



# Collaboration to Improve Population Health, Driven by Comparative Clinical Analytics



February 2013

# American Medical Group Association

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**AMGA supports its members  
in enhancing population health  
and care for patients  
through integrated systems of care.**

*Founded in 1949*

- 420+ member organizations
- 125,000+ physicians
- Provide health care to more than 130 million patients per year, in 49 states
- Two-thirds of members are integrated delivery systems—up from one-third, 5 years ago
- Average group size is 300 physicians, median 130 physicians
- Patient-centered, team-based care—emphasis on care coordination
- Continuous performance improvement—systems thinkers
- Leadership on EHR and eRx adoption
- Leadership on Accountable Care—emphasis on value, in terms of population health



# Parallel AMGA Strategies

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- Advocacy: Redesign payment system to align incentives around population health
  - Volume → Value
  - ACO → High-Performing Health System definition
- Support members in redesigning the delivery system to manage population health
  - Devise strategies for moving from one payment model to another
  - Develop competencies in understanding and managing population health
  - Provide data resources and analytical tools → Humedica partnership
  - Extend AMGA's model for shared learning → Anceta

Comparative Data



*What to improve*

Shared Learning



*How to improve*

# Organizations

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American Medical Group Association



AMGA subsidiary, created to extend AMGA's model for shared learning, based on comparative clinical analytics



Anceta's partner, a next-generation clinical informatics company, based in Boston

Recently became part of OptumInsight

"Data factory" — extract and integrate clinical and administrative data, across the continuum of care

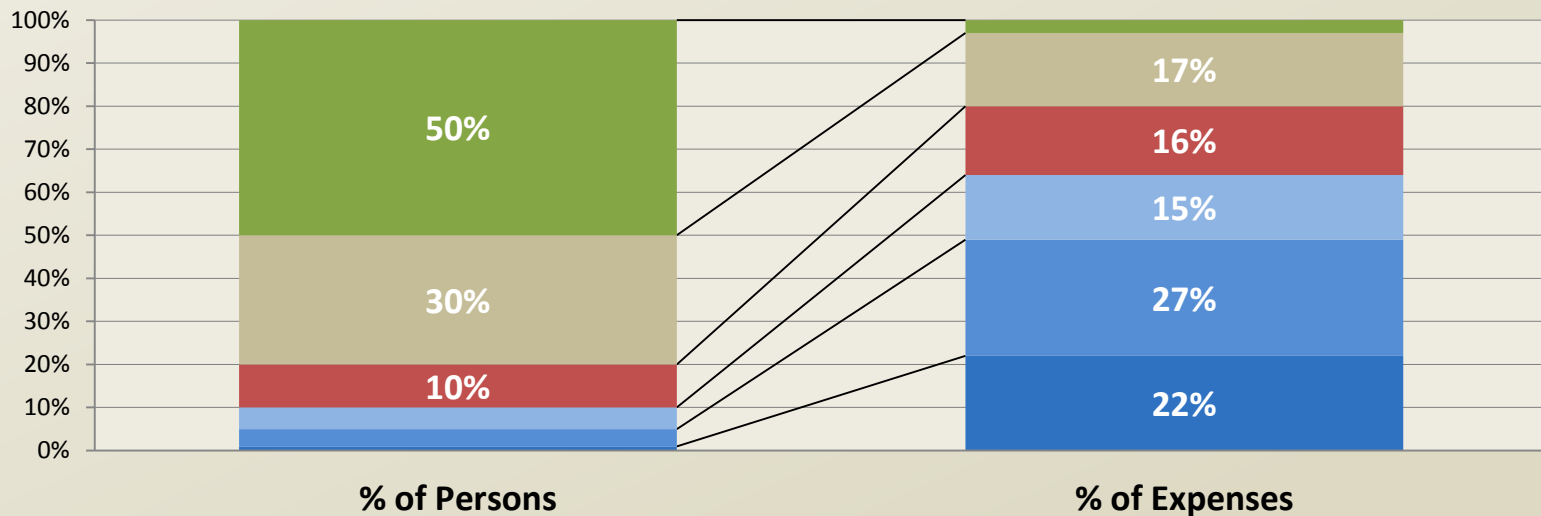
Disease-specific analytic models, including predictive analytics

Clinical analytics solution, Humedica MinedShare®

# Where's the Opportunity?

- 10% of the population consumes 64% of healthcare dollars (blue); 5% consumes 49%

**Percent of Total Health Care Expenditures Incurred by Different Percentiles of U.S. Population**



Source: Conwell LJ, Cohen JW. Characteristics of people with high medical expenses in the U.S. civilian non-institutionalized population, 2002. Statistical Brief 73. March 2005. Agency for Healthcare Research and Quality, Rockville, MD. Data from Medical Expenditure Panel Survey (MEPS).

- Hospital admission often represents a failure of ambulatory care
- Typical Medicare patient sees 7 different physicians every year—2 PCPs, 5 specialists
  - Critical need for care coordination

## Primary Care Physicians' Links to Other Physicians Through Medicare Patients: The Scope of Care Coordination

Hoangmal H. Pham, MD, MPH; Ann S. O'Malley, MD, MPH; Peter B. Bach, MD, MAPP; Cynthia Salontz-Martinez, ScM; and Deborah Schrag, MD, MPH

**Background:** Primary care physicians are expected to coordinate care for their patients.

**Objective:** To assess the number of physician peers providing care to the Medicare patients of a primary care physician.

**Design:** Cross-sectional analysis of claims data.

**Setting:** Fee-for-service Medicare in 2005.

**Participants:** 2284 primary care physicians who responded to the 2004 to 2005 Community Tracking Study Physician Survey.

**Measurements:** Primary patients for each physician were defined as beneficiaries for whom the physician billed for more evaluation and management visits than any other physician in 2005. The number of physician peers for each physician was the sum of other unique physicians that the index physician's primary patients visited plus other unique physicians who served as the primary physician for each of the index physician's nonprimary patients during 2005.

**Results:** The typical primary care physician has 229 (interquartile range, 125 to 340) other physicians working in 117 (interquartile range, 66 to 175) practices with which care must be coordinated, equivalent to an additional 99 physicians and 53 practices for every

100 Medicare beneficiaries managed by the primary care physician. When only the 31% of a primary care physician's primary patients who had 4 or more chronic conditions was considered, the median number of peers involved was still substantial (86 physicians in 36 practices). The number of peers varied with geographic region, practice type, and reliance on Medicaid revenues.

**Limitations:** Estimates are based only on fee-for-service Medicare patients and physician peers, and the number of peers is therefore probably an underestimate. The modest response rate of the Community Tracking Study Physician Survey may bias results in unpredictable directions.

**Conclusion:** In caring for his or her own primary and nonprimary patients during a single year, each primary care physician potentially must coordinate with a large number of individual physician colleagues who also provide care to these patients.

**Funding:** National Institute on Aging, American Medical Group Association, and the Robert Wood Johnson Foundation.

*Ann Intern Med.* 2009;150:236-242.

For author affiliations, see end of text.

www.annals.org

Current care systems cannot do the job. Trying harder will not work. Changing systems of care will.

— *Crossing the Quality Chasm*  
Institute of Medicine, 2001

coordination is critical to achieving high-quality and effi-

could greatly improve outcomes, is currently very fragmented. Beneficiaries typically see 7 different physicians

# Anceta Collaborative

- Use data to identify opportunities for improvement and “best” performance
  - Medical groups: Humedica MinedShare®
  - Anceta: provocative analyses
- Learn “the rest of the story” from other medical groups

## ■ Finding “best” performance

- Current: Incidental observations, clinical intuition
- Future: Systematic exploration—regression models

## ■ Expanding scope

- Detailed models for chronic disease
- All active patients—Adult preventive services, Population management dashboard
- Adjudicated claims data—all covered services

Diabetes  
Hypertension  
Dyslipidemia  
Coronary Artery Disease  
COPD  
Congestive Heart Failure  
Pediatric Asthma

Once you move away from the push of information to the pull of learning, you liberate creative powers in your people.

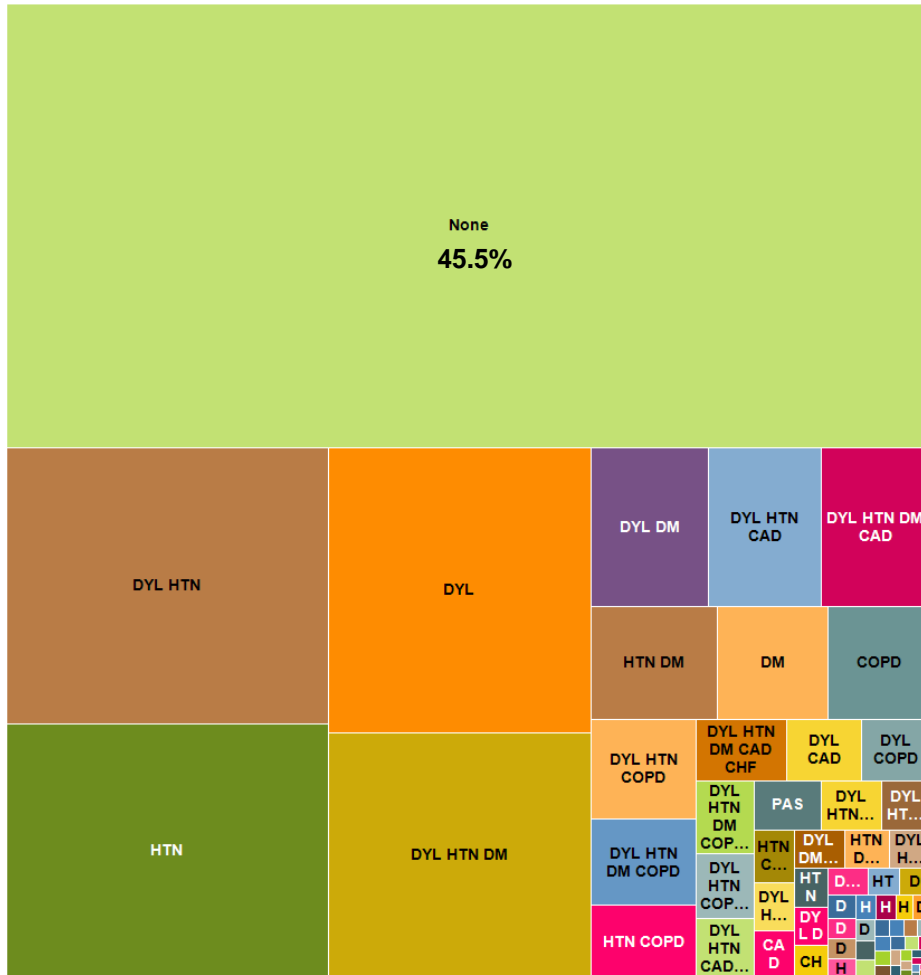
— *The New Social Learning*  
Tony Bingham and Marcia Conner

# Prevalence of Chronic Conditions

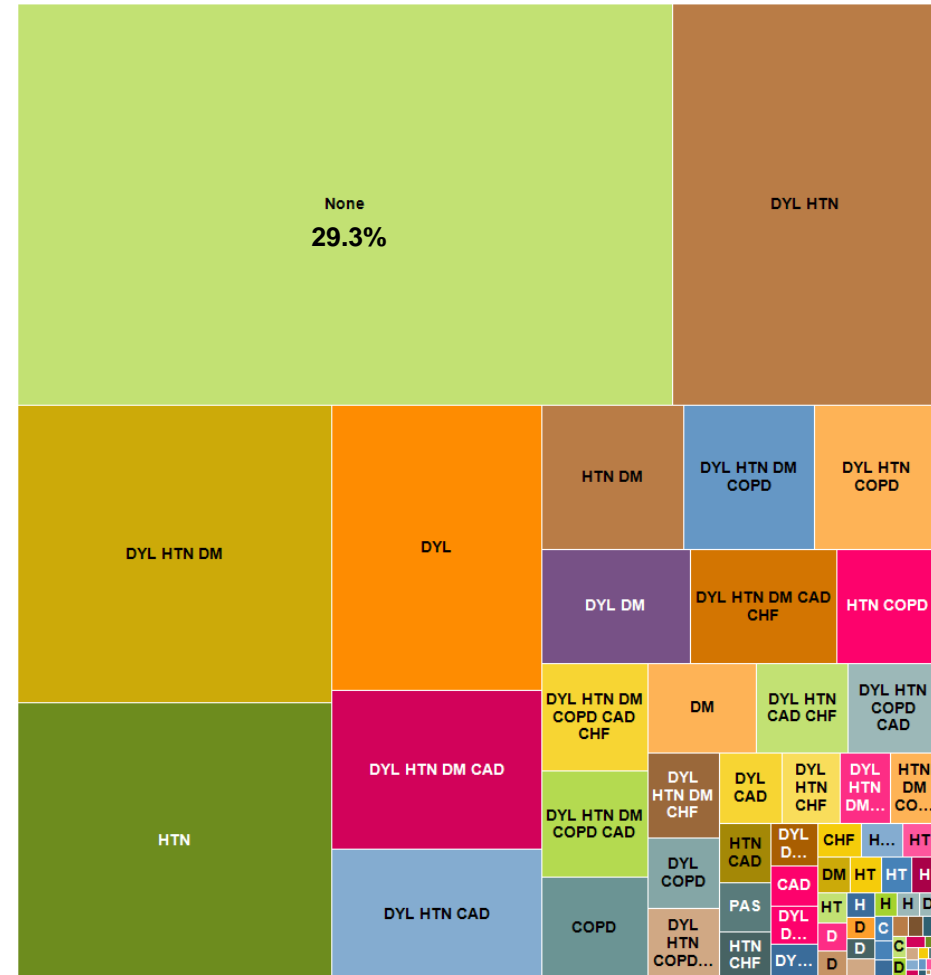
- 20 medical groups, 7.0 million patients, age 18–89, who had an ambulatory visit in 2011 or 2012
- Left: Proportion of patients who fall into each combination of Humedica disease cohorts
- Right: Total ambulatory wRVUs for the patients who fall into each combination of cohorts

CAD	Coronary Artery Disease
DM	Diabetes
DYL	Dyslipidemia
HTN	Hypertension
COPD	Chr. Obstr. Pulm. Disease
CHF	Congestive Heart Failure
PAS	Pediatric Asthma

Patients by Disease Cohort



Ambulatory Work RVUs by Disease Cohort



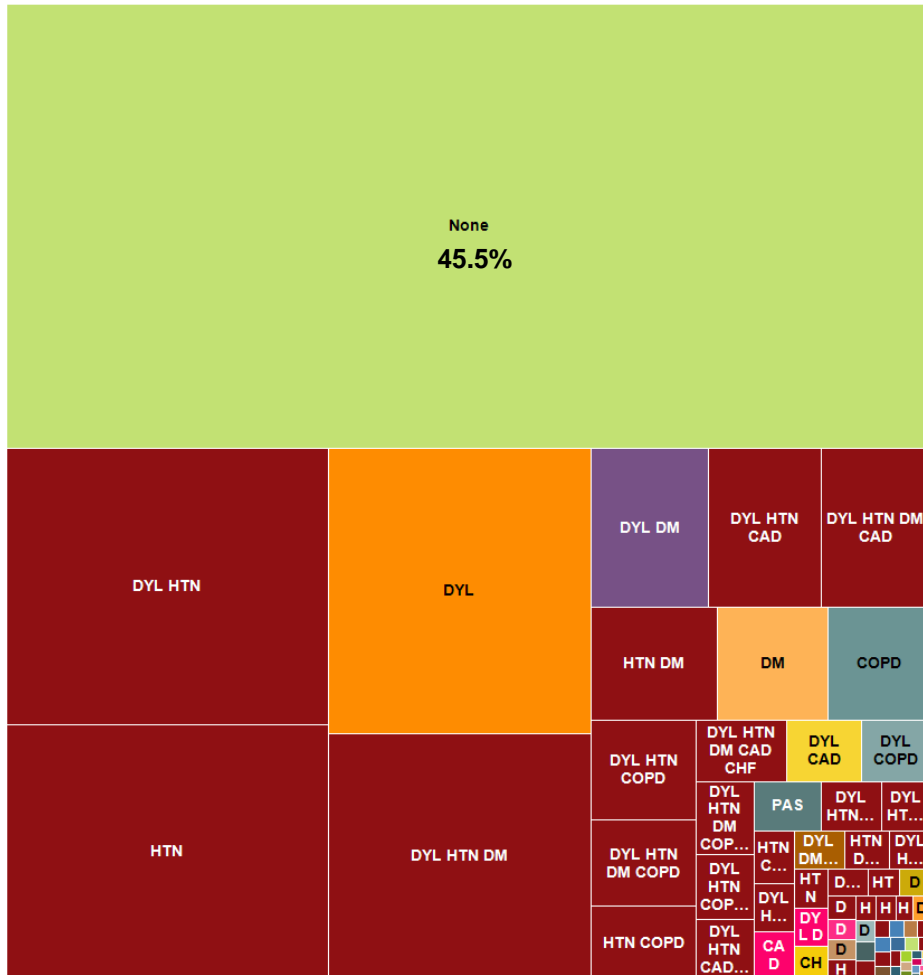


# Prevalence of Chronic Conditions

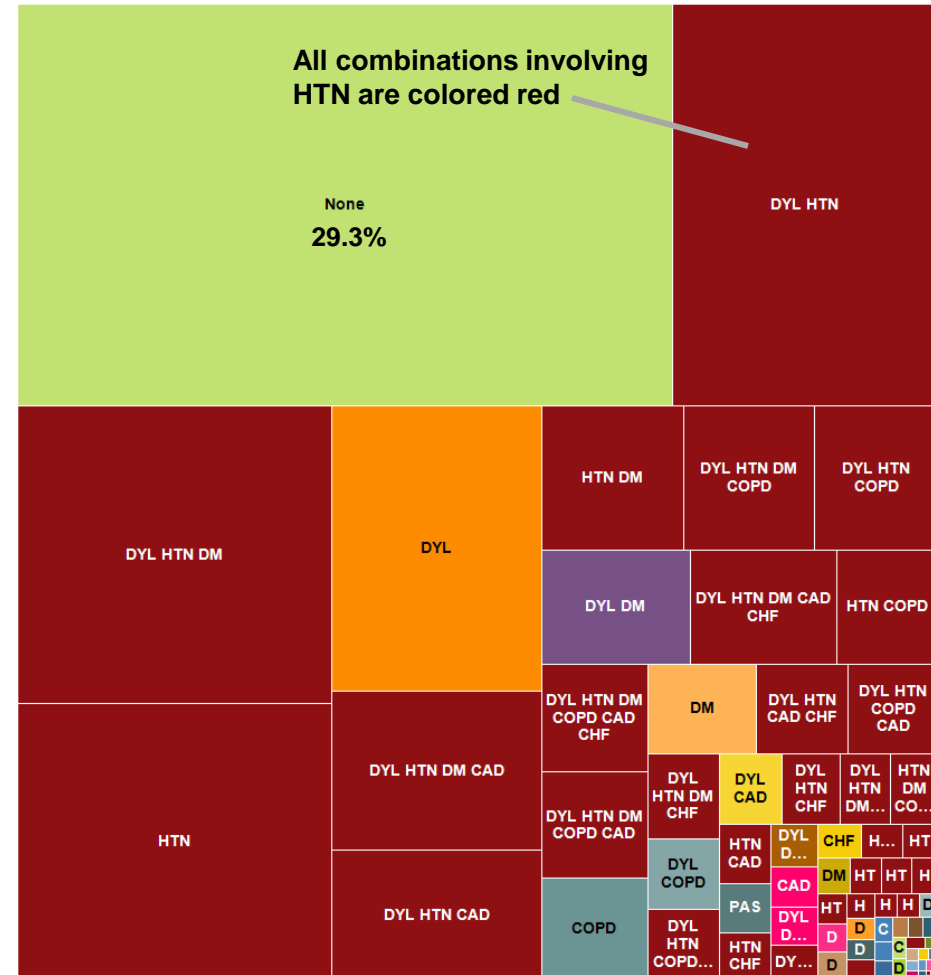
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Patients by Disease Cohort



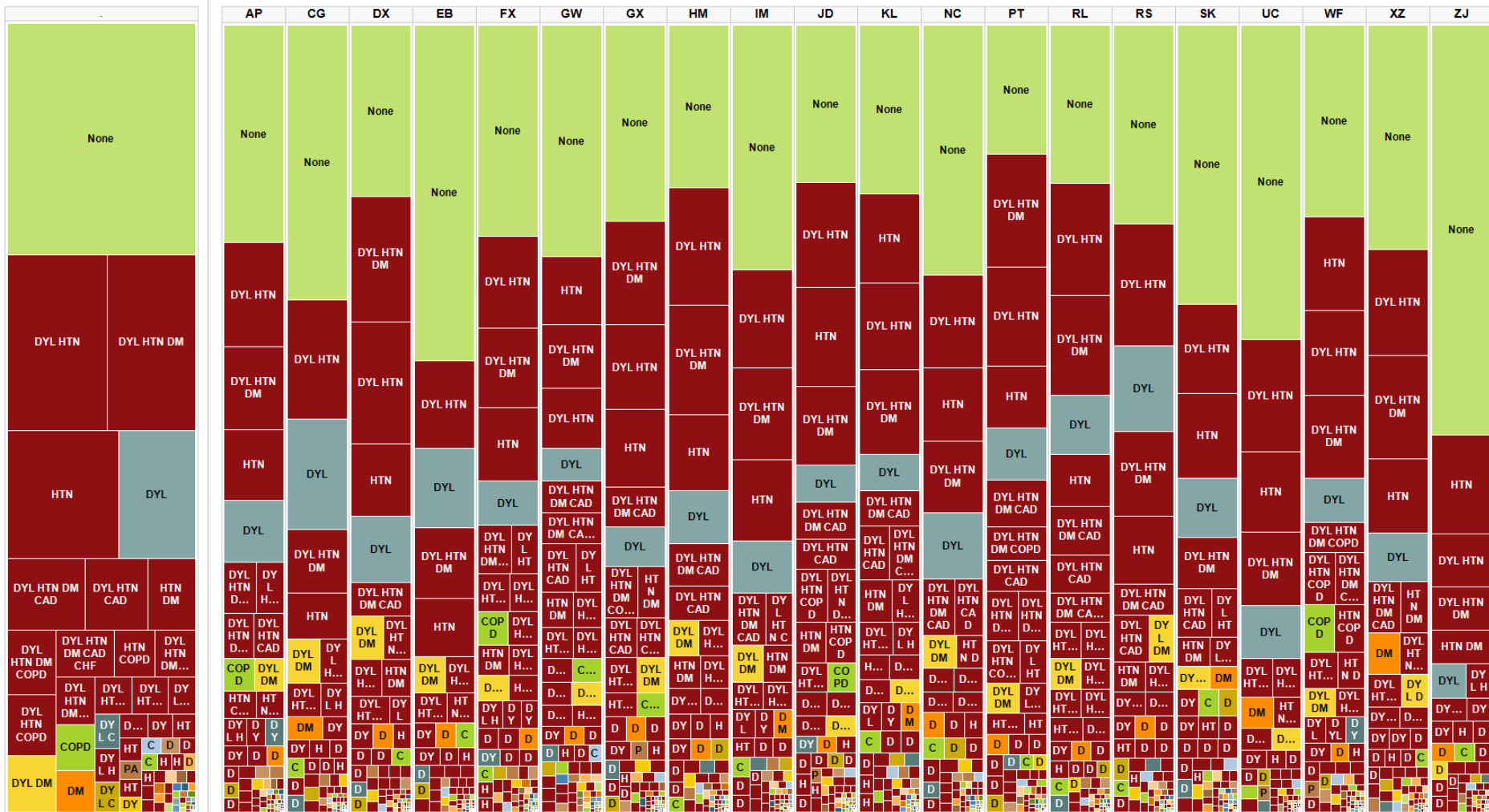
Ambulatory Work RVUs by Disease Cohort



# Chronic Conditions – Pct. of Amb. wRVUs

CAD	Coronary Artery Disease
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- 20 medical groups, 7.0 million patients, age 18–89, who had an ambulatory visit in 2011 or 2012
- Total ambulatory wRVUs for the patients who fall into each combination of cohorts
- All combinations involving hypertension are colored red



# Current Anceta Participants

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- Aurora Health Care – Milwaukee, WI
- Baylor Quality Alliance—Dallas, TX
- Billings Clinic – Billings, MT
- Brown & Toland Physicians – San Francisco, CA
- Carilion Clinic – Roanoke, VA
- Carolinas HealthCare System – Charlotte, NC
- Colorado Springs Health Partners – Colorado Springs, CO
- Community Physician Network – Indianapolis, IN
- Cornerstone Health Care – High Point, NC
- DuPage Medical Group – Downers Grove, IL
- The Everett Clinic – Everett, WA
- Florida Medical Clinic – Zephyrhills, FL
- HealthEast – St. Paul, MN
- Henry Ford Health System – Detroit, MI
- Holston Medical Group (Apogee) – Kingsport, TN
- The Iowa Clinic – West Des Moines, IA
- Lahey Clinic – Burlington, MA
- Mayo Clinic Health System – Rochester, MN
- Mercy Health System – St. Louis, MO
- Mid Hudson Medical Group – Fishkill, NY
- Mount Kisco Medical Group – Mount Kisco, NY
- Riverside Health System – Newport News, VA
- Sentara Healthcare – Norfolk, VA
- SwedishAmerican Health System – Rockford, IL
- Wilmington Health – Wilmington, NC



# Anceta Interaction

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- In-person meetings
  - Two dedicated collaborative meetings each year
    - Spring, after AMGA Annual Conference
    - Fall, coordinated with AMGA Institute for Quality Leadership/ACO Summit
  - Dedicated sessions at AMGA Annual Conference
- Webinars, between meetings
- Outreach and consultation by Anceta staff
  - Assist with data interpretation and supplemental analyses
  - Discover and document best practices
- Anceta Collaboration Portal
  - Collaborative materials, reference documents
  - Discussion forum (e-mail)

## Typical Team for Collaborative Meetings

- Physician leader with an interest in process redesign
- Operational leader, nurse-manager, or “change agent”
- Quality analyst—how data reflect the process

# Humedica's "Data Factory"

Acquiring

*Extraction across leading EMRs*

Multiple data sources

Various data types

Several access methods

Numerous extraction frequencies

Preparing

*Integrating data, clinical insight, and science*

Validation

Mapping

Normalization

Data Repository

Analyzing

*Building proprietary models, algorithms, and methods*

Bench-  
marking

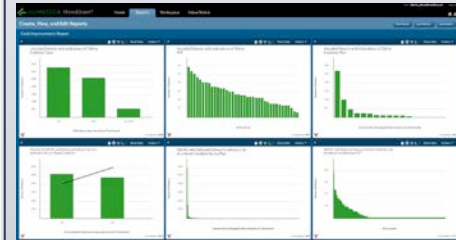
Predictive modeling

NLP

Therapeutic cohort matching

Accessing

*Providing usable and actionable SaaS applications*

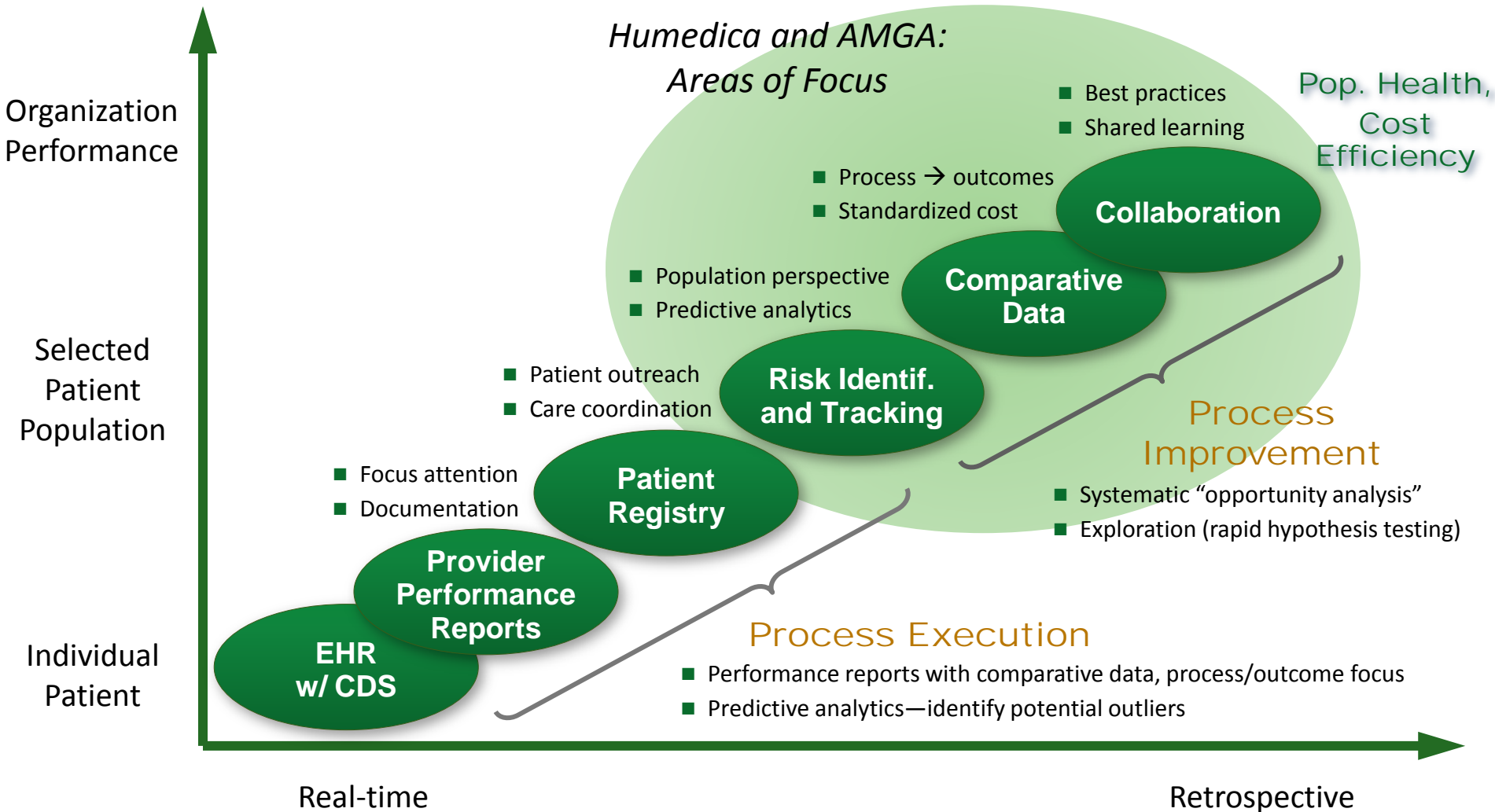


Cost-effective, state-of-the-art technology, coupled with customer engagement on analytics

# Data Normalization and Mapping

LOCAL NAME	LOCAL CODE	LOCAL NAME	LOCAL CODE
lisinolpril	53004	lisinopril 20MG	206330
lisinop 20mg	47650	LISINOPRIL 20MG	201887
lisinoprlil	84479	lisinopril 20MG	170309
lisinoporil	114142	LISINOPRIL 20MG TABLETS	2619
lisinoprel	56844	Lisinopril 40	252035
lisinoprel 20mg	62959	lisinopril 40 mg	247971
LISINOPRIL	238488	LISINOPRIL 40 MG	223018
Lisinopril	233787	lisinopril 40 mg	58406
lisinopril 10mg	82991	LISINOPRIL 40 MG TABLET	185906
LISINOPRIL 30MG	88777	LISINOPRIL 40MG	99596
lisinopril 10 mg	244861	LISINOPRIL 40MG TABLETS	51301
LISINOPRIL 10 MG	180608	lisinopril 5 mg	252165
lisinopril 10 mg	180607	LISINOPRIL 5 MG	234939
LISINOPRIL 10 MG TABLET	235592	LISINOPRIL 5 MG TABLET	239699
lisinopril 10mg	129260	LISINOPRIL 5.0 mgmTABLETS	6035
LISINOPRIL 10MG	7667	lisinopril 5mg	17488
LISINOPRIL 10MG TABLETS	4217	LISINOPRIL 5MG TABLETS	103221
lisinopril 20	229320	LISINOPRIL MG TABLETS	9413
LISINOPRIL 20 MG	229300	LISINOPRIL TAB 2.5 MG U/D	924303
lisinopril 20 mg	227878	LISINOPRIL TAB 5 MG U/D	924305
LISINOPRIL 20 MG TABLET	189126	lisinopril tab 10 mg	127775
lisinopril 20mg	253427	LISINOPRIL TAB 10 MG U/D (PRINIVIL)	924306
lisinopril Tablet 5 mg	238564	LISINOPRIL TAB 20 MG U/D	924307
lisinopril tbs	125490	LISINOPRIL TAB 40 MG (EXP) ( ZESTRIL)	924311
lisinoprol	17600	lisinopril tablet 20 mg	82047
lisinoril	83965	LISINORRIL	92141

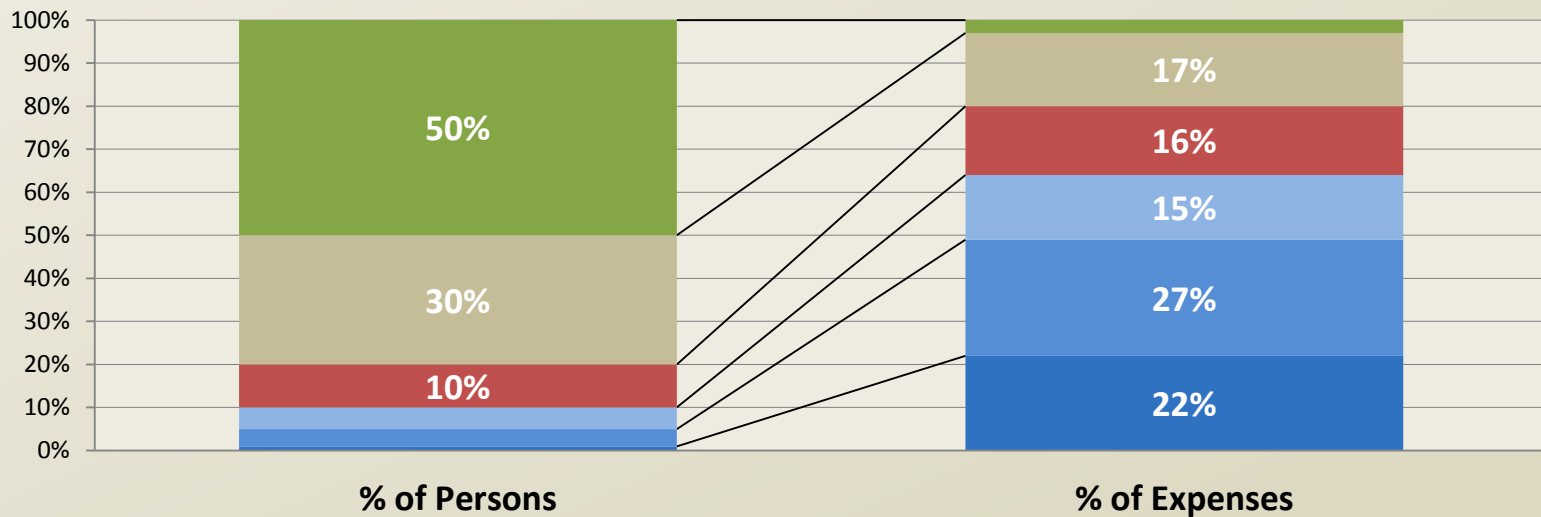
# Tools for Improving Population Health



# Risk Stratification

- 10% of the population consumes 64% of healthcare dollars (blue); 5% consumes 49%

**Percent of Total Health Care Expenditures Incurred by Different Percentiles of U.S. Population**



Source: Conwell LJ, Cohen JW. Characteristics of people with high medical expenses in the U.S. civilian non-institutionalized population, 2002. Statistical Brief 73. March 2005. Agency for Healthcare Research and Quality, Rockville, MD. Data from Medical Expenditure Panel Survey (MEPS).

- Hospital admission often represents a failure of ambulatory care
- Typical Medicare patient sees 7 different physicians every year—2 PCPs, 5 specialists
  - Critical need for care coordination



# Humedica MinedShare® – Predictive Analytics

User: [jculdeback\\_demo@anceta.com](#) Log Out

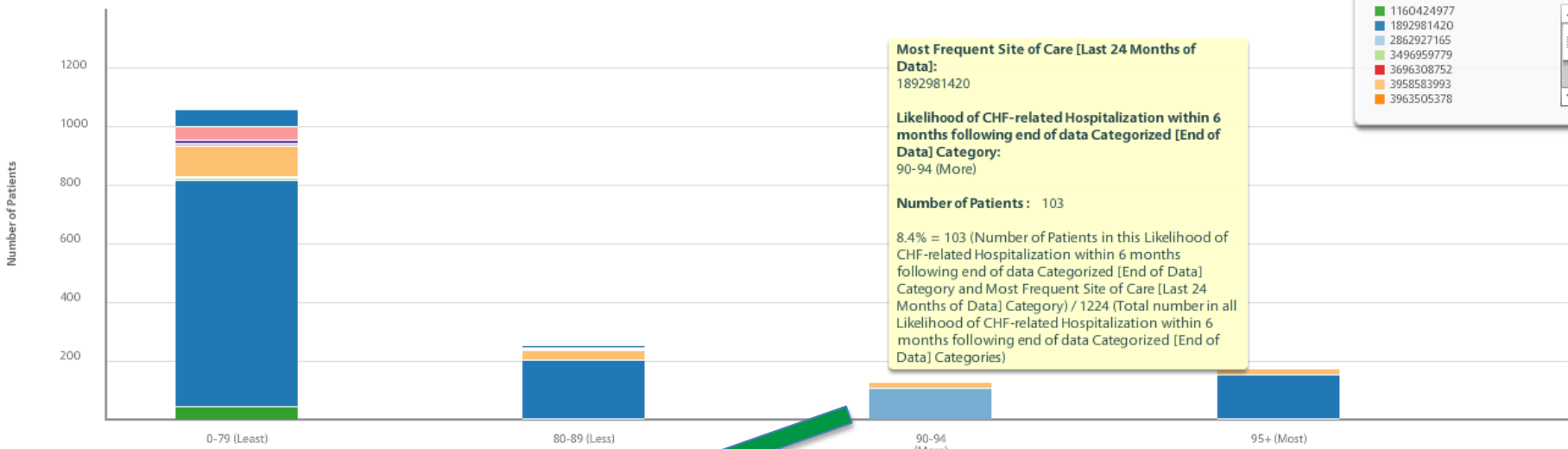
Create, View, and Edit Graphs

Clear Workspace Add Graph

Patients at Risk of CHF-Related Hospitalization w/in Next 6 Months, by Cli...

Cohort Time Period Filters (1) Graph Settings Hide Data Actions

Patients at Risk of CHF-Related Hospitalization w/in Next 6 Months, by Clinic



# of patients: 1612

Data Patient List Graph Notes

Click on data in the graph above or in the Data table to view the corresponding patient list below.

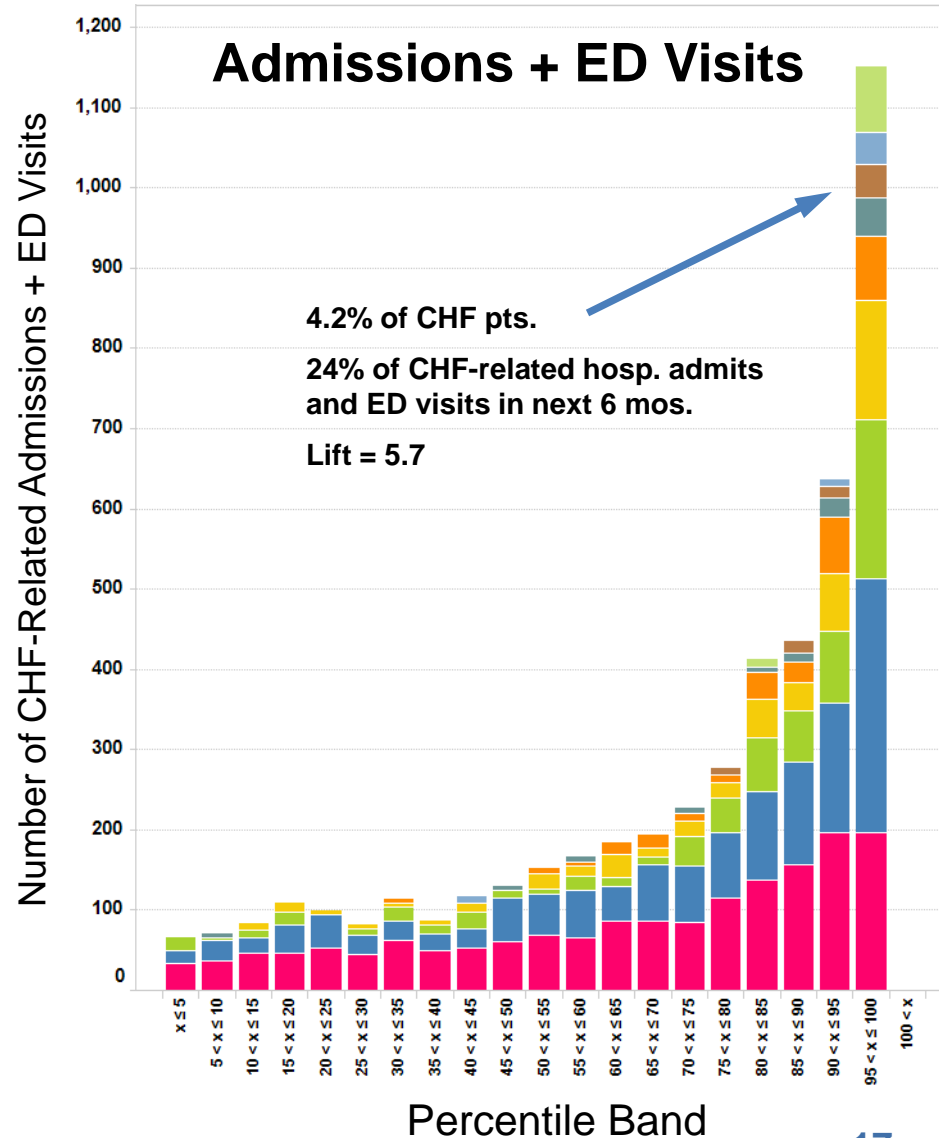
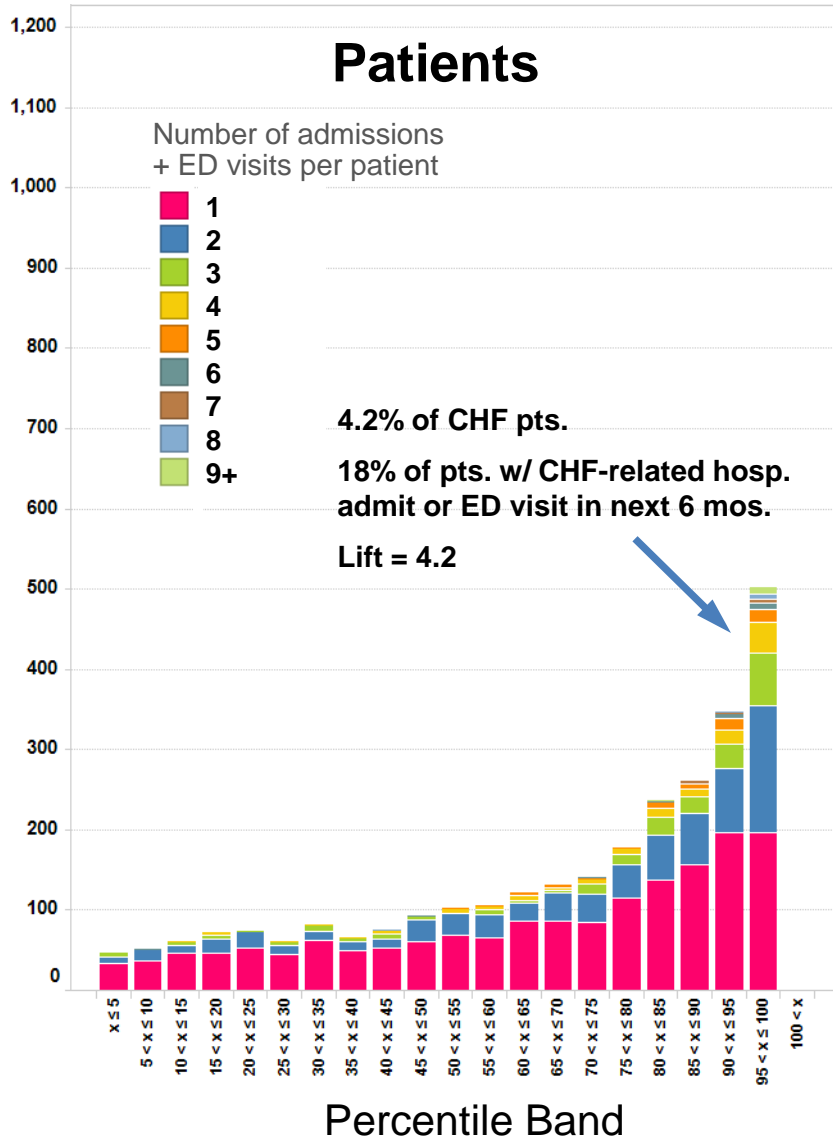
103 record(s) returned

Patient ID	Likelihood of CHF-related Hospitalization within 6 months following end of data Cat	Most Frequent Site of Care [Last 24 Months of Data]	Pts w CHF-Related Amb Visit (Eval & Mgmt and/or Proc) [In Time Period]
00A4863038C0AE8B9155AC6	90-94 (More)	1892981420	Yes
00A96305134530E6370177A9	90-94 (More)	1892981420	Yes
0254756498FAD726E7D9041F	90-94 (More)	1892981420	Yes
029C5933FA40A608C7AB25A8	90-94 (More)	1892981420	Yes
0409050E92B733C87F4EE082	90-94 (More)	1892981420	Yes
04423B066EF436BB383D783B	90-94 (More)	1892981420	Yes
04FD16EF257FB689C4D5181F	90-94 (More)	1892981420	Yes

Copy selected Patient ID

# CHF-Related Admissions and ED Visits

Number of Patients with CHF-Related Admissions or ED Visits



# Humedica MinedShare® – Dashboard

## Current Measure Status

Pop Mgmt Prev Svcs **DM** CAD CHF COPD DYS HTN PAS

A1c	# of Pts	Result	Target	Comparator	% vs. Target	Last 12 Mos.
Pts w/ 1 or more A1c tests	15,542	63.6%	65%	64.4%		
<b>Pts in Control (Last A1c &lt; 7%)</b>	<b>9,880</b>	<b>57.1%</b>	<b>80%</b>	<b>51.9%</b>		
Pts in Control (Last A1c < 8%)	9,880	80.4%	75%	75.2%		
Pts w/ 2 or more A1c tests	15,542	39.9%	40%	39.9%		
Mean A1c Improvement	6,207	0.19	0.1	0.17		
Mean # of Visits for High Risk Pts (A1c > 9%)	900	7.9	5.5	5.5		
Mean # of Visits for High Risk Pts (A1c > 11%)	247	7.8	5	5.1		
Pts at High Risk (Last A1c > 9%)	9,880	9.1%	10%	13.1%		
Pts at High Risk (Last A1c > 11%)	9,880	2.5%	5%	4.5%		

LDL	# of Pts	Result	Target	Comparator	% vs. Target	Last 12 Mos.
Pts w/ 1 or more LDL tests	15,542	59.4%	60%	59.1%		
<b>Pts in Control (Last LDL &lt; 100 mg/dl)</b>	<b>9,226</b>	<b>62.8%</b>	<b>75%</b>	<b>62.7%</b>		
Mean LDL Improvement	4,257	8.5	6	6.4		
Mean # of Visits for Higher Risk Pts	1,203	7.8	5.5	5.6		
Mean # of Visits for Highest Risk Pts	368	7.8	5.5	5.6		
Pts at High Risk (Last LDL > 130 mg/dl)	9,226	13%	15%	14.2%		
Pts at High Risk (Last LDL > 160 mg/dl)	9,226	4%	5%	4.5%		

SBP and DBP	# of Pts	Result	Target	Comparator	% vs. Target	Last 12 Mos.
Pts w/ 1 or more SBP & DBP tests	15,542	78.7%	80%	81.1%		
Pts in Control (SBP/DBP < 130/80 mmHg)	12,236	38.4%	50%	39.4%		
Pts in Control (SBP/DBP < 140/90 mmHg)	12,236	72.4%	70%	72%		
Mean SBP Improvement	9,811	1.7	2	2.1		
Mean DBP Improvement	9,829	0.9	1	1.2		
Mean # of Visits for High Risk Pts	460	8	5	5.4		
Pts at High Risk	12,236	3.8%	4.5%	4.4%		

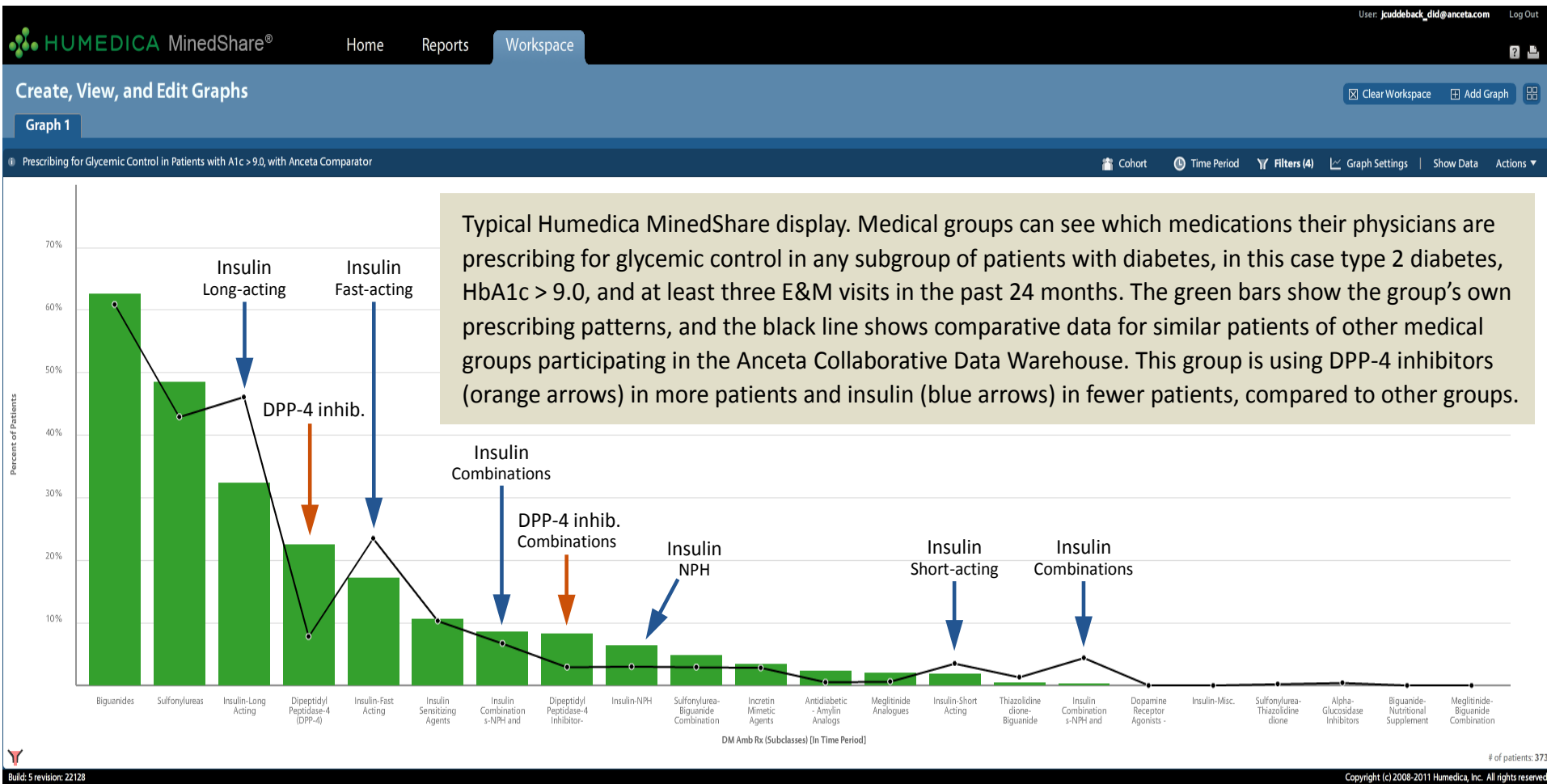
Eye Exam	# of Pts	Result	Target	Comparator	% vs. Target	Last 12 Mos.
Pts w/ 1 or more eye exams	15,542	5.3%	3%	2.9%		
Mean # of Visits for Pts w/o an eye exam	14,713	6.3	5	4.7		

Combined	# of Pts	Result	Target	Comparator	% vs. Target	Last 12 Mos.
Pts w/ 1 or more SBP, DBP, LDL & A1c tests	15,542	53%	55%	54.2%		
Pts in Control	8,242	14.6%	25%	15%		
Pts in Tight Control	8,242	39.3%	40%	38.2%		
Mean # of Visits - High Risk Pts (Any)	1,773	8.6	5.9	5.9		
Mean # of Visits - High Risk Pts (All)	0	N/A	4	3.5		
Pts at High Risk: Any Metric	8,242	21.5%	25%	25.2%		
Pts at High Risk: All Metrics	8,242	0%	0.1%	0%		

Resource Measures	# of Pts	Result	Target	Comparator	% vs. Target	Last 12 Mos.
Mean # of Any Amb Visits	15,542	9.8	7	7.3		
Mean # of E&M Visits	15,542	6.5	5	4.7		
Mean # of Amb Work RVUs	15,542	18.58	10	10.9		
Mean # of Level 4/5 E&M Visits	13,352	0.6	0.5	0.5		
Mean # of Non-Mid-Level E&M Visits	11,091	0.8	0.5	N/A		
<b>Costly DM Amb Rx Ratio</b>	<b>8,537</b>	<b>0.5</b>	<b>0.8</b>	<b>0.5</b>		
Pts w/ 1 or more ED/ER Visits	15,542	15.8%	14%	14.8%		
Mean # of ED/ER Visits/1000 DM Pts	15,542	261	300	260		
Pts w/ 1 or more IP Visits	15,542	11.9%	12%	11.9%		
<b>Mean # of IP Visits/1000 DM Pts</b>	<b>15,542</b>	<b>194</b>	<b>75</b>	<b>194</b>		
Mean Inpatient LOS	1,842	8.8	8	9.8		
# of Pts w/ ICU/CCU Stay	1,842	27%	25%	26.8%		
Mean ICU/CCU LOS	1,842	1	1.5	1.4		
Rate of Pts w/ 7-day Readmission	1,842	8.5%	7.5%	7.3%		
<b>Rate of Pts w/ 30-day Readmission</b>	<b>1,842</b>	<b>18%</b>	<b>15%</b>	<b>17.4%</b>		

# Humedica MinedShare® – Typical Query

- Even relatively complex clinical questions can be answered by point-and-click queries, since Humedica’s disease models include variables that support typical clinical questions, including relevant lab values, clinical observations (BP, BMI), medication classes and subclasses, and resource measures for ambulatory care



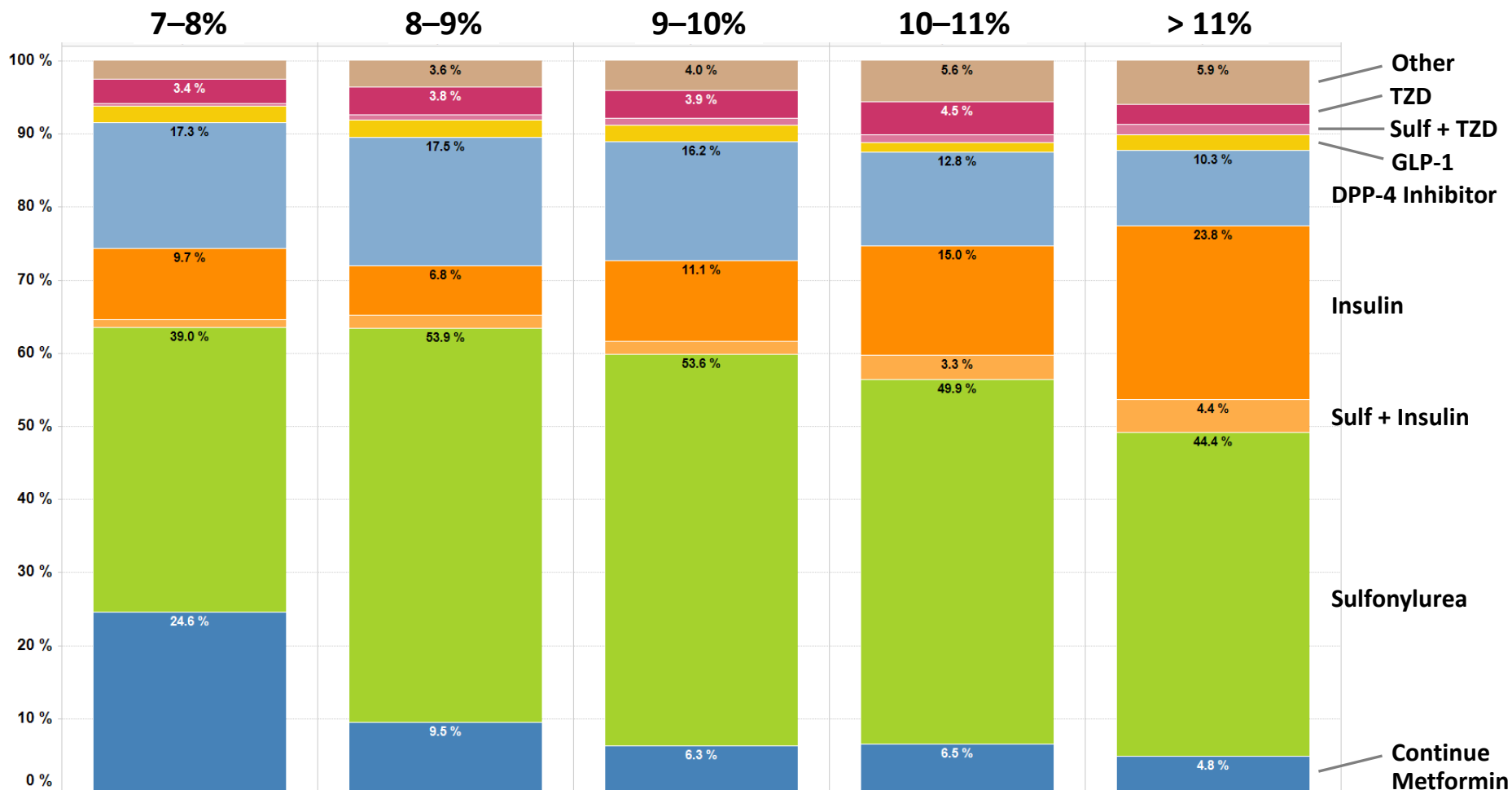
# Type 2 Diabetes: First Drug after Metformin

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- Patients with type 2 diabetes
- At least 2 E&M visits in each of 2 successive years
- At least 14 months on metformin (only)...
  - Change in therapy
  - Continue metformin through end of data
- Choice of second drug, by A1c
  - Last A1c prior to change in therapy
  - Last A1c, if continuing on metformin
- By medical group
  
- All groups achieved similar improvement in glycemic control
  - Overall (by initial A1c)
  - By major subgroups—age, comorbidities, sociodemographic factors, “engagement” with medical group (visit frequency)

# Break Out ΔRx Cohort by Drug Class

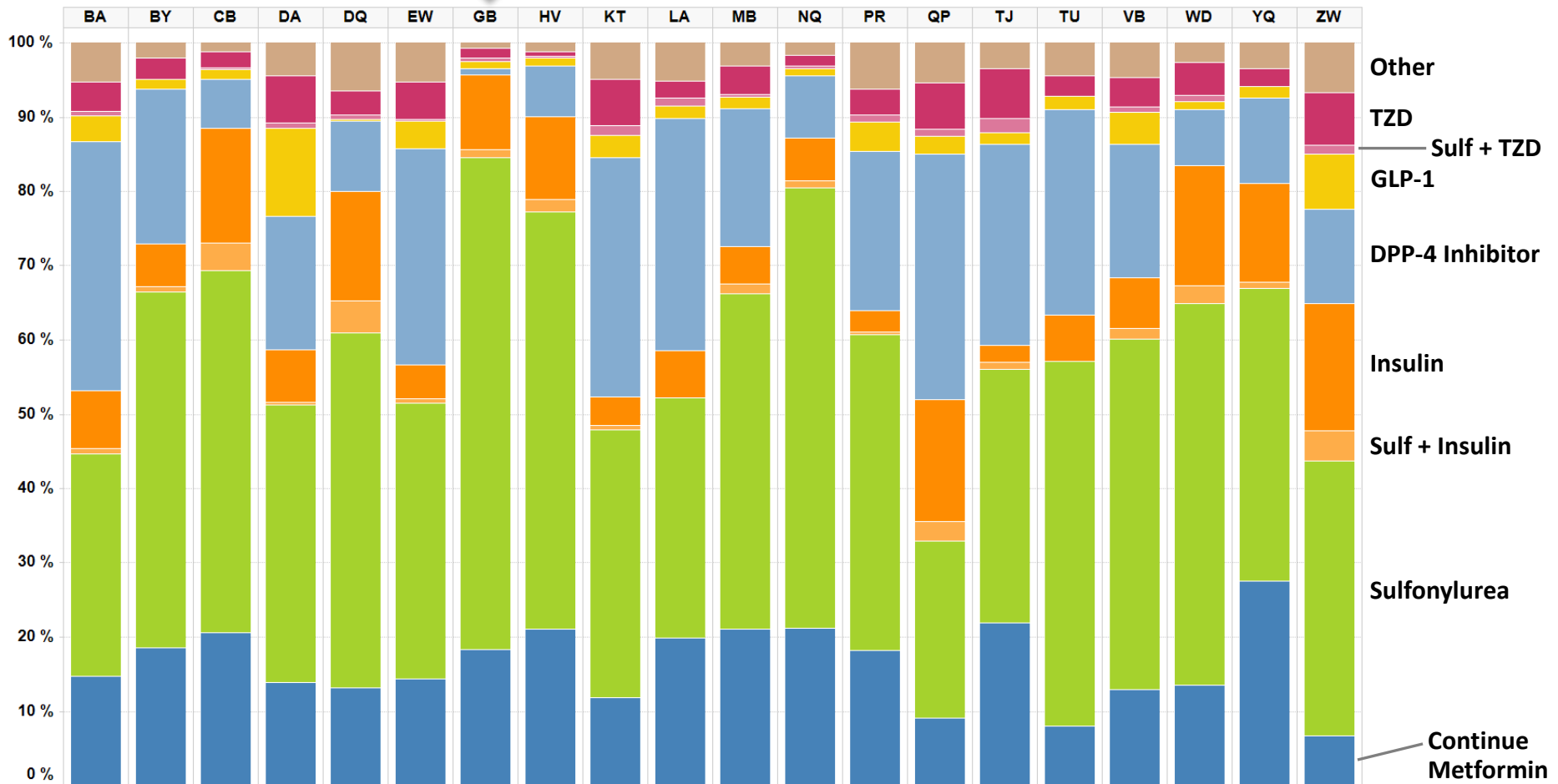
- Proportion of patients at each initial A1c level receiving each drug class or combination
  - All eRx activity within 30 days of ΔRx
- Overall, a “graded response” to initial A1c level



# Prescribing Patterns Vary across Medical Groups

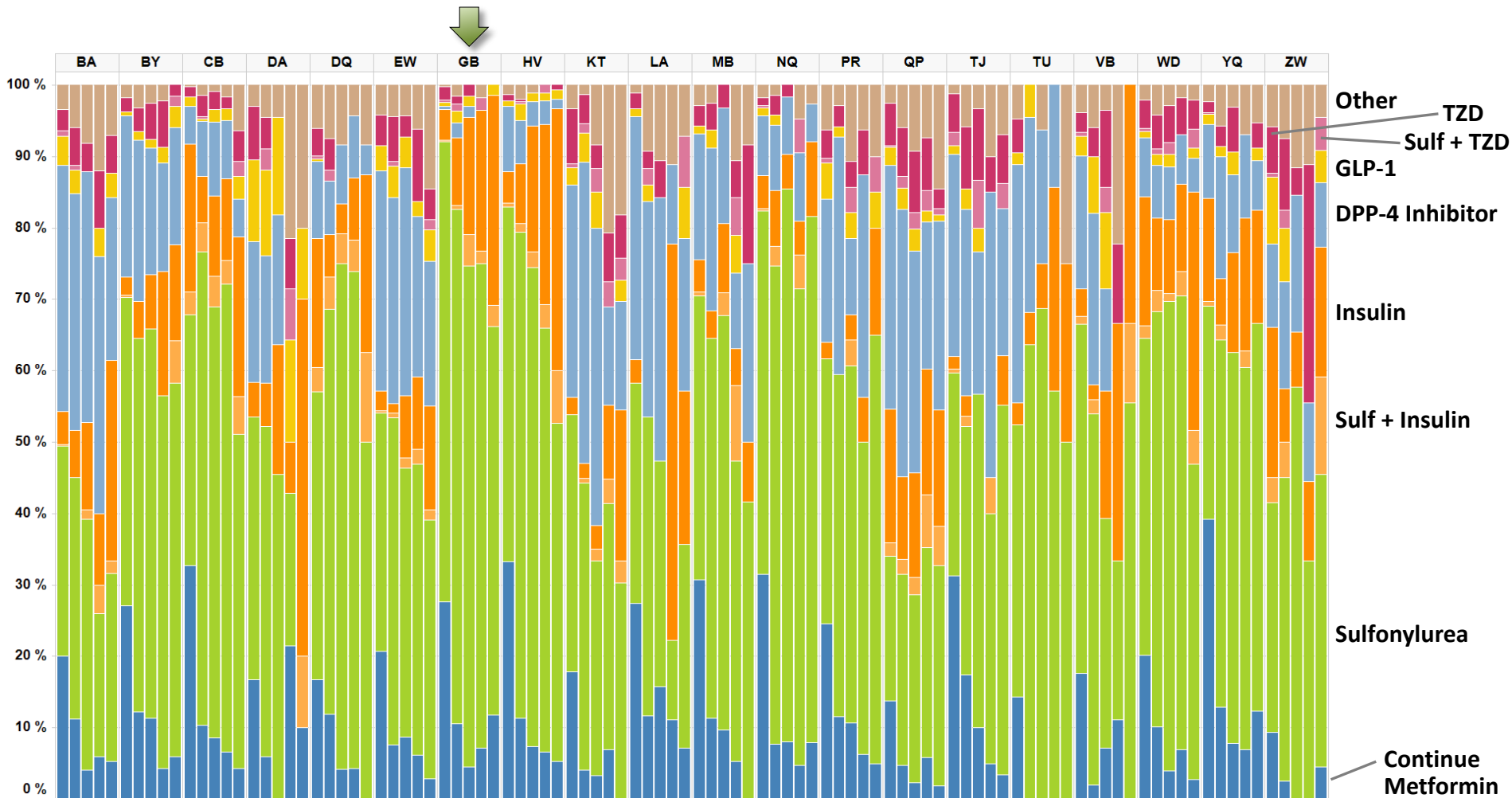
- Wide variation across groups in use of insulin, DPP-4 inhibitors, TZDs, and GLP-1 agonists
  - DPP-4i's cost approximately \$2,500 per year
- All groups achieved similar improvement in glycemic control

Medical groups identified by two-letter codes



# Prescribing Patterns Vary across Medical Groups

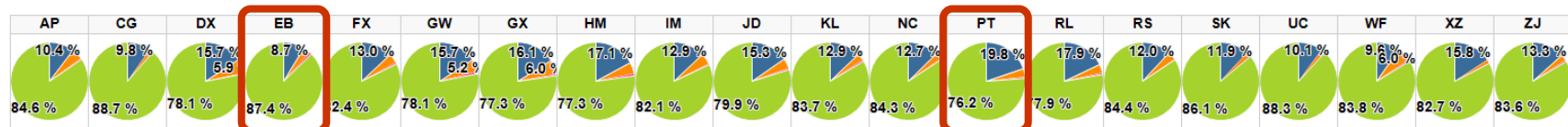
- Breaking out each group's prescribing by initial A1c, there is a "graded" response within many groups, but the drug choices vary across groups
- For each group, five bars, by initial A1c: 7–8%, 8–9%, 9–10%, 10–11%, ≥ 11%



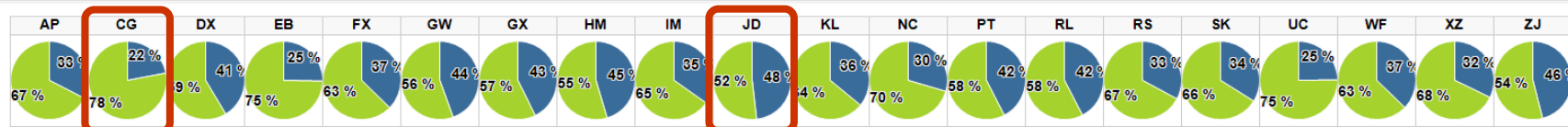


# Prevalence of Comorbidities

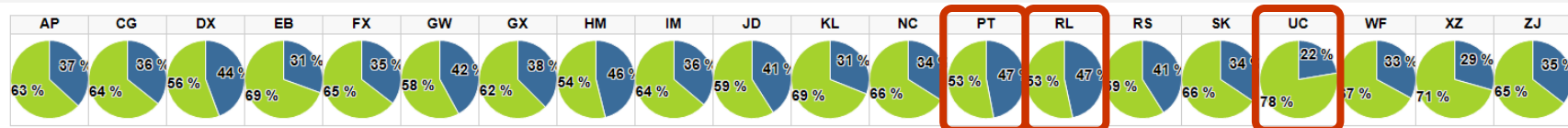
- Wide variation across medical groups in the proportion of active patients age 20–85 who have these chronic conditions
  - Important to account for these differences, in order to obtain valid, apples-to-apples comparisons
- Currently developing multiple regression models to adjust for differences in comorbidities and sociodemographic factors



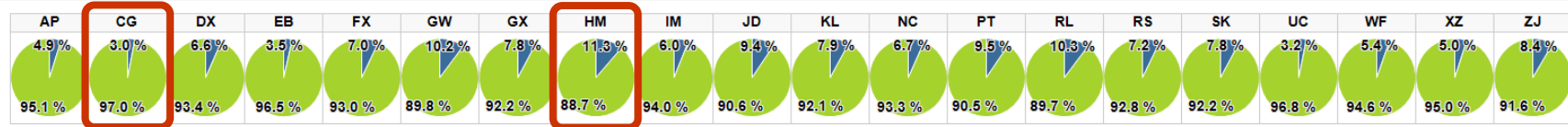
Diabetes



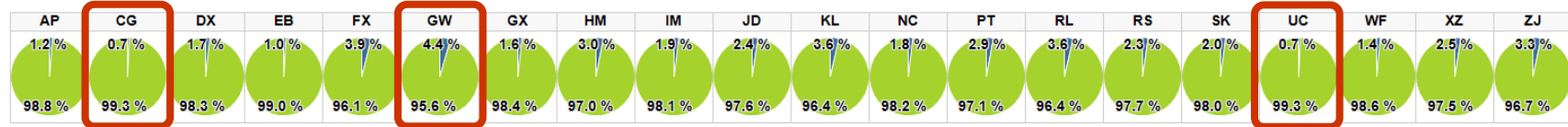
Hypertension



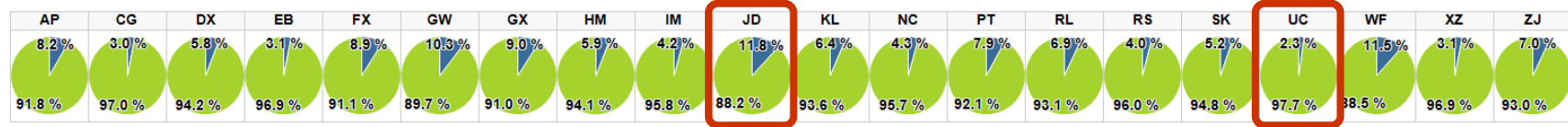
Dyslipidemia



Cor. Art. Dz



Heart Failure



COPD



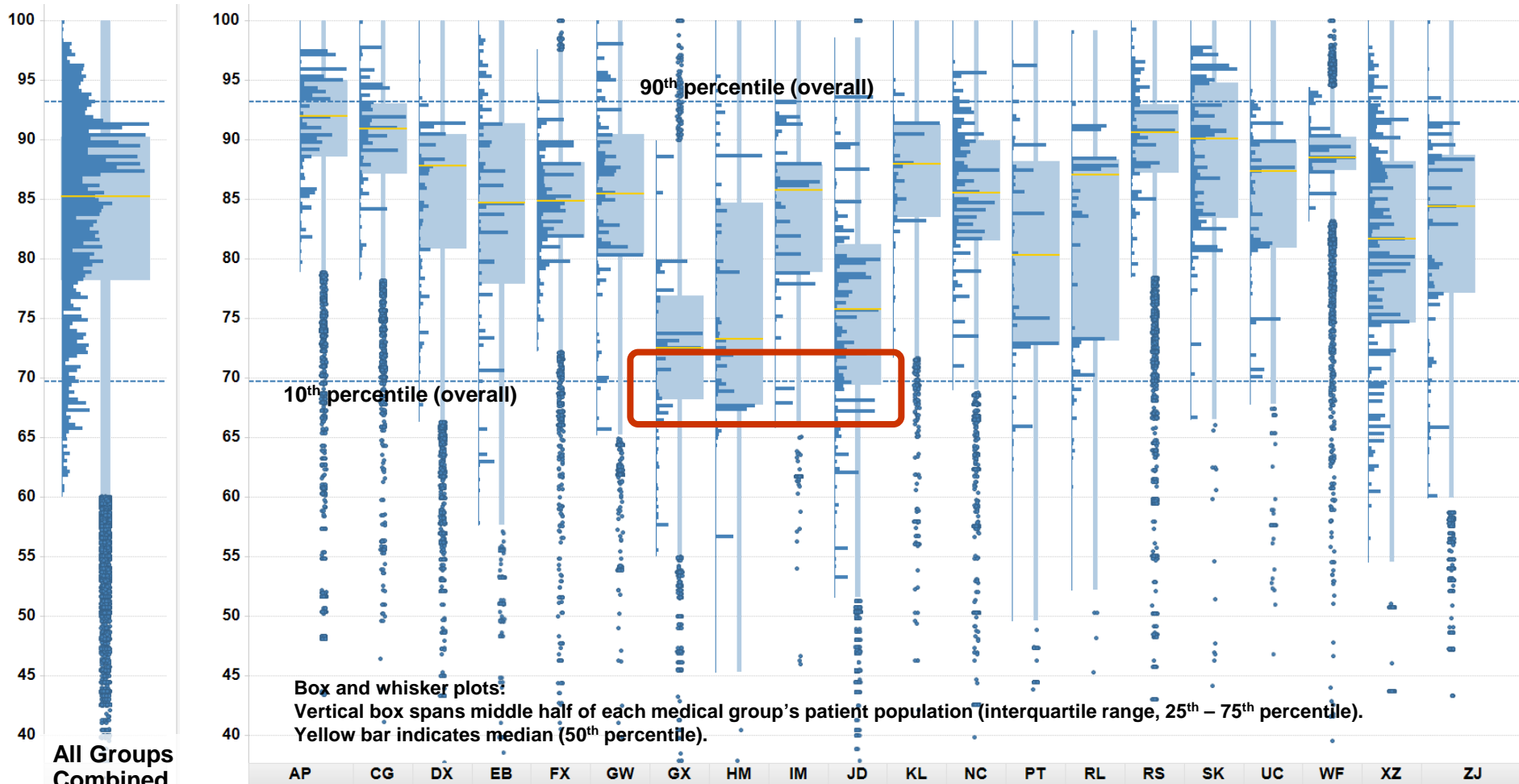
# Prevalence of Comorbidities in Patients with Diabetes

- Among patients with diabetes, there is a three-fold variation across groups in the prevalence of COPD and a four-fold variation in the prevalence of heart failure
- Among these patients, the prevalence of hypertension varies from 53 to 86%, dyslipidemia from 59 to 85%
- While high and low prevalence tends to be concentrated in certain groups, there are some differences across these conditions



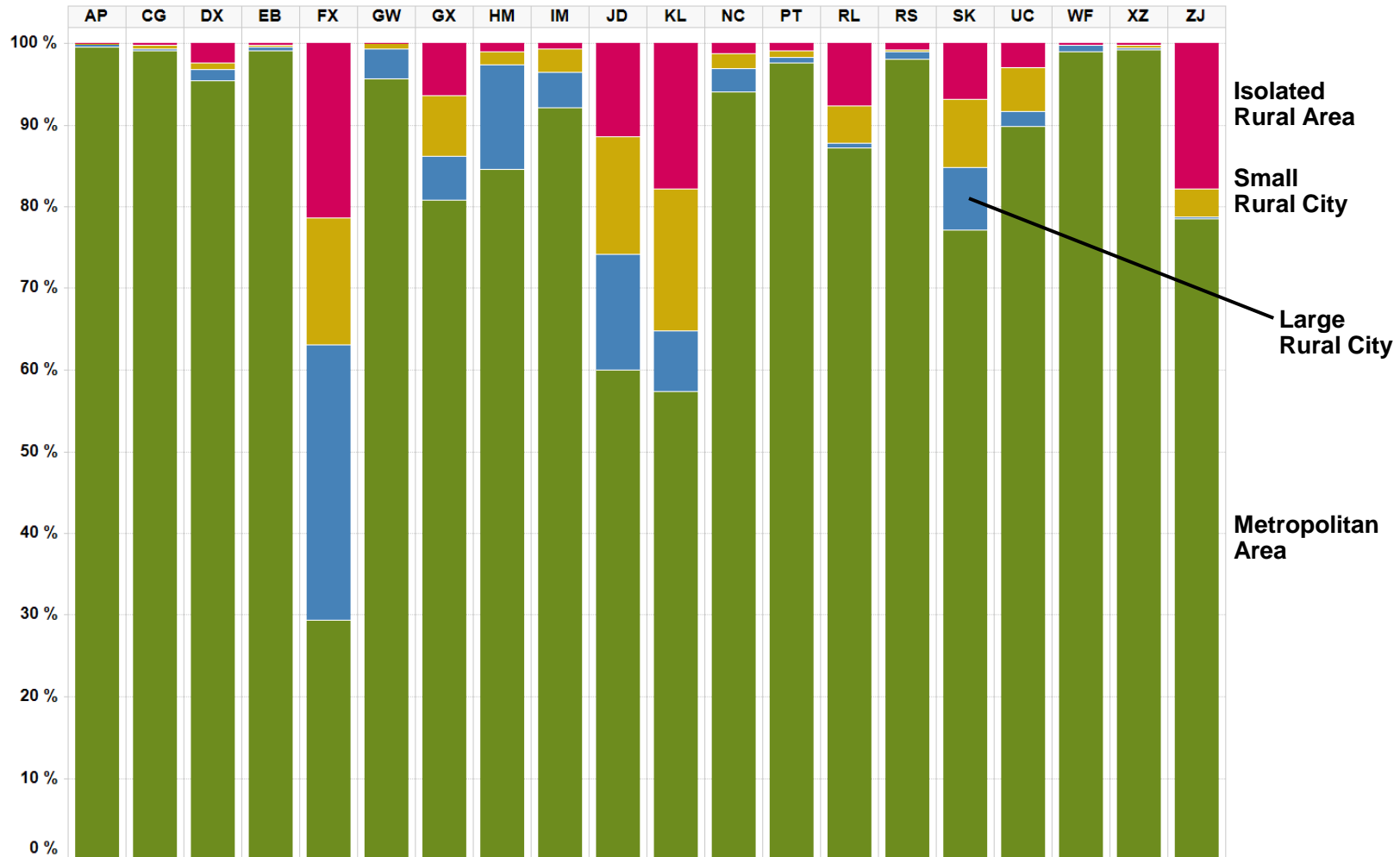
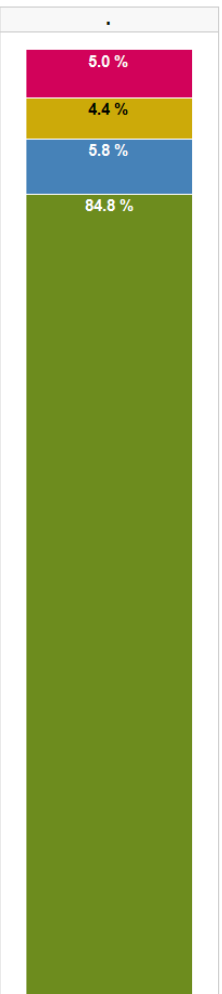
# Level of Education

- Distribution of patients by level of education in zip code of residence: Percent of persons age  $\geq 25$  with some high school
  - These data reflect 1.7 million patients with hypertension across 20 medical groups who had an E&M visit between Dec. 1, 2010 and Nov. 30, 2012
  - Variation across medical groups in in presumptive level of health literacy, based on imputed education level
- In three medical groups, approximately one-fourth of patients fall below the 10th percentile of the overall patient population



# Rural-Urban Distribution

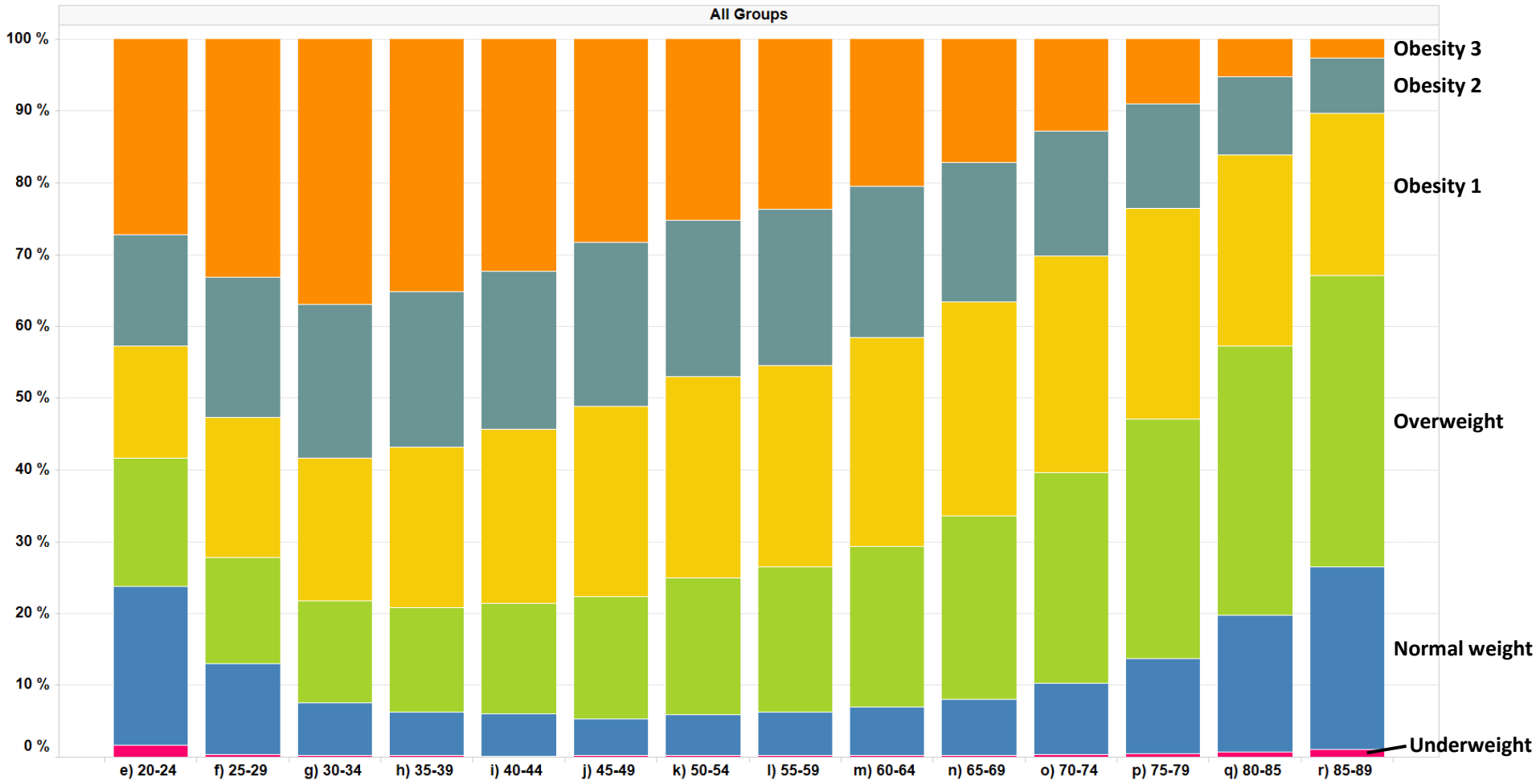
- Medical groups differ in the proportion of their patients who come from non-metropolitan zip codes
- 6.95 million patients, across 20 medical groups, with ambulatory E&M or Procedure visit during 2011 or 2012
  - Omits patients with zip codes that do not map to current RUCA tables



# Type 2 Diabetes: BMI by Age

- 21 medical groups — 389,000 patients with type 2 diabetes, age 20–89
- E&M visit during 2012 and BMI recorded
- Bars represent 5-year age bands

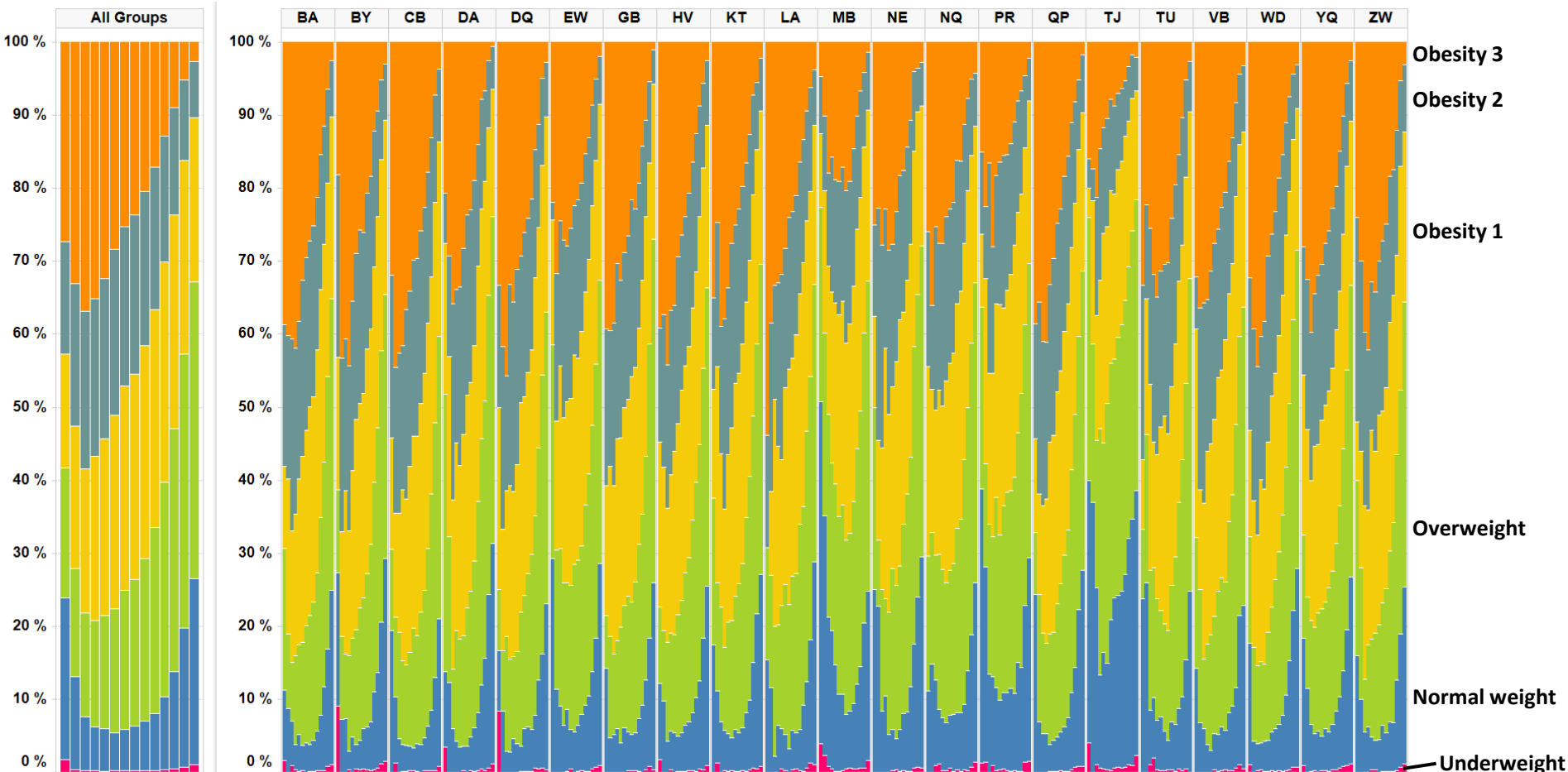
BMI ≥ 40	Obesity – Class 3
35 – 40	Obesity – Class 2
30 – 35	Obesity – Class 1
25 – 30	Overweight
18.5 – 25	Normal weight
< 18.5	Underweight



# Type 2 Diabetes: BMI by Age

- 21 medical groups — 389,000 patients with type 2 diabetes, age 20–89
- E&M visit during 2012 and BMI recorded
- Within each medical groups, bars represent 5-year age bands

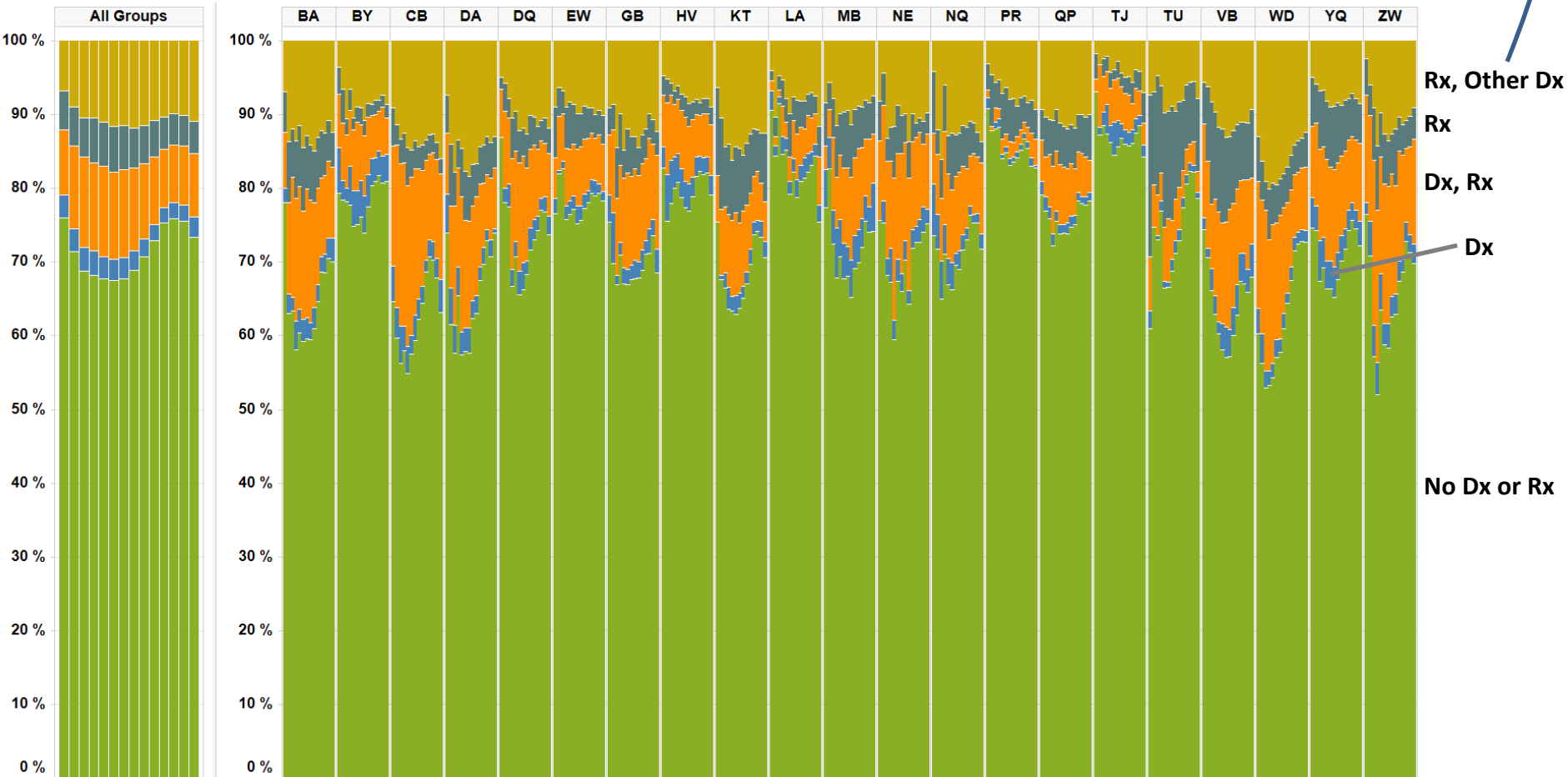
BMI ≥ 40	Obesity – Class 3
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# Depression in Diabetes

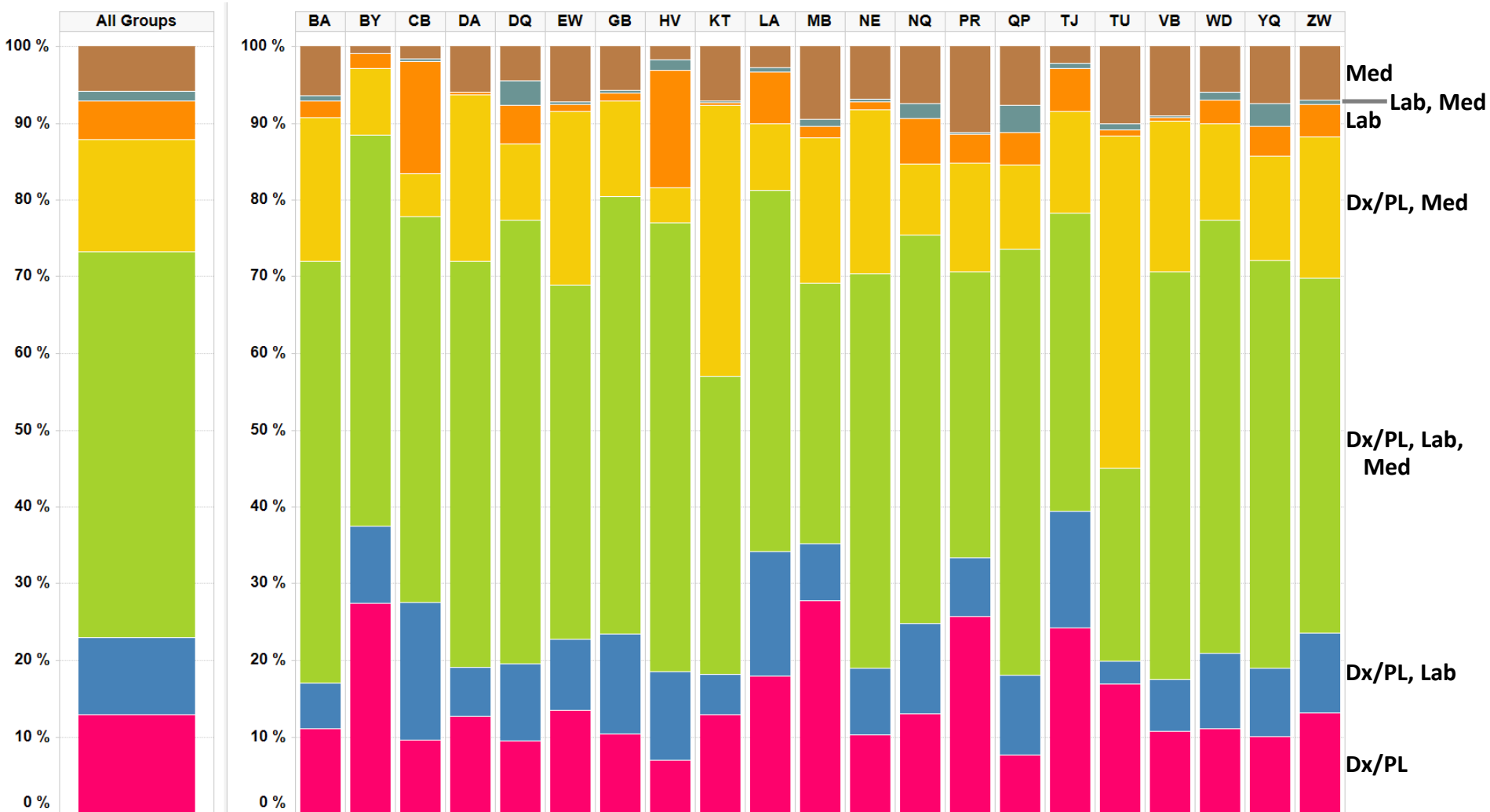
- 21 medical groups — 566,000 patients in Humedica diabetes cohort, age 20–89, with E&M visit during 2012
- Diabetes type 1, type 2, type unknown: Dx or Rx for depression in year prior to last E&M visit
- Within each medical group, bars represent 5-year age bands

Anxiety  
 Diabetic neuropathy  
 Fibromyalgia  
 Post-herpetic neuralgia  
 Osteoarthritis  
 Lower back pain



# Evidence for Diabetes

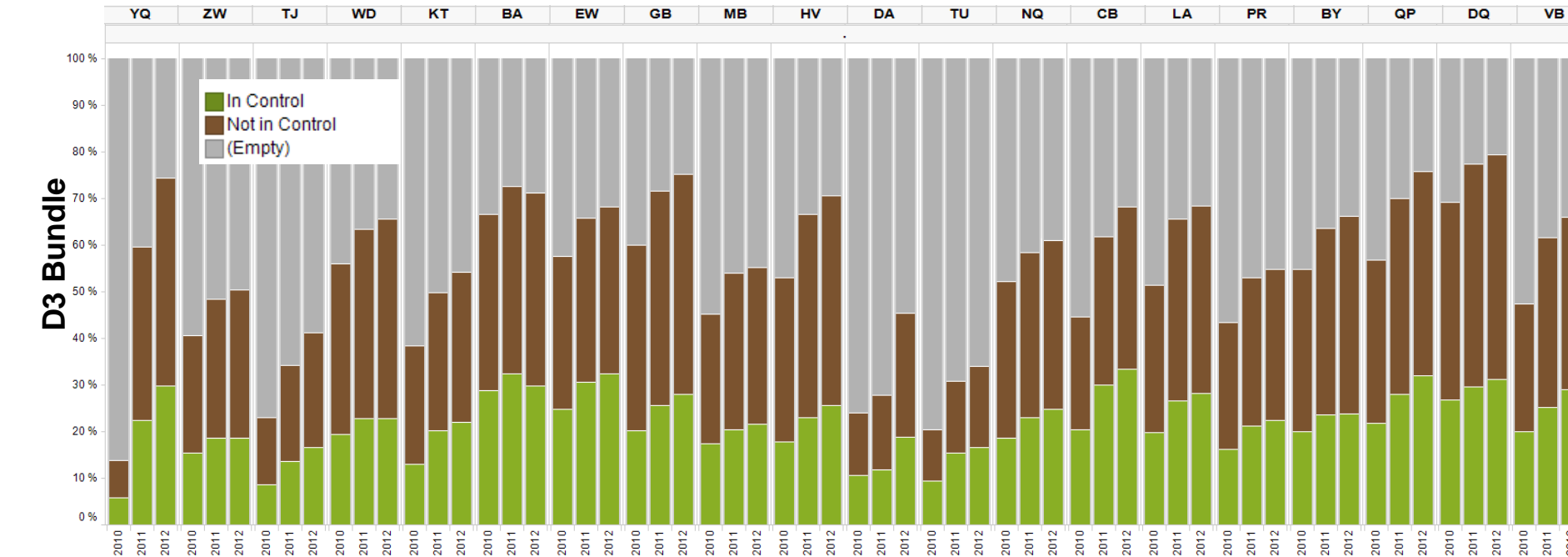
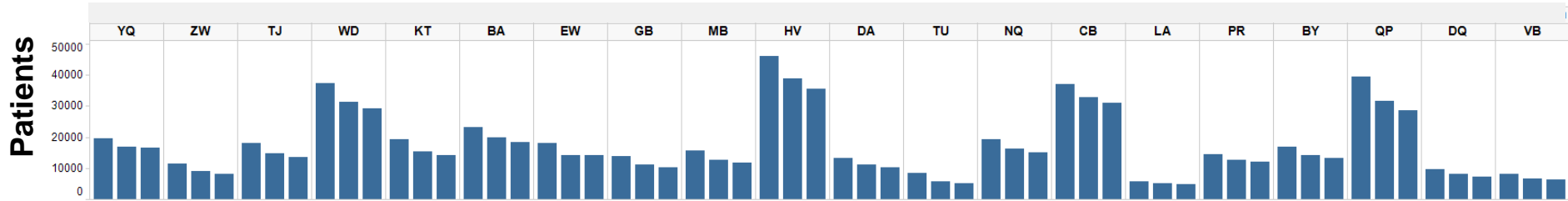
- 21 medical groups — 510,000 patients in Humedica diabetes cohort, age 20–89, with E&M visit during 2012
- Across all groups, about 12% of patients with diabetes do not have a Dx on a claim or an EHR problem list entry





# Performance over Time: Following a patient cohort over 3 years

- Diabetes Cohort
  - Type 1, Type 2, Unknown
- E&M visit Dec 2009 – Nov 2010 (year = 2010)
  - At least one E&M visit in each of the next 2 years (2011, 2012)
- D3 Bundle: A1c < 8, LDL < 100, BP < 140/90
  - Last values in each year

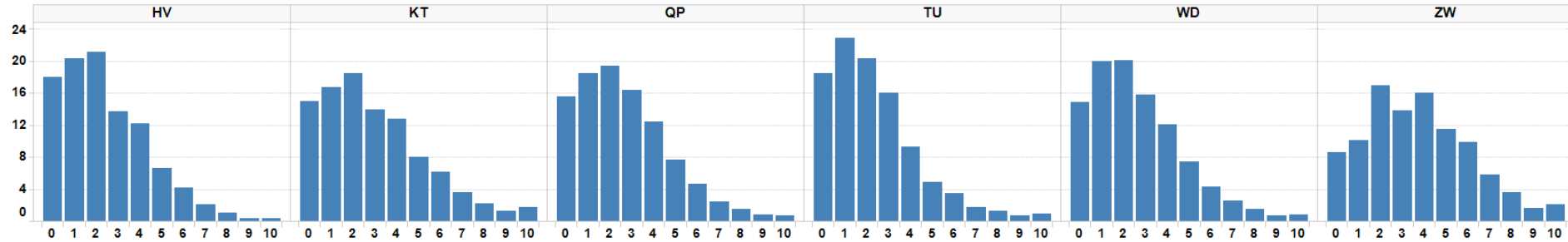


# Visit Counts, by Patient Complexity

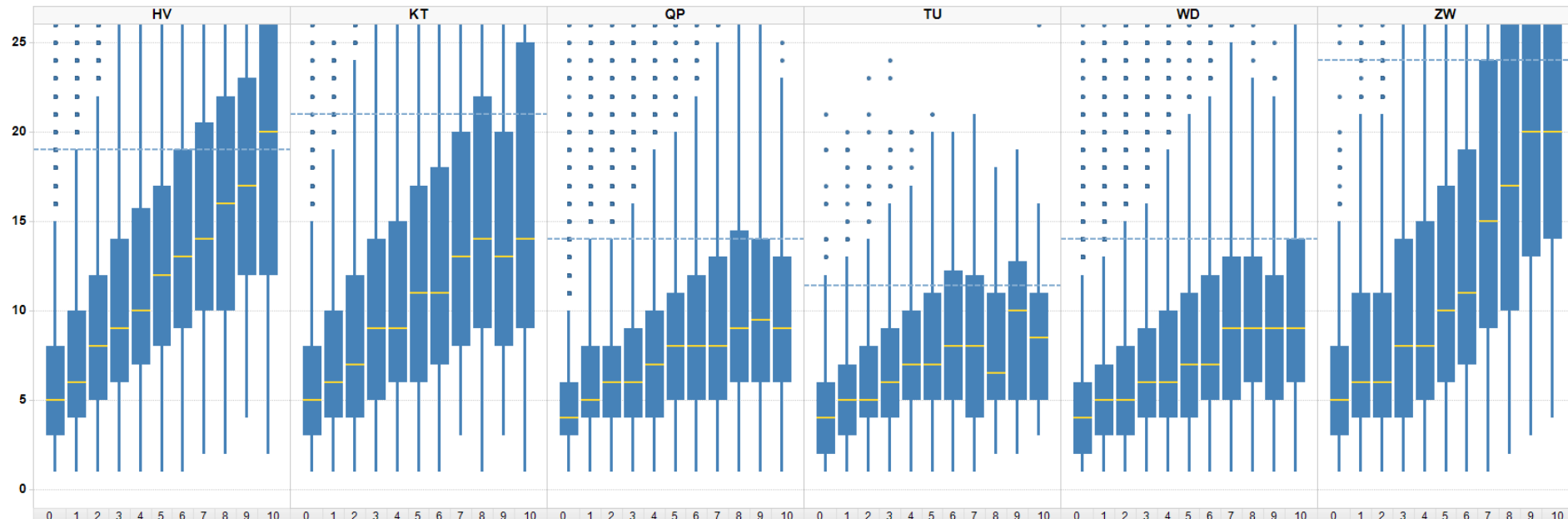
Patients with HTN, Age 18–85, E&M Visit 1/1/2012–7/31/2012, Patients of “Designated” Providers

Designated providers are those specified by the medical group whose patients are included on enterprise dashboard displays in Humedica MinedShare, generally providers associated with a “designed” primary care practice (e.g., a patient-centered medical home initiative).

Distrib of Pts. by Charlson Comorbidity Index



E&M Visit Count by Charlson Comorbidity Index



# Uses of Regression Models

**Who's getting the best outcomes,** after accounting for differences in patient populations?

First, account for patient factors:

- Age, gender, race/ethnicity
- Comorbid conditions
  - Overall disease burden
  - Specific diagnoses
  - Clinical data (e.g., eGFR, A1c, BP, BMI)
  - Smoking status
- Financial class (patient-specific)
- Imputed sociodemographic data (zip code)
  - Education, household income
  - Rural/urban

Then examine medical group effects—**who's doing best, on similar patients?**

- Interview the “best” groups to learn what they're doing for these patients, and
- Use logistic regression to identify which care process factors are more associated with the group(s) who are doing best



**What's different about patients** with good outcomes, compared to those with poor outcomes?

- Patient factors
- Process of care

Logistic regression – binary outcome

- Patient in control vs. out of control (last E&M)
- Patient moves into vs. out of control
- Patient has complete measures vs. not

What patient factors and which care process elements are associated with favorable outcomes or lower cost?

- Start with patient factors
- What care process elements have additional explanatory power?

# AMGF Chronic Care Challenge



**Measure Up  
Pressure Down**

American Medical Group Foundation

**Hypertension Campaign Goal:  
80% of Patients at Goal BP  
According to JNC 7**

**Process Planks for  
Achieving Goal**

## **PRIMARY PROCESS PLANKS**

Direct Care Staff  
Trained in Accurate  
BP Measurement

Hypertension  
Guideline Used  
and Adherence  
Monitored

BP Addressed for  
Every Hypertension  
Patient, Every  
Primary Care Visit

All Patients Not at  
Goal and with  
New Rx Seen within  
30 days

Prevention,  
Engagement, and  
Self-Management  
Program in Place

Registry Used  
to Identify and  
Track Hypertension  
Patients

All Team  
Members Trained  
in Importance of  
BP Goals

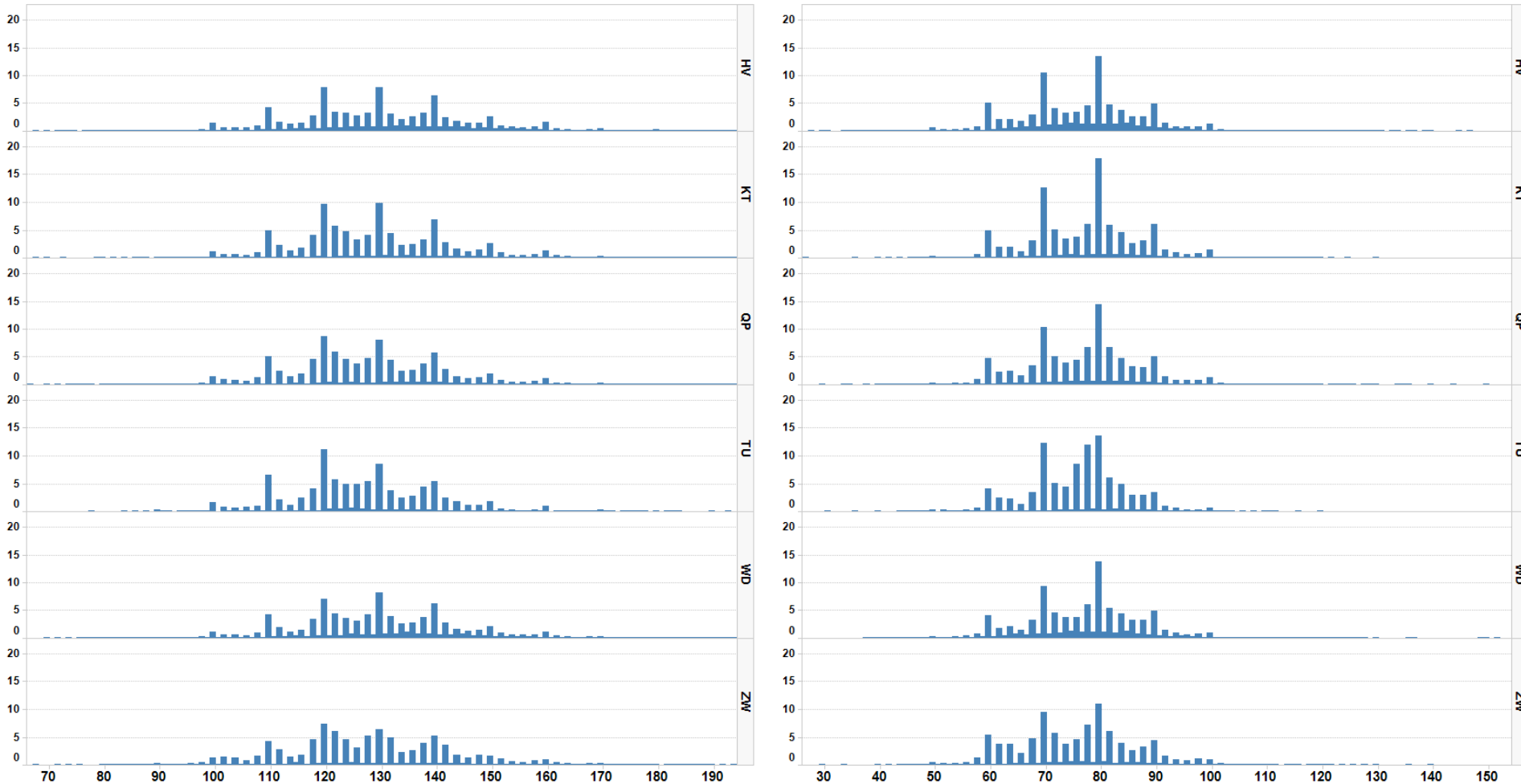
All Specialties  
Intervene with  
Patients Not in  
Control

## **VALUE-ADD PROCESS PLANKS**

# Blood Pressure Recording

## Last BP for Patients Age 18–85 with E&M Visit 1/1/2012–7/31/2012, “Designated” Providers

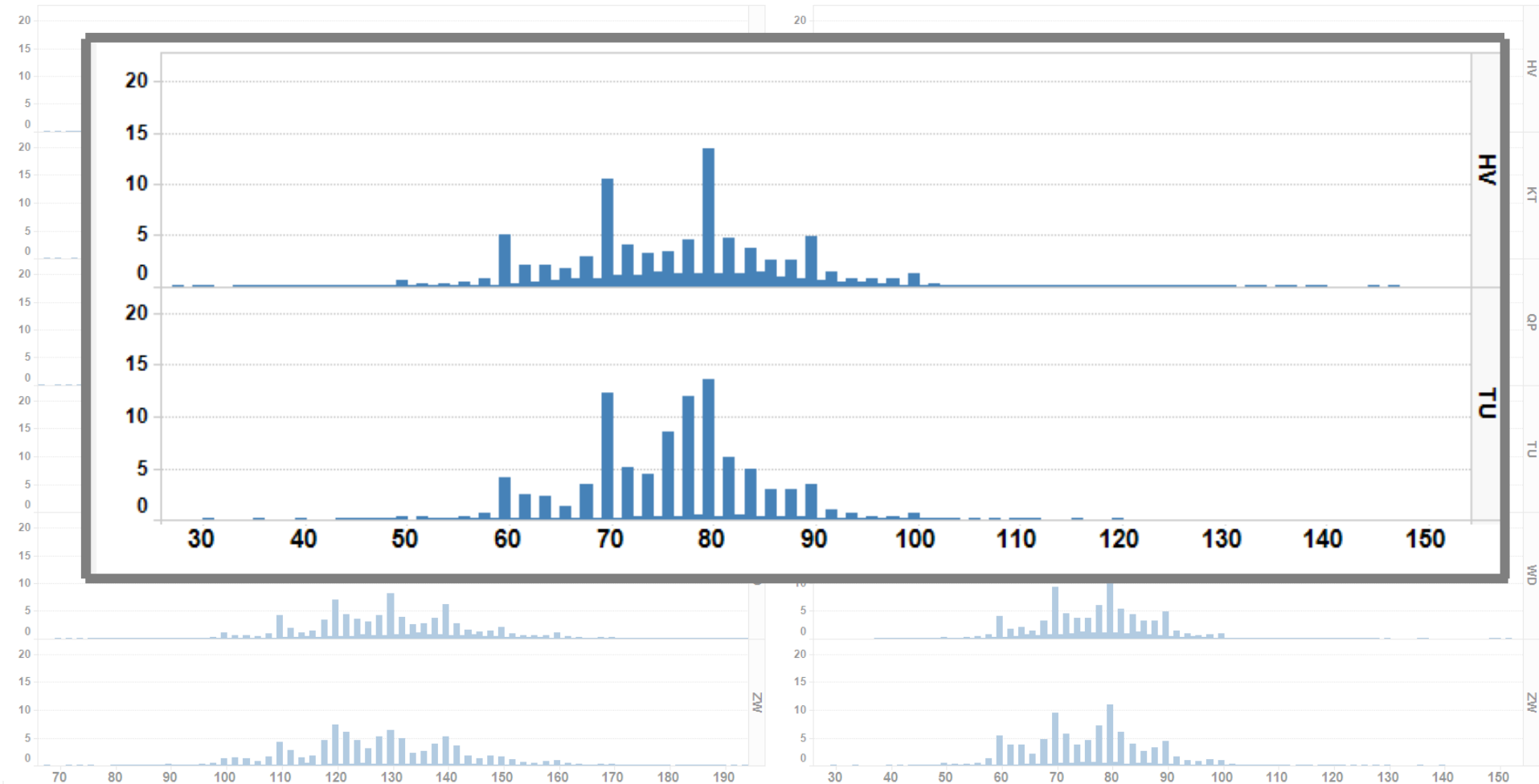
Designated providers are those specified by the medical group whose patients are included on enterprise dashboard displays in Humedica MinedShare, generally providers associated with a “designed” primary care practice (e.g., a patient-centered medical home initiative) and identified as the patient’s Current PCP in the EHR or practice management system or who provided the plurality of E&M services during the last full calendar year prior to the last E&M visit. (n = 309,000)



# Blood Pressure Recording

## Last BP for Patients Age 18–85 with E&M Visit 1/1/2012–7/31/2012, “Designated” Providers

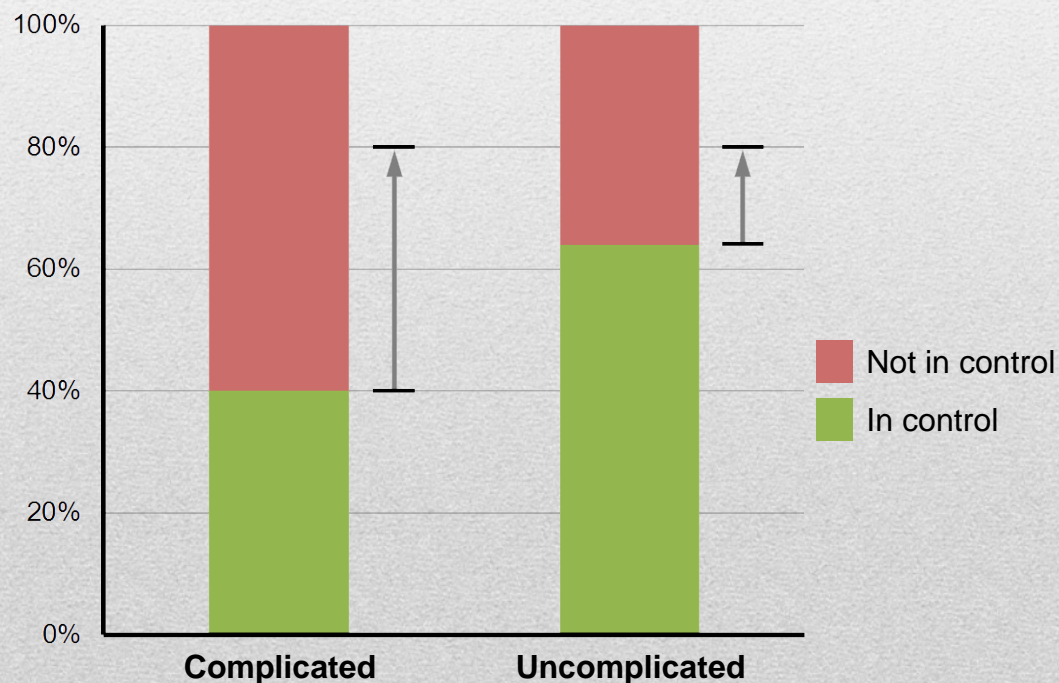
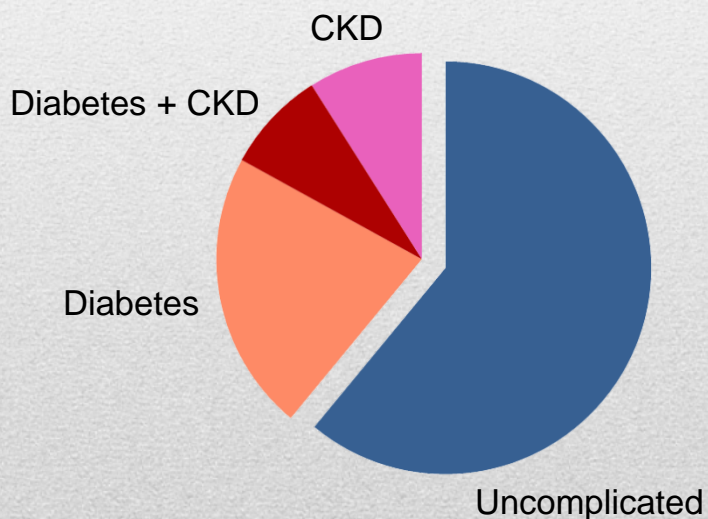
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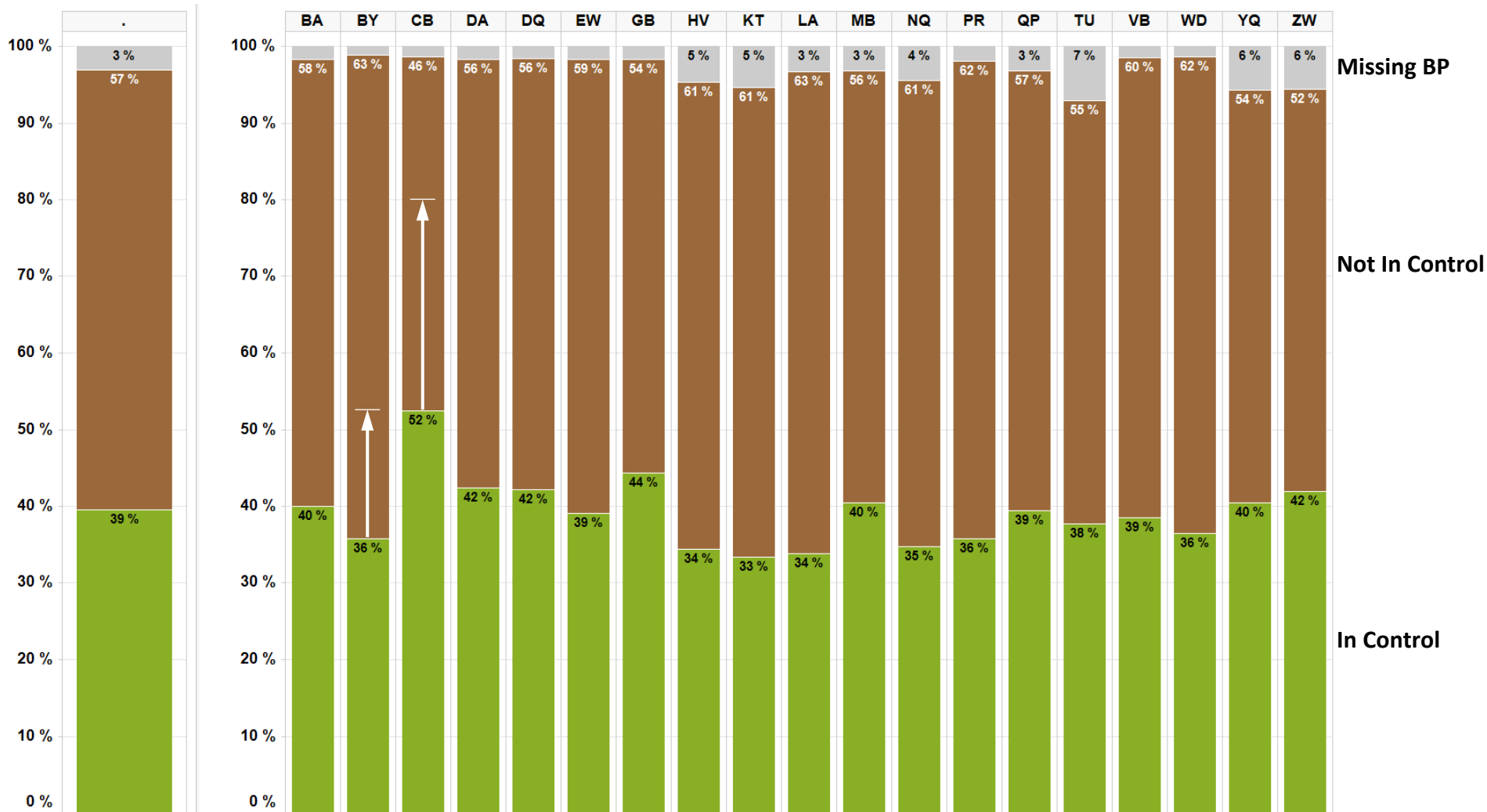
## Measure Up Pressure Down

- JNC 7 recommendations:
  - Patients with diabetes or chronic kidney disease, BP < 130/80
  - All other patients, BP < 140/90



# BP Control at Last E&M Visit: Complicated Patients

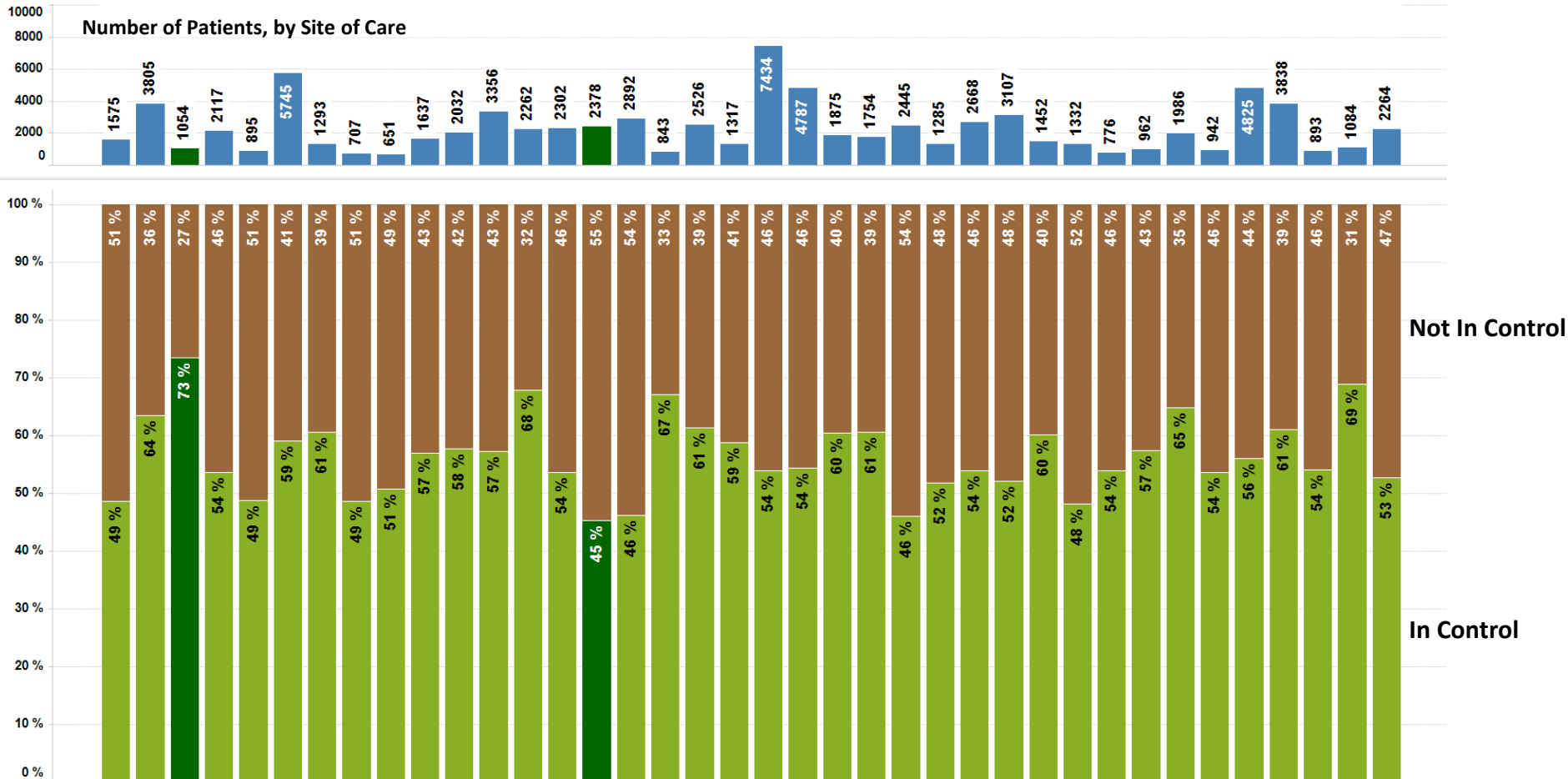
- Evidence of diabetes or chronic kidney disease (Dx/PL, lab, or meds): control threshold 130/80
- 488,000 patients with Dx/PL or BP evidence of hypertension and at least one E&M visit, 9/1/2011 – 8/31/2012
- All providers, 19 medical groups





# HTN Control – Variation within a Medical Group

- Patients in hypertension cohort with at least one E&M visit between 12/01/2011-11/30/2012
- All family medicine or internal medicine sites of care with over 500 hypertension patients
- HTN control among patients with BP measured at last E&M visit
  - Evidence of diabetes or chronic kidney disease (Dx/PL, lab, or meds): BP < 130/80
  - All other patients: BP < 140/90



# Typical Collaborative Meeting Topics

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- Techniques for breakthrough improvement
  - Complexity theory
  
- Hypertension
  - Plank-by-plank dialogue
  - Presentations by groups with superior outcomes and costs
  - Exercise: Comparative data → Action plan
  
- Diabetes
  - Cost of medications for glycemic control
  - Reducing proportion of patients with incomplete measures
  
- “PCMH 2.0”
  - Staffing models
  - Which elements drive the value?
  - Can we do it more efficiently?
  
- Ambulatory intensive care
  - Risk stratification: Whom to target? When?
  - What disciplines/services are key?
  - How does it integrate with the rest of the system?