Together2Goal®

AMGA Foundation
National Diabetes Campaign

Monthly Campaign Webinar

May 18, 2017

TODAY'S WEBINAR

- Together 2 Goal® Updates
  - Webinar Reminders
  - June 2017 Monthly Webinar
  - Save the Date! September 12-13
  - Million Hearts® Hypertension Control Champions
  - Goal Post May Newsletter Highlights
- Population Management Strategies
  - AMGA Analytics
- Q&A
  - Use Q&A or chat feature

Together 2 Goal®

WEBINAR REMINDERS

- Webinar will be recorded today and available the week of May 22nd
  - Together2Goal.org Website (Improve Patient Outcomes → Webinars)
  - Email distribution
- Participants are encouraged to ask questions using the "Chat" and "Q&A" functions on the right side of your screen

Together2Goal®

JUNE 2017 MONTHLY WEBINAR

- **Date/Time:** Thursday, June 15, 2-3pm Eastern
- **Topic:** Integrating the Patient Voice into Diabetes Management
- **Presenters:** Kelly Close, M.B.A. and Dominick Frosch, Ph.D.

Together2Goal®

SAVE THE DATE!
TOGETHER 2 GOAL® DIABETES SYMPOSIUM

September 12-13
Indianapolis, IN

- **Audience:** Together 2 Goal® Primary and Quality Contacts, Quality Department members, Chief Medical Officers, diabetes leaders, and others
- **In conjunction with:**
  - **AMGA Joint Council Meeting:** Quality Directors/Officers, Chief Medical Officers/Medical Directors, Chief Nursing Officers)
  - **AMGA Analytics for Improvement (A4i) Meeting**

in collaboration with:

American Diabetes Association®

Together 2 Goal®

MILLION HEARTS®
HYPERTENSION CONTROL CHAMPIONS

To learn more or apply, visit MillionHearts.HHS.gov

Together 2 Goal®

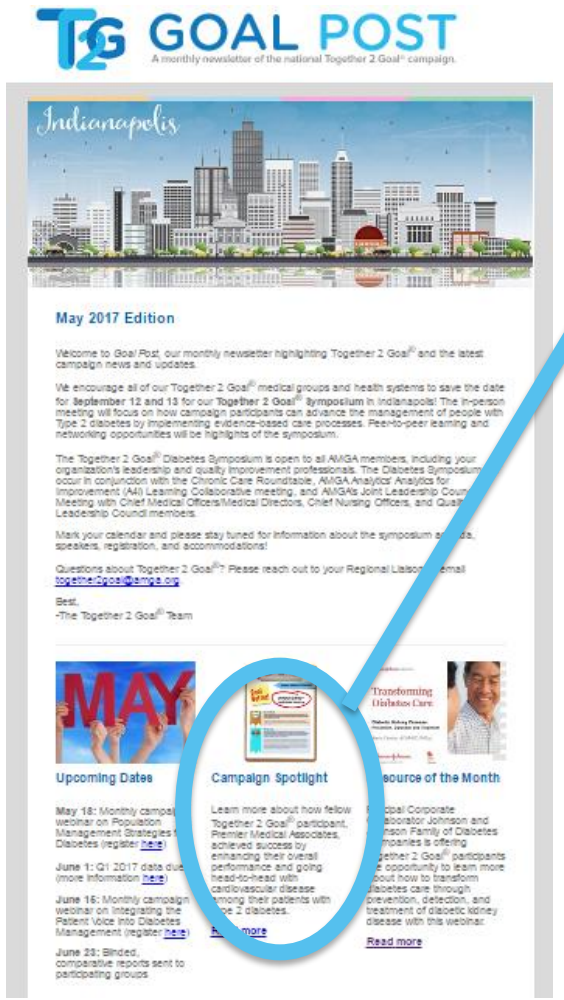
GOAL POST NEWSLETTER: APRIL UPCOMING DATES

Upcoming Dates

- **June 1:** Q1 2017 data due
- **June 15:** Monthly campaign webinar on Integrating the Patient Voice into Diabetes Management
- **June 23:** Blinded, comparative reports sent to participating groups

Together 2 Goal®

GOAL POST NEWSLETTER: APRIL CAMPAIGN SPOTLIGHT


GOAL POST
A monthly newsletter of the national Together 2 Goal® campaign.

May 2017 Edition

Welcome to Goal Post, our monthly newsletter highlighting Together 2 Goal® and the latest campaign news and updates.

We encourage all of our Together 2 Goal® medical groups and health systems to save the date for **September 12 and 13** for our **Together 2 Goal® Symposium** in Indianapolis! The in-person meeting will focus on how campaign participants can advance the management of people with Type 2 diabetes by implementing evidence-based care processes. Peer-to-peer learning and networking opportunities will be highlights of the symposium.

The Together 2 Goal® Diabetes Symposium is open to all AMGA members, including your organization's leadership and quality improvement professionals. The Diabetes Symposium occur in conjunction with the Chronic Care Roundtable, AMGA Analytics' Analytics for Improvement (A4I) Learning Collaborative meeting, and AMGA's Joint Leadership Coun Meeting with Chief Medical Officers/Medical Directors, Chief Nursing Officers, and Quali Leadership Council members.

Mark your calendar and please stay tuned for information about the symposium a de, speakers, registration, and accommodations!

Questions about Together 2 Goal®? Please reach out to your Regional Liaison or email together2goal@amga.org.

Best,
-The Together 2 Goal® Team

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June 1: Q1 2017 data due (more information here)

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Campaign Spotlight

Learn more about how fellow Together 2 Goal® participant, Premier Medical Associates, achieved success by enhancing their overall performance and going head-to-head with cardiovascular disease among their patients with ype 2 diabetes.

Learn more

Source of the Month

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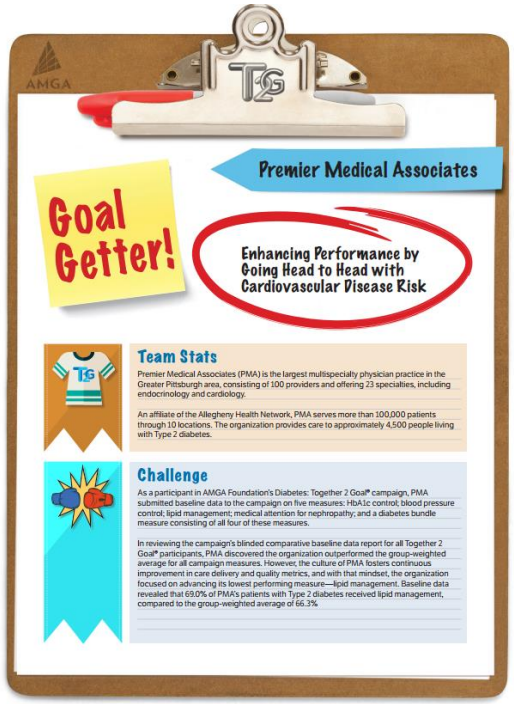
Read more

Campaign Spotlight



www.Together2Goal.org/GoalGetters

Together 2 Goal®

GOAL POST NEWSLETTER:
APRIL RESOURCE OF THE MONTH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Resource of the Month

Principal Corporate Collaborator Johnson and Johnson Family of Diabetes Companies is offering Together 2 Goal® participants the opportunity to learn more about how to transform diabetes care through prevention, detection, and treatment of diabetic kidney ...ease with this webinar.

...more

Resource of the Month

Johnson & Johnson INSTITUTE

Transforming Diabetes Care

Diabetic Kidney Disease:
Prevention, Detection and Treatment

Alexis Chettiar, ACNP-BC, PhD(c)

Johnson & Johnson DIABETES INSTITUTE

National Kidney Foundation®

Together 2 Goal®

TODAY'S SPEAKER

AMGA Analytics

AMGA™

Advancing High Performance Health

AMGA Analytics

Together 2 Goal®

AMGA

Advancing High Performance Health

The Leaky Bucket: Insights into Management of Type 2 Diabetes

May 18, 2017

Presentation Summary

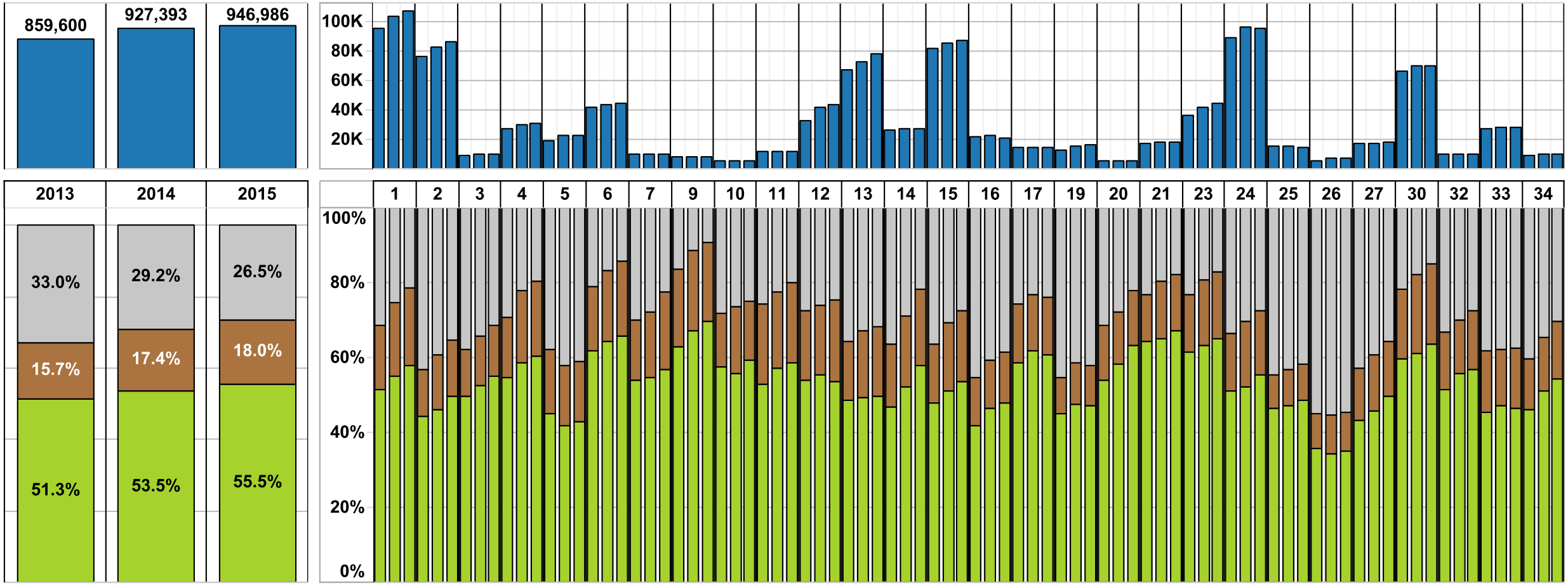
- Overview Together 2 Goal ® Campaign
- Background: Type 2 Diabetes Data Trends
- Research Study: Diabetes' Control Transitions
  - Predictive Model
  - Model Validation
  - Intervention Model

Together 2 Goal®

- AMGA Foundation's national campaign to reduce the burden of type 2 diabetes
- 150 participating AMGA members—medical groups and health systems
- Three-year initiative
- Goal: Improve care for 1 million people with type 2 diabetes
  - Screening → increased detection and diagnosis
- Measures
  - A1c measurement and control (< 8%)
  - Blood pressure measurement and control (< 140/90 mm Hg)
  - Lipid management: Statin prescribed
  - Medical attention for nephropathy
  - Bundle measure

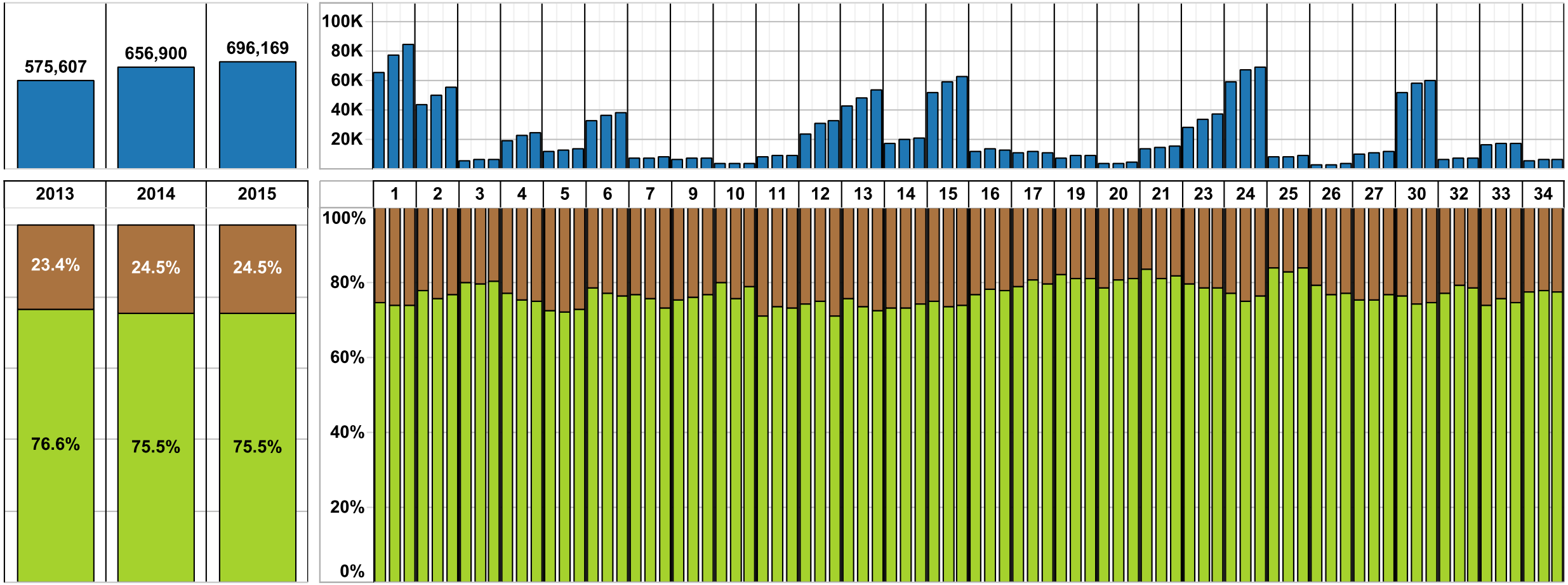
A1c Control by Year: Entire Population with Type 2 Diabetes

- Patients aged 18–75 with type 2 diabetes who had at least one E&M visit from 2013 to 2015
- Top: Number of patients. Bottom: A1c control by year, including patients without an A1c measured in that year
- Left: All organizations combined. Right: Each set of bars represents one organization



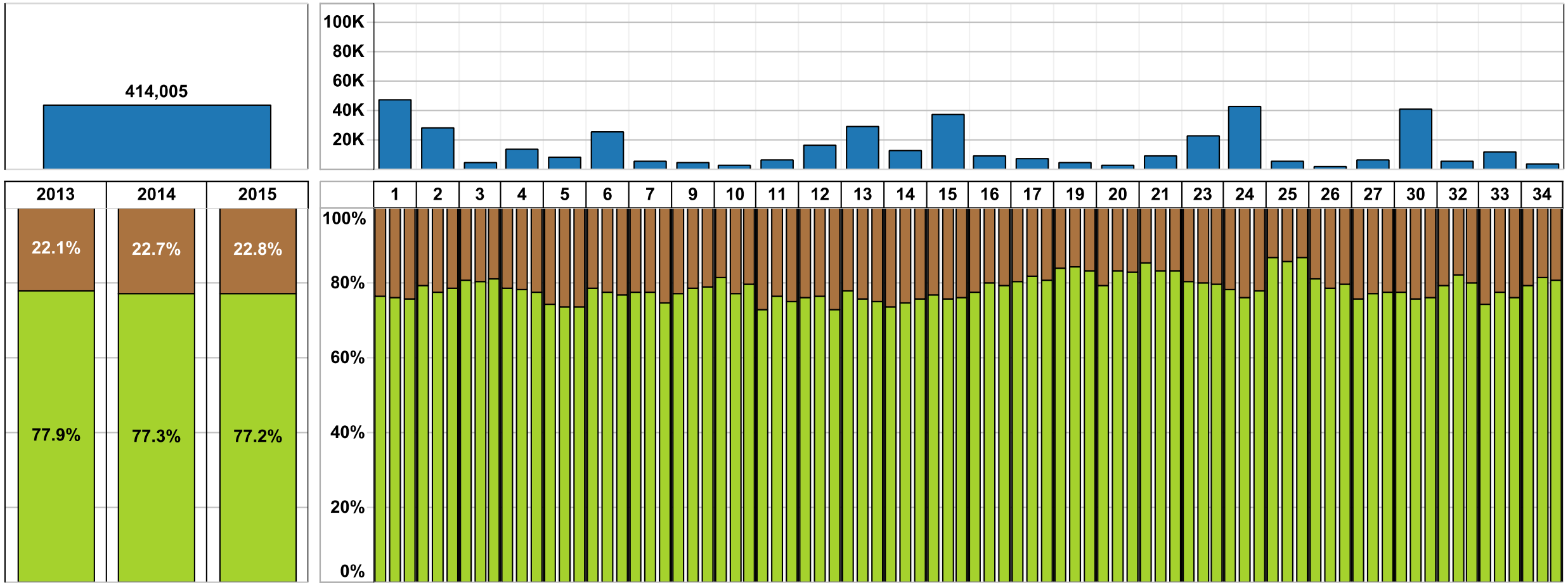
A1c Control by Year: A1c Measured in the Respective Year

- Patients aged 18–75 with type 2 diabetes who had an A1c measured in the respective year
- Top: Number of patients. Bottom: A1c control by year, excluding patients without an A1c measured in that year
- Left: All organizations combined. Right: Each set of bars represents one organization

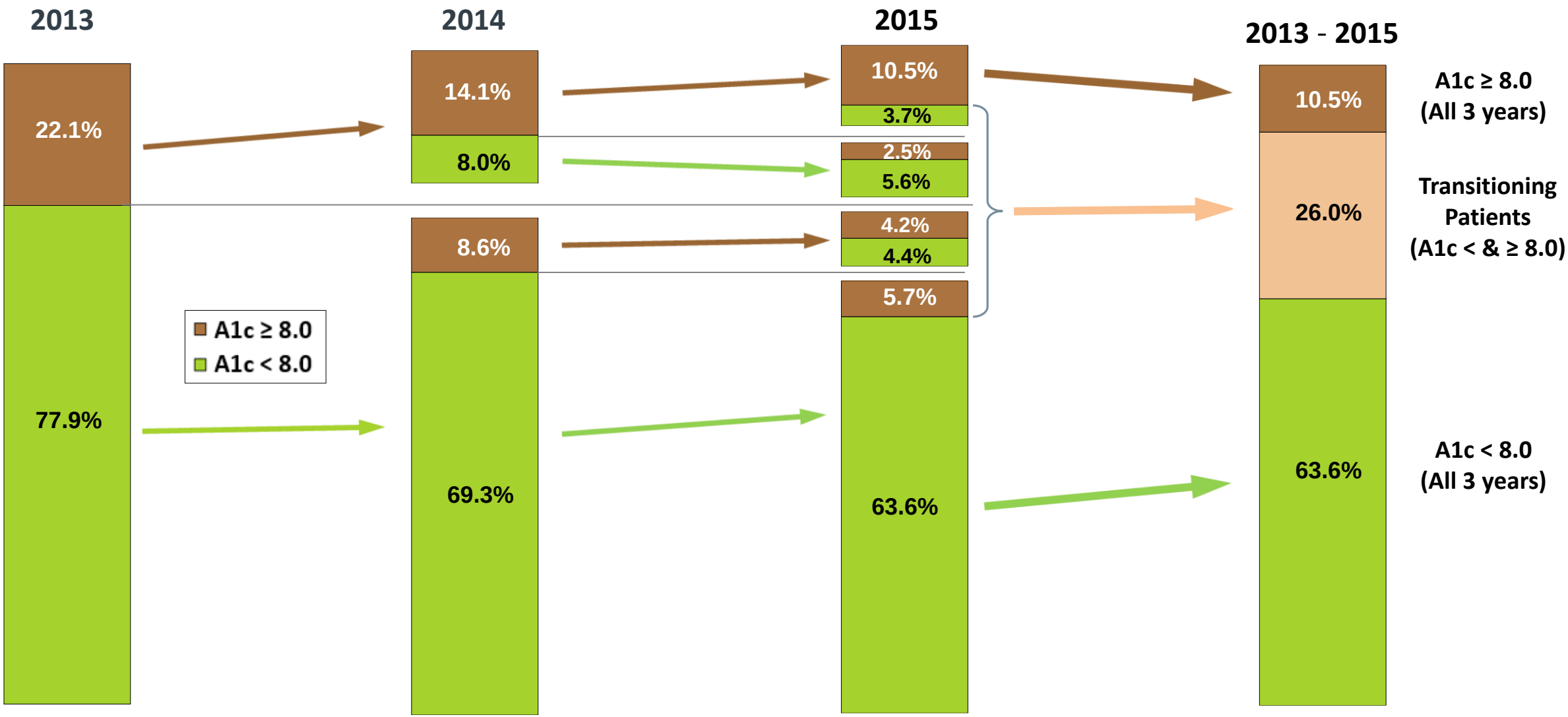


A1c Control by Year: A1c Measured in Each Year

- Patients aged 18–75 with type 2 diabetes who had A1c measured in each of 3 consecutive years
- Top: Number of patients. Bottom: A1c control by year
- Left: All organizations combined. Right: Each set of bars represents one organization

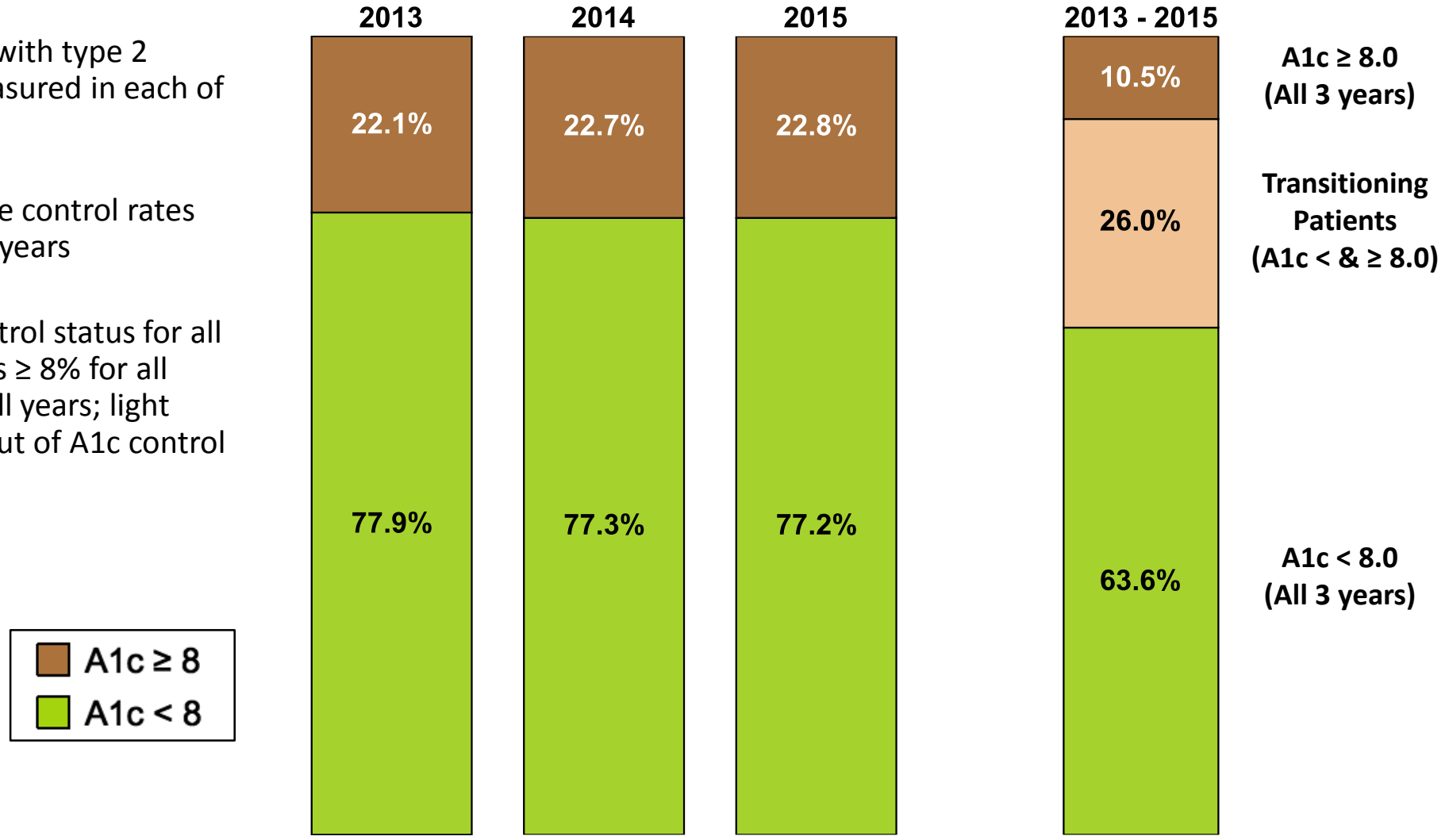


Changes in A1c Control by Year, Accounting for Prior Status



Changes in A1c Control Rates Over Time: With A1c in Each Year

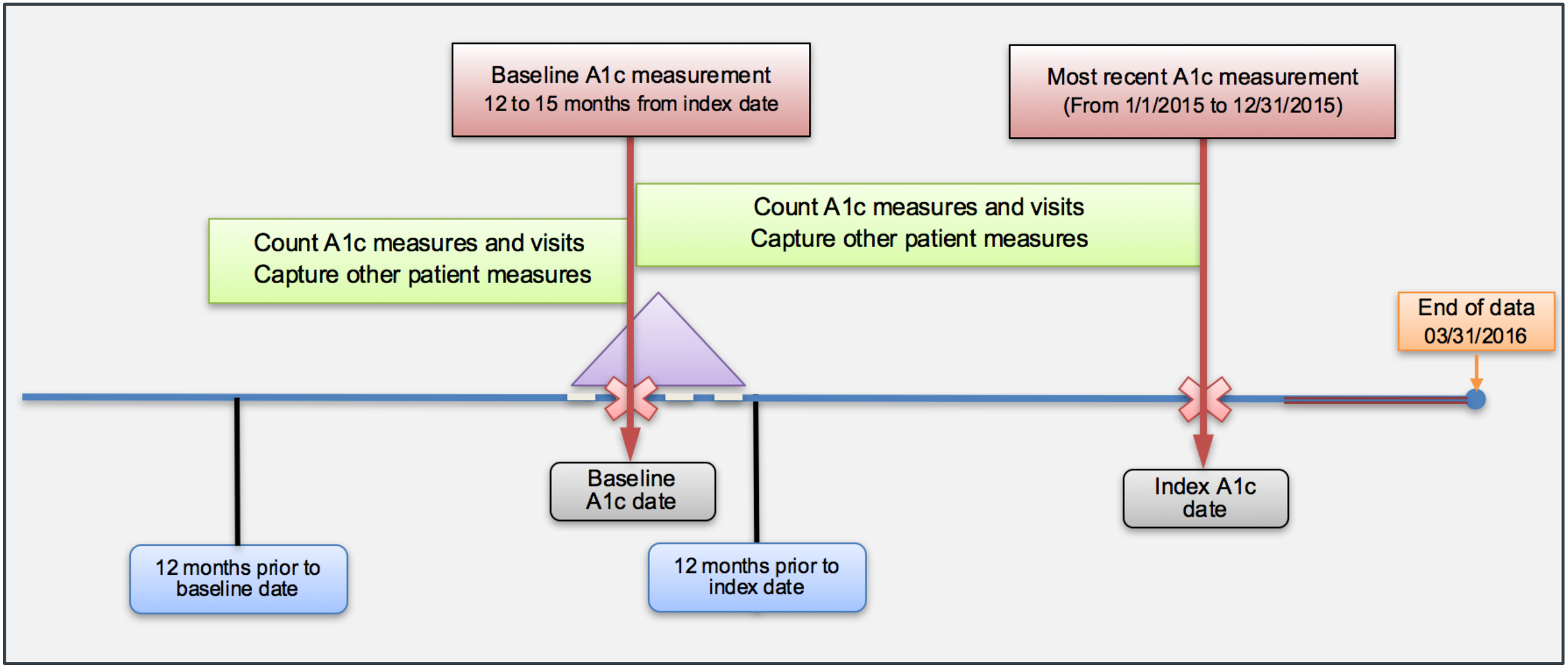
- 414,000 patients aged 18-75 with type 2 diabetes who had an A1c measured in each of the 3 consecutive years
- The 3 bars to the left show the control rates for each of the 3 consecutive years
- The right most bar shows control status for all three years (brown, A1c levels ≥ 8% for all three years; green, < 8% for all years; light orange, transitioning in and out of A1c control throughout the time period



Focus on Patients who Transition

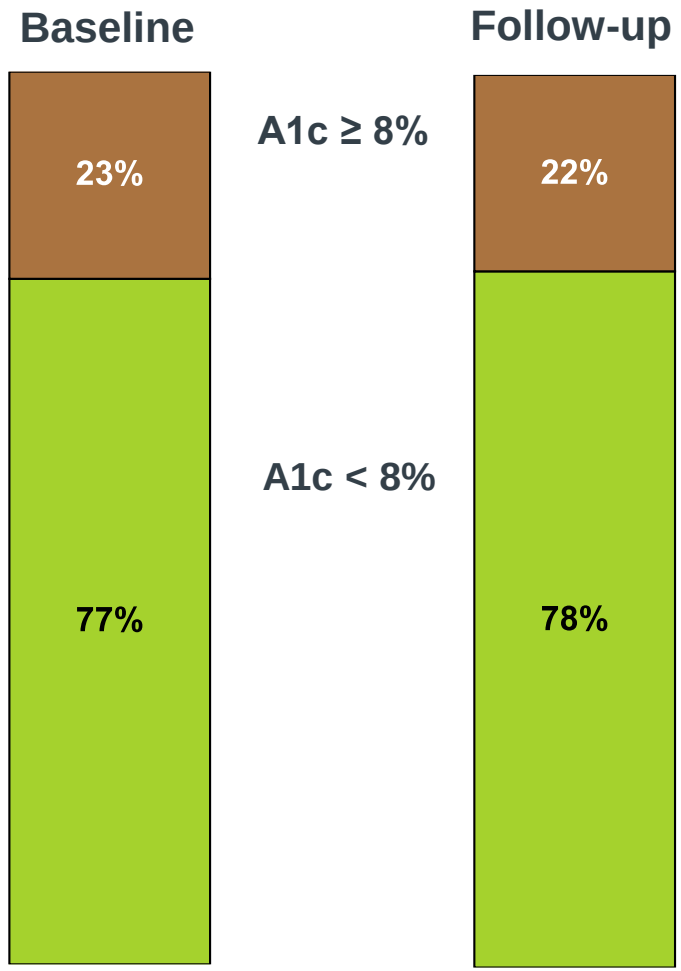
- Identify a population that allows us to answer specific questions
  - Who's transitioning?
  - What's the pattern of Δ A1c?
  - Who's most likely to slip out of control?
  - What interventions work to keep patients in control?
- Study population of 245,000 patients
  - Age 18–75 with type 2 diabetes, and plurality of care (24 months) with primary care, endocrinology, cardiology, or nephrology
  - Both an index A1c in 2015 and a baseline A1c measured 12–15 months earlier

Study Schema



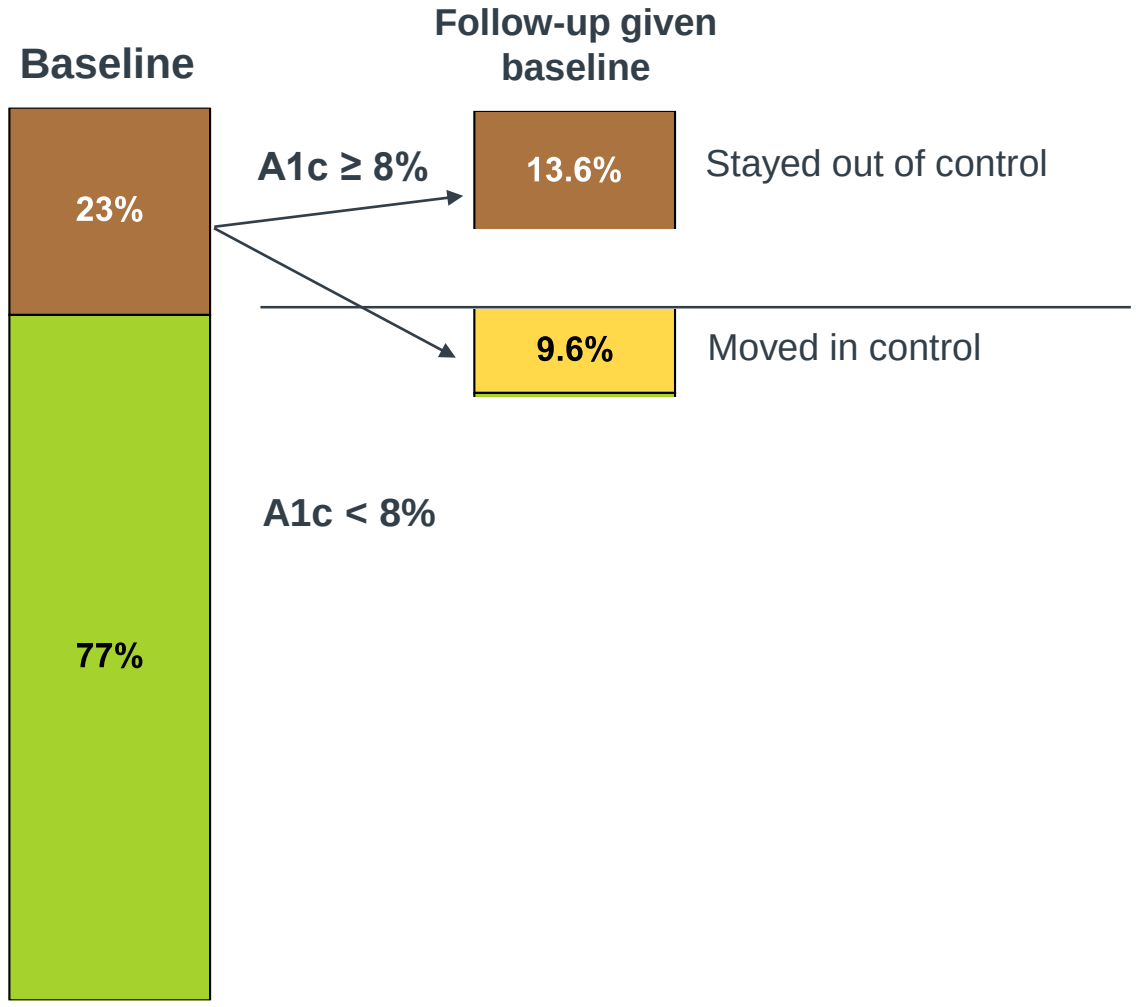
A1c Control Over Time: Study Cohort

- 245,000 patients aged 18–75 with type 2 diabetes, plurality of care (24 months) with primary care, endocrinology, cardiology, or nephrology
- Index A1c in 2015, baseline A1c measured 12–15 months earlier
- We see little movement in control over time, not what we expect



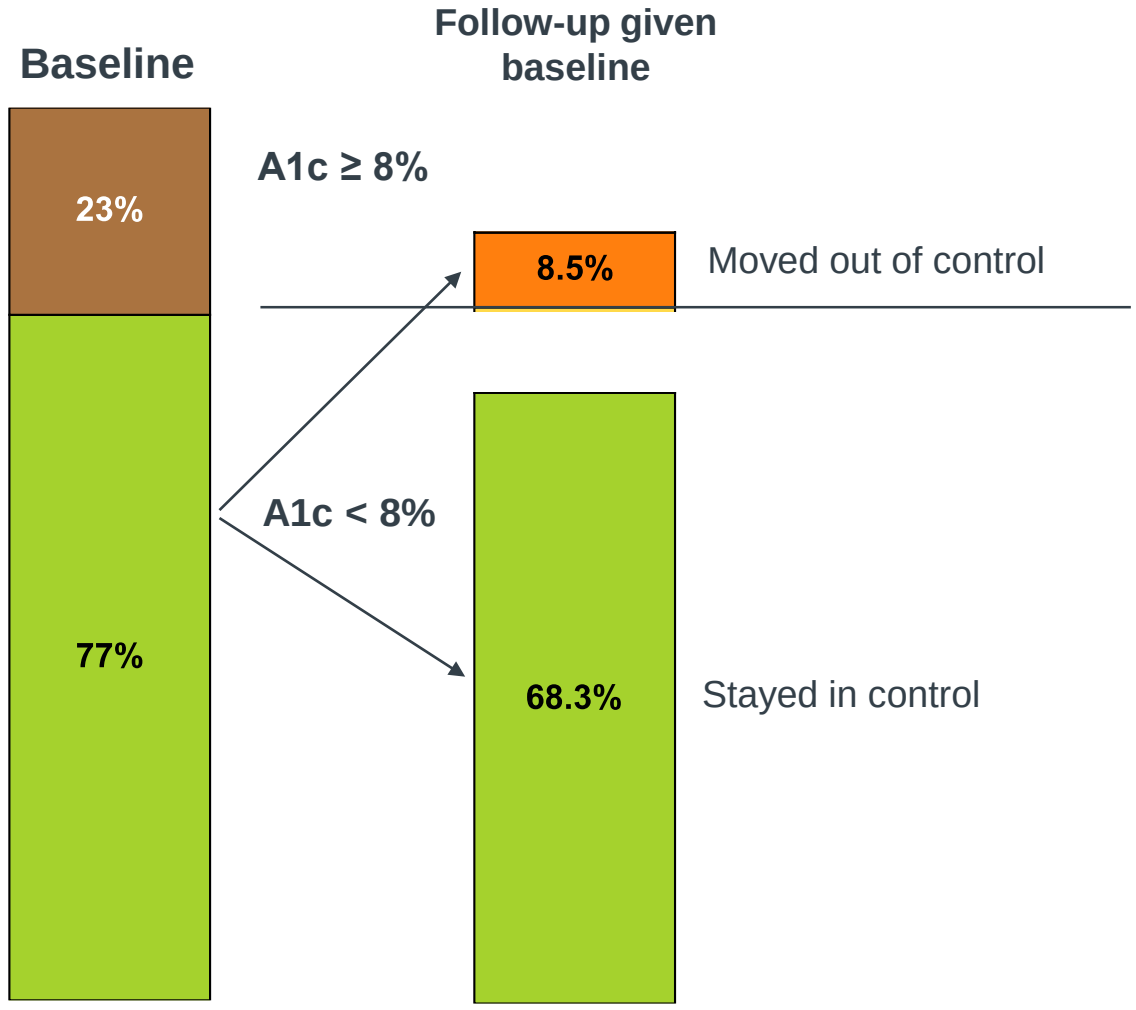
A1c Control Over Time: Accounting for Prior Status

- 12–15 months after baseline, 40% of the out of control population have moved into control (A1c has fallen to <8%)
- 60% of those out of control at baseline remain out of control
- We are making progress



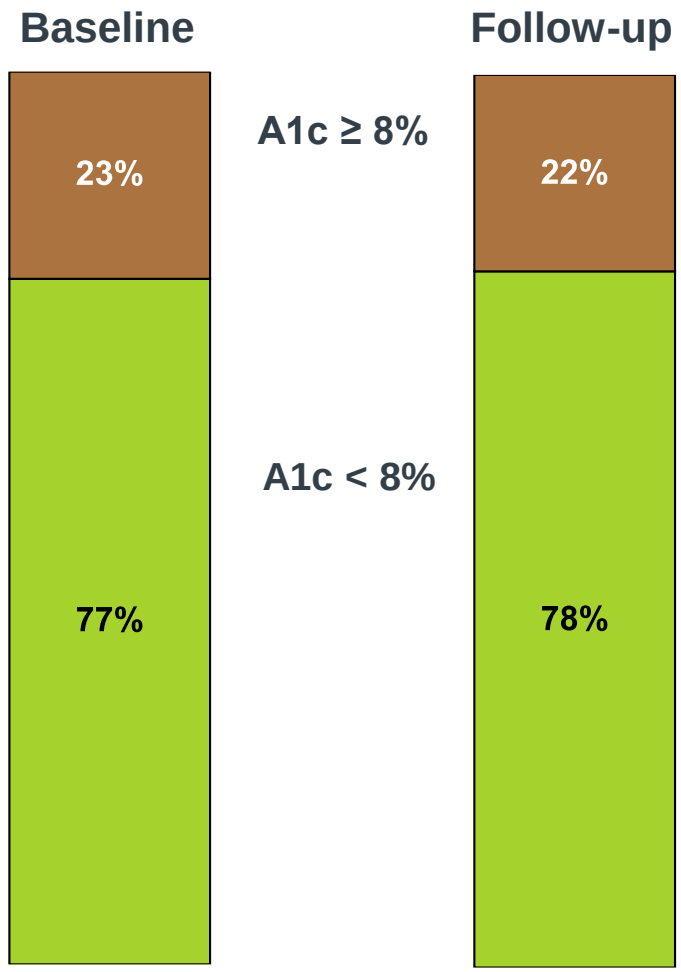
A1c Control Over Time: Accounting for Prior Status

- But, 12–15 months after baseline, 11% of the in control population have moved out of control (A1c has risen to ≥8%)
- Only 89% of those in control at baseline remain in control



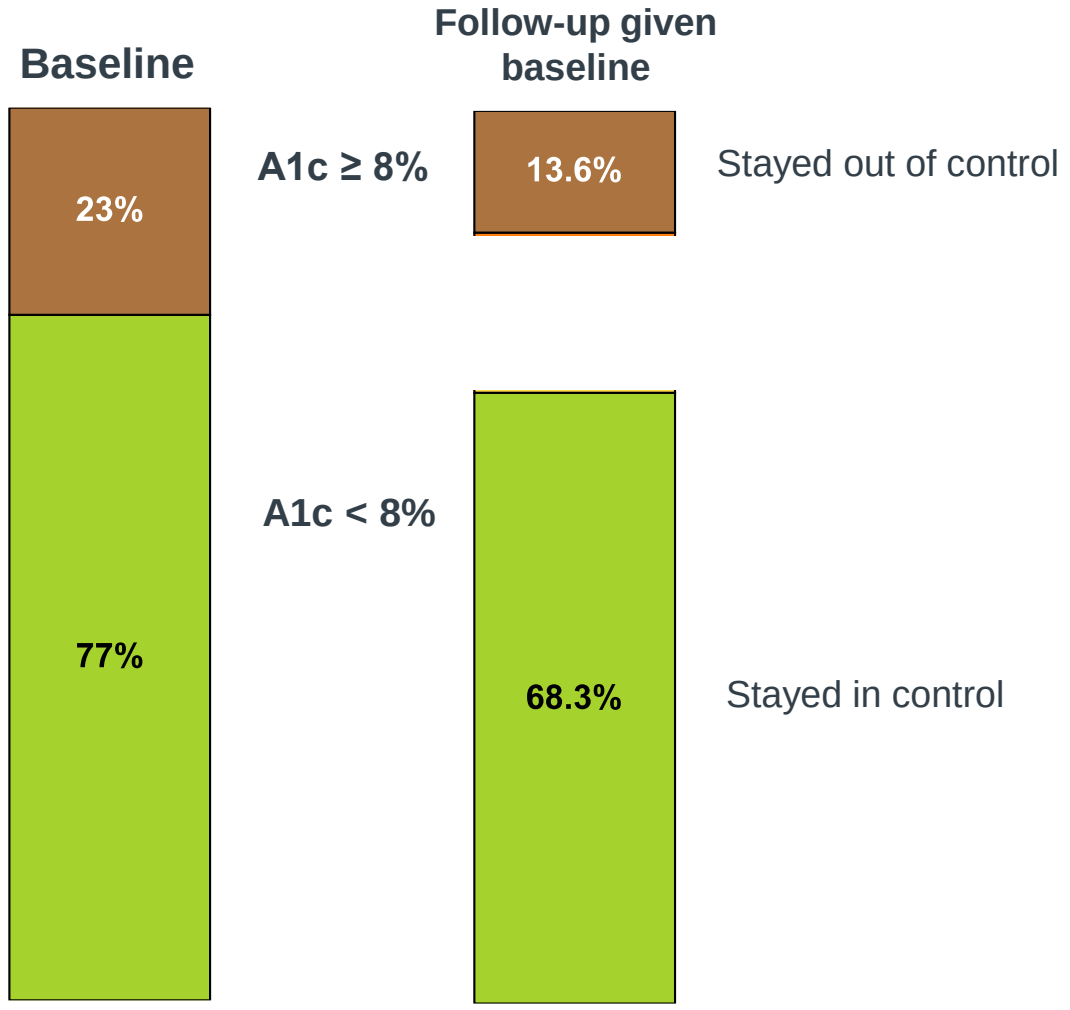
A1c Control Over Time: Accounting for Prior Status

- So, it's not really 22% of patients that we simply are unable to bring into control over time



Study Cohort: A1c Control Baseline to Follow-up

- So, it's not really 22% of patients that we simply are unable to bring into control over time
- Only 13.6% remained out of control for both years
- In addition, only 68% remained in control



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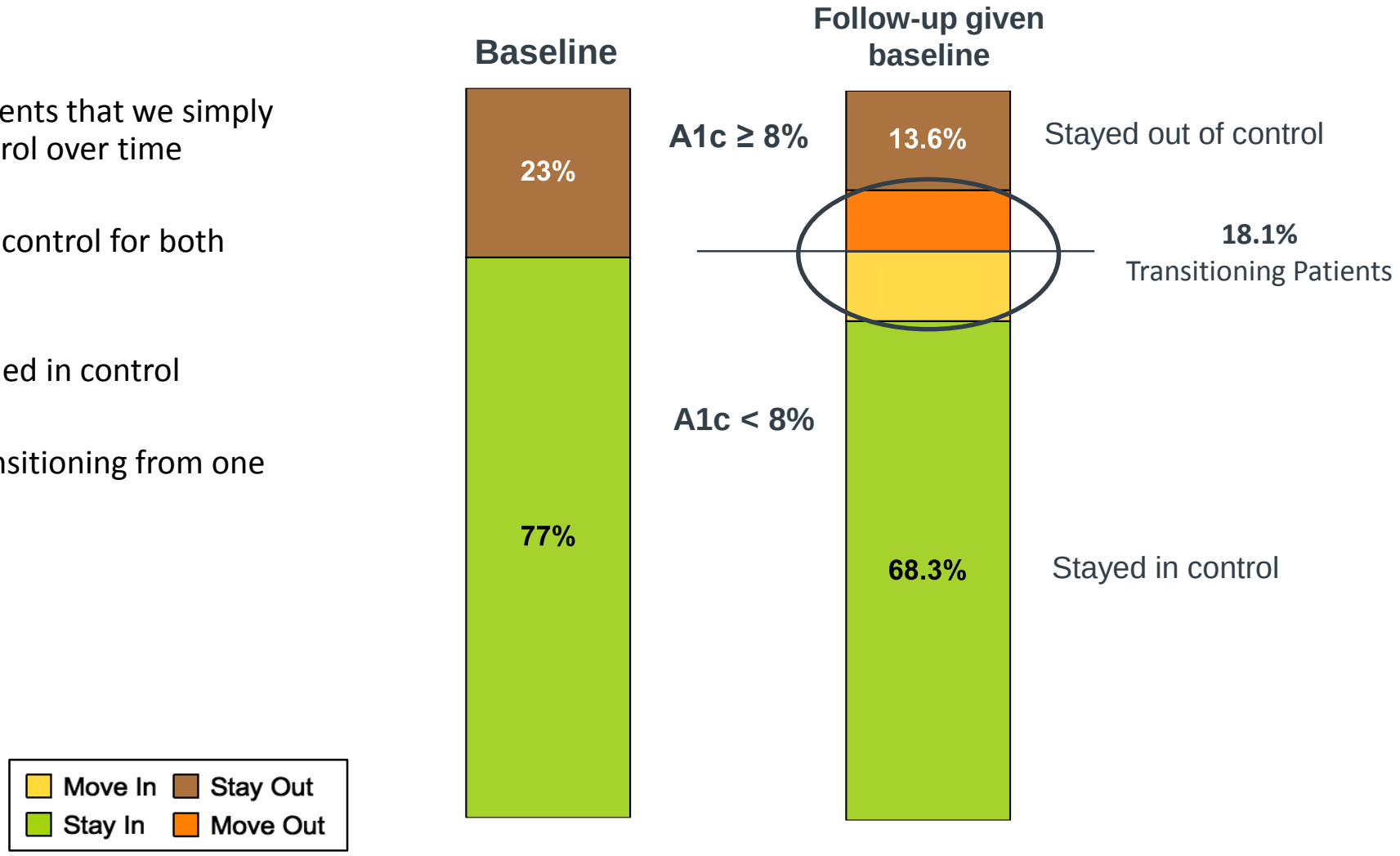
- 18% of the population is transitioning from one state of control to another



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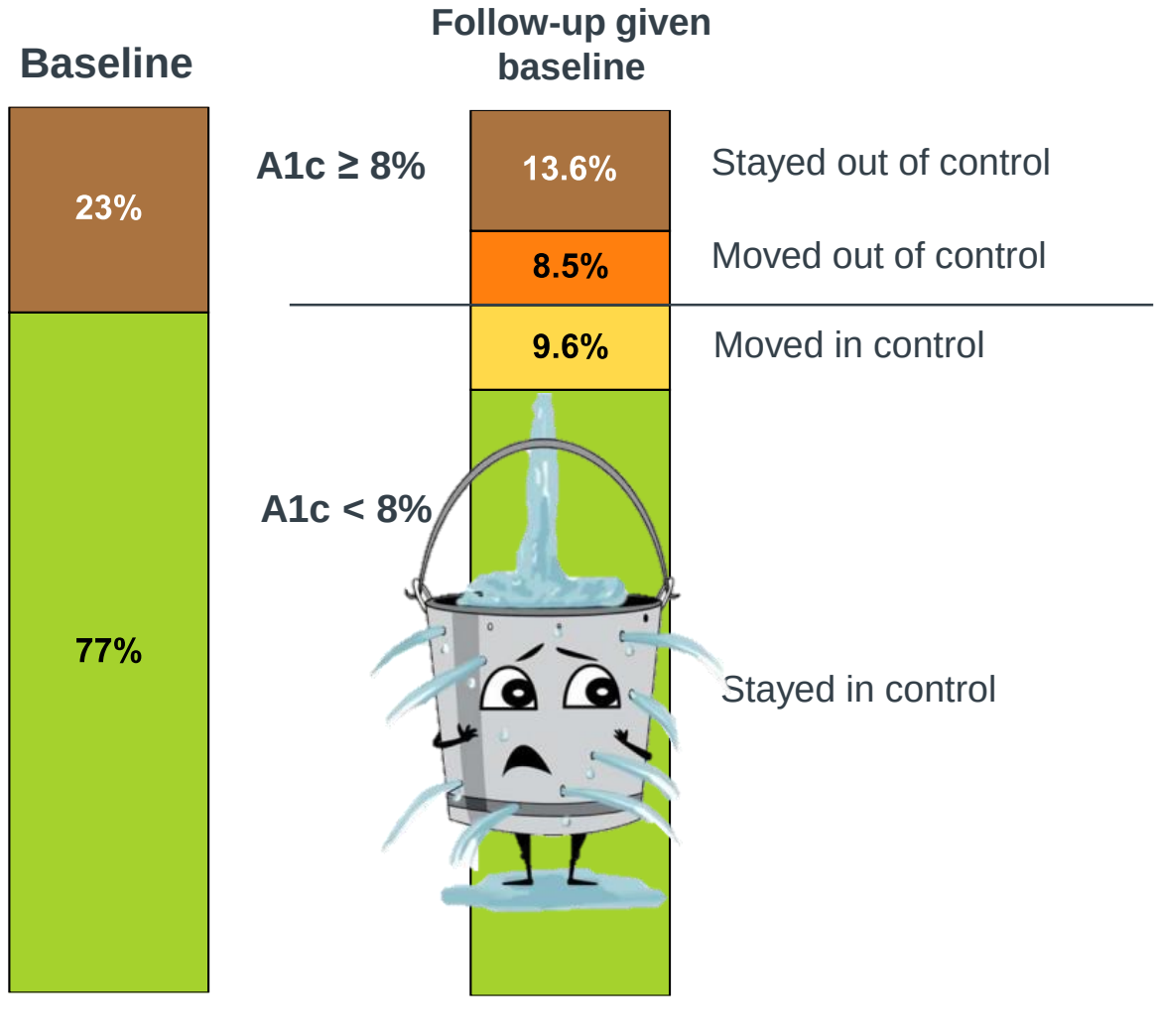
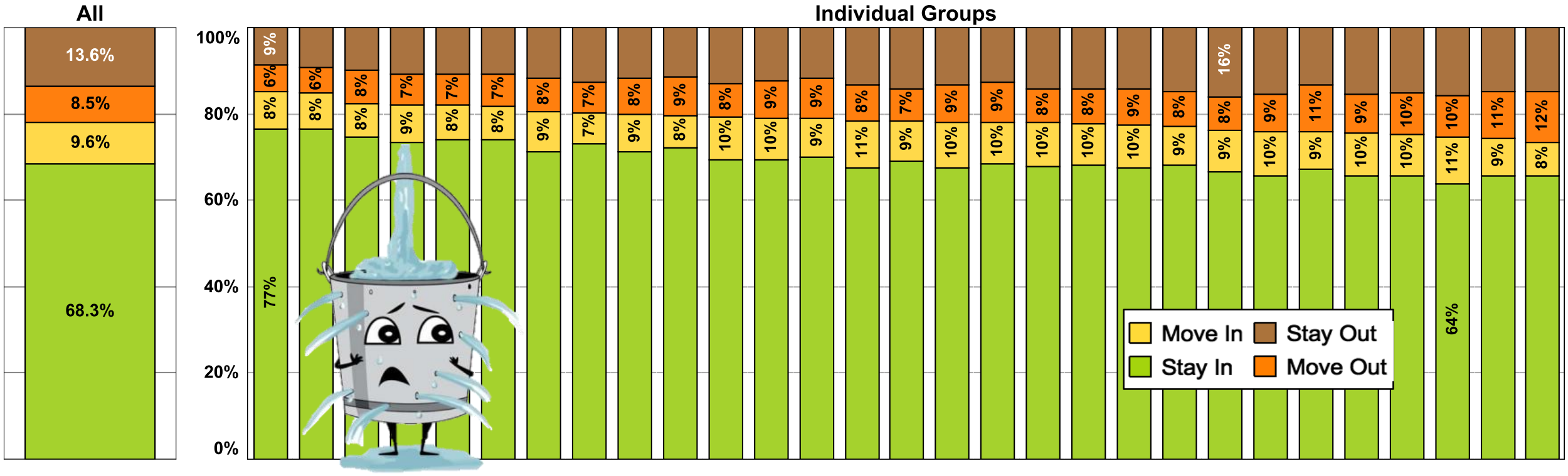
- Only 13.6% remained out of control for both years
- In addition, only 68% remained in control
- 18% of the population is transitioning from one state of control to another
  - Moving out of control at the same rate they are moving into control
  - No overall progress is being made



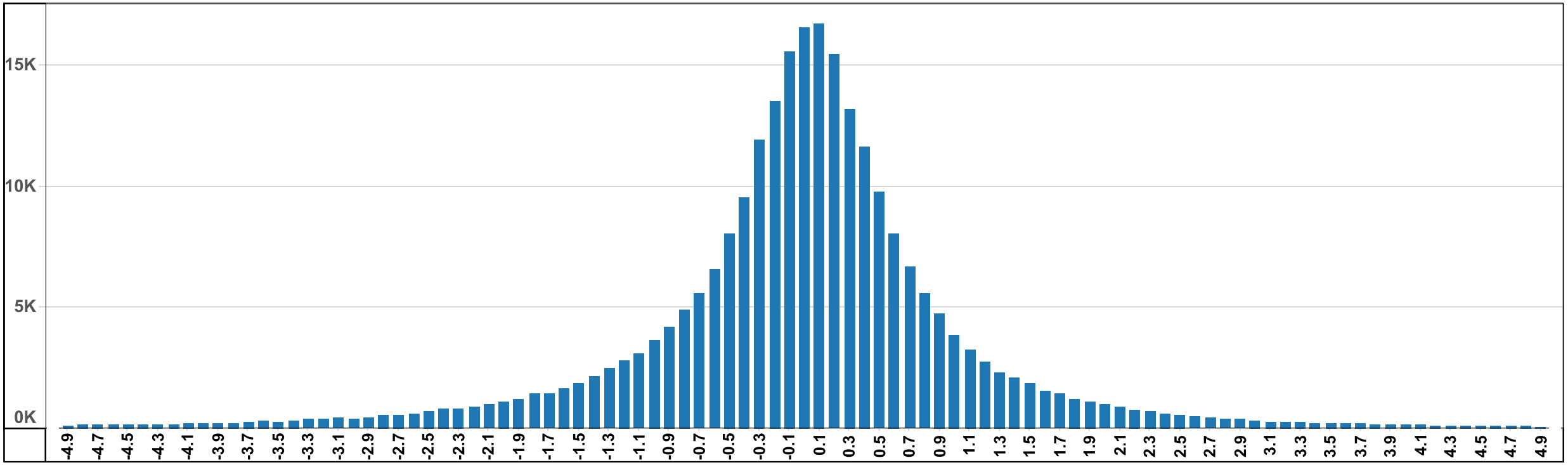
Changes (Δ) in A1c Control (< 8%)

- 245,000 patients aged 18–75 with type 2 diabetes, plurality of care (24 months) with primary care, endocrinology, cardiology, or nephrology, and both index A1c in 2015 and baseline A1c measured 12–15 months earlier
- 18% move into (yellow = 9.6%) or out of (orange = 8.5%) A1c control. Ranges from 14–20% by group (yellow + orange).



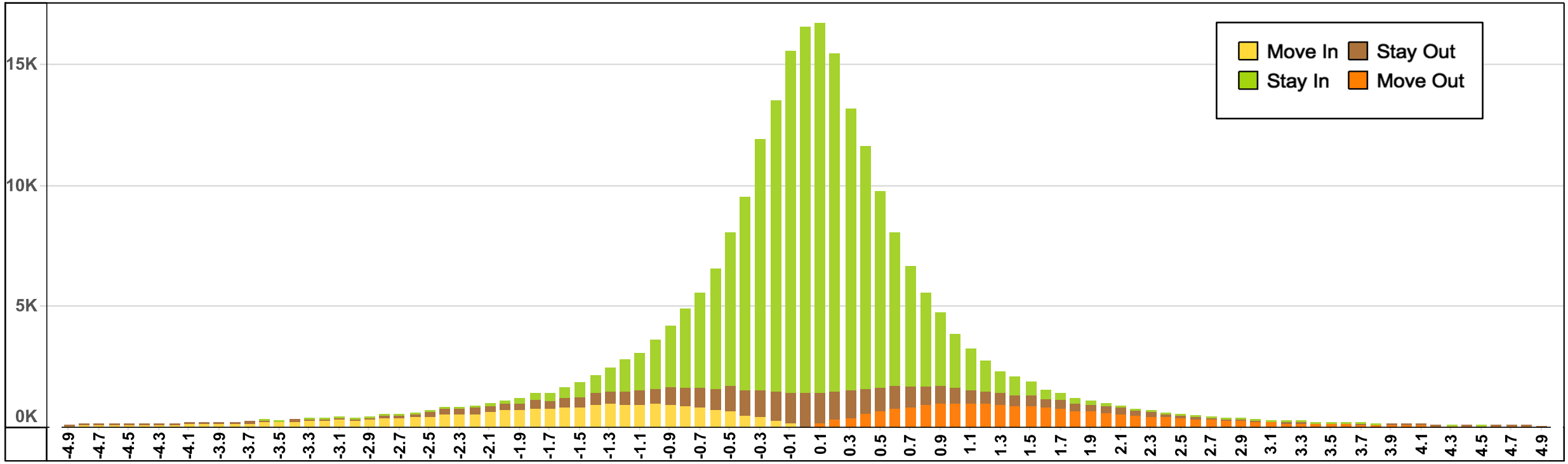
Distribution of Δ A1c over 12–15 Months

- Mean Δ A1c for the population was 0.8% and median Δ A1c was 0.5%



Distribution of ΔA1c over 12–15 Months and Transitions in Control

- Mean Δ A1c for the population was 0.8% and median Δ A1c was 0.5%
- 10% of patients (yellow) move into control, but 9% (orange) move out of control



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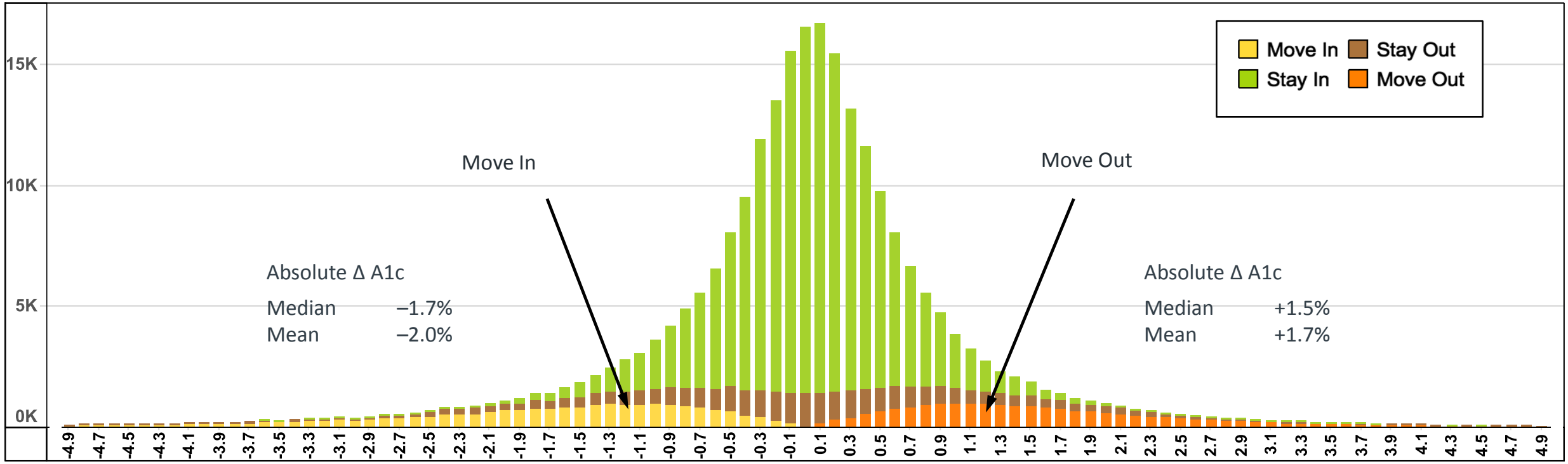
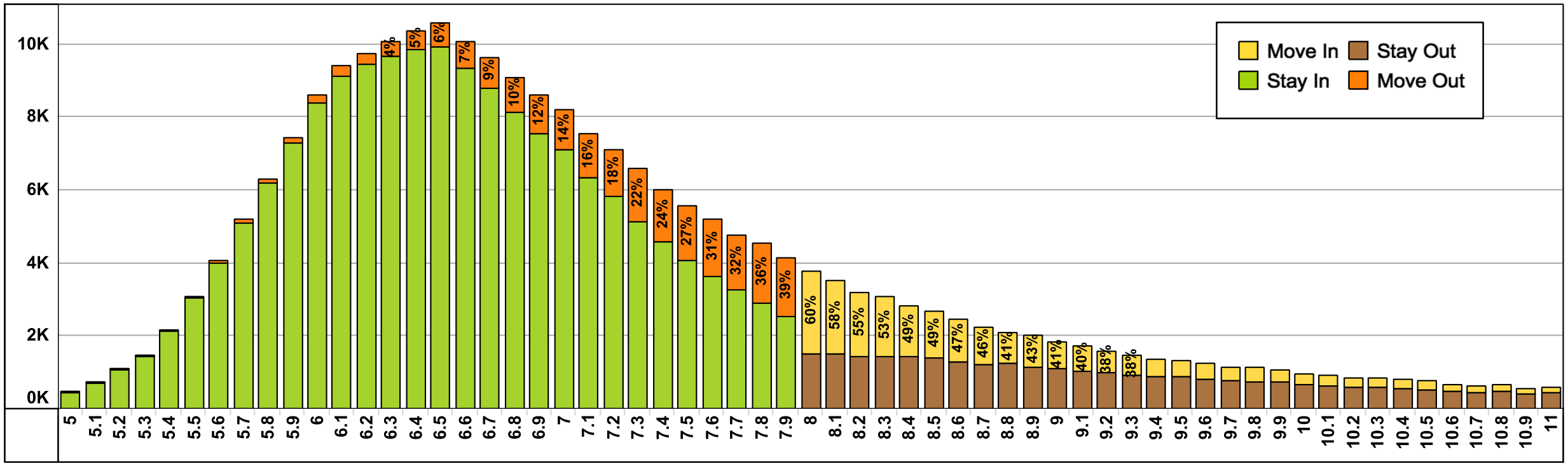
- 10% of patients (yellow) move into control, but 9% (orange) move out of control
- Δ A1c is much larger for those transitioning…transitions are not happening at the margins



Distribution of Baseline A1c and Transitions in Control

- Transitions by baseline A1c (include patients with 5.0 to 11.0 at baseline)



Changes (Δ) in A1c Control (< 8%) by Baseline A1c

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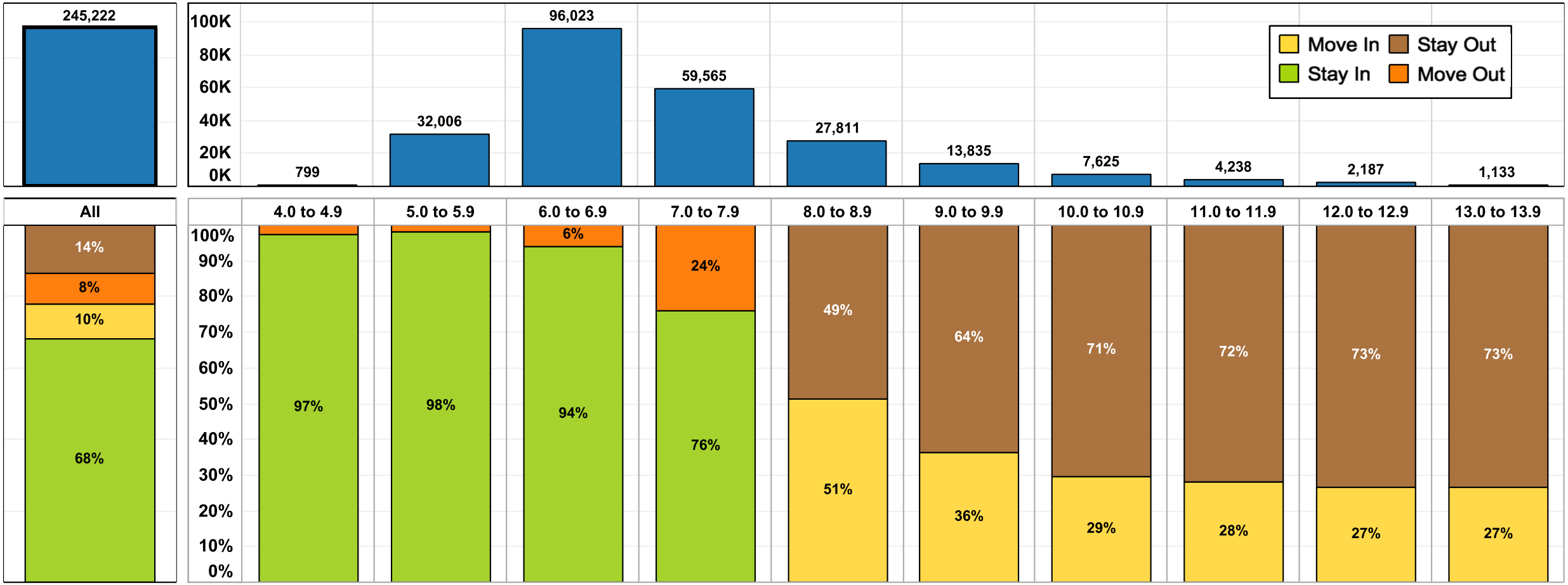

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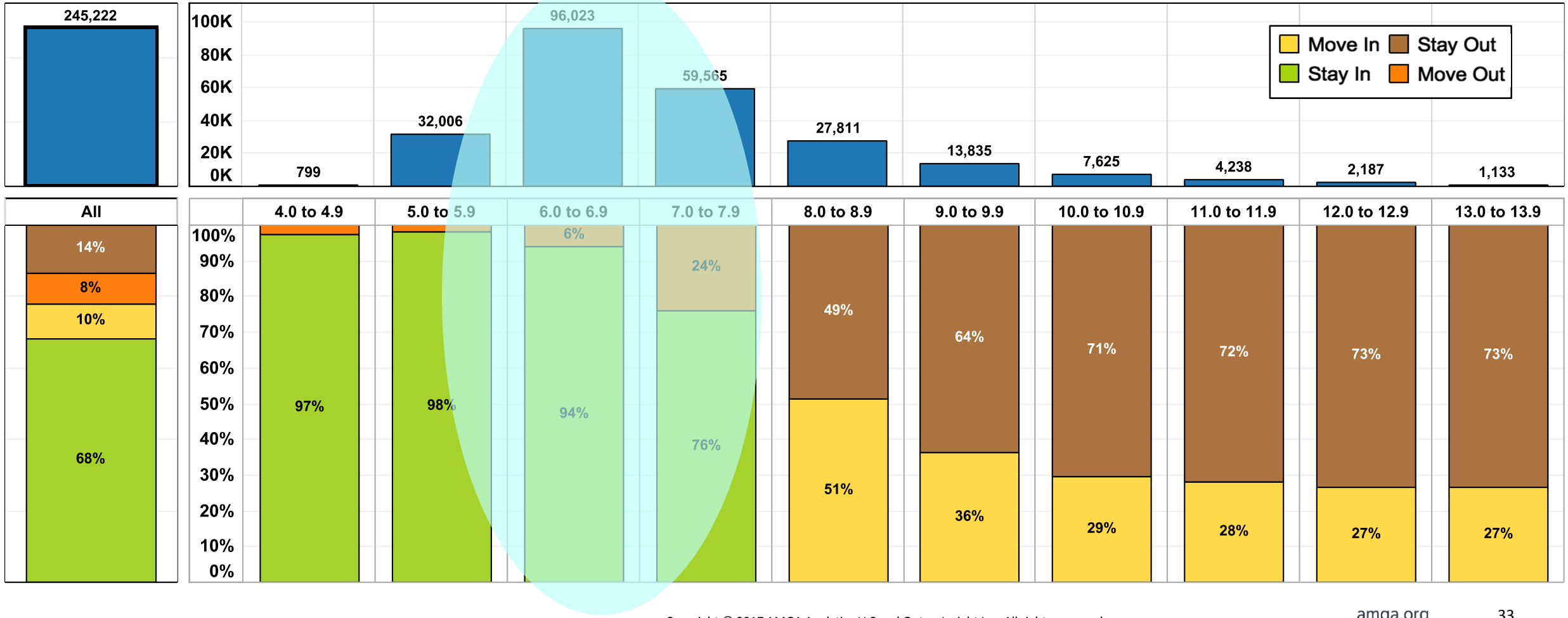


Why Predictive Model?

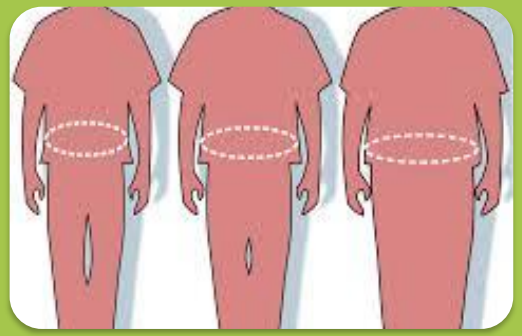
- Identify risk factors associated with patients who appear “safe” but are at risk of slipping out of control
  - Differentiate patients that are considered **“well-controlled” vs “moderately-controlled”**
    - Model 1: With baseline A1c in the range of 5.5 to 6.9
    - Model 2: With baseline A1c in the range of 7.0 to 7.9, and at least 0.5% absolute increase in A1c
  - Stratify patients by risk factors for optimal use of scarce clinical resources

- 245,000 patients with index A1c in 2015 and baseline A1c measured 12–15 months earlier
  - Restrict to population with 455 days of activity prior to baseline A1c measure (n=179,000)
  - Remove outliers (n=175,000)
  - Remove observations with missing data (n=150,000)

Candidate Predictor and Control Variables

Socio-Demographic Indicators

- Age
- Gender
- Race/Ethnicity
- Income
- Education
- Rural/Urban (RUCA)
- Insurance Status



Health Status Indicators

- Severity/Comorbidity Scores or indexes
- Utilization – IP, ED & Office Visit counts
- Related Diagnosis –e.g. Depression, Neuropathy
- Related Cohorts - e.g. CHF Cohort
- BMI, LDL, Systolic Blood Pressure

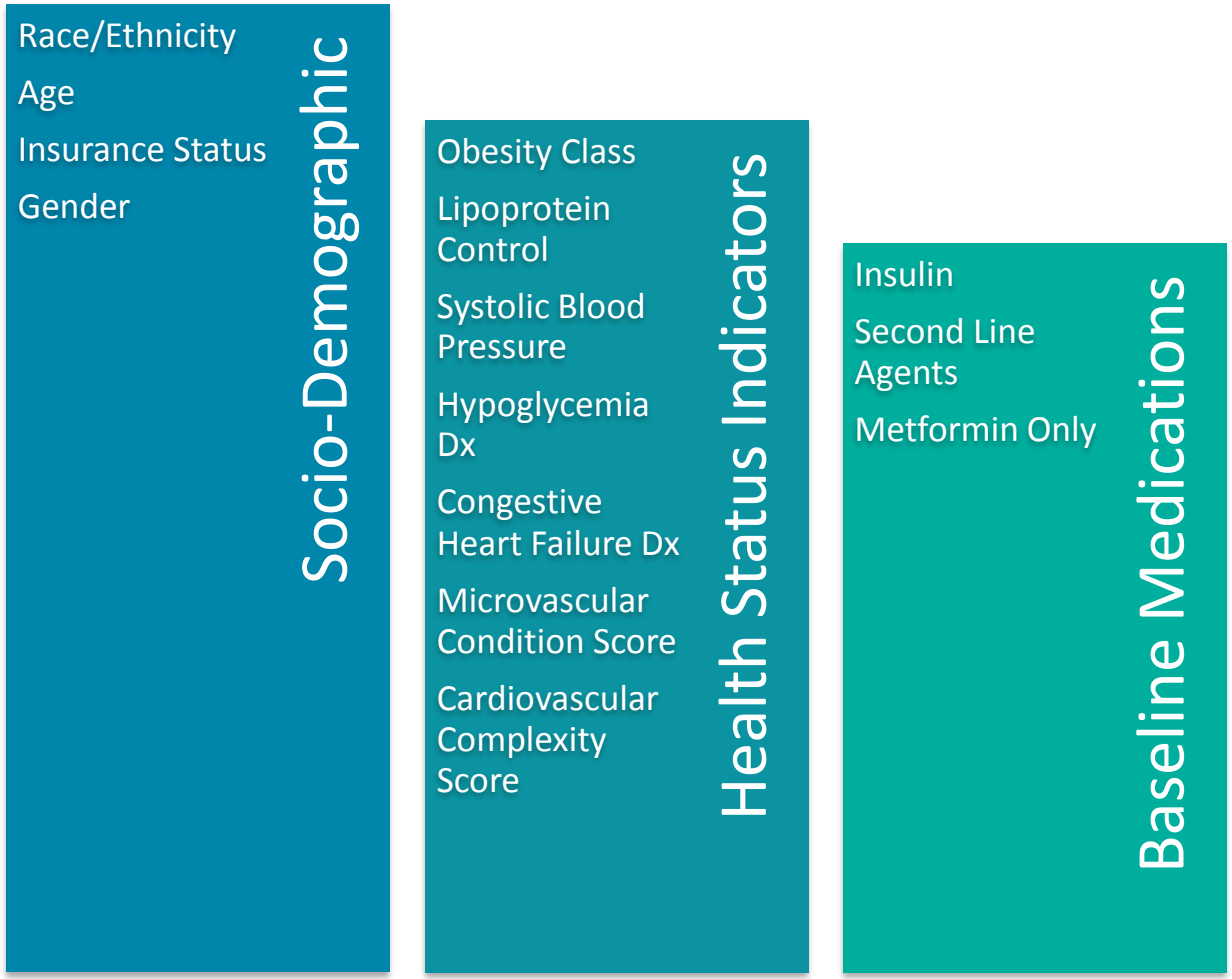
Baseline Medications

- Insulin
- Second Line DM Agents
- Metformin Only

Behavioral and Lifestyle Indicators

- Smoking Status
- Exercise
- Diabetes Management Education

Variable Selection



Variable selection was determined by:

- **Data Availability:** Variables with large number of missing observations were not used in the model
- **Univariate Analysis:** Those not found to be statistically significant at univariate level were dropped
- **Clinical Relevance and Data Diagnostics:** Of those variables measuring similar clinical constructs and to avoid correlation or collinearity, only those more clinically relevant were retained
- **Model Fit Procedure**: The final model was selected using a stepwise procedure with backward elimination

Predictive Model Key Findings

Factors with Largest Effects

For "well-controlled" population (A1c 5.5 to 6.9%)

- Age
- Male
- Hispanic non-white
- Low-income insurance
- BMI/Obesity
- Smoker at baseline
- Depression
- A1C at baseline
- Systolic blood pressure

For "moderately-controlled" population (A1c 7.0 to 7.9%)

- Low-density lipoprotein
- Congestive heart failure
- Hypoglycemia
- Microvascular Score
- Metformin only
- Insulin
- Second line agents

*variables in red are not significant in the "Moderately-Controlled" model (BL A1c of 7.0 to 7.9)

Model Validation and Application

- Risk stratification can allow for more efficient use of resources and proactive care
- Using the model results, we can rank patients in descending order by predicted probability of moving out of control (A1c ≥ 8%), then divide into percentile bands

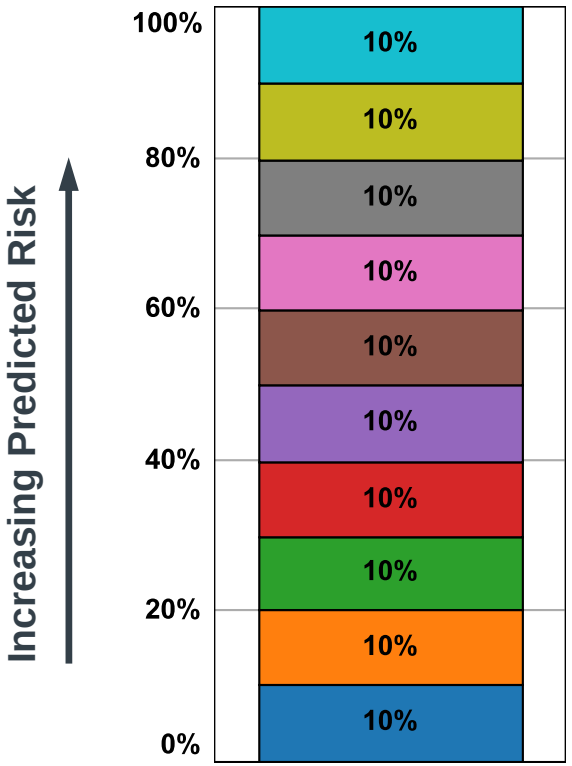
Percentile → "priority" for intervention

- How well does the model identify patients that are more (or less) at risk to move out of control relative to the average patient with A1c < 8?
- To validate the model we look at the actual experience of the patients in each ten-percentile band, over 12-15 months to see the actual proportion that transitioned out of control

Ranked Risk Predictions vs. Patients Who Actually Moved Out of Control

Patients with Baseline A1c 5.5% to 6.9%

All Patients
(Deciles: Ranked by Predicted Risk)
77,400



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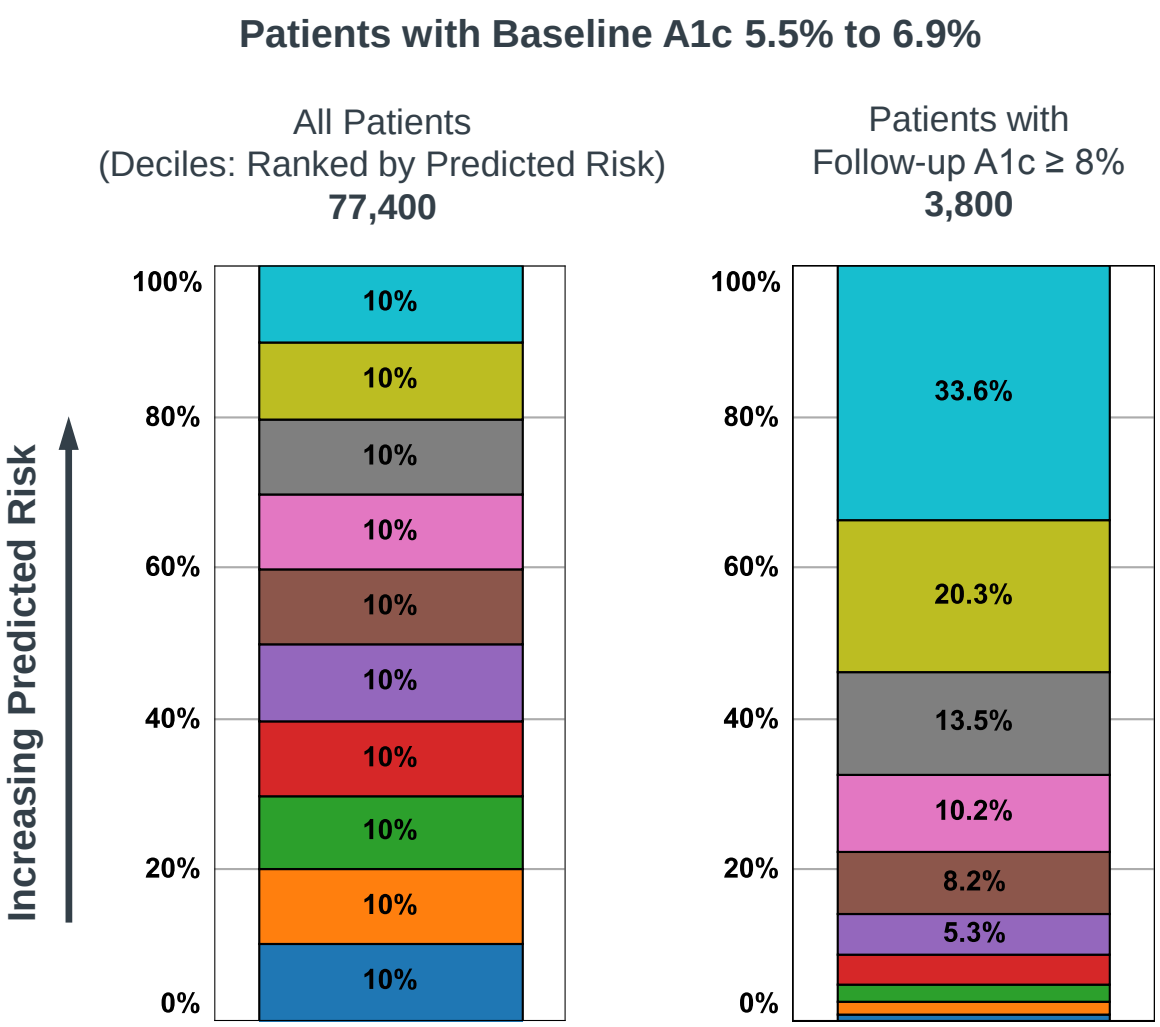

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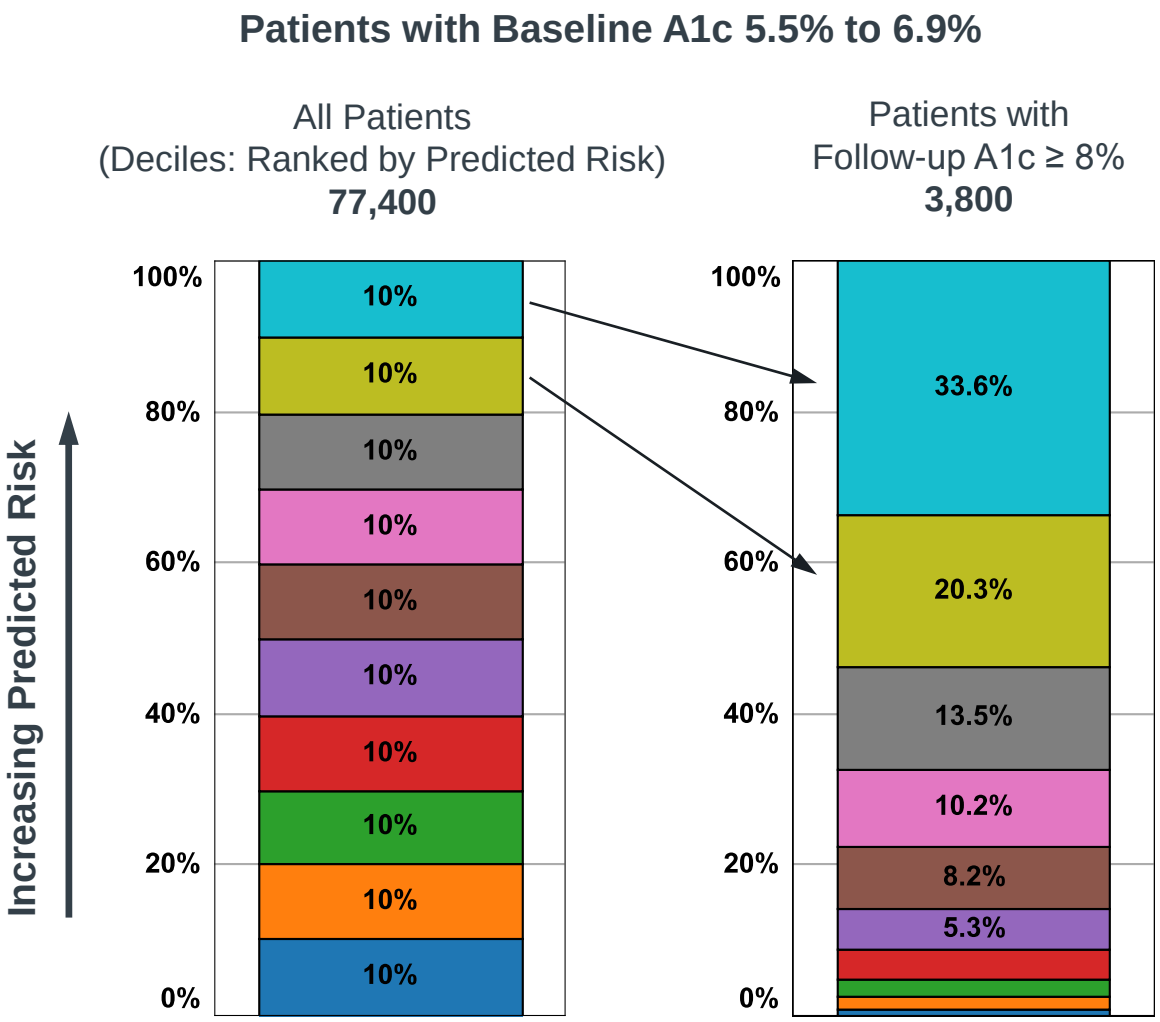
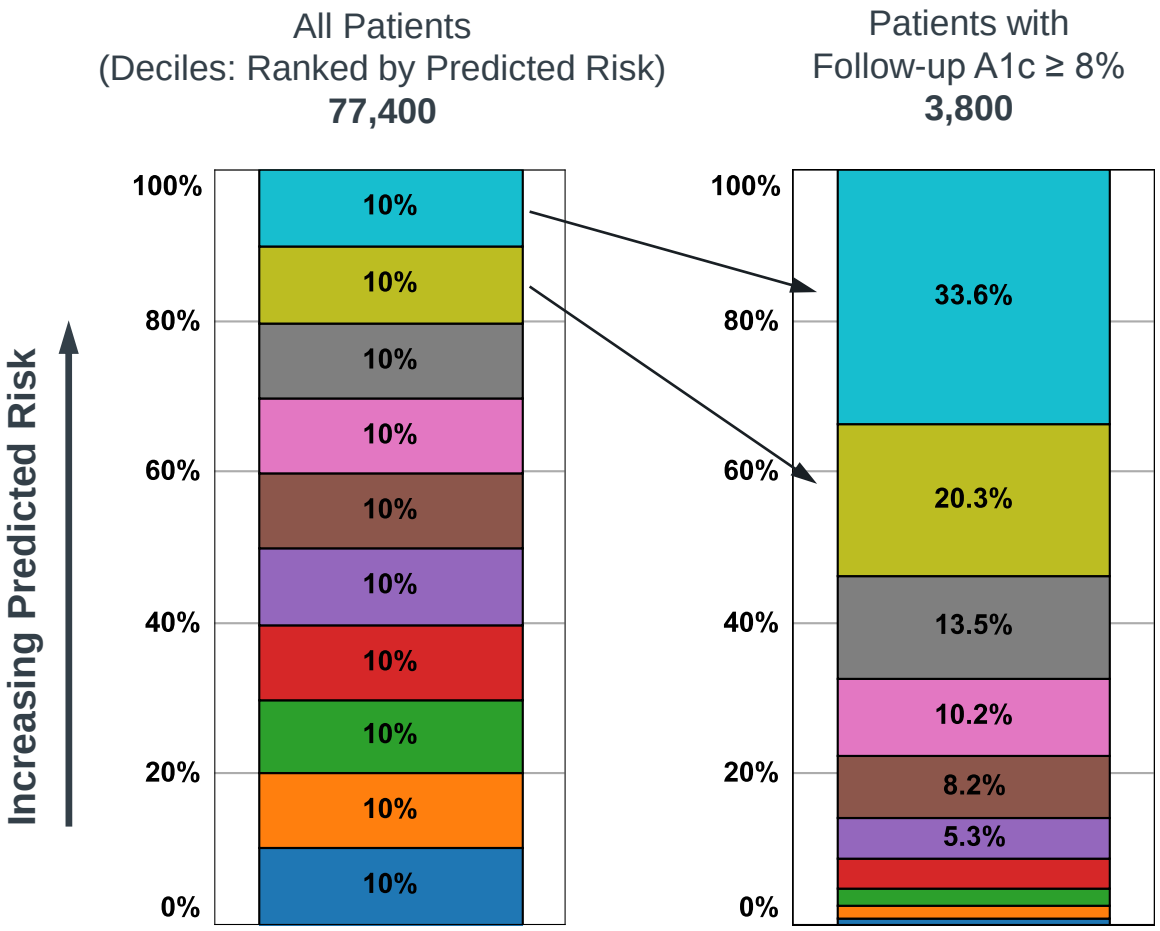
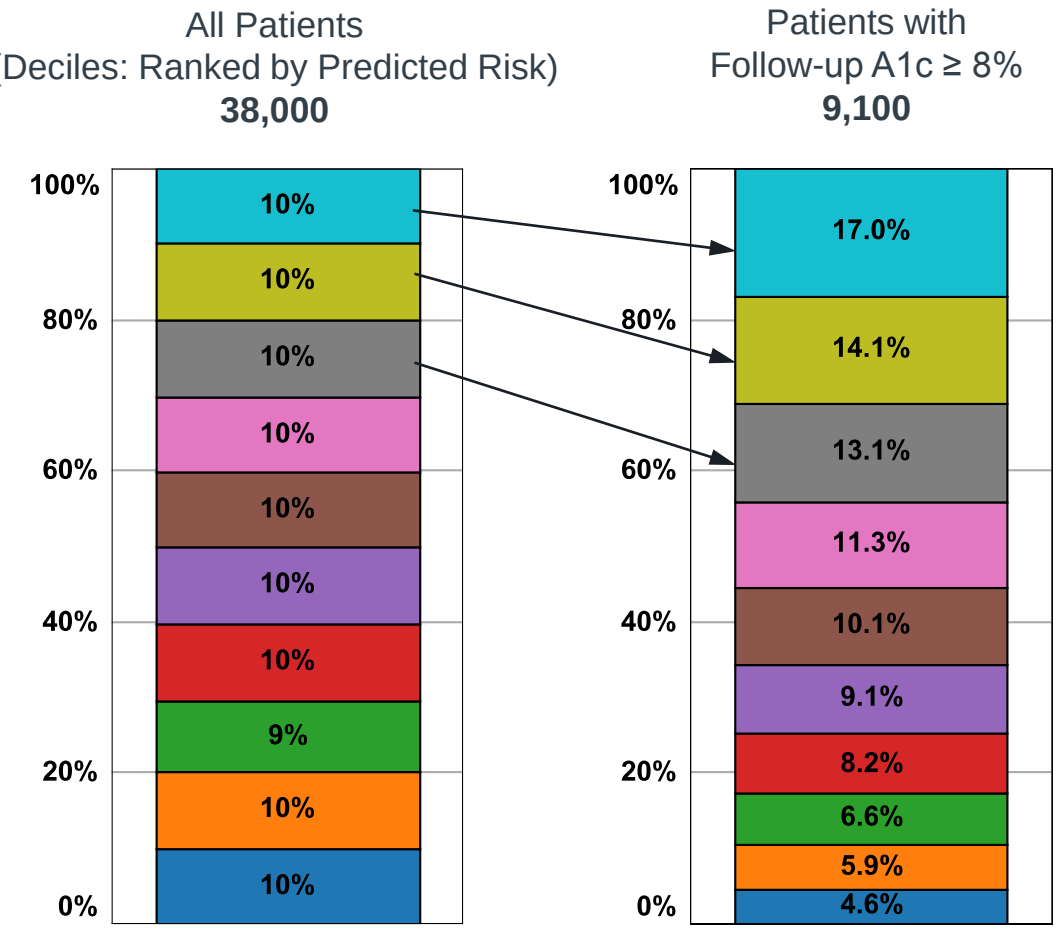


Ranked Risk Predictions vs. Patients Who Actually Moved Out of Control

Patients with Baseline A1c 5.5% to 6.9%



Patients with Baseline A1c 7.0% to 7.9%

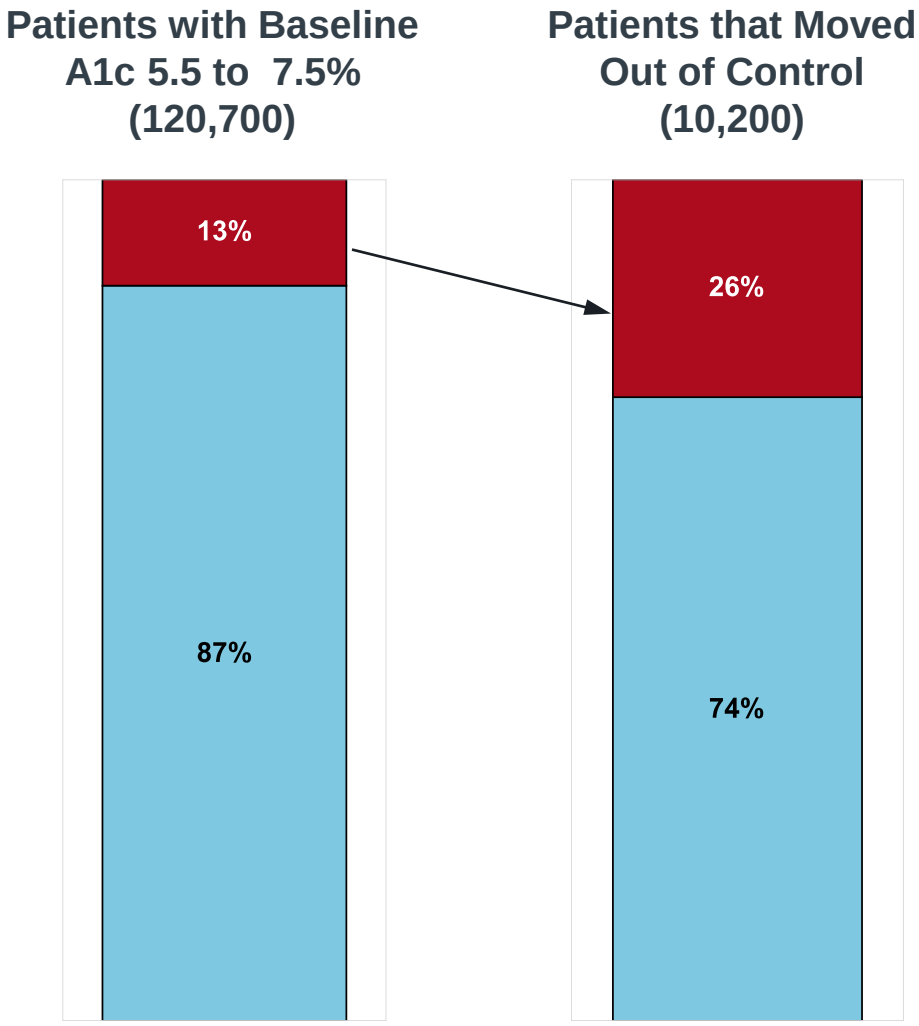


So, How Does this Help?

- Use readily available predictors to identify and stratify patients and target resources towards those most at risk of moving out of control
- In red, we identified an at-risk population (*relative to a goal of < 8%*):

Baseline A1c 5.5 to 6.9	**AND**	**Baseline A1c 7.0 to 7.5**
❑ Males		
❑ Baseline Insulin or 2nd line Rx		❑ Baseline Insulin or 2nd line Rx
❑ Class 2 or 3 obesity		❑ Class 2 or 3 obesity

- This at-risk group represents 12% of with baseline A1c ≤ 8 (that is patients that are at least 0.5% below the control threshold), and 26% of those who subsequently moved out of control (≥ 8%)
- Using this "rule of thumb" method to stratify your population you are able to concentrate patients who move out of control by a factor of > 2
- Once you identify those at the highest risk of slipping out of control… now what?



Once We Identify those Most at Risk…Now What?

- Examine the effect of specific interventions:
  - After accounting for differences in patient factors, identify which interventions have the largest impact on diabetes management and for which patients.
  - Examine differential impact of these interventions between those in-control and out-of-control at baseline.

Weight Control and Exercise

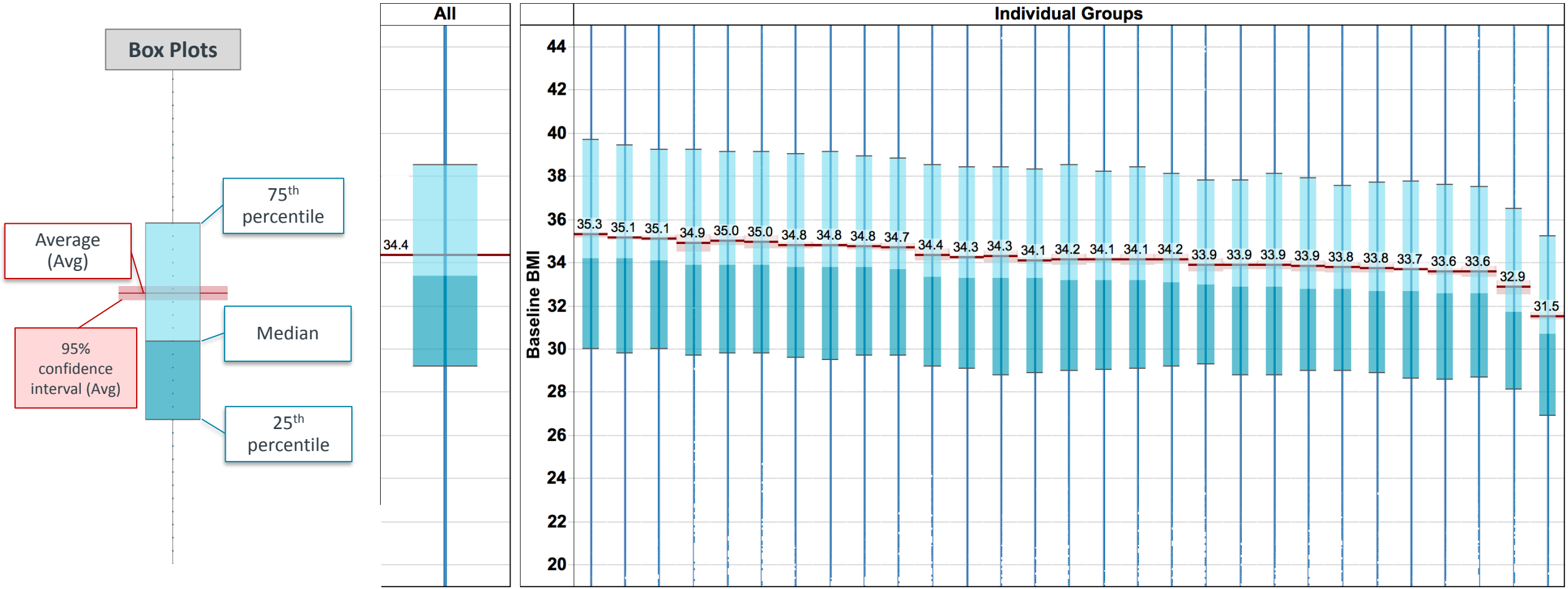
Access to Regular or Improved Care

Nutrition Counseling & Diabetes Education

Medication Regimens and Adherence

BMI Distribution by Medical Group

- 245,000 patients aged 18–75 with type 2 diabetes, plurality of care (24 months) with primary care, endocrinology, cardiology, or nephrology, and both index A1c in 2015 and baseline A1c measured 12–15 months earlier
- Left: Baseline BMI distribution for all organizations combined Right: BMI distribution for individual groups



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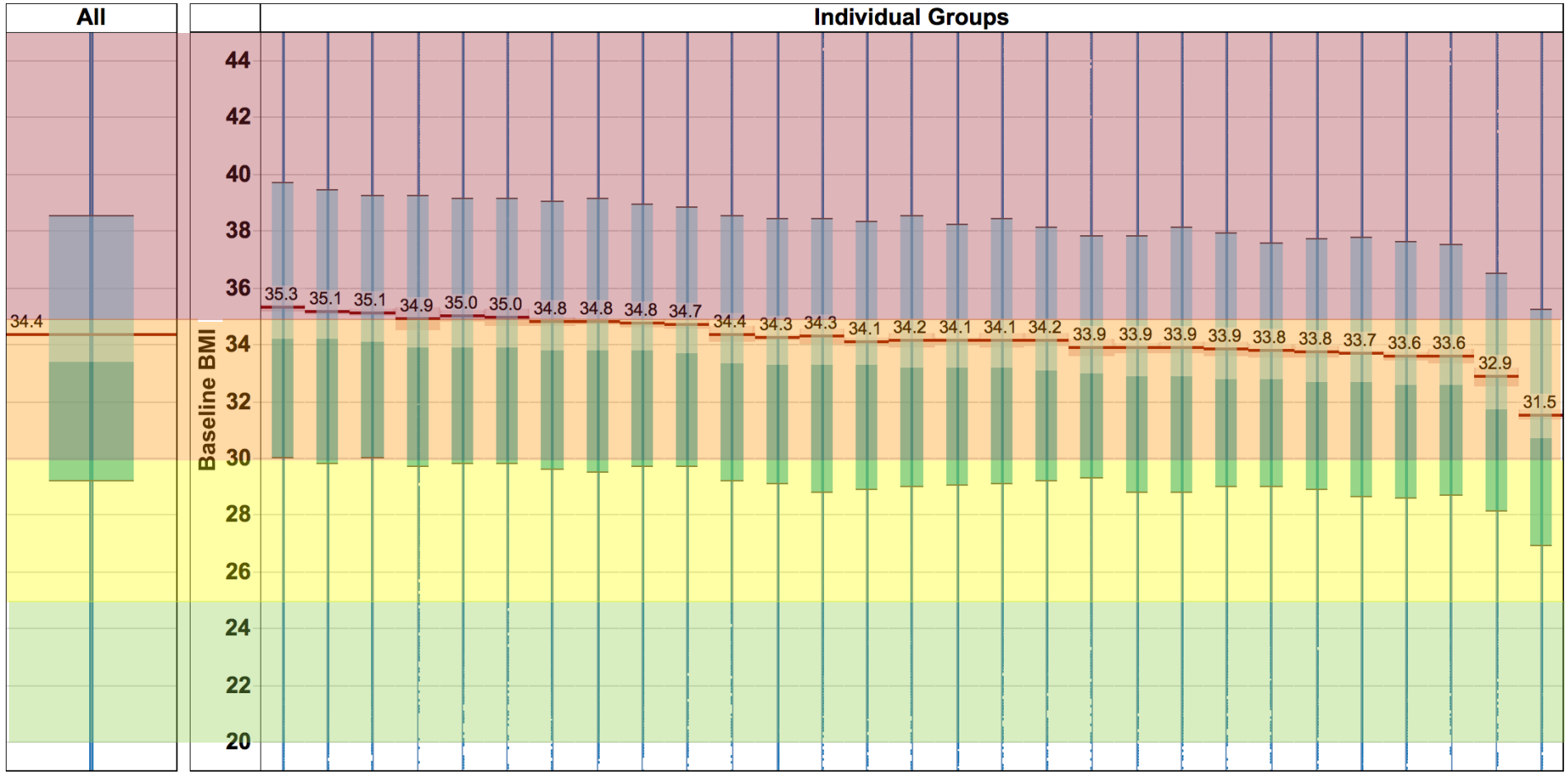
Class 2 and 3 Obesity

Class 1 Obesity

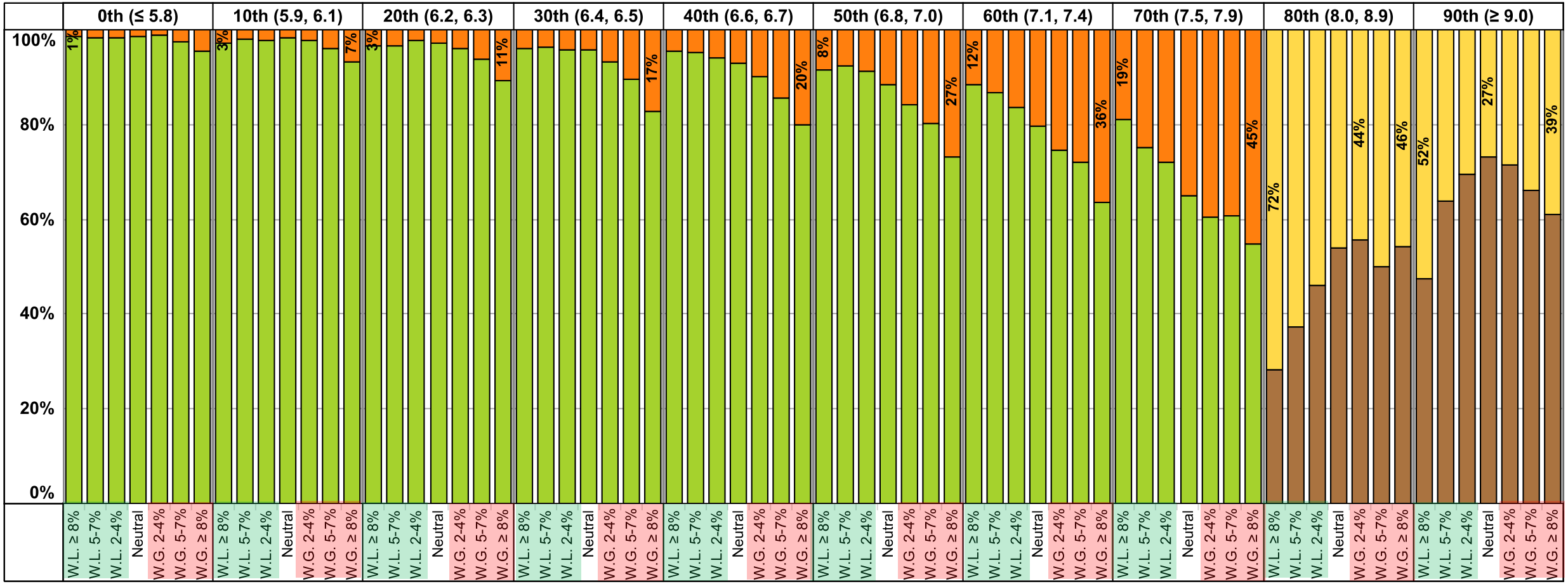
Overweight

Normal Weight



Transition Status by Baseline A1c and ΔWeight

- On the top is A1c at baseline by decile, within each decile the different columns represent varying degrees of weight loss/gain between baseline and follow-up
- Moving from left to right within a decile signifies less weight loss or more weight gain (good to bad)



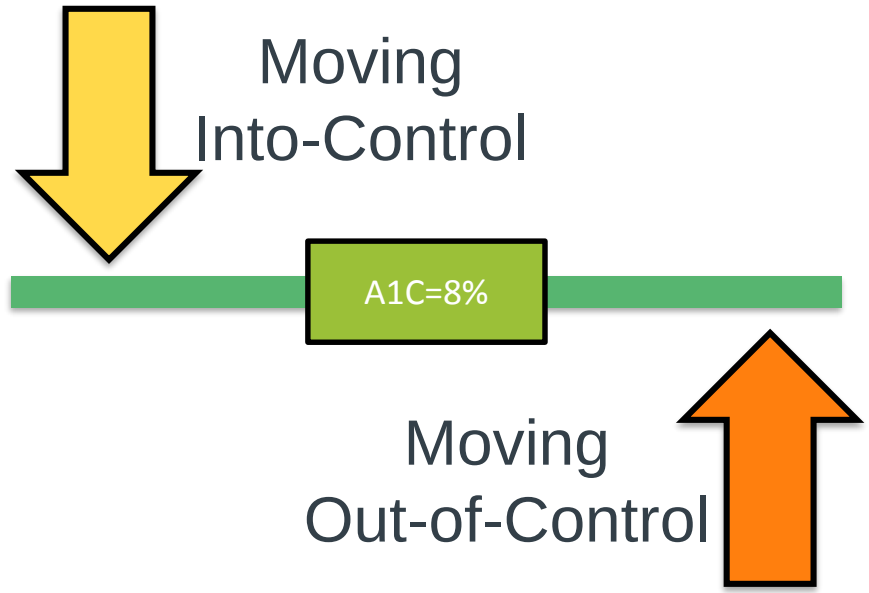
Modeling the Effect of Interventions on A1C Control

- To estimate the effect of an intervention on patients we felt it was important to differentiate the patients moving into control from those moving out
- Three different model specifications predicted odds of A1c control at follow-up based on baseline A1c status

Model A: All patients, controlling for baseline A1c status

Model B: A1c ≥ 8% at baseline

Model C: A1c < 8% at baseline



Modeling the Effect of Weight Loss on A1c Transitions

	Model A	Model B	Model C
Outcome Variable	A1C at Followup In-Control <8%		
Baseline A1C	**All patients**	**A1C ≥8**	**A1C<8**
Weight Loss 2 to 4%	19.2%	27.4%	15.7%
Weight Loss 5 to 7%	51.3%	69.5%	40.4%
Weight Loss Greater Than or Equal to 8%	144.6%	195.4%	99.9%
Number of Patients	150,395	33,877	116,518

Note:
(i) Reference Category is Weight Neutral (+/- 2%)
(ii) Controlling for socio-demographic factors, health status indicators and baseline medications
(iii) Controlling for baseline A1C in Model A

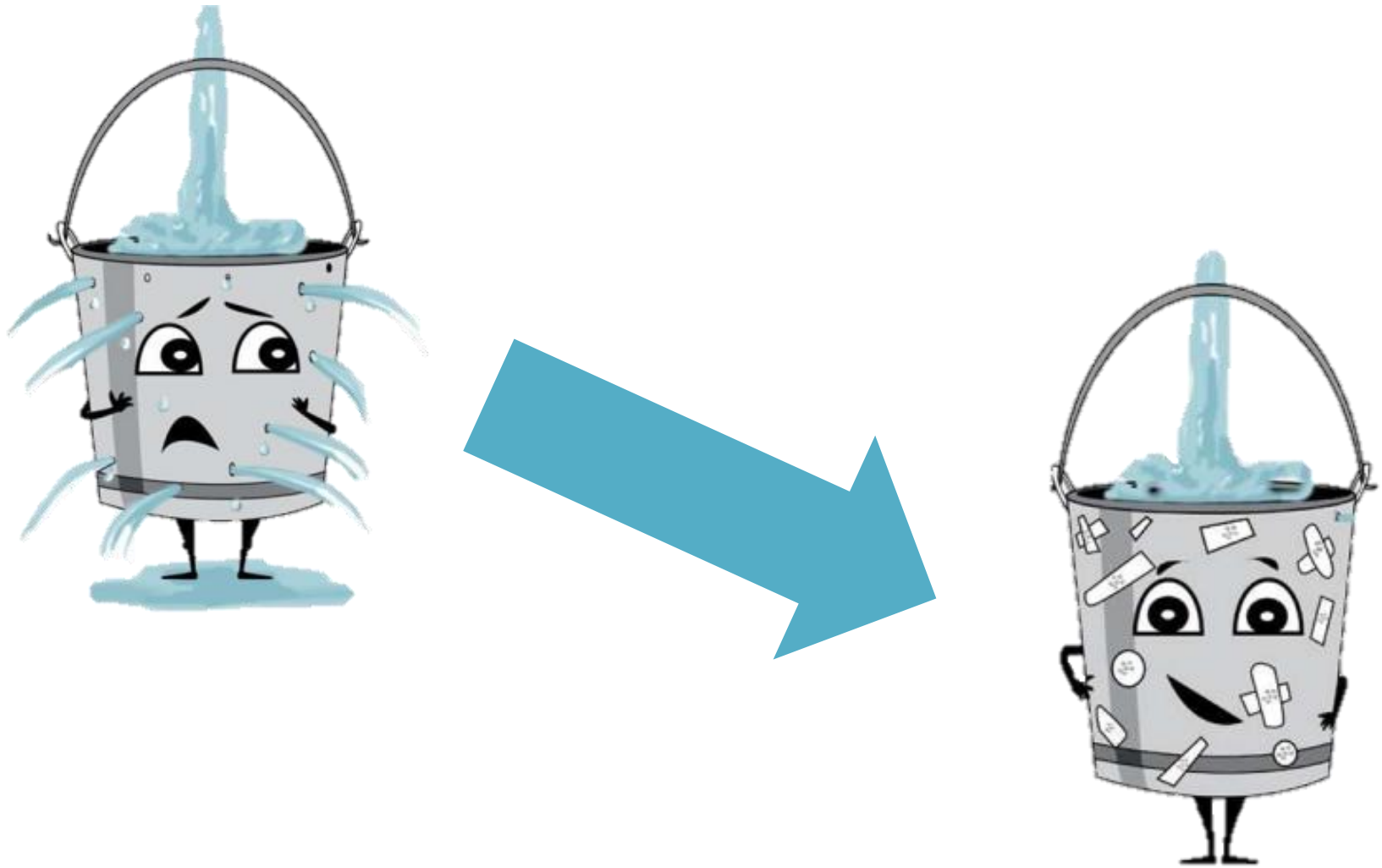
- Weight loss is associated with better A1c control
- We see incremental increase in the percentage probability of moving into-control with increase in weight loss.
- The effect is most pronounced for those out of control at baseline (A1c ≥ 8%), nearly 2x more likely to move into control with a weight loss of 8% or more
- **But most important**, the effect of weight loss is significant for even small changes in weight and for maintaining control (or for those with baseline A1c < 8%)

Further Investigation

- Refine predictive model for glycemic control state transitions
  - Check ages 18–89 (only 18–75 thus far)
  - Explore individualized threshold (6.5 to 8.5% based on ADA Guidelines)
  - Refine rules of thumb for “safe” patients at greatest risk of slipping out of control
  - Create calculator to incorporate into EHRs

- Explore interventions
  - Weight Control ✓
  - Medication Regimens and Adherence
  - Nutrition Counseling & Diabetes Education
  - Access to Regular or Improved Care

} *data constraints*



Thank you

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