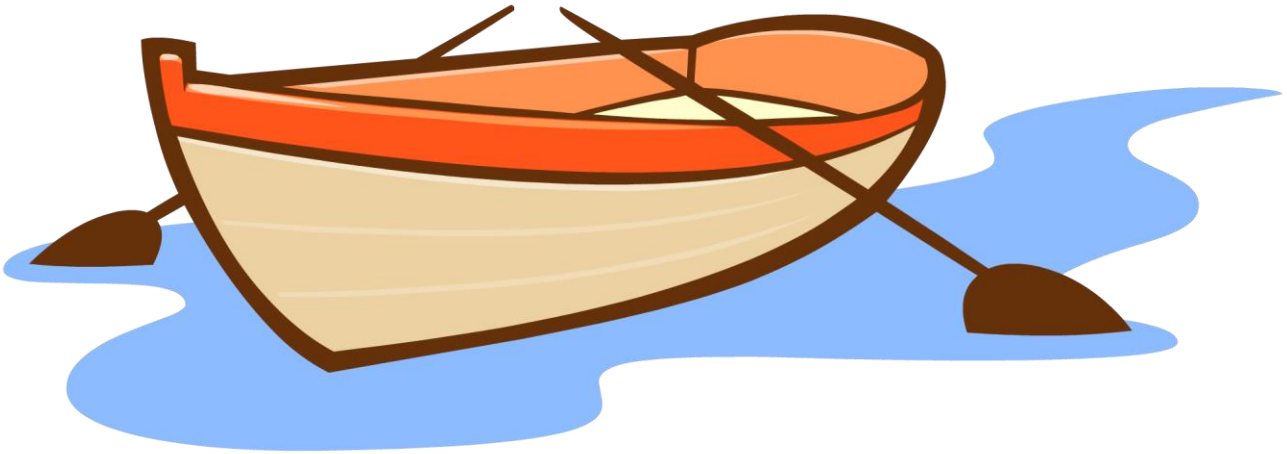
EY Entrepreneur Of The Year®

2015 Award Winner

RowdMap



Methodology Details

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Background and Context

Understanding the importance and relevance of Risk-Readiness®

Methodology Deep Dive: Clinical & Quality

Understanding the clinical components in RowdMap's methodology and how RowdMap takes into account and thinks about quality when scoring providers

Methodology Deep Dive: Indexing Scores

Understanding how scores are built and the methodology we use to ensure providers are scored appropriately and with validity

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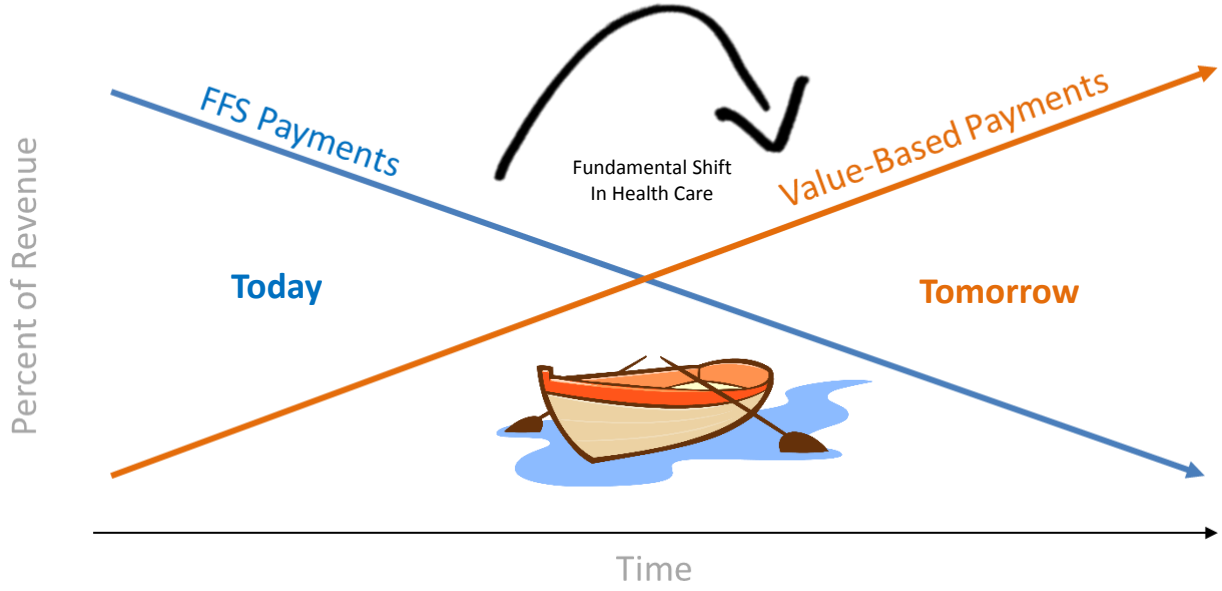
Background and Context

Why Risk-Readiness®?

After decades of fee-for-service reimbursement in the United States, health plans, government payers, hospitals systems, and physician groups have begun adopting new models of health care financing.



The Centers for Medicare and Medicaid Services (CMS) have accelerated this shift by releasing data and incentivizing both payers and practitioners to deliver health care in a way that emphasizes value over volume.

Background and Context

Why Risk-Readiness®?

Health plans have increasingly fewer options to manage risk given guaranteed issue and standardized benefit designs.

Demand-Driven

Member-Driven Risk Management v1

Profitability driven by choosing which members could buy which products.

Individual underwriting decreased or eliminated.

Benefit-Driven Risk Management v2

Profitability driven by designing benefits and pricing products to reduce demand.

Less flexibility in benefit decreased or eliminated.

Supply-Driven Risk Management v3

Profitability driven by identifying and reducing waste from low-value care

Who will move beyond demand-driven risk management and address the real opportunity: eliminating low-value care?

Currently, thirty cents of every U.S. healthcare dollar goes to low-value care. Reducing that low-value care reduces the cost of ownership of your network. There is a tangible economic impact that can either be kept, or reinvested in payment to high-value providers or benefit to members.

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Background and Context

Why Risk-Readiness®?

Economic pressures, political changes, and shifting socio-demographic trends will continue to constrain per-member reimbursement. Managing network expenditures represents the only consistent opportunity across all lines of business and payment/delivery models.

RHIOs
PCMH
RomneyCare

→

HITECH
ACA

→

MACRA
MIPS

→

What's
next…

High-Value Network

Focus on providers who manage unwarranted variation and reduce the delivery of low-value care. This network foundation can support all innovation opportunities and regulatory changes while withstanding competitive threats.

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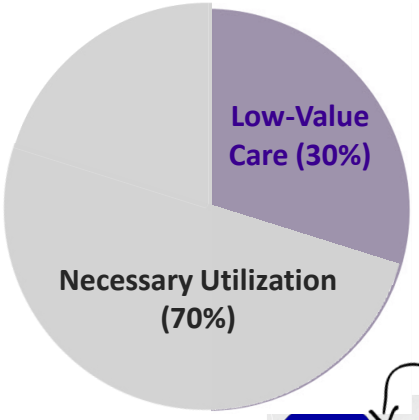
Background and Context

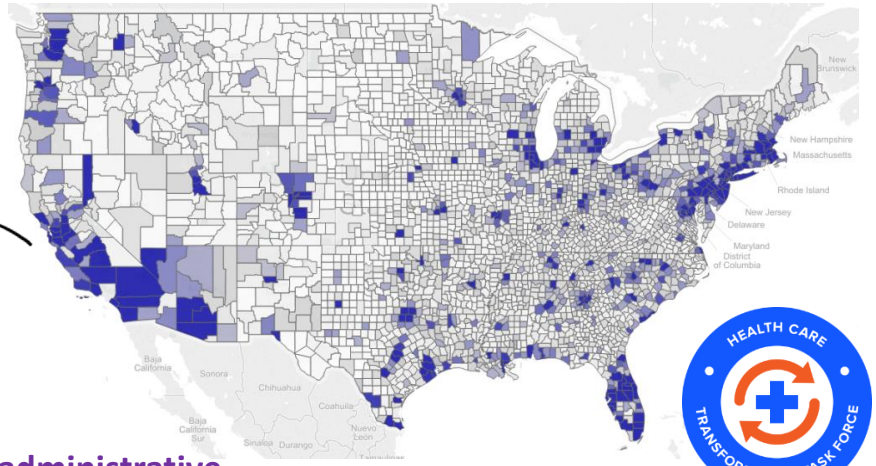
Why Risk-Readiness®?

The economic driver for pay-for-value programs is the ability of a government program or marketplace arrangement to not only achieve Triple Aim goals but to also mitigate Low-Value services, which account for thirty cents of every dollar spent on the delivery of care.



Over $9B in Orange County, CA

$900 Billion Unnecessary Spend



"It's generally agreed that **about 30 percent of what we spend on healthcare is unnecessary**. If we eliminate the unneeded care, there are more than enough resources in our system to cover everybody."

-Dr. Elliott Fisher

"**Bigger than higher prices, administrative expenses, and fraud**, however, was the amount spent on unnecessary healthcare services." **In just a single year, up to 42% of patients receive "Low-Value" Care.**

- Dr. Atul Gawande, Harvard University

Dr. Patrick Conway, Former Principal Deputy Administrator for Innovation and Quality, Chief Medical Officer, CMS

Background and Context

Why Risk-Readiness®?

Key Concepts Instrumental to Transforming the US Healthcare System

The current health care system is unsustainable.
To remain solvent, the system must transform delivery and payment of care.

1 Geographic Variation:

Geographic Variation has been documented and researched since the early 1970's in the Dartmouth Atlas of Healthcare[1]. Geographic variation describes the variation in delivery of healthcare services across the U.S. More specifically, the delivery of healthcare services varies dramatically across geographies, even after adjusting for demographics, disease prevalence, and socioeconomic risk.

Healthcare is continually changing and RowdMap is changing with it. While there are 40 years of research we are borrowing from, as new research and methods are defined, we work them into our scores.

2 High and Low Value Care:

These categories of care were researched and brought to light with the Institute of Medicine's work in 2012 and then codified and made practical by Choosing Wisely[2] , a coalition of more than 70 specialty societies. High value care is care that creates a positive health outcomes for the health care dollar. Low value care is care that is delivered in place of an alternative treatment, where the alternative actually yields at least similar if not better outcomes at a lower cost.

RowdMap's goal is to combine these two concepts to identify care delivery patterns that lead to low value care and care delivery patterns that lead to high value care. Mitigating low value care will reduce total health care expenditures in the U.S. Healthcare System.

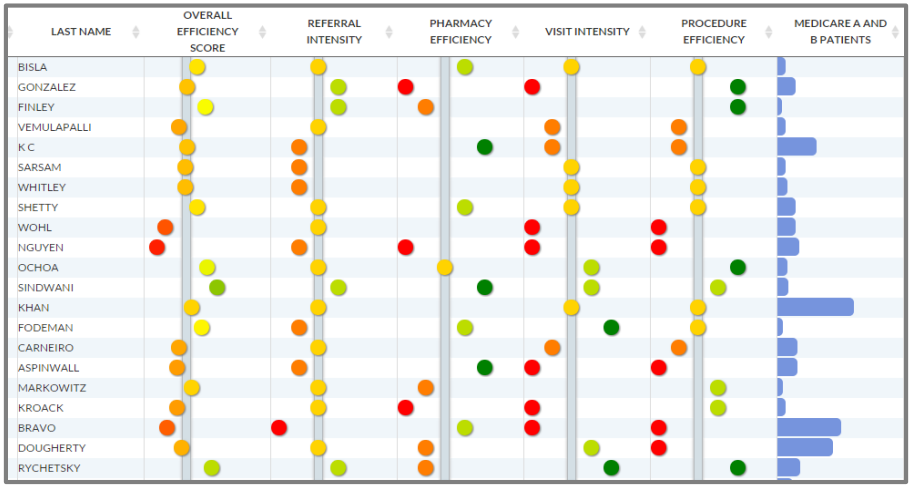
We use publicly available Medicare FFS data because it is the largest data set ever released and allows us to identify patterns of healthcare markets and individual providers.

1. http://www.dartmouthatlas.org/
2. www.choosingwisely.org

Background and Context

What is Risk-Readiness®?

RowdMap's **Risk-Readiness® benchmarks** help health plans, physician groups, and hospital systems **identify, quantify, and reduce delivery of low-value care**—a central tenet of successful pay-for-value programs.



RowdMap has **low-value care** and **population health** benchmarks for…

every physician,
every hospital,
every zip code

…in the United States.

By working with RowdMap to reduce low-value care, your network will:

- ☑ Reduce overall medical expenditures
- ☑ Become the primary lever of risk management
- ☑ Serve as a core chassis to be used across lines of business
- ☑ Deliver competitive differentiation for bid, product, marketing & sales

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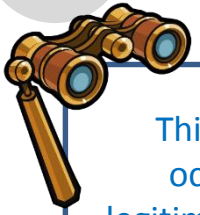
Background and Context

What is Risk-Readiness®?

A high performer exhibits patterns that align with pay for value models. They create value for whoever owns the risk.

1



This is how CMS views providers, but occasionally there are outliers with legitimate aberrational patterns. RowdMap will help you drill into this to explain why.

5

A lower performing outlier has optimized practice patterns around a specific economic model, FFS. This does not mean this provider is a poor clinician. In pay for value, these outliers may add additional risk.

RowdMap

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Clinical and Quality
Clinical Relevance Overview

RowdMap's approach is aimed at identifying whole-system care patterns that are aligned with high value care delivery. Identifying high value providers and pathways are essential for population health risk management. This provides a clinically sound approach to measuring medical economics. Specifically:

1. **Scores show providers how they compare to other similar providers in the same healthcare environment**
2. **Scores are rooted in medical economics research and mapped to the way providers make clinical decisions**
3. **Scores take into account all of the provider's activity throughout the course of a year. Scores combine traditional quality indicators with medical economics to measure value creation at a population level**
4. **Scores utilize specialty-specific metric sets**

1 Clinical and Quality
Creating Relevant Peer Groups

Peer groups are comprised of providers within the same **specialty or subspecialty** and in the same **geography**. Each metric is scaled relative to the given cohort of peers. This process ensures that each physician can be fairly compared against her counterparts.

Geography

Your Geography is Your Destiny

There are marked differences in the supply of health and care between different geographies. This leads to patterns of care that are specific to each area. Within each area, and within that ecosystem, there is considerable variation in how providers construct care. Because local providers work within the same supply-system, our comparisons are made within geographies to better understand how individual provider behavior impacts on the value choices they make.

Specialty Type

You are What You Do

We have found that even within same specialty, some physicians perform more complex procedures or focus on a few conditions or procedures more than others. For these specialties, we create peer groups at a sub-specialty level.

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Provider Peer Groups

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1 Clinical and Quality
Creating Relevant Peer Groups

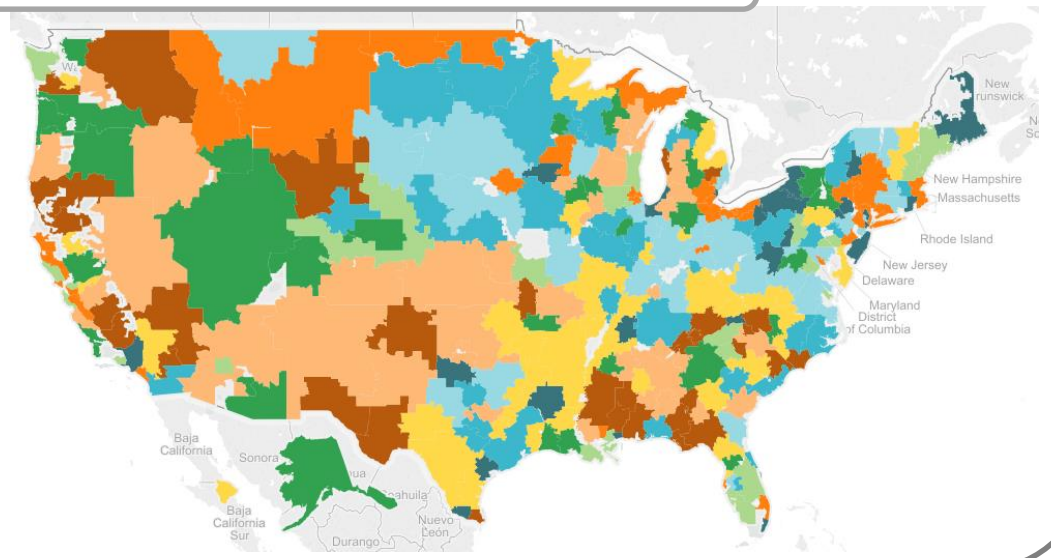
RowdMap uses Hospital Referral Regions (HRR) to define peer group geographies. The HRR is a geographic unit, used by the Dartmouth Atlas for Health Care, to define the hospital service area containing the referral hospital or hospitals most often used by residents of the region. CMS, RowdMap and many other organizations use this geographical framework to make comparisons.

HRRs are classified into 9 ecosystems based on their population health and health care supply. HRR ecosystems serve as a peer geography in cases where there are fewer than 10 peers in an HRR.

Hospital Referral Region Ecosystems

Ecosystems are defined based on similarities in patient health and provider supply characteristics

- Health Good: Supply High
- Health Good: Supply Low
- Health Good: Supply Medium
- Health Medium: Supply High
- Health Medium: Supply Low
- Health Medium: Supply Medium
- Health Poor: Supply High
- Health Poor: Supply Low
- Health Poor: Supply Medium

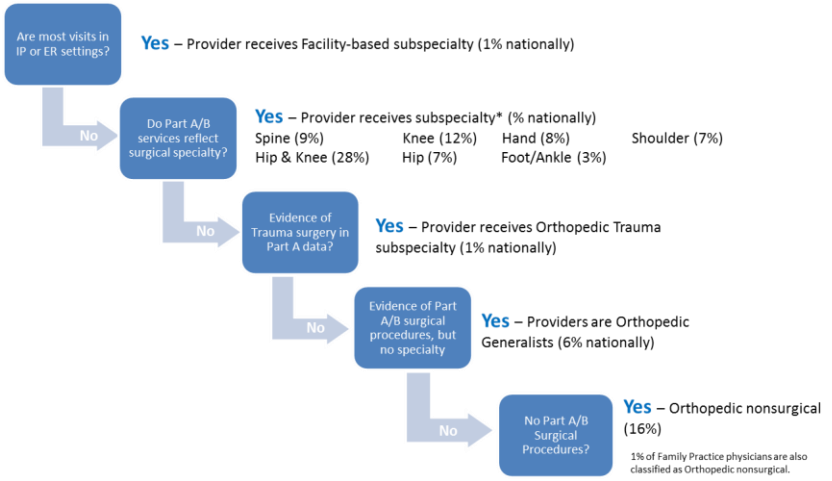


1 Clinical and Quality
Creating Relevant Peer Groups

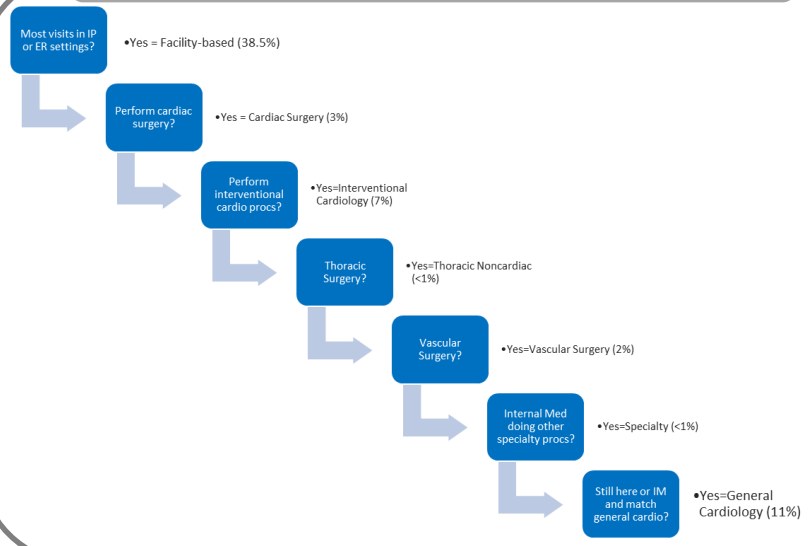
To level the playing field for fair comparisons, RowdMap develops algorithms to assign physicians to peer groups with similar geography and specialty. Heterogenous specialties (such as orthopedics, internal medicine, and cardiology) are further split into subspecialties based on how they spend their time as reflected in the CMS data.

For example, orthopedic surgeons who primarily perform back surgeries are grouped for comparison with other back surgeons. Internal medicine physicians with activity similar to cardiologists are classified as cardiology and not compared to internal medicine providers who function as primary care.

Orthopedic Sub-Specialty Definition Methodology

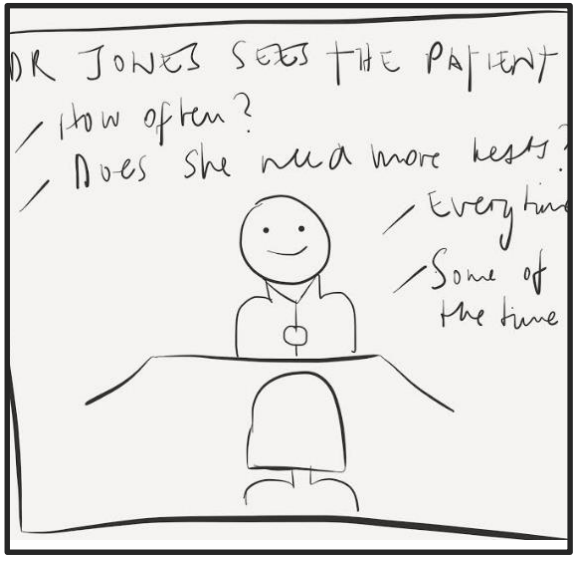


Cardiology Sub-Specialty Definition Methodology



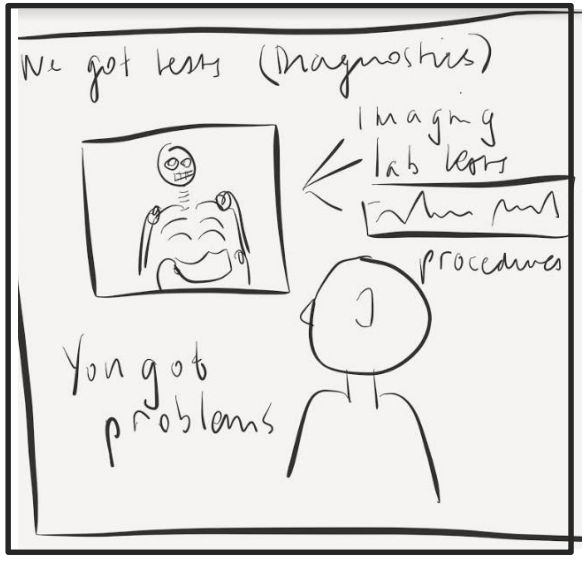
2 Clinical and Quality
Mapping to Clinical Decision Making

RowdMap starts with public data from CMS and builds clinical ontologies that classify provider visit, procedure, and pharmacy claims into clinically meaningful categories that serve as the foundation for our unwarranted variation analytic benchmarks and scores.



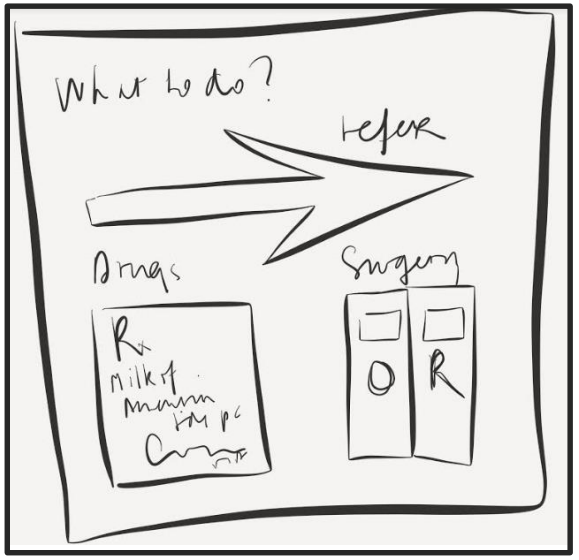
It all starts with a visit
where a plan of care is devised

How often are visits?
What's done in a visit?
What happens after a visit?



*A visit leads to **diagnostic tests and procedures***

How many tests/procedures?
What kinds of tests/procedures?
What's the cost of the test/procedures vs. alternatives?



*Tests and procedures lead to **Rx use and referrals to specialists, like surgeons***

How many scripts or referrals?
What kinds of scripts? Generic vs. Brand?
What kind of referrals? What kinds of surgeries?

RowdMap

2 Clinical and Quality
Mapping to Clinical Decision Making

RowdMap's measures are mapped to metric trees that roll up to scores across domains aligned to mimic clinical reasoning and decision-making.

1 ***Clinical Quality Outcomes***
(i.e. what is the best outcome)

2 ***Medical Economic Outcomes***
what is the best outcome for the $.

3 ***Map to the way providers make clinical decisions***

Visits | **Procedures** (Diagnostic & Therapeutic) | **Pharmacy** | **Referrals**

Visit Score
measures how quickly a visit escalates into additional services like procedures, images, tests and eventually surgery.

Procedure Score
measures how intense a doctor practices medicine, compared to peers. Does she jump immediately to high intensity treatments or start with conservative treatments?

Pharmacy Score
measures, compared to peers, how a doctor prescribes medications. How often, how much and what kind of prescriptions are common with this provider?

Referral Score
measures both the number, performance and appropriateness of the providers in this physician's value chain.

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3 Clinical and Quality
Combining Economics and Quality

Multiple metric types are combined to measure value. Metrics are designed to measure clinical quality and medical economics with the highest-level score encompassing both as a reflection of a provider's overall value compared to peers.

1 *Clinical Quality Outcomes*
(i.e. what is the best outcome)

2 *Medical Economic Outcomes*
what is the best outcome for the $.

3 *Map to the way providers make clinical decisions*

Visits | **Procedures** (Diagnostic & Therapeutic) | **Pharmacy** | **Referrals**

Umbrella metrics
aggregate measure of quality

Process metrics
stepping stones to quality

Absolute metrics
indicators of inherit value

Marker metrics
indicators of comparative value

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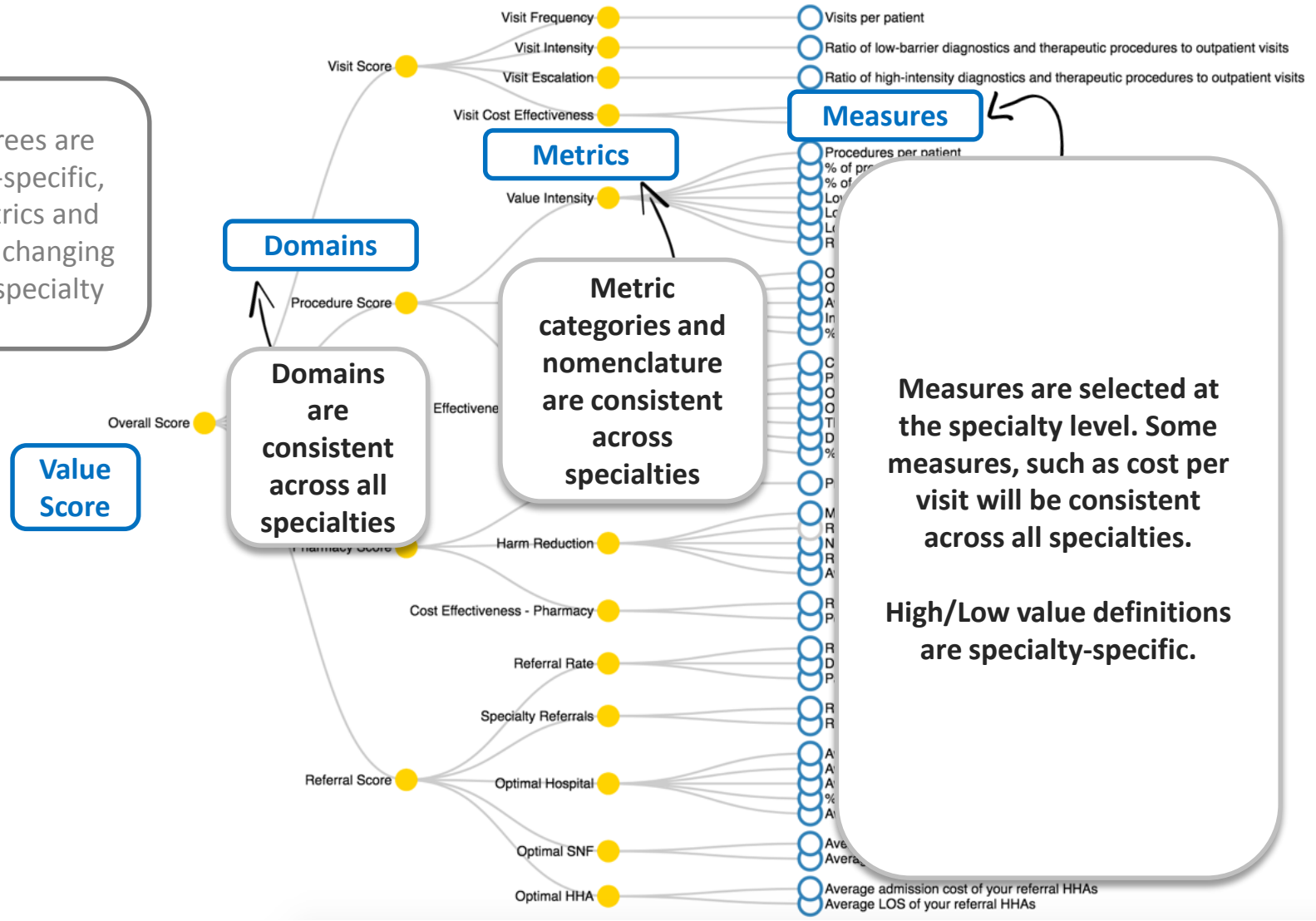
4 Clinical and Quality
Creating Specialty-Specific Metrics

Metric trees are specialty-specific, with metrics and measures changing for each specialty



Clinical and Quality
Summary

RowdMap uses the Dartmouth Atlas, Choosing Wisely, and academic research to define high and low value practice patterns and mines Medicare claims data (parts A, B, and D) to find evidence of these patterns and identify physician who are likely to succeed in risk-based arrangements.

Measures are designed to capture the full spectrum of care delivered across inpatient, outpatient and pharmacy settings as well as referral activities. In addition to comparing providers to peers on cost and utilization, specialty-specific measures uncover areas of overuse and underuse based on Dartmouth Atlas concepts of unwarranted variation.

Multiple metric types are combined to measure value. Absolute metrics reflect investment value from a population health perspective. Marker metrics identify practice patterns that appear outside the norm relative to peers. RowdMap's measures are mapped to metric trees that roll up to scores across domains aligned to mimic clinical reasoning and decision-making. Branches in the tree are designed to measure clinical Quality (i.e., what is the best outcome) and medical economics (i.e., what is the best outcome for the money), with the highest-level score encompassing both as a reflection of a provider's overall value compared to peers.

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Risk-Readiness® Scoring

What is Behind the Scores?

Red dot providers exhibit practice patterns that may be clinically appropriate, but optimized around a FFS economic model.

Low Performing
Overall Value Score = 5

High Performing
Overall Value Score = 1

Green dot providers exhibit practice patterns that align with pay-for-value models and make money for whoever owns the risk.

Provider profiles can be shown at physician level or rolled up in a variety of ways.

Blue bars indicate Medicare Part B fee-for-service volume.

PROVIDER	FIRST NAME	LAST NAME	OVERALL VALUE SCORE	VISIT SCORE	PROCEDURE SCORE	PHARMACY SCORE	REFERRAL SCORE	MEDICARE FFS PATIENTS
1396700647	PETE	MAYFIELD						1186
1487615415	MICHAEL	HARPER						693
1447386651	FARHEEN	HASNAIN						325

Overall Value Score averages the four domains into an overall composite score.

Visit Score measures intensity of practice patterns within a visit and how quickly a visit escalates into additional services like procedures, images, tests and eventually surgery.

Procedure Score measures cost effectiveness and intensity of how a doctor practices medicine, compared to peers. Does she jump immediately to high intensity treatments or start with conservative treatments?

Pharmacy Score measures, compared to peers, how a doctor prescribes medications. How often, how much and what kind of prescriptions are common with this provider?

Referral Score measures the number, performance, and appropriateness of the providers downstream referral destinations..

RowdMap

Our Approach

These Data and Approach is a Tool for Business Planning

- Underlying methods and metrics are common, but they are put together and built in a specific way
- Mimics decision process of patient - physician interaction
- Sets up cascades of patient care that represent the optimal pattern for the market

Goal

- ☐ Built with purpose
- ☐ Interdisciplinary
- ☐ Transparent and easy to read

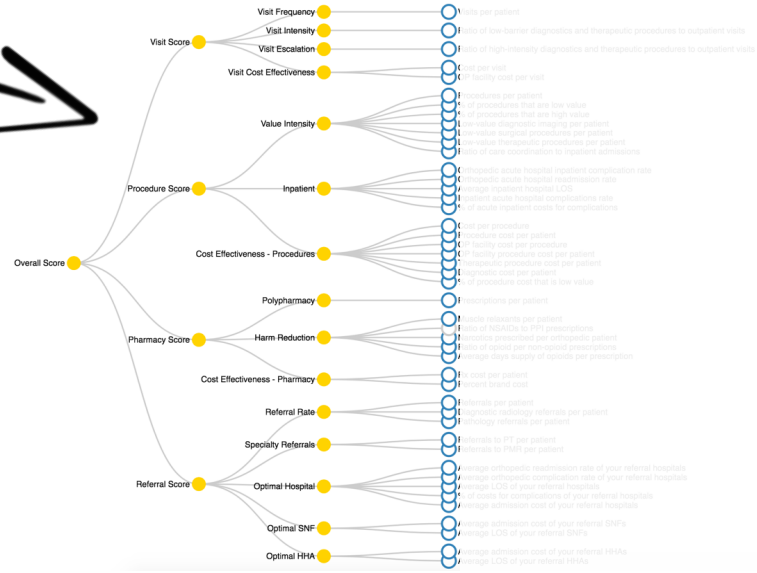
Indexing and Scores

Risk Readiness® Score Development

Let's Show You How we build the Risk Readiness® Scores!

Risk Readiness® scores are built at the individual provider NPI level. Each provider has a metric tree to describe their practice patterns. Depending on their specialty, the factors that contribute to their pattern change. In this example, we show a metric tree for an orthopedic provider.

Specialty-Specific Metric Trees*



Each Metric Tree is Specialty Specific. There is a different Metric Tree for Ortho vs. Cardio. But scores are Built the Same.

*We are using Medicare FFS Parts A, B & D Data

Indexing and Scores

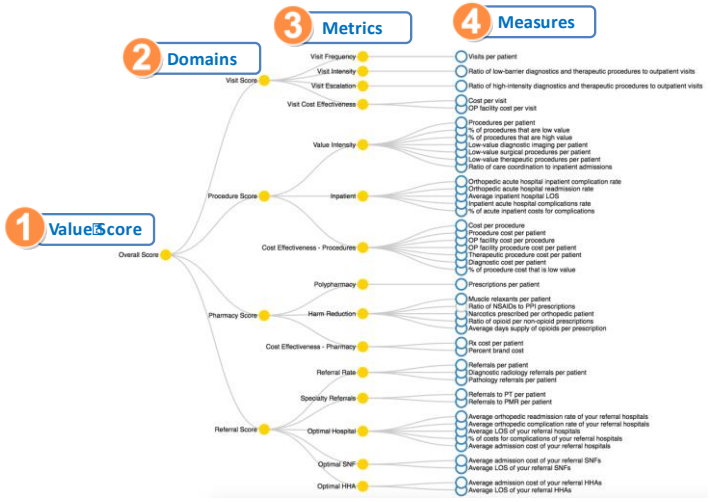
Risk Readiness® Score Development

The Metric Tree has 4 levels

We start at level 4: Measures

The Measures are Raw Values. Each of the measures (level 4) consists of a numerator and denominator derived from our clinical ontology. For example:

$$\frac{\text{Number of Diagnostic Procedures}}{\text{Number of Total Non-Visit Procedures}}$$



4 Starting at level 4, measures, a set of quintiles is defined for each measure within each peer group.

3 To create the parent level 3 score, the measures' (Level 4) quintiles are first averaged to create the baseline parent level 3 score. For each base score type, the base scores are then put into quintiles relative to the provider's peer group. This results in the final level 3 scores.

2 The level 2 (domain) scores are created similarly. The level 3 scores associated with each level 2 domain scores are averaged. These averages are then put into peer group based quintiles to create the level 2 domain scores.

1 The level 1 overall value score is the average of the level 2 domain scores. The resulting distribution is approximately normal.

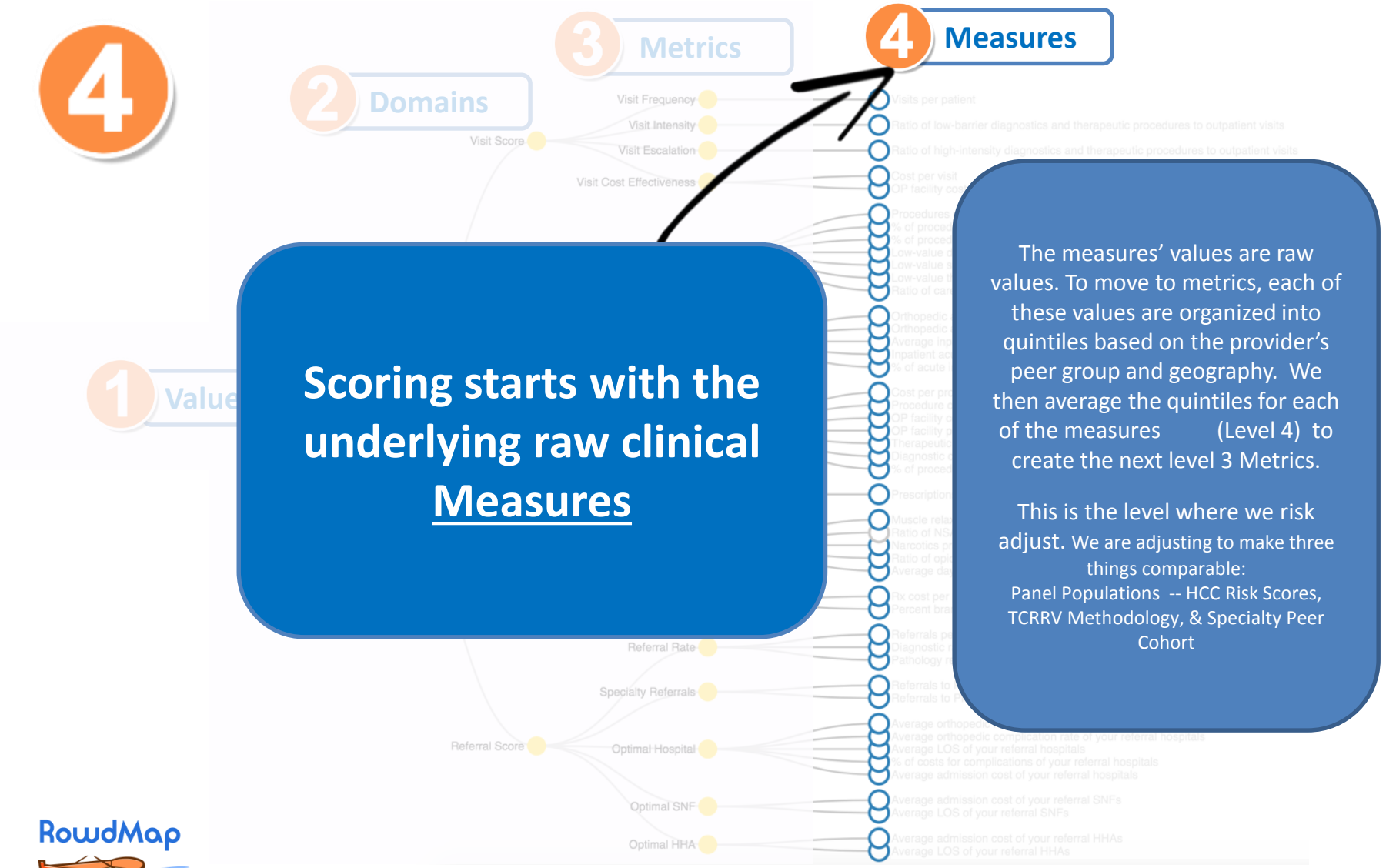
Indexing and Scores

Risk Readiness® Score Development

RowdMap

Indexing and Scores

Risk Readiness® Score Development



Scoring starts with the underlying raw clinical <u>Measures</u>

The measures' values are raw values. To move to metrics, each of these values are organized into quintiles based on the provider's peer group and geography. We then average the quintiles for each of the measures (Level 4) to create the next level 3 Metrics.

This is the level where we risk adjust. We are adjusting to make three things comparable:
Panel Populations -- HCC Risk Scores, TCRRV Methodology, & Specialty Peer Cohort

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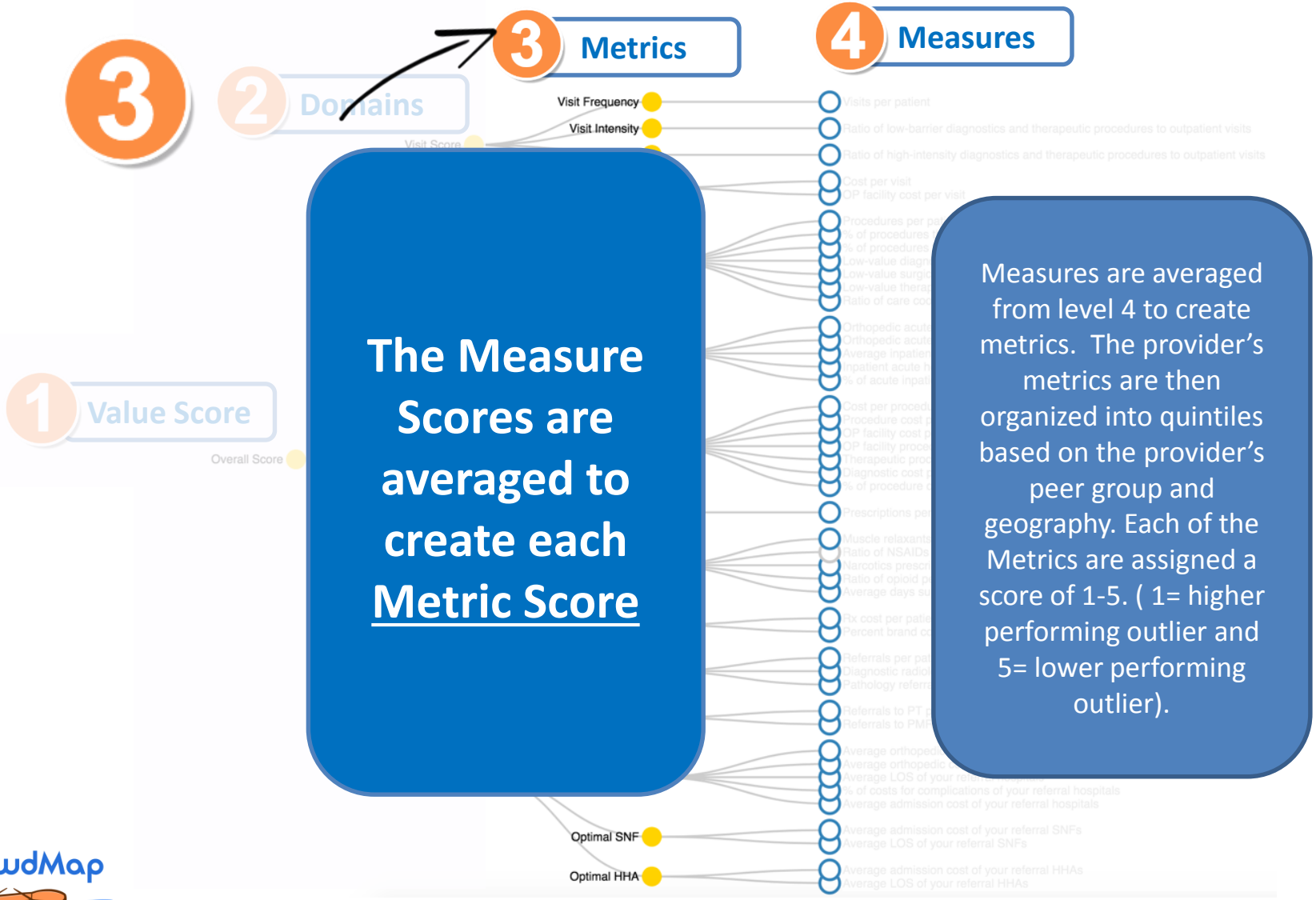
Indexing and Scores

Risk Readiness® Score Development



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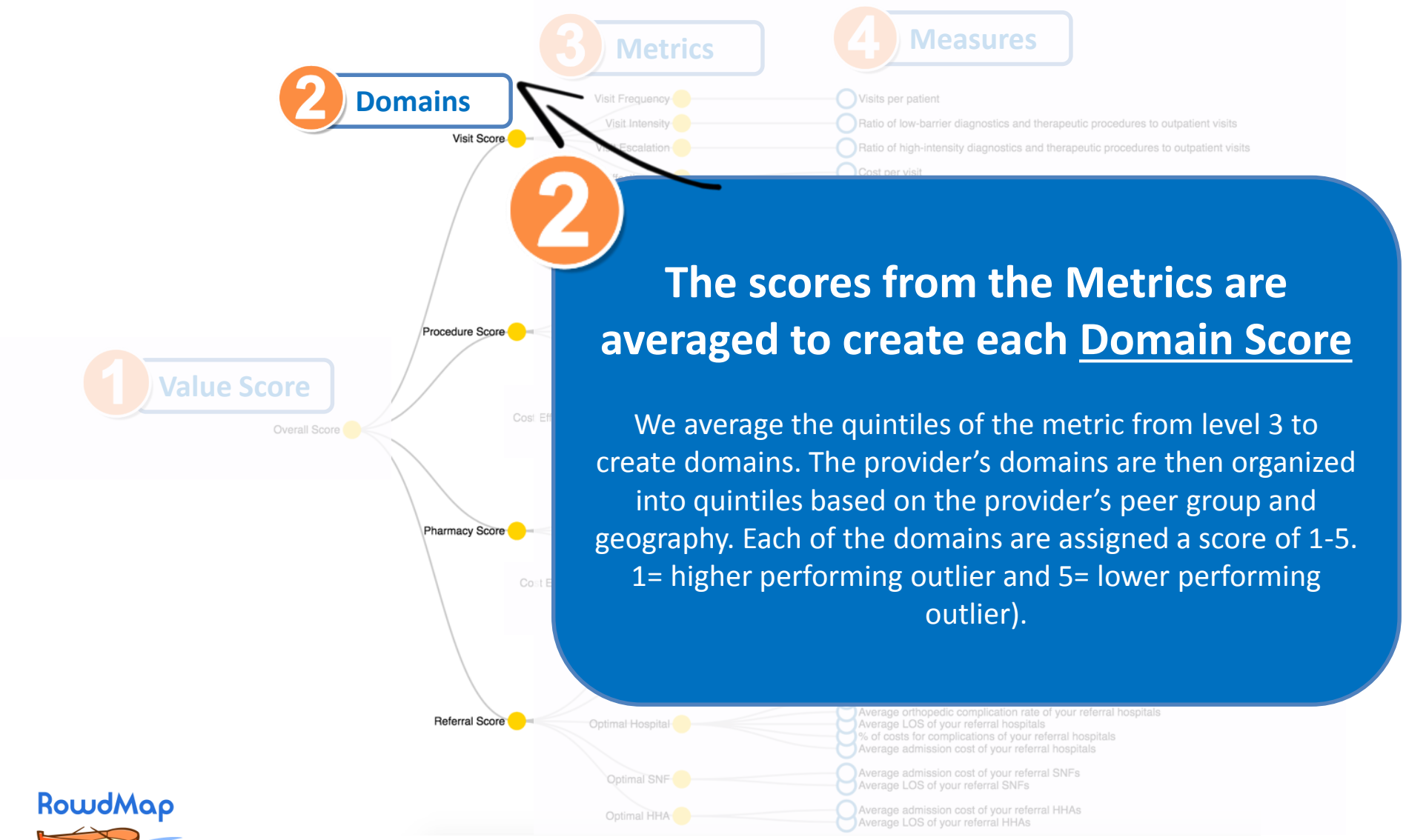
Indexing and Scores

Risk Readiness® Score Development



The scores from the Metrics are averaged to create each Domain Score

We average the quintiles of the metric from level 3 to create domains. The provider's domains are then organized into quintiles based on the provider's peer group and geography. Each of the domains are assigned a score of 1-5. 1= higher performing outlier and 5= lower performing outlier).

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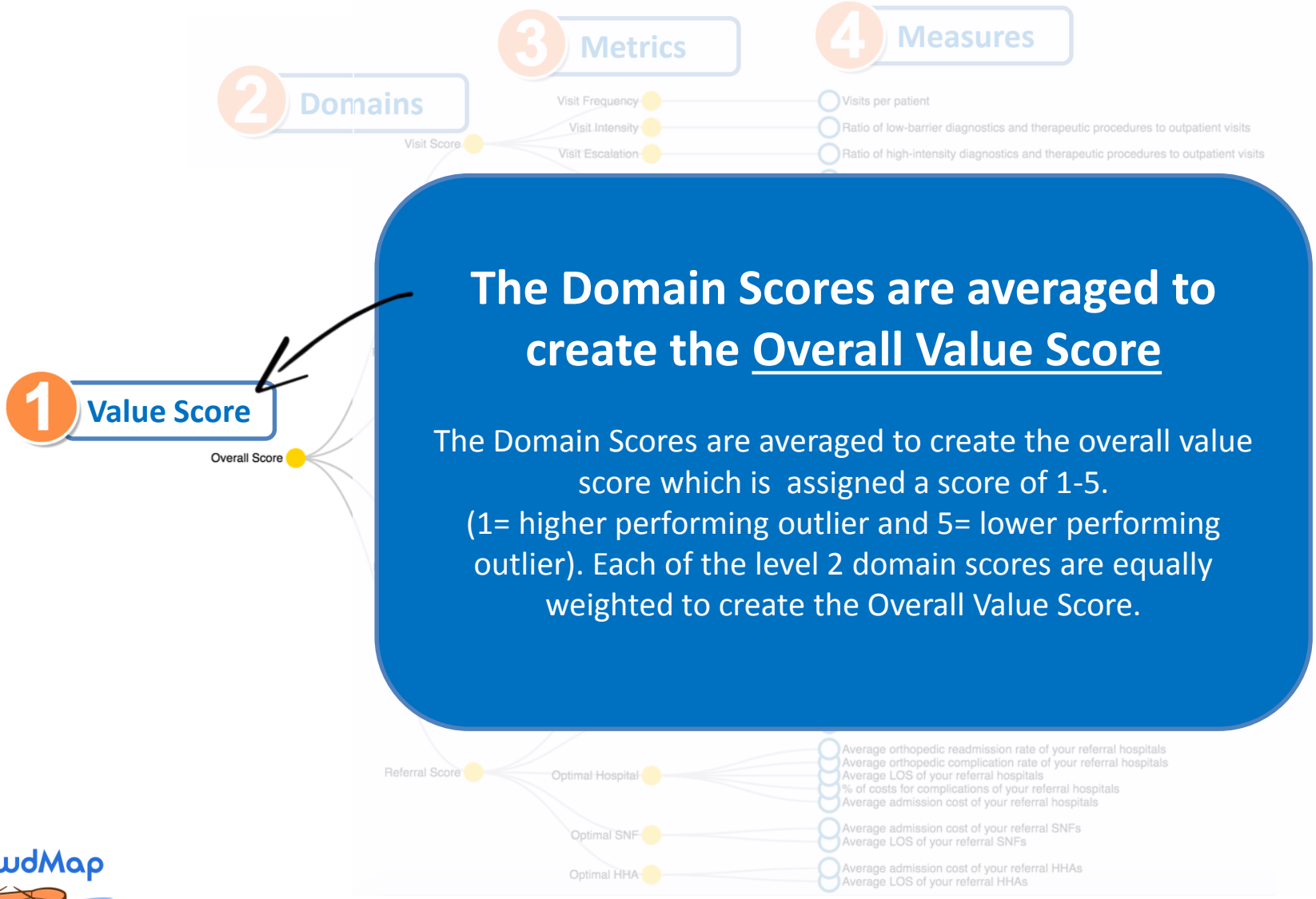
Indexing and Scores

Risk Readiness® Score Development



The Domain Scores are averaged to create the Overall Value Score

The Domain Scores are averaged to create the overall value score which is assigned a score of 1-5. (1= higher performing outlier and 5= lower performing outlier). Each of the level 2 domain scores are equally weighted to create the Overall Value Score.

Indexing and Scores

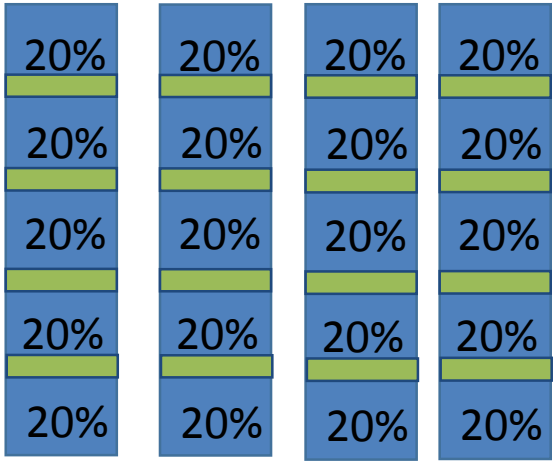
Summary

By taking the average across domain scores, the resulting distribution of the overall value score is normal

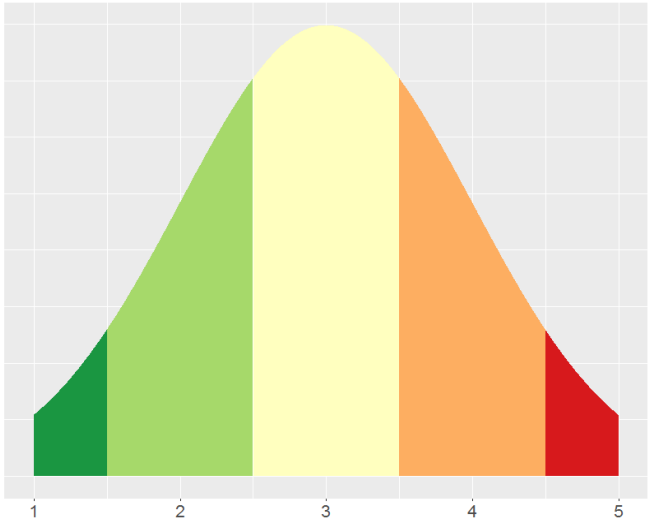
We base our scores on averages of quintiles, which are then compared to the middle quintile. This results in a normal distribution with a standard deviation of about 1, around a mean of 3 on our 1-5 scale.

2's and 4's are about 1 standard deviation away from the mean, while 1's and 5's are 2 standard deviations away.

Domains



Overall Score



Indexing and Scores

Summary

Our approach takes a multiplicity of measures designed to detect a provider's Risk Ready practice pattern.

We compare the measures within each physician's peer cohort, and organize them into 20% bins (or quintiles), going from the top performing 20% to the lowest performing 20%.

We assign each 20% bin a number from 1 to 5, with 5 being the lowest. Using the tree, we average these numbers to get the overall efficiency or value score.

The methodology results in the distribution of providers' overall score being a bell curve. This means that the vast majority of providers are graded close to the middle. On our 1 to 5 scheme, this means that most are 2-4, with much fewer providers receiving scores of 1's and 5's.

What if the measure is just on the edge of a bin, such as at the twenty-one percentile?

In that case, the provider would be scored as a 2 instead of a 1 on that measure. However, this will not affect the higher level scores unless this occurs on many measures (which is highly unlikely).

By taking the average across domain scores, the resulting distribution of the overall value score is normal

RowdMap

Our Approach

Advantages

- Our nonparametric approach limits the effect of outliers.
- The model is conservative, assigning 5's only to consistently low performers and 1's to consistently high performers.
- Each level rolls up to the next in an intuitive way that is designed to mimic how care is actually delivered in the healthcare system.
- The final outcome is normally distributed.

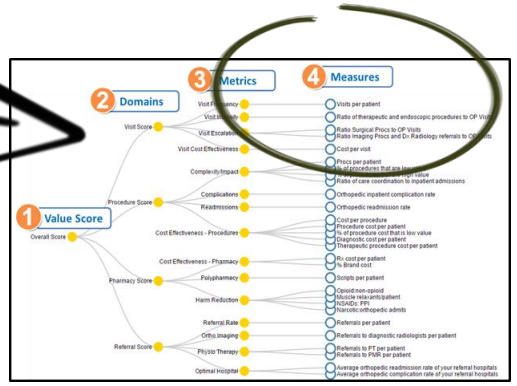
Trade-Offs

- The underlying methods and metrics are common, but they are put together and built in a specific way. Importance to business decision planning is not always significant. We want our metrics to be actionable and practical as well as statistically significant, so we use an approach that is a balance of both. Our method is an outside the box approach of statistical modelling that bridges the gap between practically and statistical significances.

Indexing and Scores

Risk Readiness® Risk Adjustment

- We adjust measures that are cost and readmission-related
- We Risk adjust at the Measure Level
- We are not inventing but borrow from well-tested methods.
- We are adjusting to make three things comparable:
  - Panel Populations -- CMS' HCC score
  - Resource Utilization -- TCRRV
  - Provider Peer Group



HCC (Hierarchical Condition Categories)

The HHS risk adjustment model uses an individual's demographic data and diagnoses to determine a risk score, which is a relative measure of how costly that individual is anticipated to be

Age
Sex
Race
Medicare Status

+

~200 condition categories

RowdMap Implementation of TCRRV

Total Care Relative Resource Values (TCRRVs) quantify resource- use for all procedures and services in a health care system. These values are designed to facilitate easy comparisons across procedures, peer groups, and health care settings (i.e. inpatient, outpatient, professional, and pharmacy).

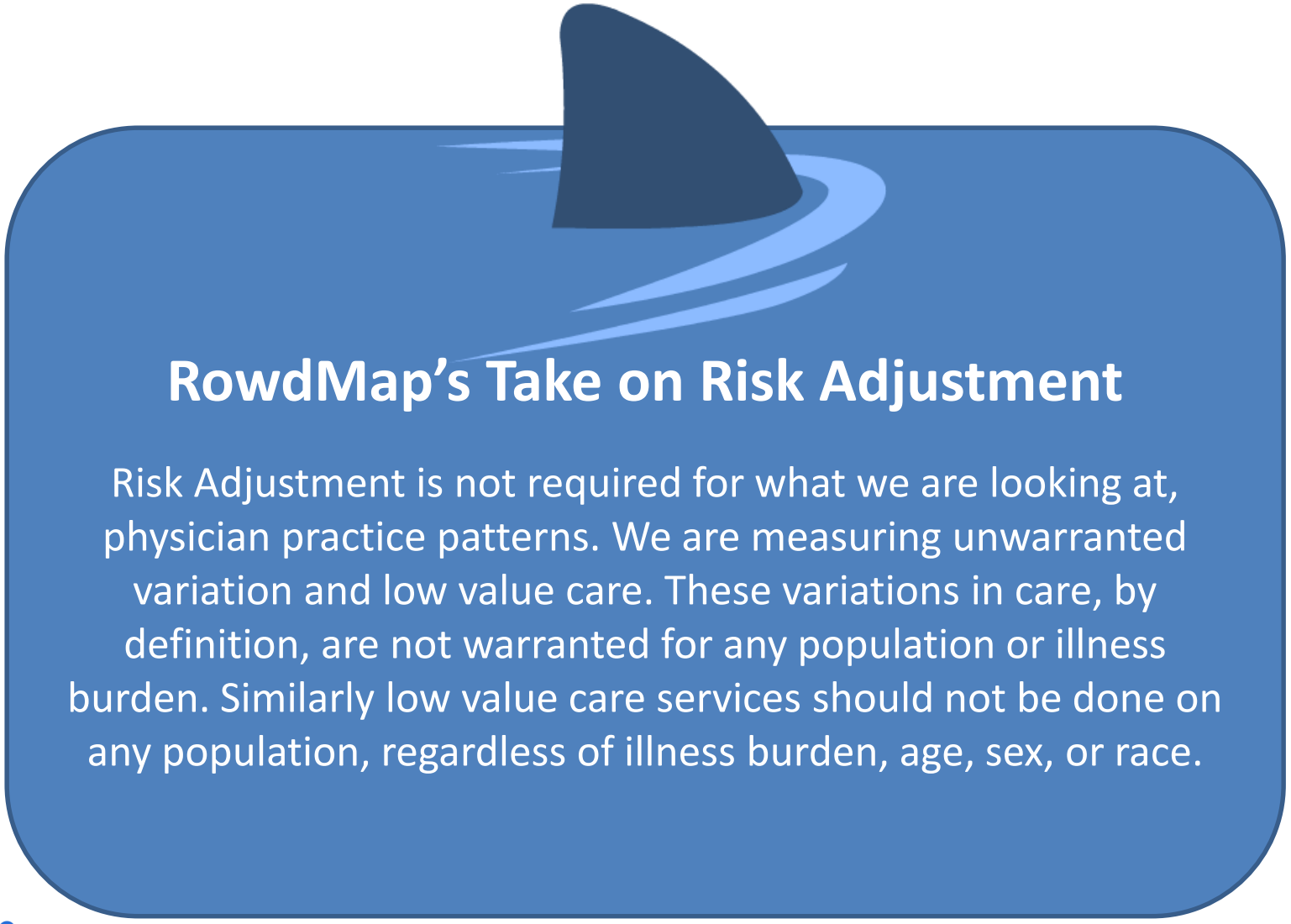
TCRRVs are relative within and across care settings. In other words, the values assigned to services may be added and compared, regardless of whether services were performed within the same care setting. This permits users to value a patients' total resource consumption.

Provider Peer Group

Peer groups are comprised of providers within the same specialty or subspecialty and in the same HRR. Each metric is scaled relative to the given cohort of peers. This process ensures that each physician can be fairly compared against her counterparts.

RowdMap

Risk Readiness® Risk Adjustment



RowdMap's Take on Risk Adjustment

Risk Adjustment is not required for what we are looking at, physician practice patterns. We are measuring unwarranted variation and low value care. These variations in care, by definition, are not warranted for any population or illness burden. Similarly low value care services should not be done on any population, regardless of illness burden, age, sex, or race.

Table of Contents

Background and Context
Understanding and summarizing the importance and relevant of Risk-Readiness®

Methodology Deep Dive: Clinical & Quality
Understanding the clinical components in RowdMap's methodology and how RowdMap takes into account and thinks about quality when scoring providers

Methodology Deep Dive: Indexing Scores
Understanding how scores are built and the methodology we use to ensure providers are scored appropriately and with validity

Data Sources

Data Sources

Selected Data Sources

Name	Years	Purpose/Grain
MEDPAR Limited Data Set	2012-2015	CMS data set containing information for 100% of Medicare beneficiaries using any hospital inpatient, outpatient, or post acute services Stay level records for every hospital across the country for 500+ DRGs
Medicare Part B HCPCS file and BETOS Groups	2012-2015	CMS data set containing all HCPCS codes for each NPI submitting claims for Medicare
Medicare Part D Drug Name file	2012-2015	CMS data set containing information on all drugs prescribed by each NPI submitting claims to Medicare
Medicare DocGraph Referral file	2009-2015	CMS data set containing information on unique patients seen by two NPI's in a 30 day window
National Plan & Provider Enumeration System (NPPES)	2017	Monthly updates of all physicians, specialty and credentials
Behavioral Risk Factor Surveillance System (BRFSS)	Varies 1984-2015	CDC's county level health survey data. As the largest health related survey in the world, this data set is essential in assessing health risks of a population without claims (Researchers published in BMJ have proven this to be a more accurate method of risk adjustment than traditional claims-based adjustment)
Other CDC Sources and Population Health Sources	Varies 1984-2015	County Health Rankings, Census, Disease Prevalence, RWJ County Health Indicators. These data sets are useful in determining demand for health services by geographic unit.
TMSIS Medicaid Statistical Information System	Coming Soon - 2017	CMS database of all those eligible and receiving services under Medicaid and CHIP programs for every state and territory. This database includes key eligibility, enrollment, program, utilization and expenditure data.
Medicare FFS Payment and Utilization Data	2012-2015	CMS data at the physician and facility grain that includes information for the 100 most common inpatient services, 30 common outpatient services, all physician and other supplier procedures and services, and all Part D prescriptions.
Medicare Geographic Variation File	2012-2015	Data on the utilization and quality of health care services for the Medicare fee-for-service population at the geography grain – state, county and HRR.

RowdMap uses more than 200 data sources, but these four sources combine to generate the claims data analyzed for the purposes of creating overall efficiency scores

This is the key source for physician demographic data, including practice location