Diabetes Data Dilemmas: Diabetes Prevention and Control

Kansas Diabetes Quality of Care Project

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Outline

- **Project Rationale**
- **Statewide Project**
- **Project Components**
- **First Year Outcomes**
- **Data Translated Into Practice**
- **Future Direction**
- **Open HRE™ Project**

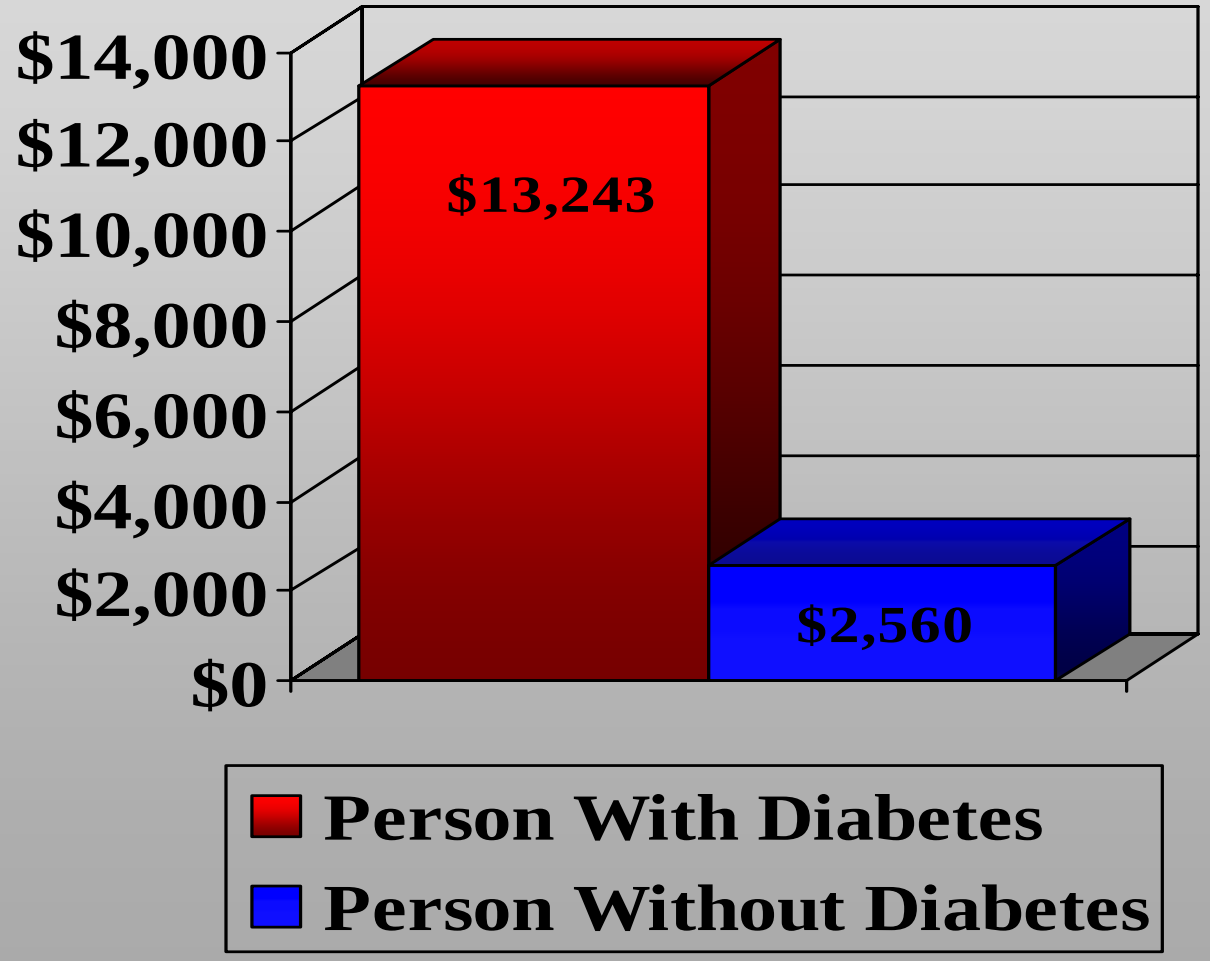
Project Rationale
Data – Decision Support

Burden of Diabetes in Kansas

- **2005 – 7.0% Adult Kansans diagnosed with diabetes**
- **7th Leading cause of death (683 Kansans died of diabetes in 2004)**
- **Estimated direct and indirect costs of diabetes were nearly $1.3 billion a year**

2004 Kansas Behavioral Risk Factor Surveillance System, KDHE.
Center for Health & Environmental Statistics,Office of Vital Statistics KDHE, 2004
Lewin Group, Inc., American Diabetes Association,, 2002

Average Yearly Health Care Cost
United States 2002



Source: Hogan P etal. Economic Cost of Diabetes in the U.S.in 2002. American Diabetes Association. Diabetes Care. 26: 917-932, 2003.

Costs Associated with Poorly Controlled Versus Well Controlled Diabetes

A1c Level	*Adult with Diabetes*	*Adult with Diabetes, Hypertension & Heart Disease*
6% (normal)	**$8,576**	**$38,726**
7% (goal)	**$8,954**	**$40,230**
8%	**$9,555**	**$42,467**
9%	**$10,424**	**$45,557**
10%	**$11,629**	**$49,673**

Source: Gilmer, Todd P, et al. Diabetes Care 1997; Vol. 20, No. 12.

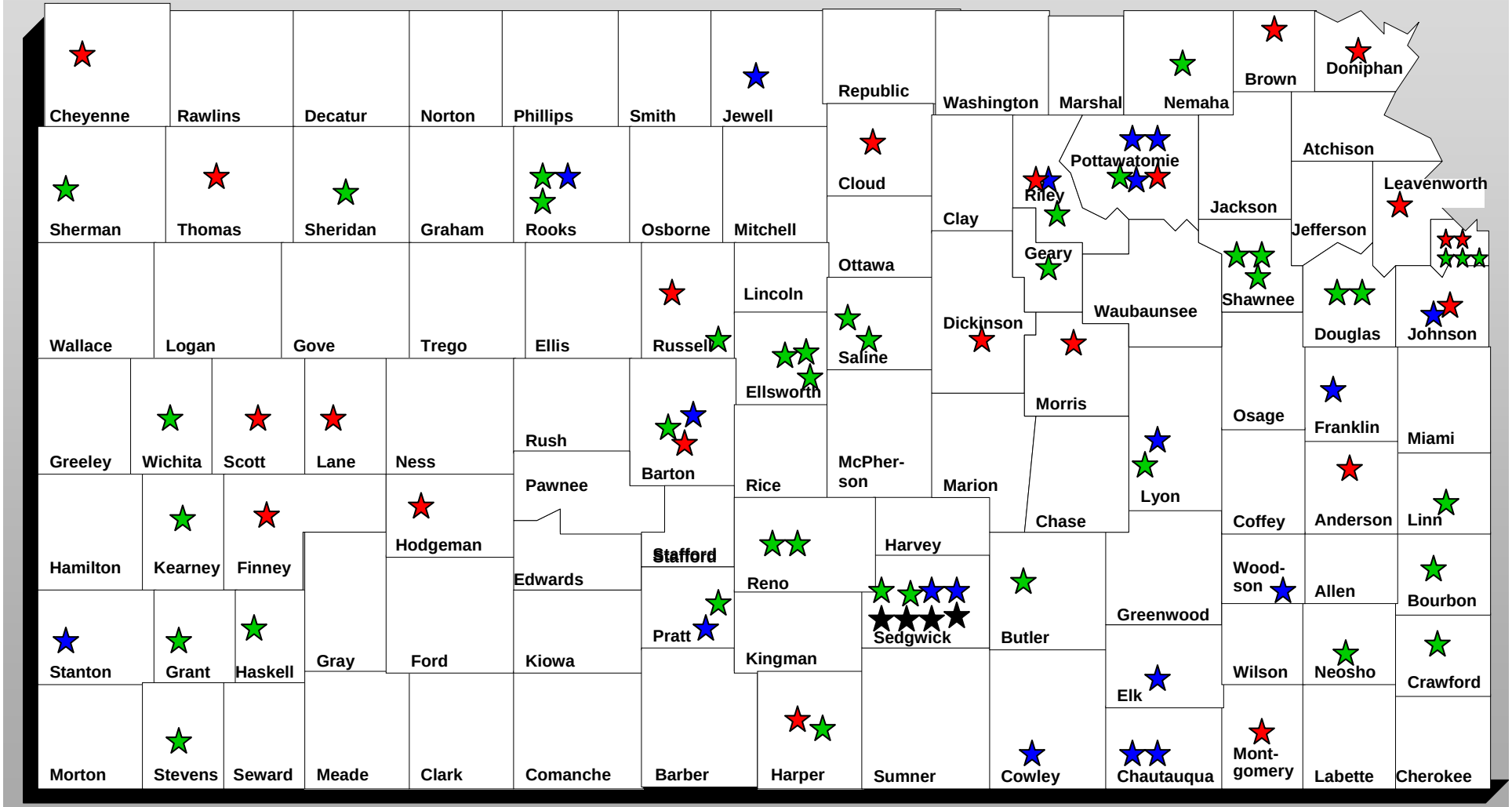
Average Medical Care Over 3 Year Period

Kansas Diabetes Prevention & Control Program Objectives

By 2008, increase the rate of:	
HbA1c test	**69.1 % to 83.0 %**
Annual foot exam	**60.8% to 83.0%**
Dilated eye exam	**67.5% to 83.0%**
Recommended annual pneumococcal immunization	**49.3% to 51.6%**
Recommended annual influenza immunization	**60.7% to 63.5%**

Statewide Project

Kansas Diabetes Quality of Care Project Sites



Project Organization Demographics

- **68 funded organizations**
- **90 sites statewide**
- **350 participating health professionals**
- **50% of Kansas' counties represented**
- **Diverse organizations participating**
- **Over 4,000 patients with Diabetes**

Project Organization Demographics – cont'd

Types of participating organizations:

- **Local Health Departments**
- **Community Health Clinics**
- **Safety Net Clinics**
- **American Indian Health Clinic**
- **Home Health Agencies**
- **Hospital Affiliated Practices**
- **Private Practices**
- **Farmworker Program**
- **Promotora Program**

Project Components

First Year-----Process

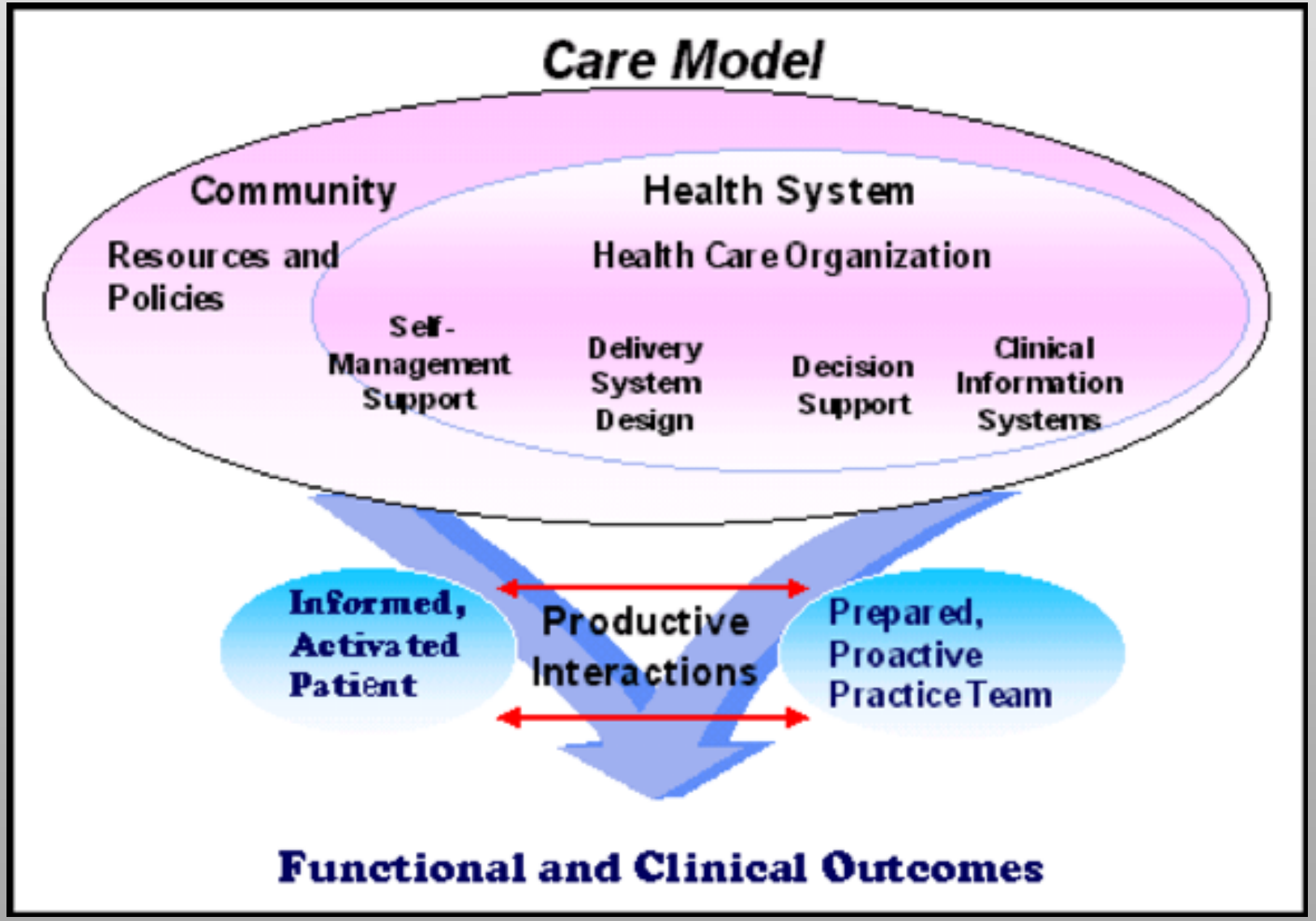
- **Chronic Care Model Training**
- **Chronic Disease Electronic Management System (CDEMS) Training**
- **Data Entry and Analysis**
- **Quarterly Reports**
- **Office Protocol Development Encouraged**
- **Diabetes Teams Encouraged**
- **Regular Team Meetings Encouraged**
- **Monthly Conference Calls**
- **Site Visits**

Project Components

Second Year-----Outcomes

- Advanced CDEMS Training
- Advanced Data Analysis
- Diabetes Teams Established
- Regular Team Meetings Documented
- Office Protocols Implemented
- Monthly Conference Calls
- Improved Quality of Care Measures

The Chronic Care Model

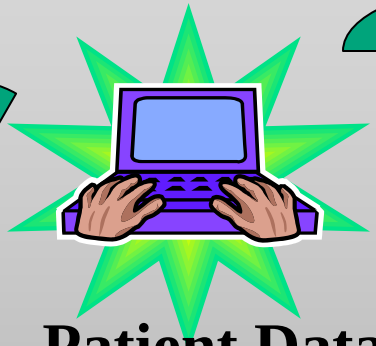


Chronic Care Model Components

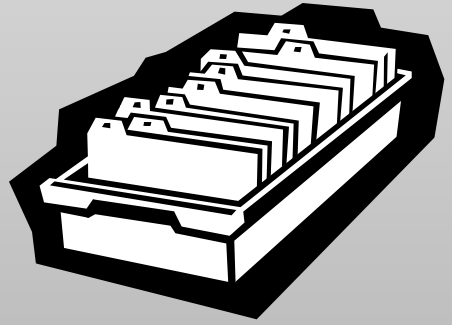
- **Health Care Organization**
- **Delivery System Design**
- **Decision Support**
- **Self-Management Support**
- **Community Resources**
- **Clinical Information System**

CDEMS

How does it work?



Patient Data Entered



Hard copy inserted into patient's chart

Dr. updates patient's chart

% of Patients Receiving Vaccinations and Foot Exams Needs Improvement

First Year Outcomes

Health Care Organization			
Outcomes	**1st quarter**	**4th quarter**	**% change**
Quantifiable goals for quality of care provided to Patients	**45%**	**66%**	**46%**
Holding routine diabetes team meetings	**42%**	**60%**	**42%**

Organizations Checking Yes on the Quarterly Office Self-Assessment Form

First Year Outcomes Cont'd….

Delivery System Design			
Outcomes	**1st quarter**	**4th quarter**	**% change**
Routinely ask patients to remove socks and shoes before exam	**39%**	**69%**	**76%**
Non-physician staff allowed to do foot exam	**36%**	**39%**	**8%**
All patients scheduled for follow-up	**60%**	**60%**	**-**
Non-physician staff empowered to order overdue labs	**36%**	**54%**	**50%**
Non-physician staff empowered to administer flu and pneumonia vaccinations	**48%**	**57%**	**18%**

Organizations Checking Yes on the Quarterly Office Self-Assessment Form

First Year Outcomes Cont'd….

Decision Support			
Outcomes	**1st quarter**	**4th quarter**	**% change**
CDEMS used to make decisions about needed care for patients	**36%**	**54%**	**50%**

Self-management Support			
Outcomes	**1st quarter**	**4th quarter**	**% change**
Patients routinely know their targets for blood pressure, finger stick blood sugar, and HbA1	**18%**	**54%**	**200%**
Provide resources for patients to allow them to be full partners in their care	**42%**	**69%**	**64%**

Organizations Checking Yes on the Quarterly Office Self-Assessment Form

First Year Outcomes Cont'd….

Community Resources

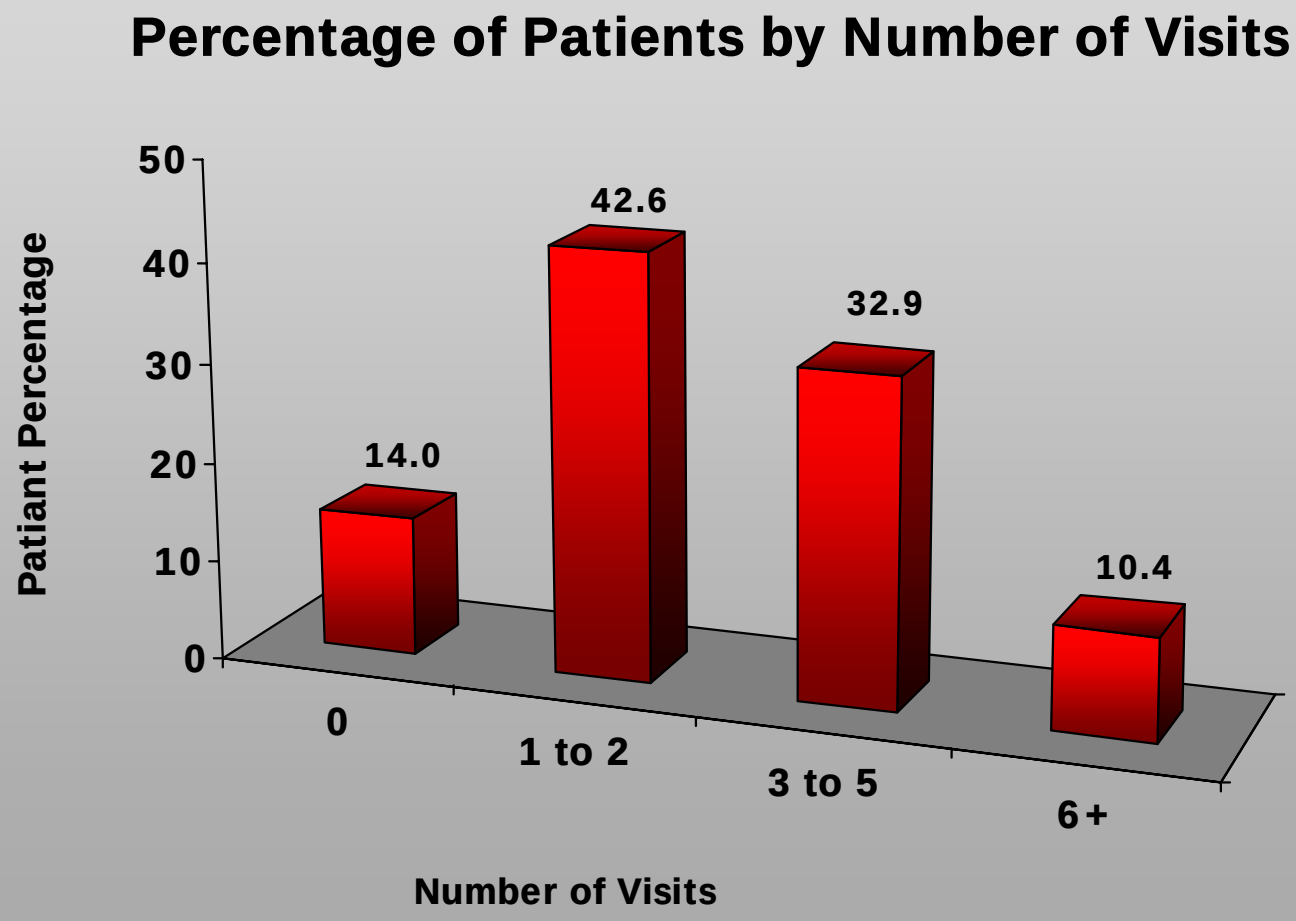
Outcomes	1st quarter	4th quarter	% change
Develop partnerships in the community for referral	39%	51%	30%

Clinical Information Systems

Outcomes	1st quarter	4th quarter	% change
Use CDEMS to record patients with eye exams, foot exams, HbA1c, flu and pneumonia vaccinations	45%	75%	66%
Use CDEMS as a reminder system to prompt when a patient is due for labs or visit	27%	42%	55%

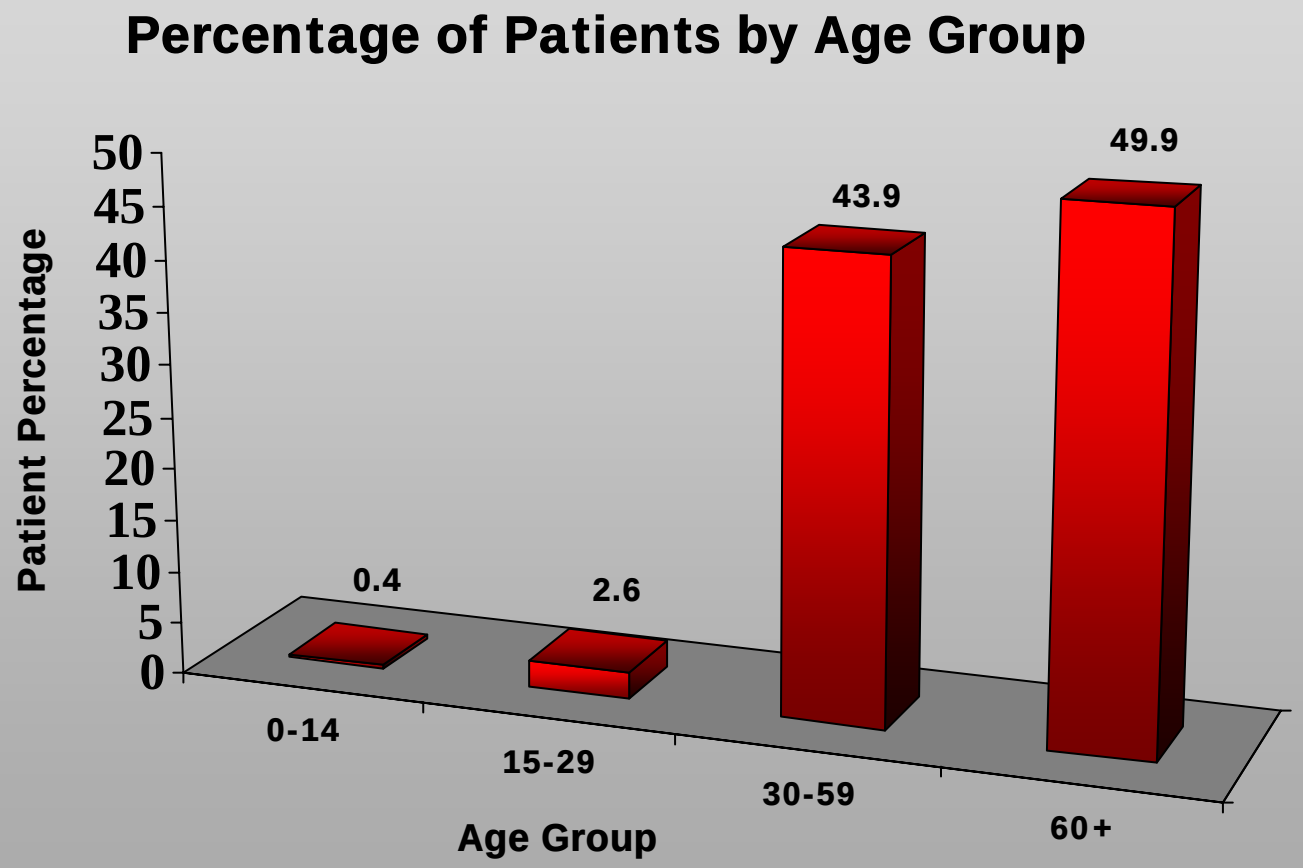
Organizations Checking Yes on the Quarterly Office Self-Assessment Form

Patient Office Visits



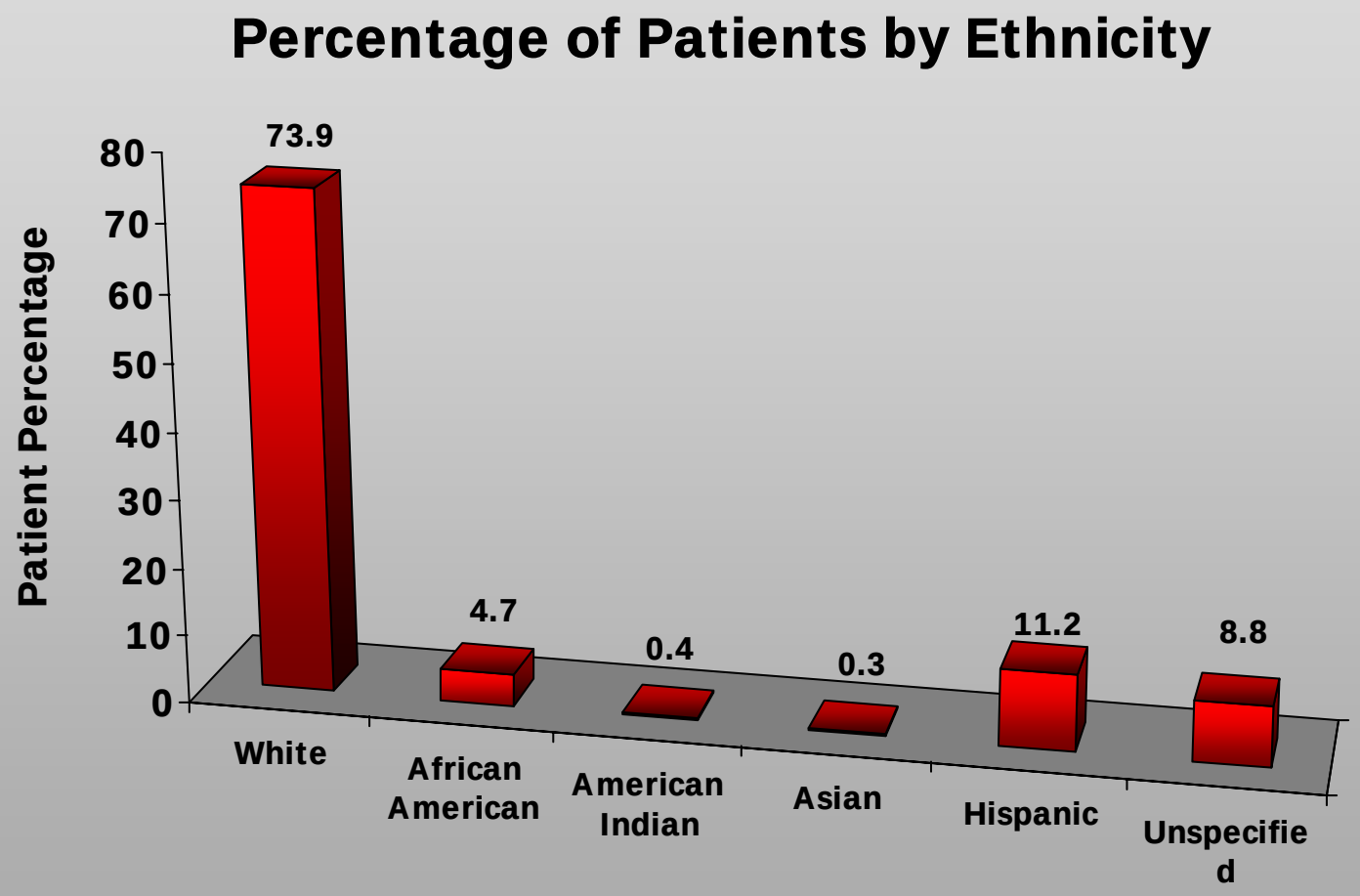
1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

Age Demographics



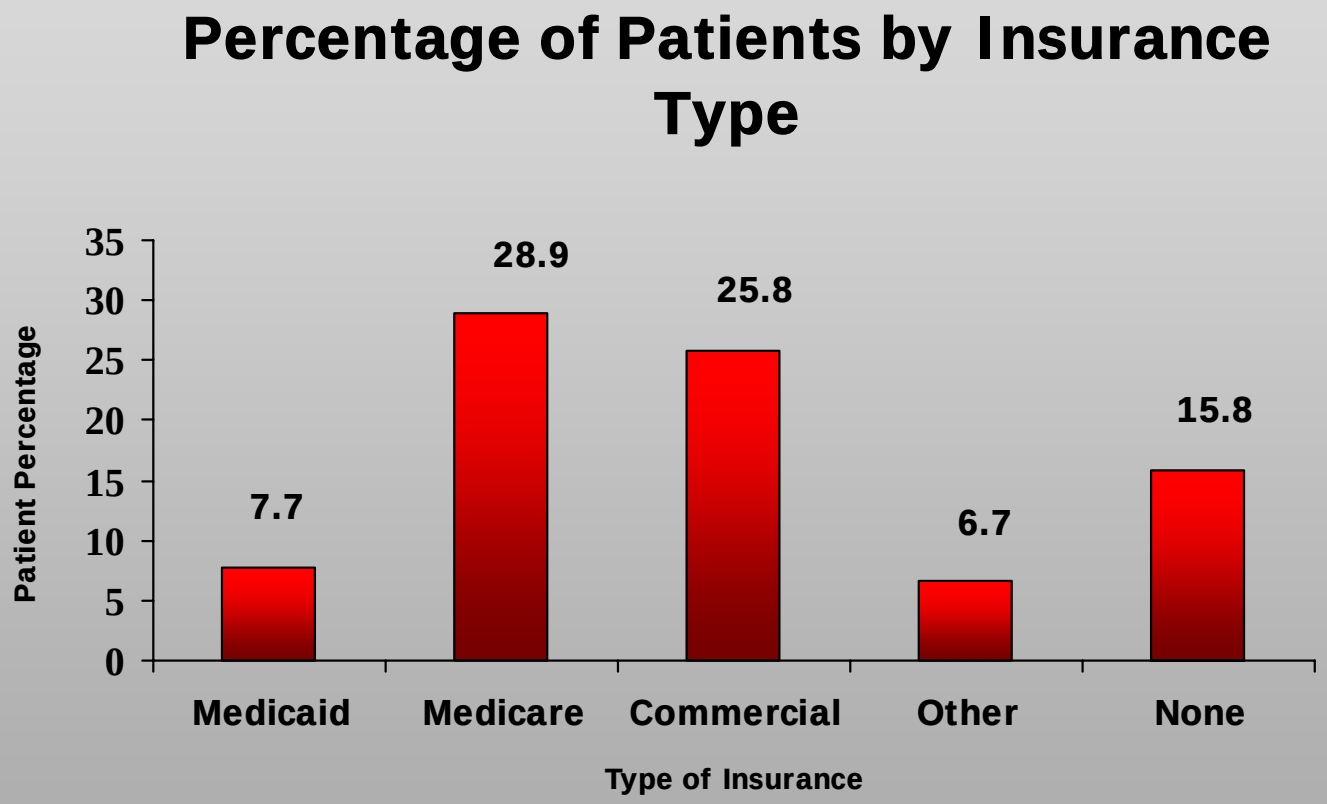
1st Year Results 2005-2006 - CDEMS Data ,Office of Health Promotion (KDHE)

Ethnicity



1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

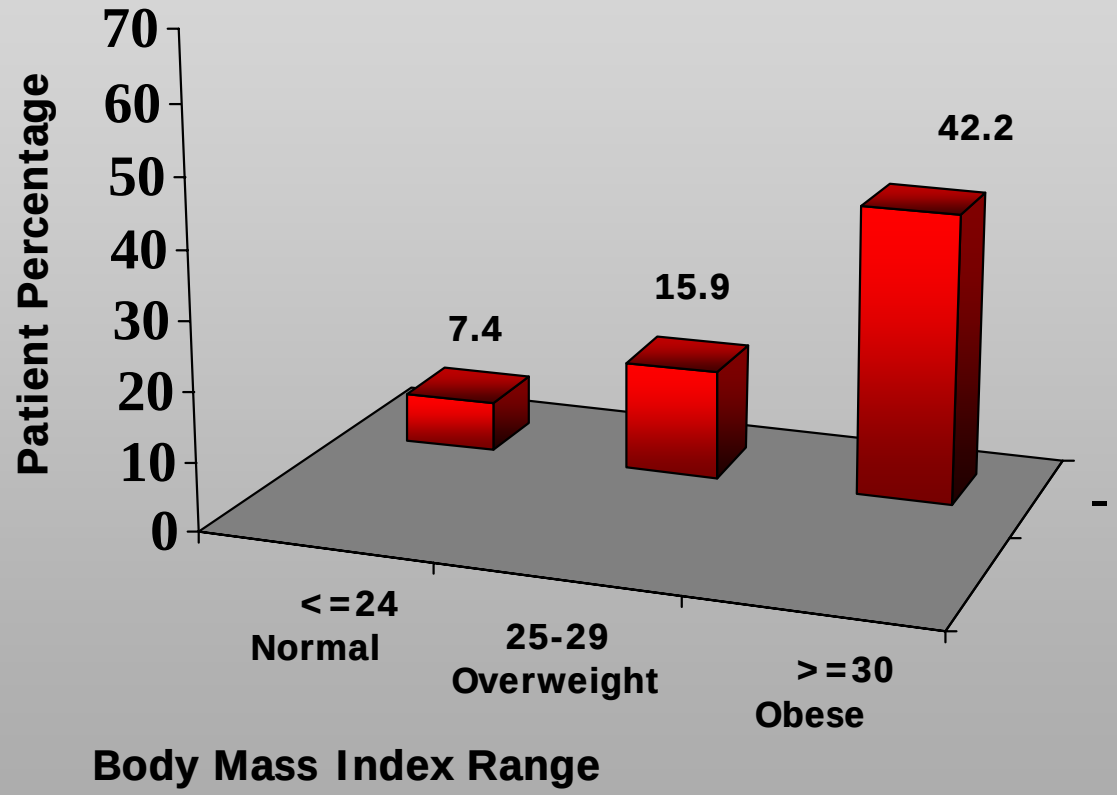
Insurance



1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

Body Mass Index

Percentage of Patients by Body Mass Index



Body Mass Index is defined as weight in kilograms divided by height in meters squared (kg/m^2)

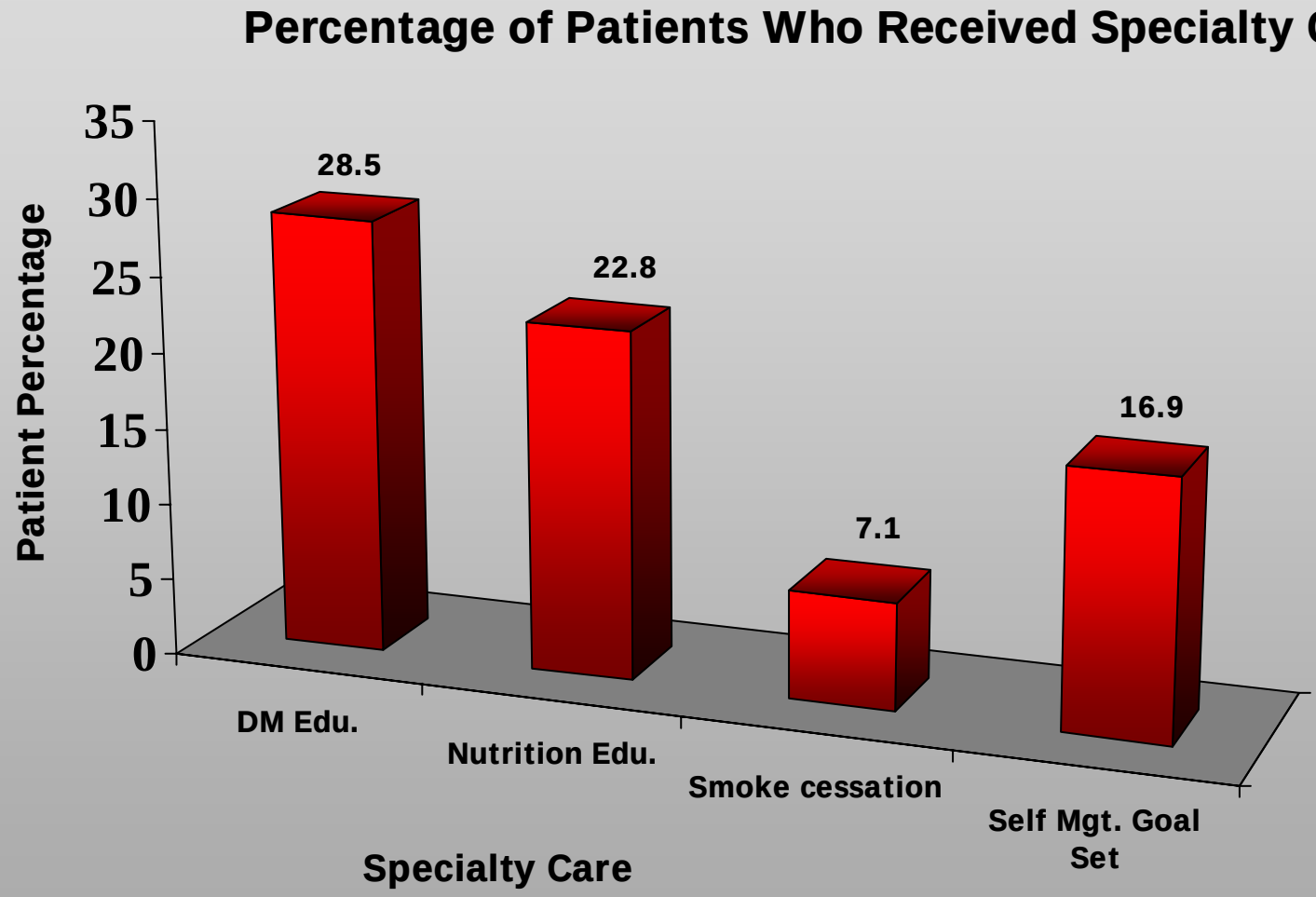
1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

Comorbidity/Complication Profile of Patients

Comorbidity/Complication	Percentage (%)
Hypertension	56.5
Hyperlipidemia	56.3
Heart Disease/Coronary Artery Disease	12.5
Neuropathy	9.6
Nephropathy	4.6
Peripheral Vascular Disease	3.9
Cerebrovascular Disease (stroke)	3.7
Retinopathy	3.5

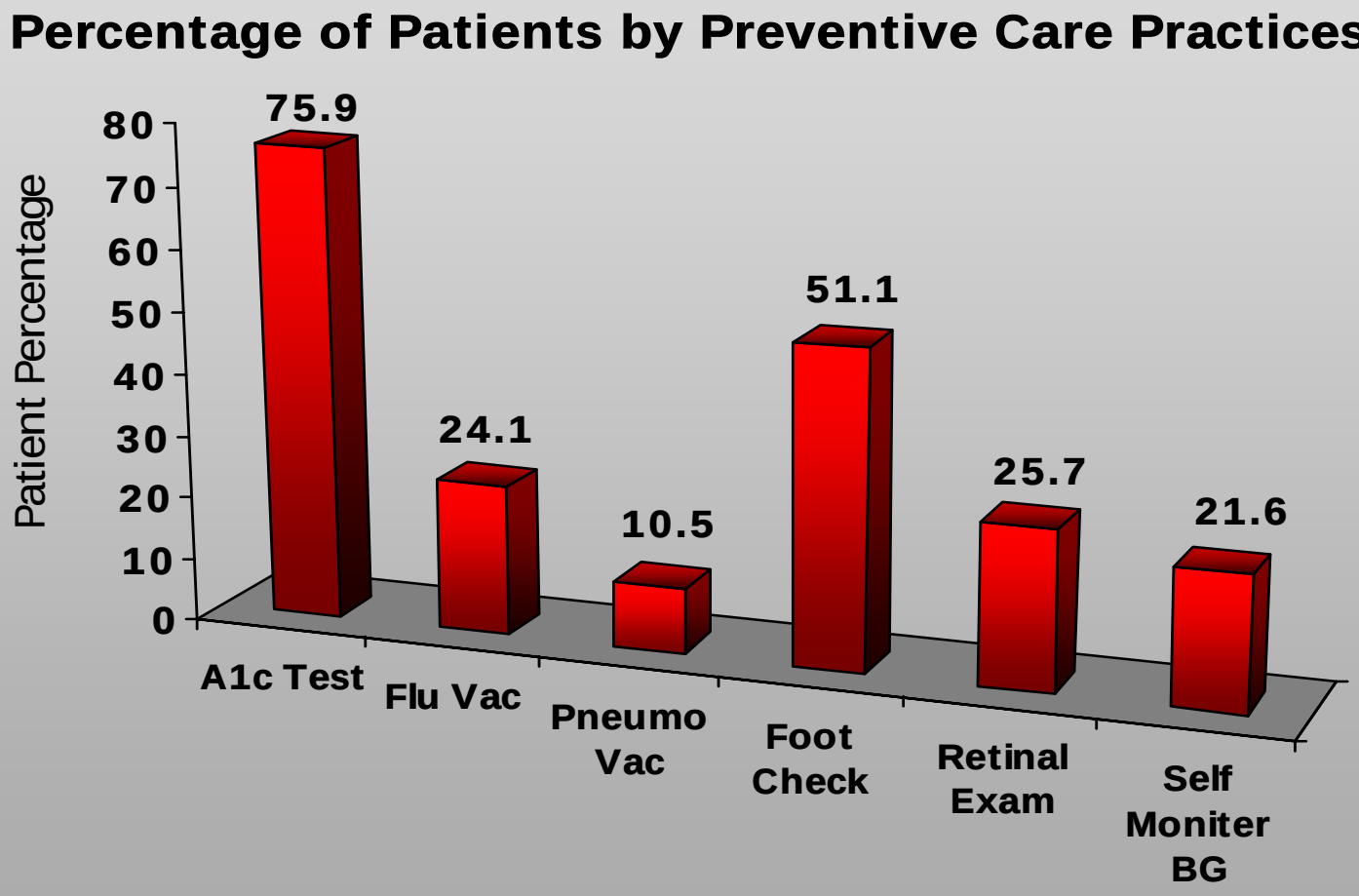
1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

Specialty Care Received



1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

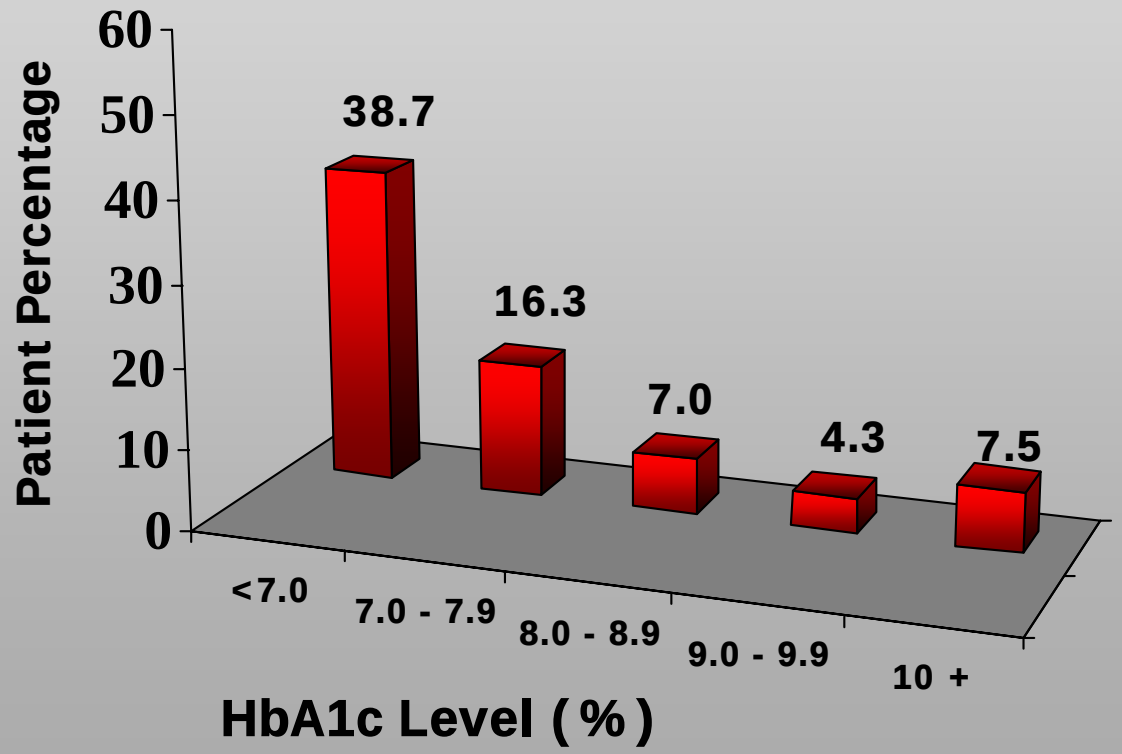
Preventive Care Practices



1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

HbA1c Levels

Percentage of Patients by HbA1c Level



1st Year Results 2005-2006 - CDEMS Data, Office of Health Promotion (KDHE)

Data Translated Into Practice

- at the clinic level

- **New office protocols in all organizations**
- **Diabetes patient newsletters**
- **Patient certificates for improved A1c**
- **Pre-visit patient self-assessment programs**
- **CDEMS data used to guide team decisions**
- **Improved communication among providers**
- **Separate diabetes clinic days established**
- **Patients made full partners in care**

Data Translated Into Practice

- at the community level

- **Pre-Diabetes Screening Programs**
  - **Community health fairs**
  - **Churches**
  - **Cattle and hog processing plants**
- **New Community Partnerships**
  - **YMCA**
  - **Podiatrists**
  - **Optometrists**
  - **Dentists**
- **Community Diabetes Education Programs**
  - **Targeting seniors**
  - **Targeting overweight/obese**

Project Direction

- **Continue to add organizations**
- **Provide technical assistance to practices to further improvements in diabetes indicators**
- **Collaborate with other chronic disease programs (Hypertension quality of care project)**
- **Explore collecting primary prevention data**
- **Explore interfacing CDEMS with EHR**
- **OpenHRE™ expansion (Pilot to additional clinics)**

OpenHRE™ Pilot Project

Process Problem

- **Method of data collection was not efficient (manual spreadsheets)**
- **Accuracy of information obtained was affected due to inconsistent data collection and submission**
- **Timeliness to aggregate data**
- **Reporting – limited to MS Excel**

About OpenHRE™

OpenHRE Community - is a consortium of communities and organizations working together to achieve secure and sustainable Health Record Exchanges.

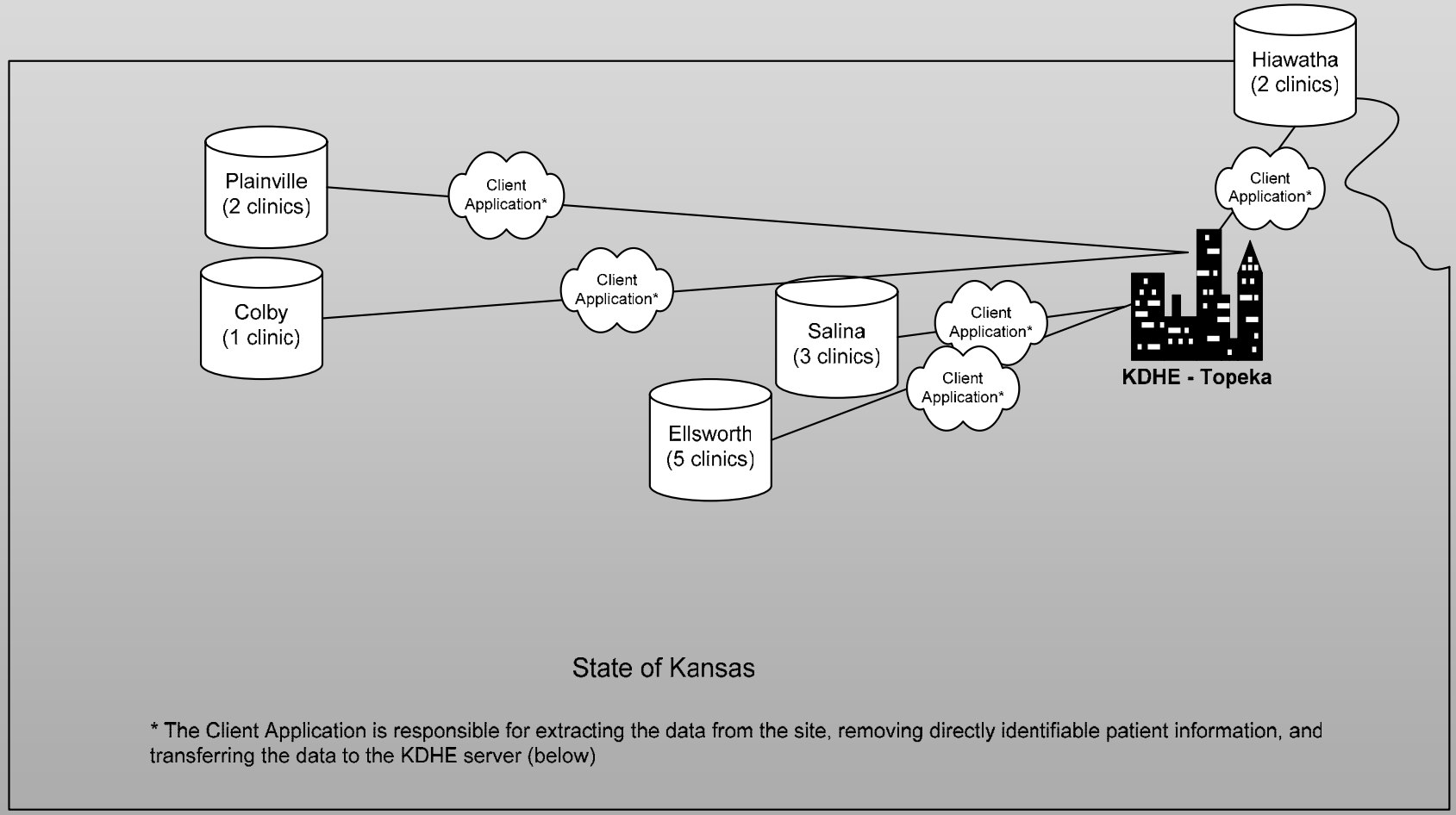
OpenHRE™ - toolkit consists of three configurable services that connect existing data sources for Health Information Exchange. The OpenHRE™ toolkit is available for download as free, open source software.

OpenHRE™ Pilot Project

Pilot Deployment

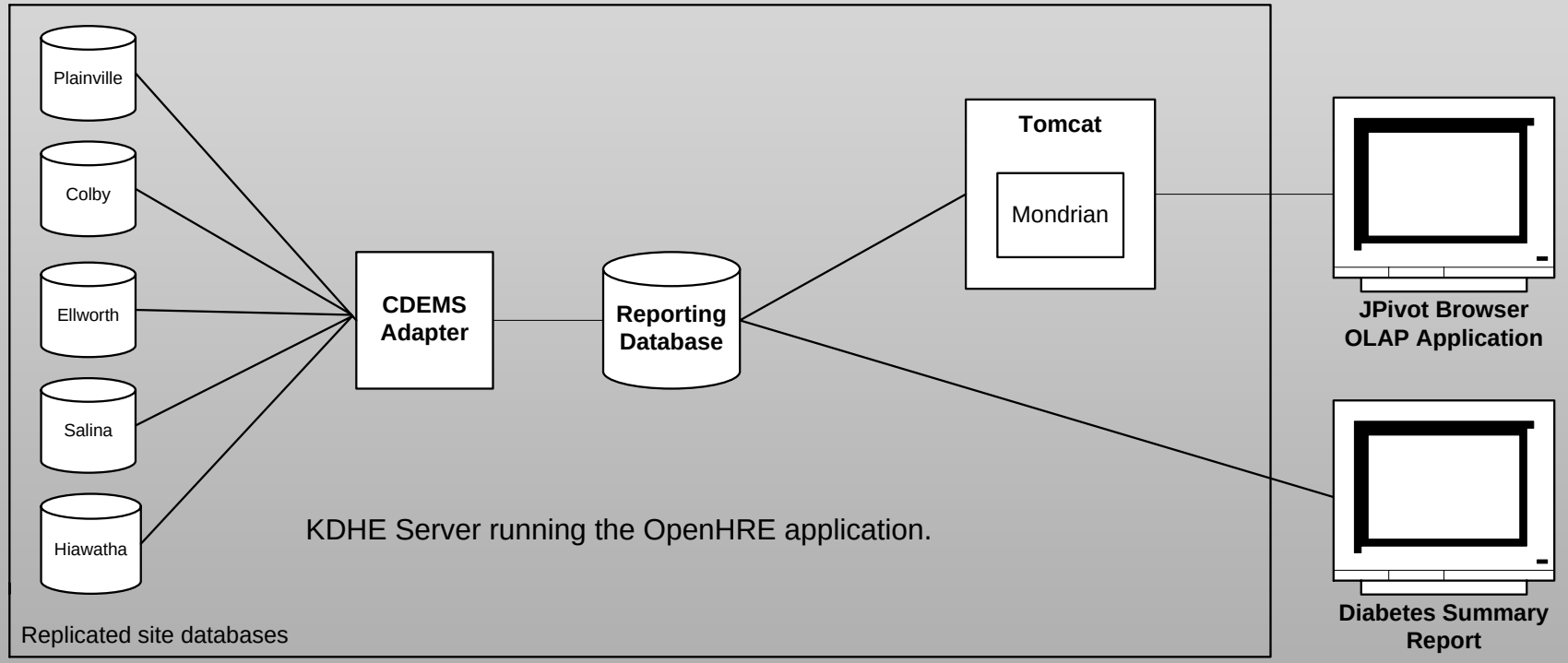
- **Collect data from 5 rural sites representing 13 clinics (1,408 patients)**
- **Remove directly identifiable patient data**
- **Create web-based Diabetes Summary Report**
- **Implement OLAP Reporting**

Kansas Department of Health and Environment
CDEMS - Pilot
Browsersoft/OpenHRE



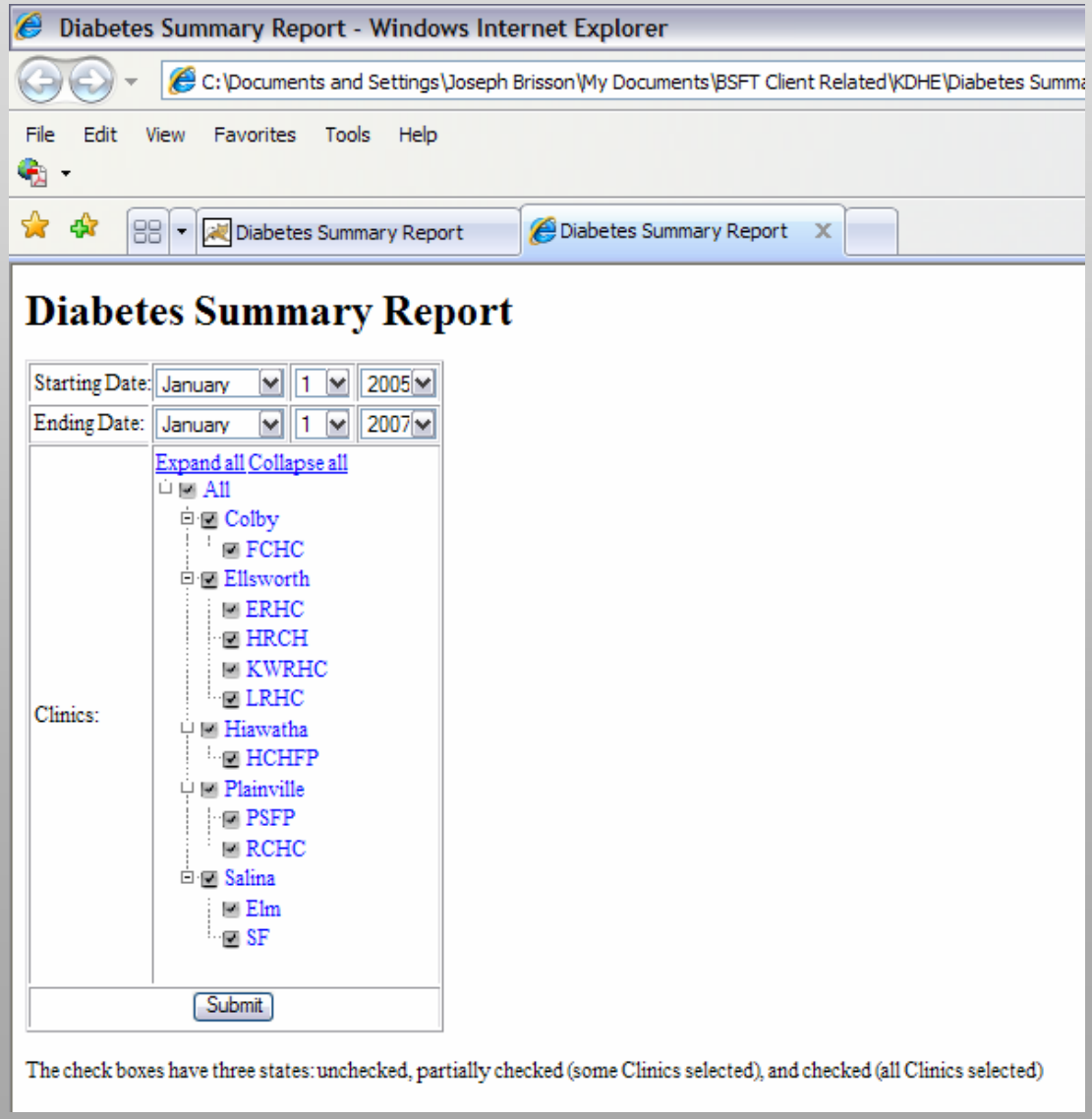
* The Client Application is responsible for extracting the data from the site, removing directly identifiable patient information, and transferring the data to the KDHE server (below)

Kansas Department of Health and Environment
CDEMS - Pilot
Browsersoft/OpenHRE



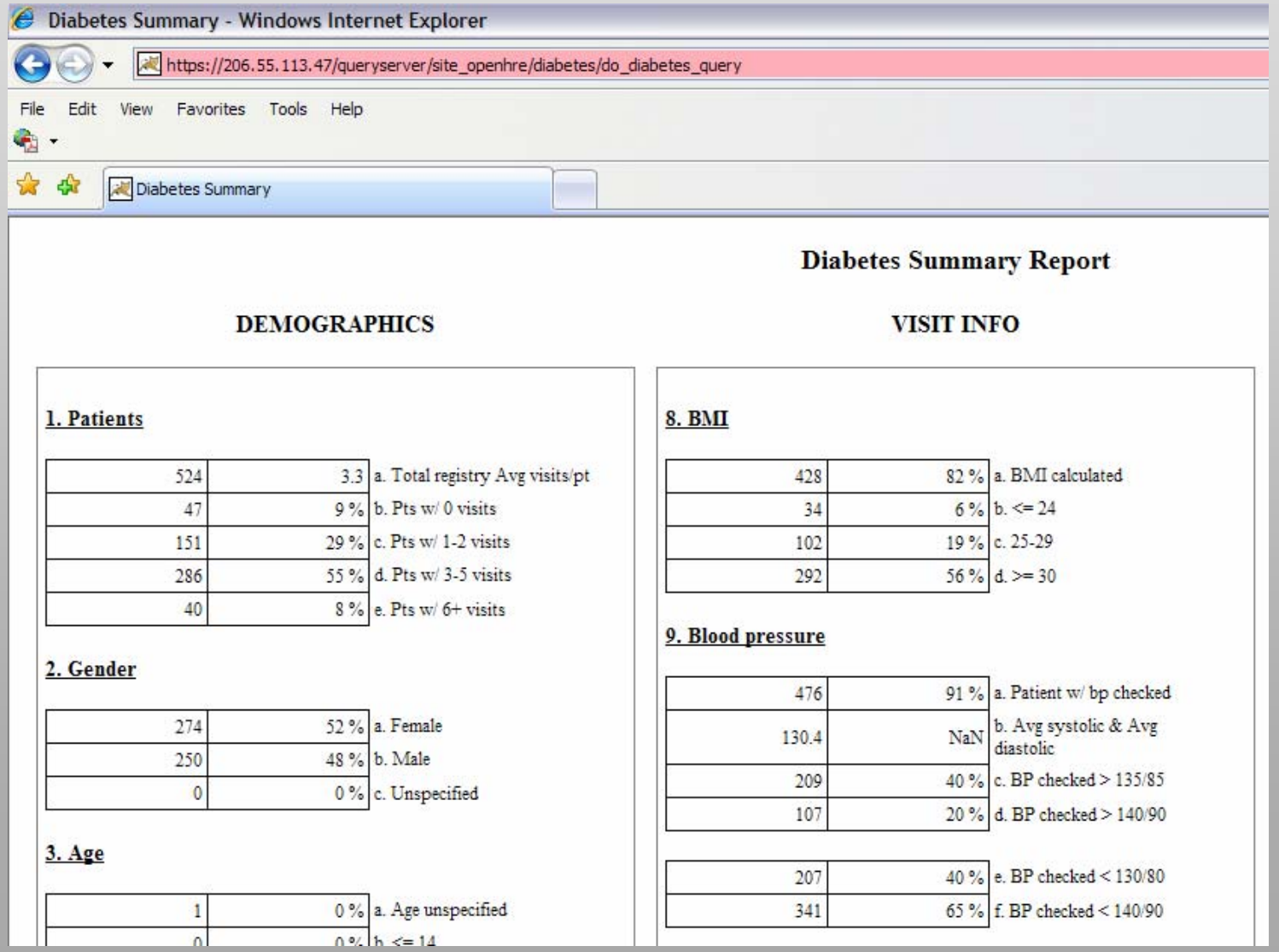
Diabetes Summary Report

Parameters Screen



Diabetes Summary Report

Report Output



Diabetes Summary Report

DEMOGRAPHICS

1. Patients

524	3.3	a. Total registry Avg visits/pt
47	9 %	b. Pts w/ 0 visits
151	29 %	c. Pts w/ 1-2 visits
286	55 %	d. Pts w/ 3-5 visits
40	8 %	e. Pts w/ 6+ visits

2. Gender

274	52 %	a. Female
250	48 %	b. Male
0	0 %	c. Unspecified

3. Age

1	0 %	a. Age unspecified
0	0 %	b. <= 14

VISIT INFO

8. BMI

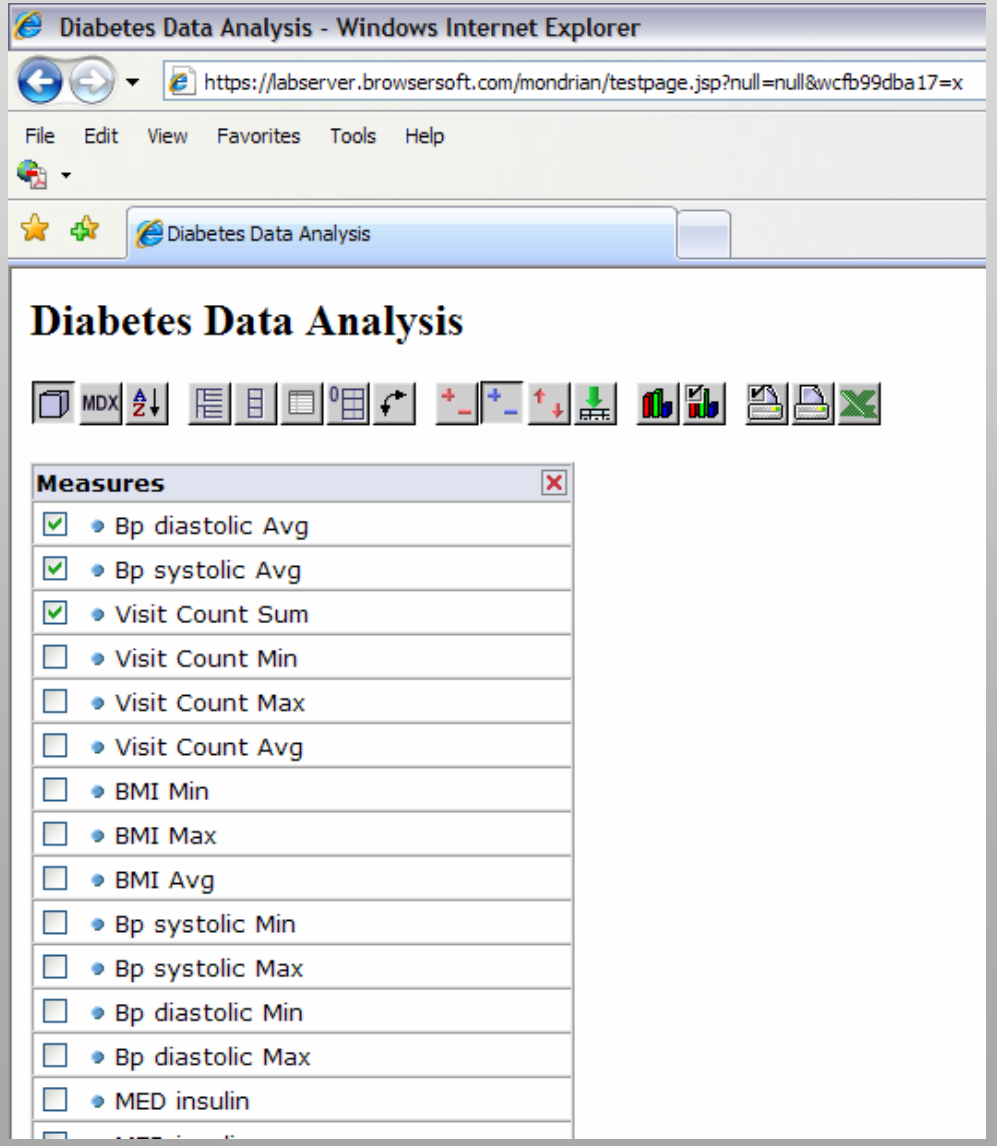
428	82 %	a. BMI calculated
34	6 %	b. <= 24
102	19 %	c. 25-29
292	56 %	d. >= 30

9. Blood pressure

476	91 %	a. Patient w/ bp checked
130.4	NaN	b. Avg systolic & Avg diastolic
209	40 %	c. BP checked > 135/85
107	20 %	d. BP checked > 140/90
207	40 %	e. BP checked < 130/80
341	65 %	f. BP checked < 140/90

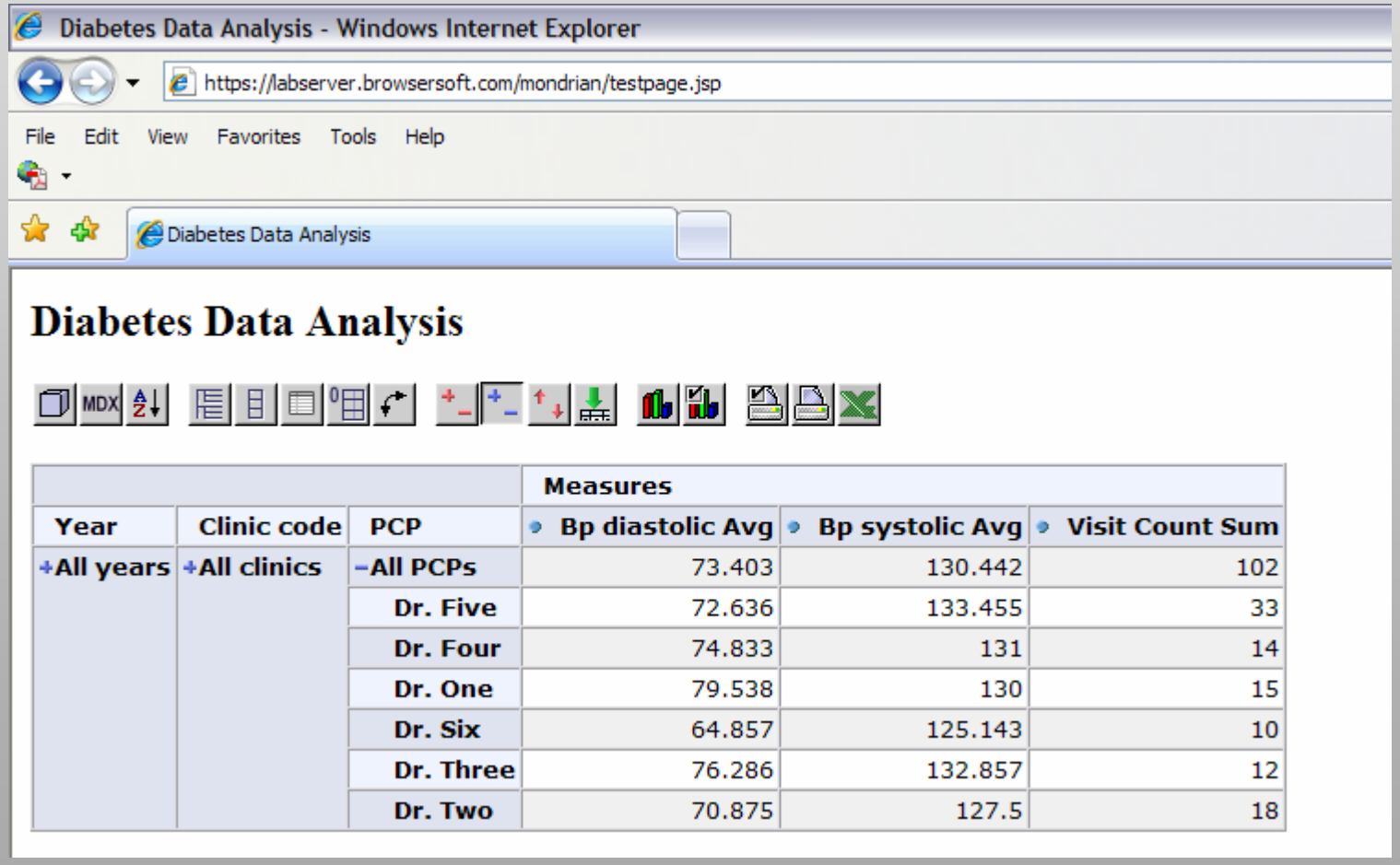
OLAP Reporting Tool

Parameters Screen



OLAP Reporting Tool

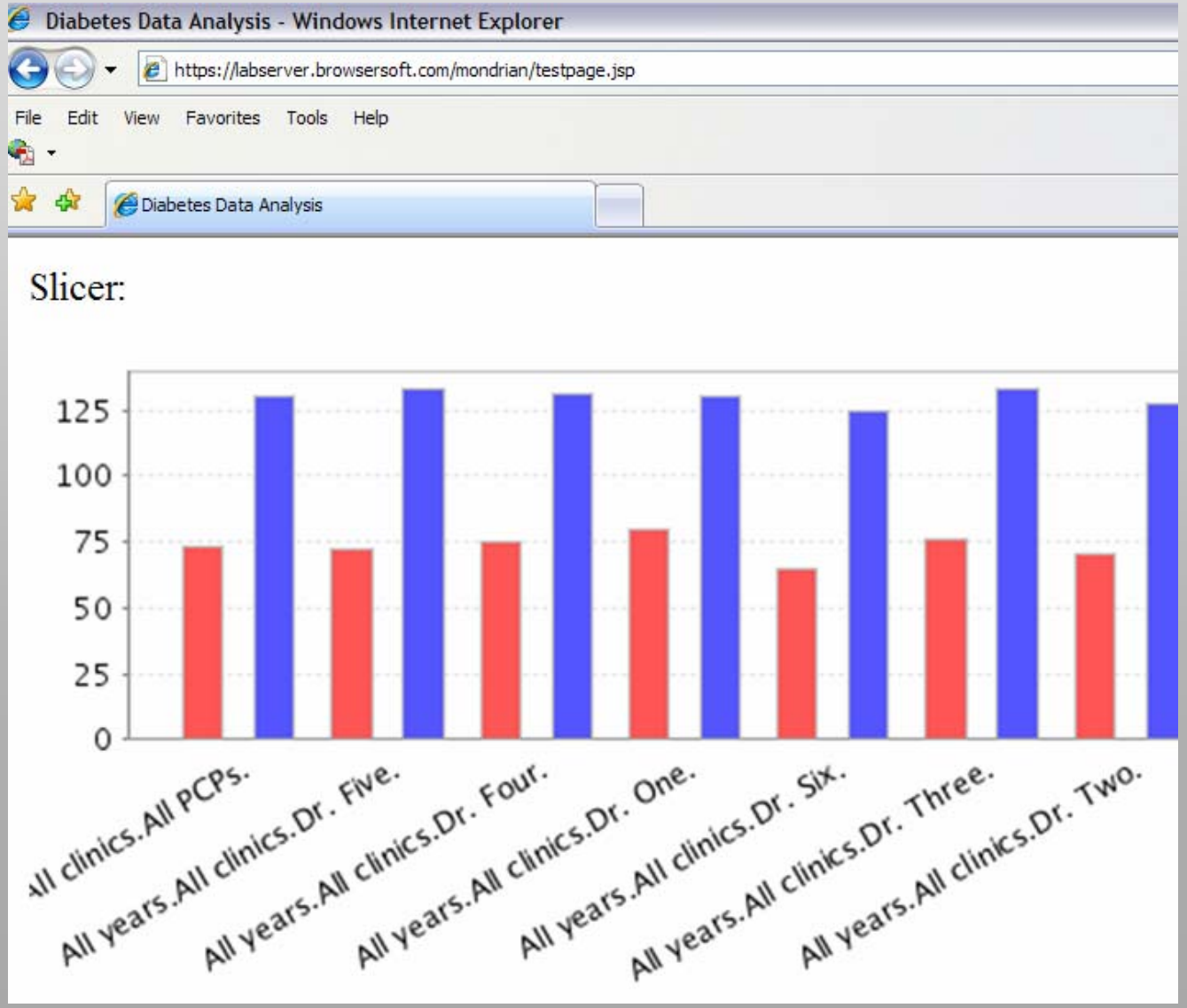
Sample Output



			Measures		
Year	Clinic code	PCP	Bp diastolic Avg	Bp systolic Avg	Visit Count Sum
+All years	+All clinics	−All PCPs	73.403	130.442	102
		Dr. Five	72.636	133.455	33
		Dr. Four	74.833	131	14
		Dr. One	79.538	130	15
		Dr. Six	64.857	125.143	10
		Dr. Three	76.286	132.857	12
		Dr. Two	70.875	127.5	18

OLAP Reporting Tool

Sample Graph Output



Problems Addressed

Process Problems

- **Method of data collection was not efficient (manual spreadsheets)**
  - **Eliminated manual entry for participating clinics**
- **Accuracy of information obtained was affected due to inconsistent data collection and submission**
  - **Automated collection occurs monthly or more frequently if desired**
- **Timeliness to aggregate data**
  - **Nightly updates as new data arrives**
- **Reporting – limited to MS Excel**
  - **Parameter driven Diabetes Summary Report**
  - **OLAP tool for Data Analysis**
- **Open source software provides a cost effective deployment**
  - **Reusability**
  - **Sustainable**

Contact Information

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