DECISION SUPPORT TOOLS (cont.)

Table 21-1: EHR Decision Support Tools: % Used by Organizations by Practice Type

Function	Entity Responses	Drug warnings	Lab out range	Guideline reminders	Notify patients	Order prompts
Level of Functionality ==>		**Full**	**Full**	**Full**		
Clinician Names	70	62.5%	60.6%	53.8%	60.6%	44.6%
Clinic/Practice Names	305	71.7%	61.6%	56.4%	66.8%	50.5%
Subtotal	375	69.9%	60.4%	54.9%	64.6%	48.5%
FQHCs/Safety Net	15	86.7%	93.3%	80.0%	66.7%	53.3%
Health Systems	22	80.0%	90.9%	60.0%	61.9%	42.1%
Community Hospitals	8	100.0%	100.0%	100.0%	100.0%	100.0%
Ambulatory Surgery Centers	8	62.5%	50.0%	37.5%	87.5%	42.9%
Kaiser, OHSU	3	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	10	60.0%	60.0%	80.0%	70.0%	30.0%
Total	441	73.3%	66.9%	61.5%	68.3%	53.1%

Table 21-2: EHR Decision Support Tools: % Used by Clinicians by Practice Type

Function	Clinicians Covered	Drug warnings	Lab out range	Guideline reminders	Notify patients	Order prompts
Level of Functionality ==>		**Full**	**Full**	**Full**		
Clinician Names	105	72.0%	63.6%	53.3%	55.1%	39.3%
Clinic/Practice Names	2,152	84.3%	72.4%	64.6%	71.8%	56.2%
Subtotal	2,257	83.8%	72.0%	64.1%	71.0%	55.4%
FQHCs/Safety Net	215	97.2%	98.1%	94.0%	83.3%	77.7%
Health Systems	860	92.2%	97.5%	76.8%	76.8%	74.2%
Community Hospitals	126	100.0%	77.0%	100.0%	100.0%	100.0%
Ambulatory Surgery Centers	42	82.6%	39.1%	34.8%	87.0%	34.8%
Kaiser, OHSU	1,548	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	71	50.7%	50.7%	91.5%	60.6%	23.9%
Total	5,119	90.6%	85.4%	79.3%	81.9%	73.4%

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EHR SYSTEM DECISION SUPPORT TOOLS (cont.)

Table 22-1: EHR Decision Support Tools: % Used by Clinician Organizations by Practice Size

Function	Entity Responses	Drug warnings	Lab out range	Guideline reminders	Notify patients	Order prompts
Level of Functionality ==>		**Full**	**Full**	**Full**		
Solo	111	48.7%	45.1%	47.8%	56.6%	43.4%
2 to 4	138	74.3%	62.9%	52.9%	63.6%	44.3%
5 to 9	78	85.9%	67.9%	64.1%	73.1%	59.0%
10 to 19	27	74.1%	70.4%	59.3%	66.7%	51.9%
20 to 49	15	86.7%	86.7%	66.7%	86.7%	66.7%
50 +	6	100.0%	83.3%	66.7%	66.7%	50.0%
Total	375	69.9%	60.4%	54.9%	64.6%	48.5%

Table 22-2: EHR Decision Support Tools: % Used by Clinicians at Clinician Organizations by Practice Size

Function	Clinicians Covered	Drug warnings	Lab out range	Guideline reminders	Notify patients	Order prompts
Level of Functionality ==>		**Full**	**Full**	**Full**		
Solo	111	48.7%	45.1%	47.8%	56.6%	43.4%
2 to 4	374	73.9%	65.5%	55.3%	63.7%	45.3%
5 to 9	511	86.3%	66.7%	65.8%	75.0%	60.9%
10 to 19	382	74.1%	67.0%	58.1%	65.2%	48.4%
20 to 49	354	88.1%	88.1%	69.8%	87.9%	70.3%
50 +	525	100.0%	80.4%	73.0%	68.4%	54.9%
Total	2,257	83.8%	72.0%	64.1%	71.0%	55.4%

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EHR SYSTEM INFORMATION EXCHANGE AND ACCESS CAPABILITIES

Question 14: Does your EHR/EMR have the ability to exchange information with any of the following information systems?

Information exchange and access capability	Abbreviation
a. An electronic interface to a hospital or hospital ED?	**Hosp or ED**
b. An electronic interface to a lab?	**Lab interface**
c. An electronic interface to pharmacies for the electronic transmission of prescriptions?	**Pharm interface**
d. An electronic interface to a radiology systems (for reports, not images)?	**Rad interface**
e. Remote access capabilities (e.g., from home)?	**Remote access**
f. Connection to a patient Web portal or Personal Health Record (PHR)?	**Patient portal/PHR**

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EHR SYSTEM INFORMATION EXCHANGE AND ACCESS CAPABILITIES (cont.)

Table 23-1: EHR Information Exchange and Access: % Used by Organizations by Practice Type

Function	Entity Responses	Hosp or ED	Lab interface	Pharm interface	Rad interface	Remote access	Patient portal/ PHR
Clinician Names	70	30.6%	52.8%	62.5%	34.7%	76.4%	16.7%
Clinic/Practice Names	305	44.3%	72.0%	61.2%	47.6%	88.3%	39.4%
Subtotal	375	41.7%	68.3%	61.5%	45.1%	86.0%	35.1%
FQHCs/Safety Net	15	40.0%	93.3%	80.0%	26.7%	66.7%	0.0%
Health Systems	23	82.6%	91.3%	65.2%	82.6%	95.7%	56.5%
Community Hospitals	8	87.5%	100.0%	87.5%	62.5%	87.5%	50.0%
Ambulatory Surgery Centers	8	44.4%	66.7%	55.6%	66.7%	66.7%	44.4%
Kaiser, OHSU	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	10	10.0%	50.0%	50.0%	30.0%	70.0%	20.0%
Total	442	44.3%	70.7%	62.6%	47.2%	85.2%	35.6%

Table 23-2: EHR Information Exchange and Access: % Used by Clinicians by Practice Type

Function	Clinicians Covered	Hosp or ED	Lab interface	Pharm interface	Rad interface	Remote access	Patient portal/ PHR
Clinician Names	105	35.5%	57.9%	64.5%	40.2%	83.2%	21.5%
Clinic/Practice Names	2,154	53.1%	82.8%	73.4%	61.5%	94.5%	51.0%
Subtotal	2,259	52.3%	81.6%	73.0%	60.5%	94.0%	49.6%
FQHCs/Safety Net	215	25.6%	96.7%	67.4%	15.3%	70.2%	0.0%
Health Systems	868	98.7%	99.4%	78.9%	97.2%	99.8%	79.6%
Community Hospitals	126	77.0%	100.0%	97.6%	84.9%	94.4%	84.1%
Ambulatory Surgery Centers	42	47.8%	87.0%	78.3%	87.0%	76.1%	63.0%
Kaiser, OHSU	1,548	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	71	7.0%	40.8%	54.9%	36.6%	80.3%	26.8%
Total	5,129	73.3%	90.7%	82.3%	77.2%	95.4%	68.4%

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EHR SYSTEM INFORMATION EXCHANGE AND ACCESS CAPABILITIES (cont.)

Table 24-1: EHR Information Exchange and Access: % Used by Clinician Organizations by Practice Size

Function	Entity Responses	Hosp or ED	Lab interface	Pharm interface	Rad interface	Remote access	Patient portal/ PHR
Solo	110	27.4%	52.2%	52.2%	29.2%	73.5%	18.6%
2 to 4	139	40.7%	69.3%	59.3%	42.9%	87.9%	34.3%
5 to 9	78	55.1%	83.3%	75.6%	64.1%	96.2%	48.7%
10 to 19	27	55.6%	74.1%	63.0%	51.9%	92.6%	55.6%
20 to 49	15	60.0%	80.0%	60.0%	60.0%	93.3%	53.3%
50 +	6	50.0%	100.0%	100.0%	83.3%	100.0%	50.0%
Total	375	41.7%	68.3%	61.5%	45.1%	86.0%	35.1%

Table 24-2: EHR Information Exchange and Access: % Used by Clinicians at Clinician Organizations by Practice Size

Function	Clinicians Covered	Hosp or ED	Lab interface	Pharm interface	Rad interface	Remote access	Patient portal/ PHR
Solo	110	27.4%	52.2%	52.2%	29.2%	73.5%	18.6%
2 to 4	377	42.9%	71.1%	59.5%	43.2%	89.2%	35.0%
5 to 9	511	55.4%	82.6%	75.9%	63.0%	96.9%	49.1%
10 to 19	382	55.5%	73.3%	60.2%	55.0%	92.1%	53.4%
20 to 49	354	61.9%	82.5%	63.8%	62.1%	94.4%	58.5%
50 +	525	52.6%	100.0%	100.0%	80.4%	100.0%	58.7%
Total	2,259	52.3%	81.6%	73.0%	60.5%	94.0%	49.6%

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EHR ADOPTION AND FUNCTIONALITY LEVEL

Alternative levels of EHR system functionality were defined in a New England Journal of Medicine article from July 3, 2008:
DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, Kaushal R, Levy DE, Rosenbaum S, Shields AE, Blumenthal D. Electronic health records survey in ambulatory care -a national survey of physicians. NEJM, 359:1, July 3, 2008, 50-60.
Levels of functionality are one means of assessing the likelihood that eligible professionals using certified EHRs will be able to demonstrate meaningful use to qualify for Medicare or Medicaid incentive payments.

The DesRoches paper generally defines BASIC and FULLY FUNCTIONAL EHRs as:.

A Basic EHR System is defined as including **all** of the following functional components: patient demographics, patient problem lists, electronic medication lists, clinical notes, order entry management of prescriptions, and viewing capability of laboratory and imaging results (reports).

A Fully Functional EHR System is defined as including **all** the basic system functionalities **all** of the added functions of clinical notes of medical history and follow-up, ordering of laboratory and radiology tests, electronic transmission of prescriptions and orders, and electronic return of images. Fully functional also includes clinical decision support with warnings of drug interactions or contra-indications, highlighting of out-of-range test levels and reminders regarding guideline-based interventions or screening

Tables 20-1 through 24-2 provide data on the use rates of each separate functionality calculated on the basis of use at practices with EHR systems.

Tables 25-1 through 28-2 provide combined functionality rates against the Basic and Fully Function criteria on the basis of total clinicians responding to the survey whether they use an EHR system or not.

The DesRoches paper results required that **all** criteria be met to qualify as Basic or Fully Functional (six criteria for basic and 12 for fully functional). Tables 25-1 through 28-2 also presents results for Nearly Basic and Nearly Fully Functional defined as meeting 5 of 6 and 10 of 12 of the criteria respectively.

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EHR ADOPTION AND FUNCTIONALITY LEVEL (cont.)

Table 25-1: EHR Adoption & Functionality: All Organizations by Practice Type

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Clinician Names	317	72	45	28	20	9
Clinic/Practice Names	691	307	220	168	125	53
Subtotal	1,008	379	265	196	145	62
FQHCs/Safety Net	25	15	14	13	12	6
Health Systems	33	23	16	13	11	5
Community Hospitals	14	8	5	5	5	3
Ambulatory Surgery Centers	41	9	5	3	2	-
Kaiser, OHSU	3	3	3	3	3	3
County health, school districts & college health se	44	10	6	4	3	2
Total	1,168	447	314	237	181	81

Table 25-2: % of EHR Adoption & Functionality: All Organizations by Practice Type

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Clinician Names	317	22.7%	14.2%	8.8%	6.3%	2.8%
Clinic/Practice Names	691	44.4%	31.8%	24.3%	18.1%	7.7%
Subtotal	1,008	37.6%	26.3%	19.4%	14.4%	6.2%
FQHCs/Safety Net	25	60.0%	56.0%	52.0%	48.0%	24.0%
Health Systems	33	69.7%	48.5%	39.4%	33.3%	15.2%
Community Hospitals	14	57.1%	35.7%	35.7%	35.7%	21.4%
Ambulatory Surgery Centers	41	22.0%	12.2%	7.3%	4.9%	0.0%
Kaiser, OHSU	3	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	44	22.7%	13.6%	9.1%	6.8%	4.5%
Total	1,168	38.3%	26.9%	20.3%	15.5%	6.9%

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EHR ADOPTION AND FUNCTIONALITY LEVEL (cont.)

Table 26-1: EHR Adoption & Functionality: Clinicians at All Organizations by Practice Type

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Clinician Names	426	107	75	48	39	17
Clinic/Practice Names	3,751	2,158	1,634	1,242	1,000	352
Subtotal	4,177	2,265	1,709	1,290	1,039	369
FQHCs/Safety Net	328	215	208	199	195	74
Health Systems	906	868	704	687	654	460
Community Hospitals	162	126	107	107	107	75
Ambulatory Surgery Centers	535	46	34	13	9	-
Kaiser, OHSU	1,548	1,548	1,548	1,548	1,548	1,548
County health, school districts & college health se	189	71	36	33	28	21
Total	7,845	5,139	4,346	3,877	3,580	2,547

Table 26-2: % of EHR Adoption & Functionality: Clinicians at All Organizations by Practice Type

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Clinician Names	426	25.1%	17.6%	11.3%	9.2%	4.0%
Clinic/Practice Names	3,751	57.5%	43.6%	33.1%	26.7%	9.4%
Subtotal	4,177	54.2%	40.9%	30.9%	24.9%	8.8%
FQHCs/Safety Net	328	65.5%	63.4%	60.7%	59.5%	22.6%
Health Systems	906	95.8%	77.7%	75.8%	72.2%	50.8%
Community Hospitals	162	77.8%	66.0%	66.0%	66.0%	46.3%
Ambulatory Surgery Centers	535	8.6%	6.4%	2.4%	1.7%	0.0%
Kaiser, OHSU	1,548	100.0%	100.0%	100.0%	100.0%	100.0%
County health, school districts & college health se	189	37.6%	19.0%	17.5%	14.8%	11.1%
Total	7,845	65.5%	55.4%	49.4%	45.6%	32.5%

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EHR ADOPTION AND FUNCTIONALITY LEVEL (cont.)

Table 27-1: EHR Adoption & Functionality: Clinician Organizations by Practice Size

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Solo	432	113	60	43	23	11
2 to 4	350	140	107	74	55	24
5 to 9	148	78	65	53	43	16
10 to 19	47	27	17	13	12	7
20 to 49	24	15	11	9	9	4
50 +	7	6	5	4	3	-
Total	1,008	379	265	196	145	62

Table 27-2: % of EHR Adoption & Functionality: Clinician Organizations by Practice Size

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Solo	432	26.2%	13.9%	10.0%	5.3%	2.5%
2 to 4	350	40.0%	30.6%	21.1%	15.7%	6.9%
5 to 9	148	52.7%	43.9%	35.8%	29.1%	10.8%
10 to 19	47	57.4%	36.2%	27.7%	25.5%	14.9%
20 to 49	24	62.5%	45.8%	37.5%	37.5%	16.7%
50 +	7	85.7%	71.4%	57.1%	42.9%	0.0%
Total	1,008	37.6%	26.3%	19.4%	14.4%	6.2%

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EHR ADOPTION AND FUNCTIONALITY LEVEL (cont.)

Table 28-1: EHR Adoption & Functionality: Clinicians at Clinicians Organizations by Practice Size

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Solo	432	113	60	43	23	11
2 to 4	948	380	290	195	150	68
5 to 9	954	511	424	347	275	107
10 to 19	640	382	235	186	168	95
20 to 49	618	354	246	199	206	88
50 +	585	525	454	320	217	-
Total	4,177	2,265	1,709	1,290	1,039	369

Table 28-2: % of EHR Adoption & Functionality: Clinicians at Clinicians Organizations by Practice Size

	All Responses	Have Any EHR	Near Basic EHR	Basic EHR	Near Full Function EHR	Full Function EHR
Solo	432	26.2%	13.9%	10.0%	5.3%	2.5%
2 to 4	948	40.1%	30.6%	20.6%	15.8%	7.2%
5 to 9	954	53.6%	44.4%	36.4%	28.8%	11.2%
10 to 19	640	59.7%	36.7%	29.1%	26.3%	14.8%
20 to 49	618	57.3%	39.8%	32.2%	33.3%	14.2%
50 +	585	89.7%	77.6%	54.7%	37.1%	0.0%
Total	4,177	54.2%	40.9%	30.9%	24.9%	8.8%

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ORGANIZATIONS WITH EPM SYSTEMS

Table 29: EPM VENDOR PRODUCTS

ORGANIZATIONS AND CLINICIANS FOR EPM VENDORS		All Organizations			Clinician Organizations		
		Organization	Clinicians	Clin./Org	Organization	Clinicians	Clin./Org
Epic Systems		23	1,845	80.2	2	15	7.5
GE Healthcare - Centricity		143	1,297	9.1	119	699	5.9
GE Healthcare - Flowcast,CareCast,LastWord		6	328	54.7	2	14	7.0
NextGen		48	374	7.8	45	338	7.5
McKesson - Practice Partner		84	336	4.0	76	286	3.8
AllScripts		28	251	9.0	28	251	9.0
Sage - Intergy		70	379	5.4	62	306	4.9
Sage - other		6	11	1.8	6	11	1.8
Cerner		12	186	15.5	11	181	16.5
eClinical Works		44	182	4.1	40	157	3.9
e-MDs		7	114	16.3	7	114	16.3
Greenway		17	63	3.7	17	63	3.7
Source Medical		5	63	12.6	1	28	28.0
InteGreat Concepts - IC Chart		4	44	11.0	2	28	14.0
Experior		1	35	35.0	-	-	#DIV/0!
Gateway Electronic Med Mgmt System		2	28	14.0	2	28	14.0
HealthPro		3	26	8.7	-	-	#DIV/0!
HST		2	26	13.0	-	-	#DIV/0!
AMICAS		3	24	8.0	3	24	8.0
Netsmart Technologies		4	24	6.0	3	21	7.0
Lavender and Wyatt Systems		1	22	22.0	1	22	22.0
Subtotal: Vendors serving >20 clincians		513	5,658	11.0	427	2,586	6.1
Indian Health Service		3	19	6.3	-	-	#DIV/0!
Other vendors serving 0-20 clinicians		197	612	3.1	185	531	2.9
Total		713	6,289	8.8	612	3,117	5.1

*Vendors serving >20 clinicians, Indian Health Service

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ORGANIZATIONS WITHOUT EHRs: Characteristics

Table 30-1: No EHR BY PRACTICE TYPE: All Organizations

	Entities	No EHR Has EPM	No EHR No EPM	Within 1 Year *	In 1 to 2 Years	In 2 to 5 Years	In more than 5 Years	No plan to implement
Clinician Names	245	29.8%	70.2%	7.7%	5.7%	2.9%	2.4%	81.2%
Clinic/Practice Names	384	44.3%	55.7%	13.3%	17.7%	13.3%	2.6%	53.1%
FQHCs/Safety Net	10	90.0%	10.0%	20.0%	50.0%	10.0%	0.0%	20.0%
Public/Other Clinics	34	20.6%	79.4%	23.5%	5.9%	20.6%	2.9%	47.1%
Health System Practices/Clinics	10	10.0%	90.0%	30.0%	30.0%	20.0%	0.0%	20.0%
Community Hospitals	6	16.7%	83.3%	33.3%	16.7%	16.7%	16.7%	16.7%
Ambulatory Surgery Centers	32	46.9%	53.1%	6.2%	21.9%	9.4%	6.3%	56.3%
Total	721	38.3%	61.7%	12.1%	13.9%	10.0%	2.8%	61.3%

* includes implementations in process, executed contracts and plans to implement

Table 30-2: No EHR BY PRACTICE TYPE: Clinicians at All Organizations

	Clinicians	No EHR Has EPM	No EHR No EPM	Within 1 Year *	In 1 to 2 Years	In 2 to 5 Years	In more than 5 Years	No plan to implement
Clinician Names	319	31.3%	68.7%	8.1%	6.3%	2.5%	2.5%	80.6%
Clinic/Practice Names	1,593	48.8%	51.2%	18.3%	25.2%	16.8%	2.6%	37.2%
FQHCs/Safety Net	113	97.3%	2.7%	29.2%	53.1%	2.7%	0.0%	15.0%
Public/Other Clinics	118	32.2%	67.8%	28.8%	10.2%	29.7%	1.7%	29.7%
Health System Practices/Clinics	38	2.6%	97.4%	34.2%	28.9%	28.9%	0.0%	7.9%
Community Hospitals	36	36.1%	63.9%	33.3%	36.1%	5.6%	11.1%	13.9%
Ambulatory Surgery Centers	489	27.8%	72.2%	3.0%	33.5%	7.2%	4.5%	51.7%
Total	2,706	43.5%	56.5%	15.6%	25.2%	13.3%	2.8%	43.0%

* includes implementations in process, executed contracts and plans to implement

2009 Oregon Ambulatory EHR Survey

ORGANIZATIONS WITHOUT EHRs: Characteristics

Table 30-3: No EHR BY PRACTICE SIZE: Clinician Organizations

	Entities	No EHR Has EPM	No EHR No EPM	Within 1 Year *	In 1 to 2 Years	In 2 to 5 Years	In more than 5 Years	No plan to implement
Unidentified size	-							
Solo	319	29.5%	70.5%	8.2%	6.9%	5.0%	1.6%	78.4%
2 to 4	210	45.2%	54.8%	10.9%	14.3%	11.9%	3.8%	59.0%
5 to 9	70	52.9%	47.1%	18.6%	28.6%	17.1%	4.3%	31.4%
10 to 19	20	65.0%	35.0%	25.0%	45.0%	10.0%	0.0%	20.0%
20 to 49	9	44.4%	55.6%	33.3%	0.0%	33.3%	0.0%	33.3%
50 +	1	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Total	629	38.6%	61.4%	11.1%	13.0%	9.2%	2.5%	64.1%

* includes implementations in process, executed contracts and plans to implement

Table 30-4: No EHR BY PRACTICE SIZE: Clinicians at Clinician Organizations

	Clinicians	No EHR Has EPM	No EHR No EPM	Within 1 Year *	In 1 to 2 Years	In 2 to 5 Years	In more than 5 Years	No plan to implement
Unidentified size	-							
Solo	319	29.5%	70.5%	8.2%	6.9%	5.0%	1.6%	78.4%
2 to 4	568	47.4%	52.6%	10.7%	15.3%	13.6%	3.9%	56.5%
5 to 9	443	54.0%	46.0%	18.7%	30.7%	16.5%	5.0%	29.1%
10 to 19	258	65.9%	34.1%	22.9%	45.0%	10.5%	0.0%	21.7%
20 to 49	264	40.2%	59.8%	33.4%	0.0%	31.1%	0.0%	35.6%
50 +	60	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Total	1,912	45.9%	54.1%	16.6%	22.0%	14.4%	2.6%	44.5%

* includes implementations in process, executed contracts and plans to implement

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ORGANIZATIONS WITHOUT EHRs: BARRIERS

Question 5: Does your clinic currently use an EHR/EMR at your sites?

1	Yes, installed & in operation	==>	Go to Question 10
2	No, implementation underway	==>	Go to Question 16
3	No, contract signed	==>	Go to Question 16
4	**No**	==>	Go to Question 6

Question 6: Does your clinic plan to implement and EHR/EMR?

1	Yes	==>	Go to Question 7
2	No	==>	Go to Question 8

Question 7: Do you think your clinic will invest in EHR:

1	Less than 1 year	==>	Go to Question 8
2	1 to 2 years	==>	Go to Question 8
3	2 to 5 years	==>	Go to Question 8
4	More than 5 years	==>	Go to Question 8

Question 8: What are the main barriers to implementing an EHR/EMR in your clinic? (Mark all that apply)

1 Security and privacy issues
2 Confusing number of EMR choices.
3 Lack of expertise to lead or organize the project
4 No currently available EMR product satisfies our needs.
5 Staff would require retraining
6 Expense of Purchase
7 Expense of implementation (e.g., decreased productivity during implementation)
8 Inadequate return on investment
9 Concern the product will fail
10 Staff is satisfied with paper-based records
11 Practice is too small
12 Plan to retire soon
13 Other(s) - Please specify below.

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ORGANIZATIONS WITHOUT EHRs: BARRIERS (cont.)

Table 31: No EHR - No Plan to Implement an EHR/EMR - - - Barriers

Percent of Organizations and Clinicians with No Plan to Implement an EHR/EMR	All Entities	Clinicians All Entities		All Entities - with an EPM	All Entities - without an EPM		Clinicians at All Entities - with an EPM	Clinicians at All Entities - without an EPM
Total Organizations & Clinicians	626	2,313		229	397		959	1,354
Barriers								
Security and privacy issues	18.1%	11.2%		15.7%	19.4%		9.6%	12.3%
Confusing number of EMR choices.	0.3%	0.1%		0.4%	0.3%		0.1%	0.1%
Lack of expertise to lead or organize the project	19.5%	16.6%		15.7%	21.7%		10.6%	20.8%
No currently available EMR product satisfies our	18.2%	20.8%		18.3%	18.1%		16.5%	23.9%
Staff would require retraining	26.0%	31.0%		26.6%	25.7%		28.1%	33.1%
Expense of Purchase	80.2%	84.1%		80.3%	80.1%		83.7%	84.4%
Expense of implementation (e.g., decreased prod	58.6%	68.4%		66.4%	54.2%		71.4%	66.2%
Inadequate return on investment	36.1%	29.8%		34.9%	36.8%		26.3%	32.3%
Concern the product will fail	17.9%	15.6%		21.4%	15.9%		14.6%	16.2%
Staff is satisfied with paper-based records	34.8%	25.9%		31.4%	36.8%		19.9%	30.1%
Practice is too small	47.8%	25.7%		37.6%	53.7%		16.7%	32.1%
Plan to retire soon	17.3%	7.7%		12.7%	19.9%		6.6%	8.6%
Other	14.7%	23.1%		19.2%	12.1%		24.0%	22.5%

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ORGANIZATIONS WITHOUT EHRs: INCENTIVES

Question 9: Which of the following incentives might convince your clinic to implement and EHR/EMR? (Select five)

1 Guidance to appropriate and effective EMR products
2 Technical assistance to optimize EMR efficiency and effectiveness
3 Evidence that it will improve the quality of care of my patients
4 Evidence that it will improve reduce liability risk
5 Evidence that it will improve practice operations
6 A better EMR system than what we've seen so far
7 A simpler way to enter information
8 Standards that ensure that all systems can share information
9 Help from the local hospital to implement a system that will interface with theirs
10 Assistance with technology readiness assessment of this practice
11 Grant to help with implementation costs
12 Interest-free loan to help with implementation costs
13 Tax credit against the costs of the EMR investment
14 Nothing

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ORGANIZATIONS WITHOUT EHRs: INCENTIVES (CONT.)

Table 32: No EHR - No Plan to Implement and EHR/EMR - - - Incentives

Percent of Organizations and Clinicians with No Plan to Implement an EHR/EMR	All Entities	Clinicians All Entities		All Entities - with an EPM	All Entities - without an EPM		Clinicians at All Entities - with an EPM	Clinicians at All Entities - without an EPM
Total Organizations & Clinicians	615	2,268		225	390		930	1,338
Incentives								
Guidance to appropriate and effective EMR produ	24.4%	24.3%		23.6%	24.9%		19.9%	27.4%
Technical assistance to optimize EMR efficiency a	29.9%	29.0%		34.2%	27.4%		29.6%	28.6%
Evidence that it will improve the quality of care of	33.2%	33.1%		38.2%	30.3%		34.6%	32.1%
Evidence that it will improve reduce liability risk	21.3%	19.3%		24.4%	19.5%		23.3%	16.4%
Evidence that it will improve practice operations	33.0%	32.9%		38.7%	29.7%		36.2%	30.6%
A better EMR system than what we've seen so fa	20.8%	20.3%		22.7%	19.7%		17.1%	22.6%
A simpler way to enter information	21.3%	19.9%		23.1%	20.3%		19.7%	20.0%
Standards that ensure that all systems can share	28.8%	34.0%		38.2%	23.3%		38.2%	31.2%
Help from the local hospital to implement a syster	0.3%	0.6%		0.9%	0.0%		1.5%	0.0%
Assistance with technology readiness assessmer	12.8%	16.7%		12.0%	13.3%		12.2%	19.9%
Grant to help with implementation costs	58.0%	67.5%		66.7%	53.1%		73.0%	63.7%
Interest-free loan to help with implementation cos	1.0%	1.5%		1.8%	0.5%		2.6%	0.7%
Tax credit against the costs of the EMR investme	42.3%	41.4%		50.7%	37.4%		50.4%	35.1%

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ADOPTION TRAJECTORY - ALL ORGANIZATIONS

Table 33-1: Extrapolated EHR Adoption BASED ON SURVEY RESPONSES: Organizations

EXTRAPOLATED ADOPTION RATES - BY PRACTICE TYPE	All Entities	% Total in Spring 2009	% Total plus In Process	% Total Plus within 1 Year	% Total Plus 1-2 Years	% Total Plus 2-5 Years	% Total Plus > 5 Years
Clinician Names	317	22.7%	27.8%	28.7%	33.1%	35.3%	37.2%
Clinic/Practice Names	691	44.4%	49.3%	51.8%	61.6%	69.0%	70.5%
FQHCs/Safety Net	25	60.0%	68.0%	68.0%	88.0%	92.0%	92.0%
Public/Other Clinics	44	22.7%	40.9%	40.9%	45.5%	61.4%	63.6%
Health System Practices/Clinics	33	69.7%	78.8%	78.8%	87.9%	93.9%	93.9%
Community Hospitals	14	57.1%	71.4%	71.4%	78.6%	85.7%	92.9%
Ambulatory Surgery Centers	41	22.0%	24.4%	26.8%	43.9%	51.2%	56.1%
Kaiser, OHSU	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total	1,168	38.3%	43.9%	45.7%	54.3%	60.4%	62.2%

Table 33-2: Extrapolated EHR Adoption BASED ON SURVEY RESPONSES: Clinicians at All Organizations

EXTRAPOLATED ADOPTION RATES - BY PRACTICE TYPE	Clinicians at All Entities	% Total in Spring 2009	% Total plus In Process	% Total Plus within 1 Year	% Total Plus 1-2 Years	% Total Plus 2-5 Years	% Total Plus > 5 Years
Clinician Names	426	25.1%	30.5%	31.2%	35.9%	37.8%	39.7%
Clinic/Practice Names	3,751	57.5%	63.1%	65.3%	76.0%	83.1%	84.2%
FQHCs/Safety Net	328	65.5%	75.6%	75.6%	93.9%	94.8%	94.8%
Public/Other Clinics	189	37.6%	55.6%	55.6%	61.9%	80.4%	81.5%
Health System Practices/Clinics	906	95.8%	97.2%	97.2%	98.5%	99.7%	99.7%
Community Hospitals	162	77.8%	85.2%	85.2%	93.2%	94.4%	96.9%
Ambulatory Surgery Centers	535	8.6%	9.7%	11.4%	42.1%	48.6%	52.7%
Kaiser, OHSU	1,548	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total	7,845	65.5%	69.7%	70.9%	79.6%	84.2%	85.2%

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ADOPTION TRAJECTORY - CLINICIAN ORGANIZATIONS

Table 34-1: Extrapolated EHR Adoption: Clinician Organizations

EXTRAPOLATED ADOPTION RATES BY PRACTICE SIZE	All Entities	% Total in Spring 2009	% Total plus In Process	% Total Plus within 1 Year	% Total Plus 1-2 Years	% Total Plus 2-5 Years	% Total Plus > 5 Years
Solo	432	26.2%	30.8%	32.2%	37.3%	41.0%	42.1%
2 to 4	350	40.0%	44.6%	46.6%	55.1%	62.3%	64.6%
5 to 9	148	52.7%	57.4%	61.5%	75.0%	83.1%	85.1%
10 to 19	47	57.4%	68.1%	68.1%	87.2%	91.5%	91.5%
20 to 49	24	62.5%	70.8%	75.0%	75.0%	87.5%	87.5%
50 +	7	85.7%	85.7%	85.7%	100.0%	100.0%	100.0%
Total	1,008	37.6%	42.6%	44.5%	52.7%	58.4%	60.0%

Table 34-2: Extrapolated EHR Adoption: Clinicians at Clinician Organizations

EXTRAPOLATED ADOPTION RATES BY PRACTICE SIZE	Clinicians at All Entities	% Total in Spring 2009	% Total plus In Process	% Total Plus within 1 Year	% Total Plus 1-2 Years	% Total Plus 2-5 Years	% Total Plus > 5 Years
Solo	432	26.2%	30.8%	32.2%	37.3%	41.0%	42.1%
2 to 4	948	40.1%	44.5%	46.5%	55.7%	63.8%	66.1%
5 to 9	954	53.6%	58.2%	62.3%	76.5%	84.2%	86.5%
10 to 19	640	59.7%	68.9%	68.9%	87.0%	91.3%	91.3%
20 to 49	618	57.3%	68.3%	71.5%	71.5%	84.8%	84.8%
50 +	585	89.7%	89.7%	89.7%	100.0%	100.0%	100.0%
Total	4,177	54.2%	59.8%	61.8%	71.9%	78.5%	79.7%

Appendix D: Comments on EHR Strengths (Question 18.a)

Survey question 18 asked respondents: **What have been the strengths or challenges of implementing and using an EHR/EMR in your clinic?** Of the 447 organizations using an EHR/EMR, 337 respondents provided comments about strengths and/or challenges.

The most common responses for <u>strengths of implementing an EHR/EMR</u> were:

- Access/information share/better data tracking 179
- EHR appropriate for our use
  - Paperless, no lost charts, better data storage 92
  - Data management (patient tracking, data collection/reporting, information share) 72
  - Efficiency/reduce costs (e.g. no transcription costs) 43
  - E-prescribing, medication lists, drug-drug interactions, problem lists 42
  - Legibility 27
  - Better patient care/safety, increased coordination of care 23
  - Billing and coding 16
  - Privacy and security 6
- Everyone's on board 25
- Integration (internal/external) 22
- IT/vendor support 14

Selected comments on EHR/EMR **strengths** that provide insight to organization and clinician perspectives are shown below. Some comments have been edited for clarity, spelling and to preserve anonymity. Comments longer than allowed by the online survey process are identified as truncated.

- Has allowed my clinic to add much preventive, prophylactic and chronic doctor care.
- Implementation was easy as we opened the practice with the program, therefore no conversion issues.
- Our office is small, so it has been fairly easy to get everyone trained and using the EMR.
- Our clinic administrator has an information systems background in healthcare and has been involved with EHR/EMR implementation before.
- If it were not for the effort made by the Mid Valley IPA it would not have been possible to implement the EMR. They researched the available choices, chose the best, negotiated contract and cost, subsidized the cost, did extensive training and do continue
- Practice Management and EMR all-in-one eases the administrative burden.
- Scan capabilities with patients'/practice info needs.
- Total streamlining of medical practice vastly improves care and patient satisfaction. The big increase in production has paid for itself in a few months.
- I'm a solo practitioner working 1.5 days/week. I use Allscripts for prescriptions as it's free.
- Importance of clinicians to initiate the process. Currently have a relatively good electronic health record, but it is not a true EMR.
- Lab crossover between lab tests and tests ordered.

- Compatible with voice recognition for provider charting
- Everyone has global access. We went from electronic to electronic; therefore it was a good conversion process. Electronic interfaces are good.
- Advantages are numerous, from the perspective of efficiency as well as clinical effectiveness.
- Improved chart access for all staff. Faster Rx refills. Instant chart information increases phone call efficiency, workers comp forms, MVA forms, etc. No transcription cost!
- E-Rx via internet. Flow of lab results once ordered via EMR (w/graphing capabilities); also due for patient weight, vitals, etc. Higher coding and billing possible, but more time per patient seen.
- Provides more accurate, concise, and well-organized medical records.
- Great costumer service and training. We never have to look for a chart and no storage is required. System is user friendly and easy to use.
- Amazing Charts is low cost, high function, is great for a single practitioner and group. They are offering electronic connection to labs and x-rays but fairly pricey.
- Simplicity, low cost, reliability (no crashes in 6 years, no lost data, and backup is simple).
- Very customizable, great for intraoffice communication. Provider add-ons are a plus.
- Initially iSalus was a small company and I had very personal support. I was a "Beta" physician and have written all their primary care templates-exactly how I want them.
- Soapware is user friendly, easy to download and start using immediately.
- Fast, legible, accurate, and cheap. Ease of use overall, web based, and low maintenance
- 1) No storage space required for paper charts or associated chart papering labor. 2) Pull down menus make manual entry much faster. 3) No legibility issues. 4) Functionality of Excel eliminates redundant data entry tasks.
- We are able to modify our system in-house with our own programmer and adapt it to meet changes in Oregon Administrative Rules/Federal Regulations/Practice Trends.
- Web-based appointment scheduling, so we can schedule and access information from any computer without the need to purchase software.
- Keeping up-to-date. Getting better reimbursement due to billing codes and ability to connect with the other offices/hospital.

Appendix E: Comments on EHR Challenges (Question 18.b)

Survey question 18 asked respondents: **What have been the strengths or challenges of implementing and using an EHR/EMR in your clinic?** Of the 447 organizations using an EHR/EMR. 337 respondents provided comments about strengths and/or challenges.

The most common responses for challenges of implementing an EHR/EMR were:

- Expense of implementation (e.g., decreased productivity) and on going costs 171
- Expense of purchase 131
- Inadequate return on investment/lower productivity/does not increase efficiency 51
- No currently available EHR product satisfies our needs. Need for customization. 47
- Staff would require retraining/learning curve 41
- Interfacing (internal/external) 30
- Practice is too small 21
- Staff/physician resistance to change 18
- Security and privacy issues 17
- Lack of expertise to lead or organize the project/lack of IT support 16
- Confusing number of EHR choices/using system as its fullest capacity 14
- Concern the product will fail 11

Selected comments on EHR/EMR **challenges** that provide insight to organization and clinician perspectives are shown below. Some comments have been edited for clarity, spelling and to preserve anonymity. Comments longer than allowed by the online survey process are identified as truncated.

- System is very cumbersome, needs a lot of customization to work for our specialty, which is very labor intensive.
- Finding an easy to use and intuitive system that enhances and creates efficiencies.
- Convincing providers that moving to an EMR facilitates better patient care in the long run.
- Infrastructure: networking and interface setup; maintaining connectivity; (truncated)
- Capturing the information required by the State for various funding streams. For instance, documentation for Title X is different than documentation for FPEP so it's difficult to make sure our EHR captures enough information to satisfy both.
- Our system transferred all ICD-9 responsibility to provider. Too many choices for medications, supplies etc. on list so hard to pick correct one.
- Not all pharmacies are using e-prescribing, causing issues. Providers learning charting tools.
- Creating interfaces with the hospital/lab, and converting paper to electronic attachments.
- Time and disruption to patient care services. The efficiencies and workflows that the clinic had prior to EMR were totally disrupted. Providers are upset about the amount of time they must be on the system.

- Dealing with DEA and pharmacy board on faxing prescriptions; having to sign notes, orders, etc. even though they are securely signed electronically, few are set up to accept electronic signatures.
- Need to update medications/allergies in system faster and more often! Training, streamlining process amongst divisions/clinics. We have a wide-ranging multi-specialty group.
- Training program by vendor is limited. Probably other capabilities that we don't even know about. Need to keep up with all of the upgrades as they come out.
- Learning that the EMR is a database and not each practitioner's individual chart. Practitioners wanting to have individual control over what the product looks like when they are interacting with it.
- Providers spending much more time charting/documenting than in paper charts. Office needed to really change the workflow to accommodate new technologies. Difficult to transition away from relying on paper charts.
- Cost and length of time to implement. Getting patient to do their on-line patient history.
- Training, keeping current with software changes, regulatory changes, process changes.
- There is no standard to communicate between systems. Government "think tanks" are not spending money in here. Most importantly HIPAA is a hindrance to sharing core patient data.
- Use of the practice management part of the system; now I only use the EMR portion.
- I have been unclear how to enter clinic notes. I don't like keyboarding the entire note in front of the patient. I'd also like to be able to download reports from my hospital.
- Cost, security/privacy, psychiatry records involve the use of "psychotherapy note's" which are not accessed by insurers or other third parties, alongside the normal medical records.
- Psychiatry is unusual for note taking and storing information. Finding a program that was not cost prohibitive that worked for my specialty was not easy.
- As a small office-based practice with a single office staff person, we have not found the time to implement the system.
- Cost, implementation, no coordination w/insurance carriers for practice management issues.
- Centricity has good practice management software but Logician (the EMR side of the program) is cumbersome to me. This has stalled out the process.
- Concerned about privacy of patient recorder and improper use by insurance companies.
- I'm basically an "old Dog" with old habits so EMR is quite a revolutionary concept. Also, I read that info could be lost somewhere in the circuitry of electronics!
- 1) Finding a system that understands rehabilitation and mental health. 2)Finding a system that has scheduling features compatible with our day treatment model, (truncated)
- Getting folks with diverse IT backgrounds up to a knowledge base standard.
- Lack of funding for federally qualified health centers.
- 1) Must interface easily with any/all other EHRs and labs out there. 2) Need to make IT support cheaper. 3) National standards are needed.

Appendix F: Comments on Barriers to Adoption (Question 8)

Survey question 8 asked respondents indicating no plans for implementing an EHR to identify the **main barriers** to implementing an EHR in their practice or clinic. Respondents could check up to twelve possible reasons and/or check "Other" and provide narrative comments regarding barriers. Of the 655 organizational entities reporting that they had no plans to implement an EHR/EMR, 626 entities provides one or more responses regarding barriers. Ninety-two (92) respondents used the "Other" option to amplify their responses to the available multiple choice options. About one-third (34) of these open-ended comments were related to the check box options. About two-thirds of the open-ended comments provided further insight into clinician perspectives on EHR adoption and utilization. The most common response was that EHR would interfere with the doctor/patient relationship and reduce the quality of care and patient satisfaction (10 responses).

Selected comments on **barriers** to implementing an EHR/EMR provide insight to organization and clinician perspectives are shown below. Some comments have been edited for clarity, spelling and to preserve anonymity. Comments longer than allowed by the online survey process are identified as truncated.

- Most implementations of various HIT functions are IT first and taking care of sick folks second. Compare a good comprehensive history and physical examination done by a good clinician with what is generated by an EMR.
- EMRs do not let me dictate as I do. I do not want programmed responses.
- EHR has not been validated by randomized controlled trials as being effective. Their use violates the goals of evidence based medicine and EHR can be considered an experimental and therefore unethical major alteration to all branches of medical practice.
- Future federal standards will make today's EMRs obsolete. Also new HIPPA regulations.
- Lack of physician willingness to participate.
- It is for insurance people, E-government, not patients or physicians. Depersonalizes contact with patient. What happened to looking at patient and relating to them? Why does data entry replace caring?
- Interfacing issues with EPM software and other community provider systems.
- We have multiple large projects on our plate and need to take on one project at a time.
- Not sure how to eliminate some of our paper records.
- Many administrative functions are shifted to MD, DO, etc.
- Decreased productivity after implementation.
- Need a community wide solution.
- EMR does not save time or money for organization—support is an ongoing expense.
- Our records are computer-based on an encrypted server. Billing is done by agency and I don't know their practice but we send them data on paper.
- Waiting for stimulus clarification.
- We recently implemented the EPM software and need time to integrate it completely before another intense implementation. Also weighing the options carefully before going forward.

Appendix G: Other Comments (Question 19)

Survey question 19 provided respondents the opportunity to offer Additional Comments Related to EHR/EMR Implementation and Adoption. Please provide any additional comments applicable to the implementation and adoption of EHR/EMR at your clinic. Of the 453 respondents indicating they had an EHR/EMR within their practice, 358 respondents provided additional open-ended comments. The most common responses were:

- Time and cost intensive (cost of EHR/EMR and implementation) 82
- No return on investment 37
- Need to train staff 31
- Need for interfacing 14

The following comments were selected and representative of the remaining **additional comments** related responses. Some comments have been edited for clarity, spelling, and to preserve anonymity.

- The screening process is extremely difficult & regardless of how many demos you see on a particular product it is impossible to know exactly how it will function in your own clinic's environment.
- As an individual I think it would have been nearly impossible to implement without the IPA and the support of physicians going through the same process.
- Voice recognition systems don't work very well unless you use extensive templating which for me makes all the entry's work the same and don't allow me the information to recall unique features of patients which are my memory
- Should have spent more time choosing a system—looking further into its abilities and limitations, understanding work flow changes.
- We had 4 providers leave in 1st year after implementation. It's a tough transition especially for smaller clinics. Outside funding or grants would have been very helpful as many of the ones that left thought we wouldn't make it.
- We started out with EHR. We also have a paper chart to hold outside records, copies of x-ray reports, consults, etc. This helps with power outage days.
- We have been very fortunate to be able to move to EHR. Support from industry partners, grants, etc. have been invaluable. OCHIN has been a very good partner and has provided good support and expertise and has been instrumental in bringing EHRs to safety net clinics.
- We felt pressured to move onto EMR or be left behind in the market place, but there is little assistance for small groups to adopt this new technology, which is very expensive and time consuming to implement.
- The risk for earlier adopters is that the government, state, or local hospital will mandate a different system after much time and money has been invested into the current system.
- For national use, medication/allergy lists would need to be updated as medications are introduced to the market. Allergies need to include more environmental causes.
- The most important aspect would be for the medical schools and residency programs to have EMR/EHR utilization. Physicians have a "hard" time going from a paper chart to electronic.

- Difficult culture change for multi-specialty group as software doesn't meet the needs of all departments. Continued vendor implementation difficulties and software has not been implemented by all providers.
- Physicians feels that the EHR/EMR interferes with their ability to care for patients efficiently
- EMR makes it easy to find documentation errors and to quantify client outcomes.
- Very difficult to deal with any system malfunctions and take care of sick people at the same time.
- HIPPA prevents hospital and other clinics from sharing information and retention of stored data problem-identity theft also a problem