

CareOregon and Population Segmentation-What, Why and How

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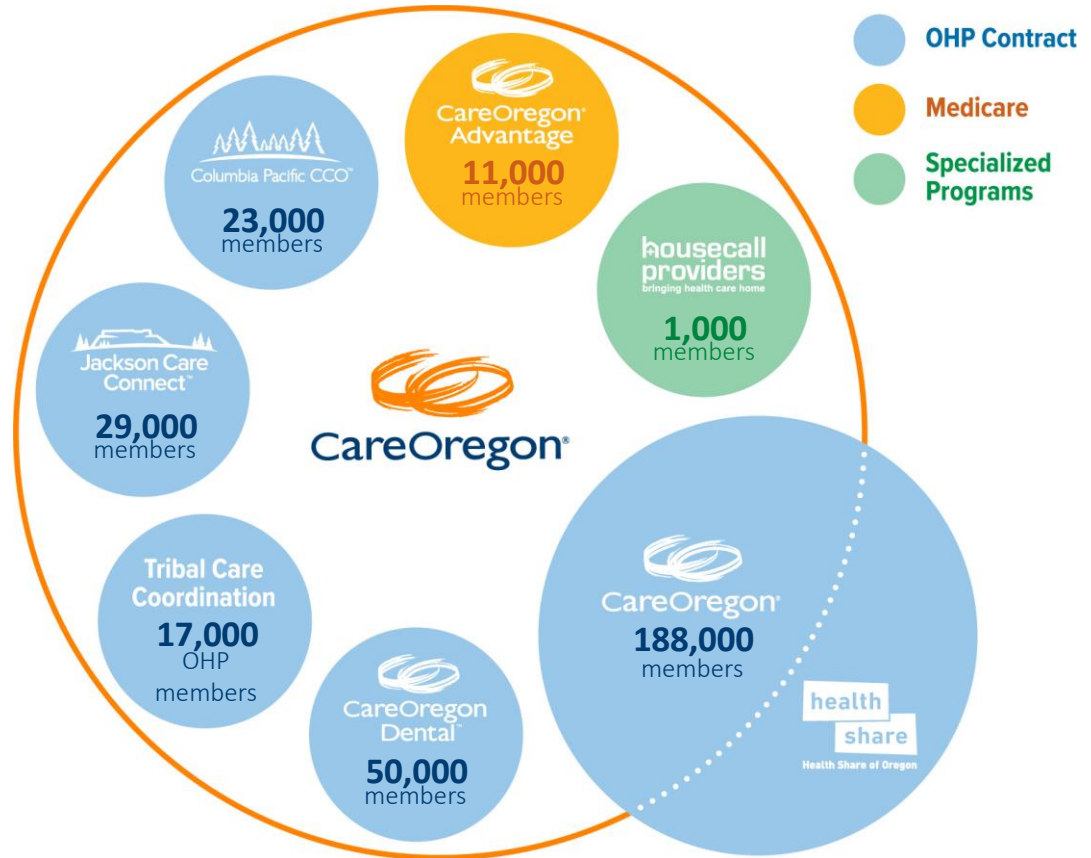


CareOregon

Founded in 1994

Multiple lines of business across three regions within Oregon

- Largest Medicaid plan in Oregon
- 3.5 STAR Medicare Dual SNP Plan
- Dental Plan
- Care Coordination Contract with Tribal Membership on Open Card
- In Home Primary Care
Provider/Hospice and Palliative Care



CareOregon's Mission

Why we exist

To cultivate individual well-being and community health through partnerships, shared learning and innovation.

CareOregon's Vision

Where we are going

Healthy communities for all individuals, regardless of income social circumstances.



Agenda

Population Segmentation-The What, Why, and How

Description:

- Sharing CO journey of why need to segment and understand population trying to manage

- Sharing of the road map to building a robust population segmentation tool

What model looks like specifically

How CO is and plan to use model

- Drive care management-care coordination

- Resulted in restructuring population health department

- Understanding ROI

- Interfacing with network on shared population segments and who does what work for which population

- Future Plans-Pediatrics, SDoH, Segment Shifts, Predictive Analytics



Current State

- Members we offer care coordination to are identified upon acute episode
- Reactive response to ED visit or IP hospitalization
- Members behavior/need not matched to discipline suited to address those needs
- Criteria-based programming (x ED visits in x time) rather than proactive identification



Proactive Future

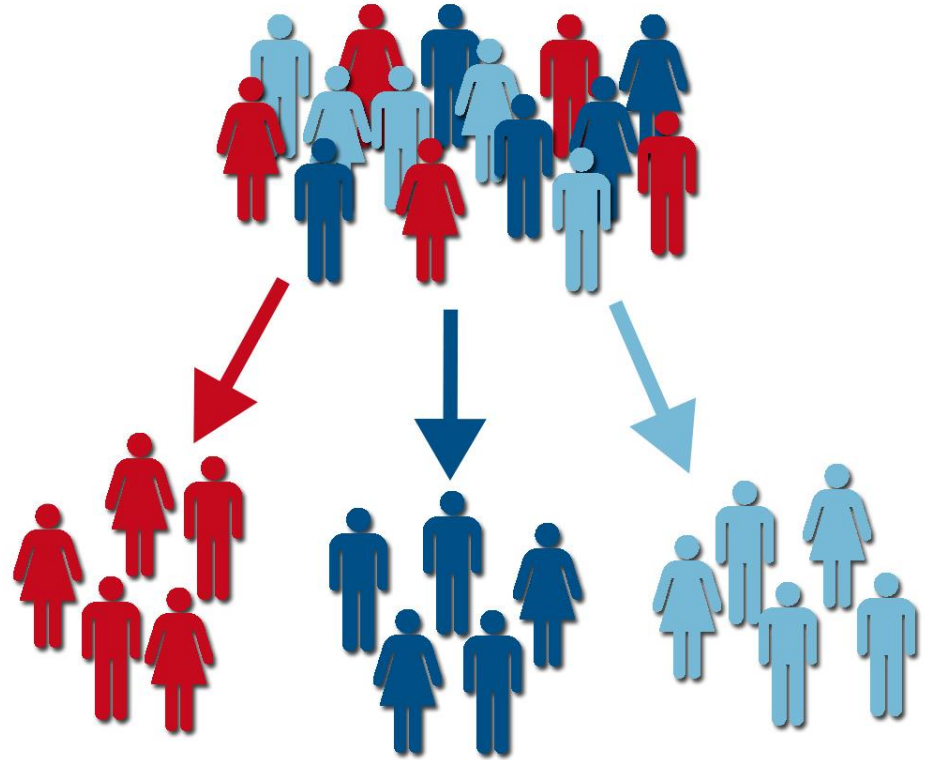
- Identifying members prior to acute episodes (IP hospitalization, ED, etc.)
- Proactively outreach members likely to need more attention
- Preventatively approaching member care—more upstream
- Ensuring access to services/care that most appropriately address needs/gaps
- Addressing physical and behavioral health needs because whole health picture is called out/easily accessible



What is Segmentation?

Process of putting
people into groups
based on *similarities*

Commonly used in
marketing



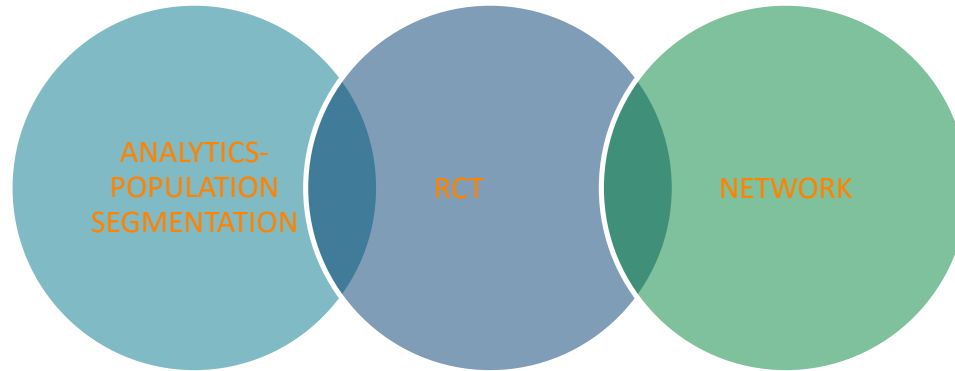
Why Segment?

- Understanding our population based on specific patterns/behaviors/needs
- Inform resource allocation to address those specific needs
- Observe population level trends over time (are members collectively getting more healthy, more sick, etc.)
- Identify member-level trends by provider/clinic to inform opportunities for quality improvement and support



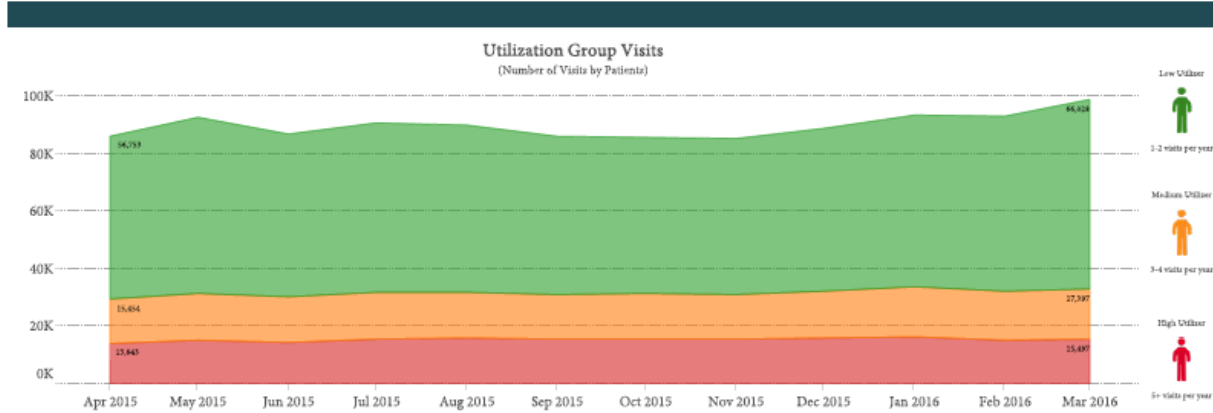
Population Health (PHP)

- “Cohort-Population Segmentation-Marriage-ROI”
- PreManage-Stayer, Joiner, Leaver report
- CO analytics-cluster analysis review



Q2 2015 - Q1 2016 EDIE DASHBOARD

UTILIZATION AND MOVEMENT

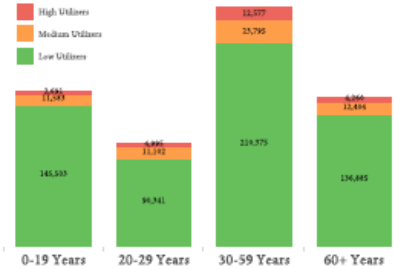


Noteworthy Trends

- The number of total ED visits rose by 15%
- The number of high utilizer visits rose by 12%
- The average high utilizer patient visited an ED 7.5 times
- Portland and Eugene zip codes had the highest percentage of high utilizers (as a percentage of all ED patients)
- The zip codes with the highest percentage of low utilizers (as a percentage of all ED patients) were all in rural areas of the state

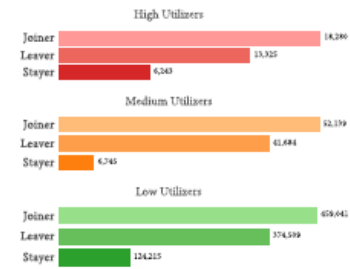
Age Groups

(Number of Patients)

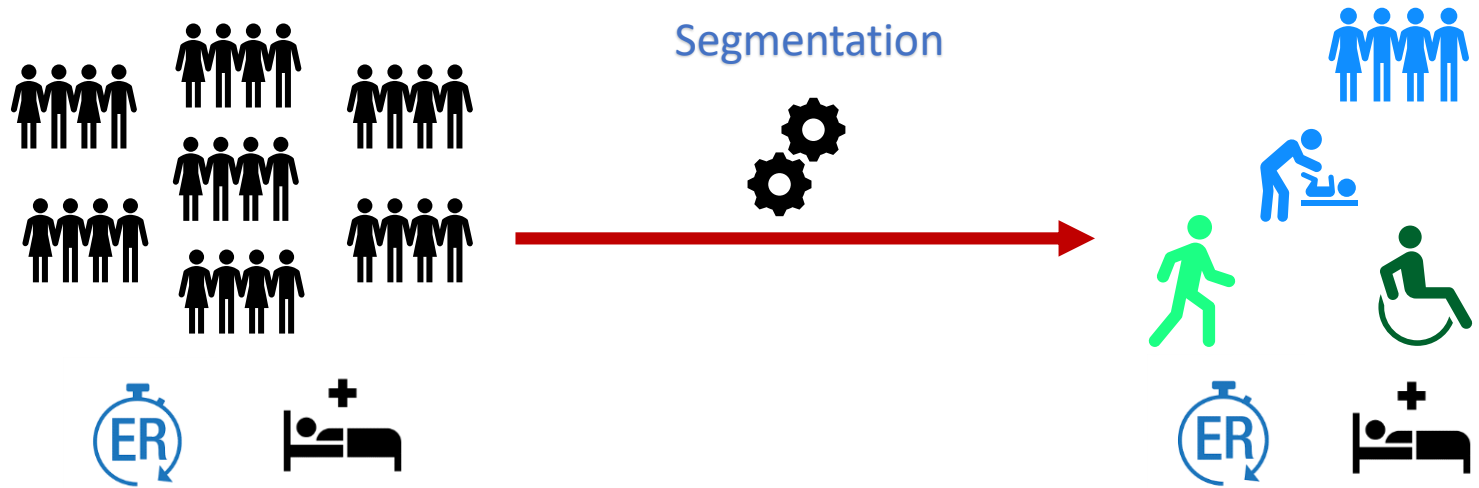


Movement Groups

(Number of Patients)



How Segmentation Works

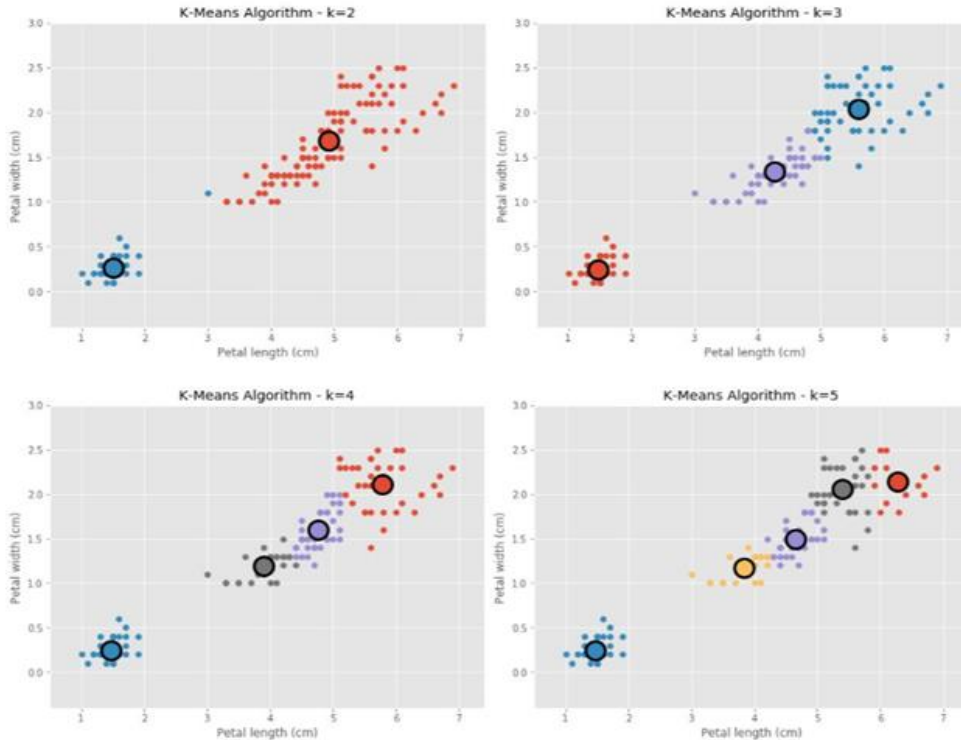


That's only 0.5% of our population!!!
What about the remaining 99.5% of our population?

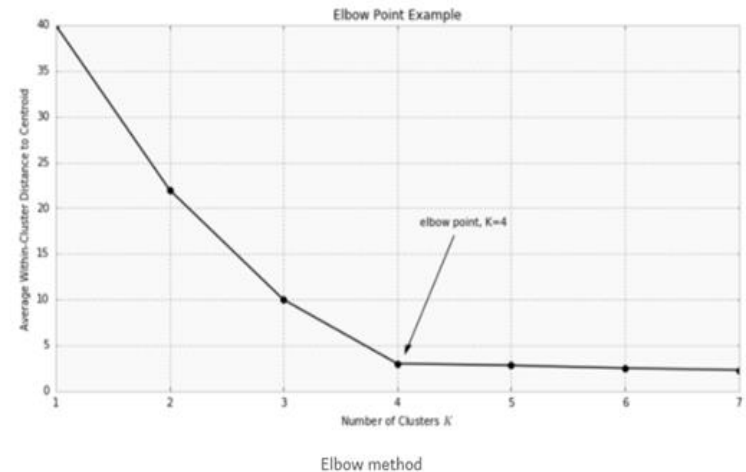


Population Segmentation Model: Methodology

- Machine Learning = *art & science of programming computers so they can learn from data*
- Unsupervised model
- K – means algorithm



“Machine Learning works with data and processes it to discover patterns that can be later used to analyze new data”



Segmentation – Model Development

Data Sources

Medical Claims



Pharmacy Claims



John Hopkins
ACG



Input Variables

Age

Inpatient
Admissions

ED Visits

Outpatient
Other Visits

Pharmacy Cost

+ Other derived
variables

Hospital
Dominant Count

Chronic
Condition Count

Major ADG
Count

Diagnoses Used

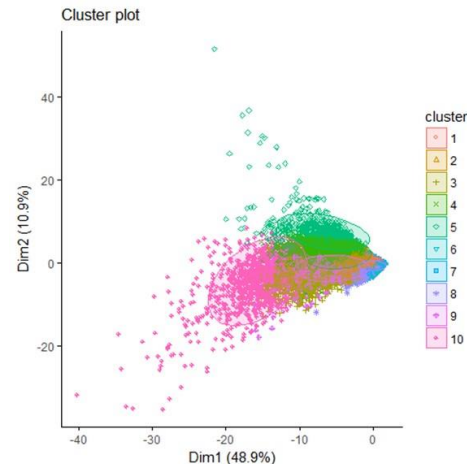
Active
Ingredient Count

Total Providers
Seen

Cluster
Analysis



Algorithm Output

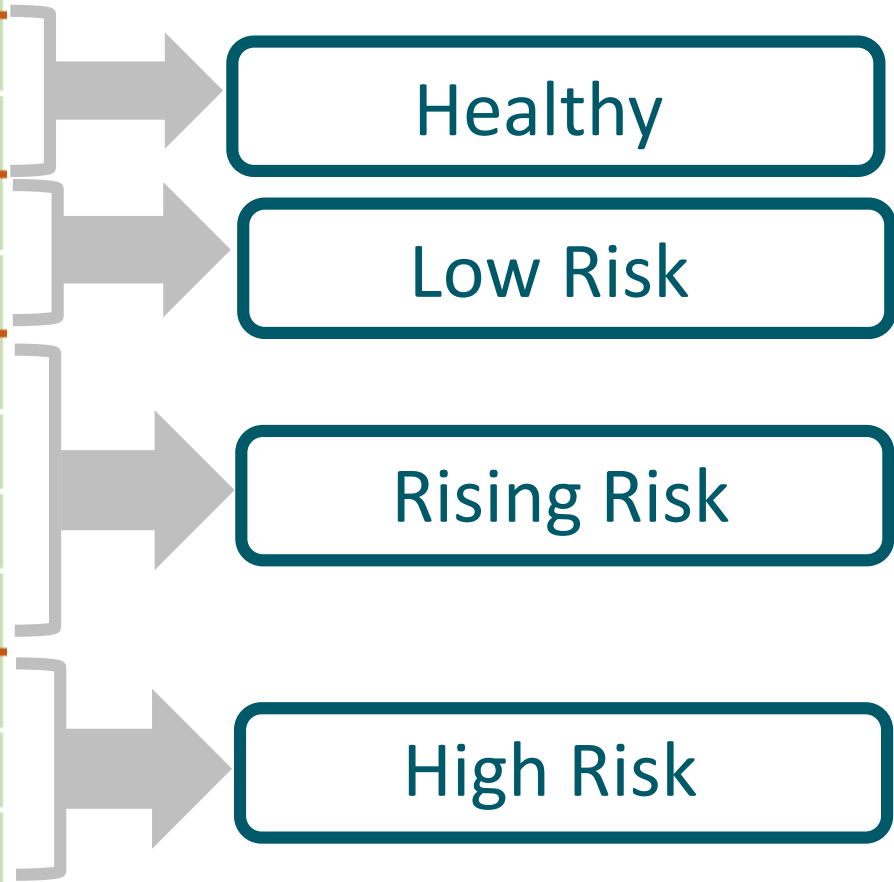


Human assigned
Labels



11 Segments further grouped into 4 cohorts

	Cluster #
Healthy Adults Only	6
Healthy Adults/Kids	8 - 10, 15
Acute Kids & Adults	13
Maternity or ChronicUncoord	2
Chronic Managed	1, 7
Complex Managed	4
Chronic Uncoord Only	5
Uncoordinated	14
SA/SMI/Chronic	3
High Rx	12
Extremely Complex	11



How many members are in a cohort?

(mbrs actively enrolled at time of model refresh)

	March 2019	April 2019
Healthy	75%	75%
Low Risk	11%	11%
Rising Risk	13%	13%
High Risk	0.9%	0.9%
TOTAL	100%	100%

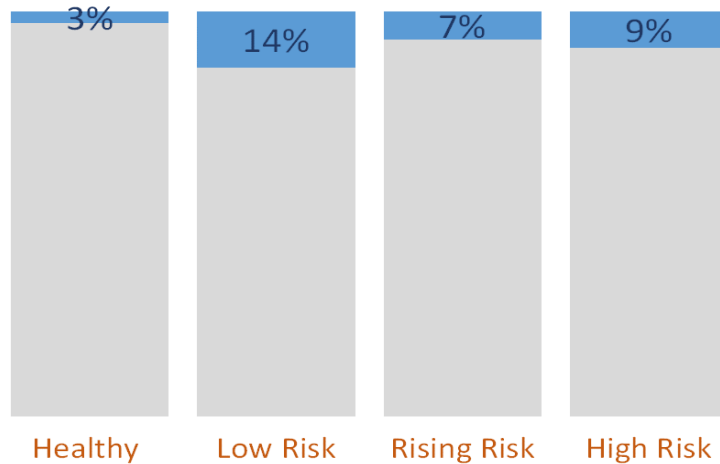
KEY question:

The cohort percentages each month are stable –
BUT how many members stayed in the SAME cohort month-to-month?

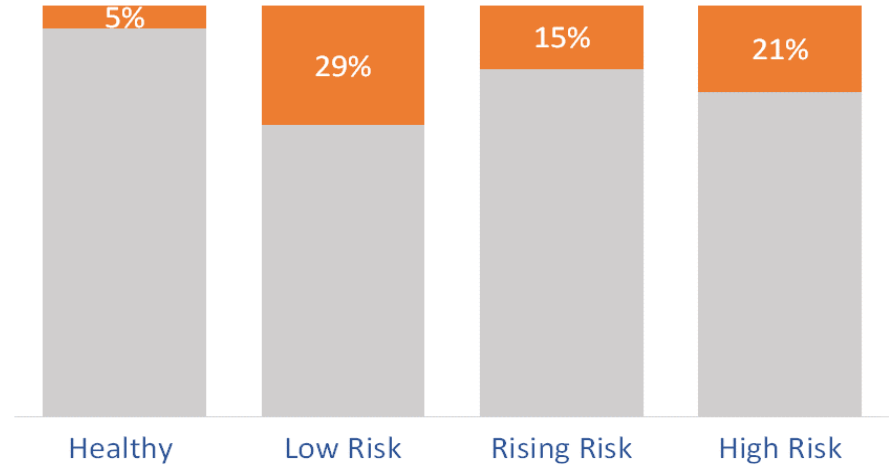


How likely are mbrs move to a different cohort?

1 month time frame - March vs. April



3 mos time frame - Dec vs. March



KEY question:

Do these members move to a LESS risky or MORE risky cohort?



How many members moved to higher versus lower risk cohorts?

	% mbrs	% overall
Hlthy or LowRisk March / Hlthy or LowRisk April	85%	98%
Rising Risk March / Rising Risk April	12%	
High Risk March / High Risk April	0.8%	
Rising Risk March / moved DOWN to Hlthy or LowRisk April	0.8%	1%
High Risk March / moved DOWN to Rising Risk April	0.1%	
High Risk March / moved DOWN to Hlthy or LowRisk April	0.0%	
Rising Risk March / moved UP to High Risk April	0.1%	1.2%
Hlthy or LowRisk March / moved UP to Rising or High Risk April	1.1%	
Total # mbrs in BOTH refreshes	100%	100%

Within a 30 day period, from March 2019 to April 2019:

2,979 mbrs (1.2%) moved **UP** to **HIGHER** Risk cohorts

2,093 mbrs (1%) moved **DOWN** to Lower Risk cohort

31,436 mbrs (13%) STAYED to **HIGHEST** Risk cohorts





Model is DESCRIPTIVE:

It is a point-in-time 'snap shot' that describes population patterns of health services use based on what happened over the last 12 mos. It provides a *Retrospective view*.

Model is NOT PREDICTIVE:

It does not answer the question of **WHO** is at risk to start or stop or continue using health services in the future.

Additional stratification within a cohort required to provide *Prospective view* needed to effectively & efficiently target care coordination activities / resources

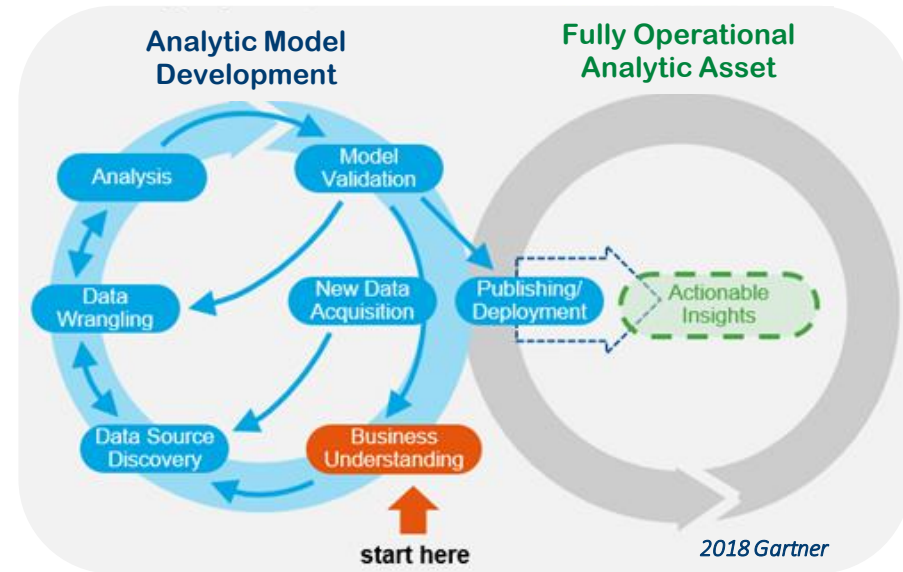


Moving toward PREDICTION:

- How do we proactively id **HEALTHY mbrs** who are on the way UP?
- How do we proactively id **HIGHER RISK mbrs** who are persisting?
- How do we proactively id **HIGHER RISK mbrs** who are the way DOWN?

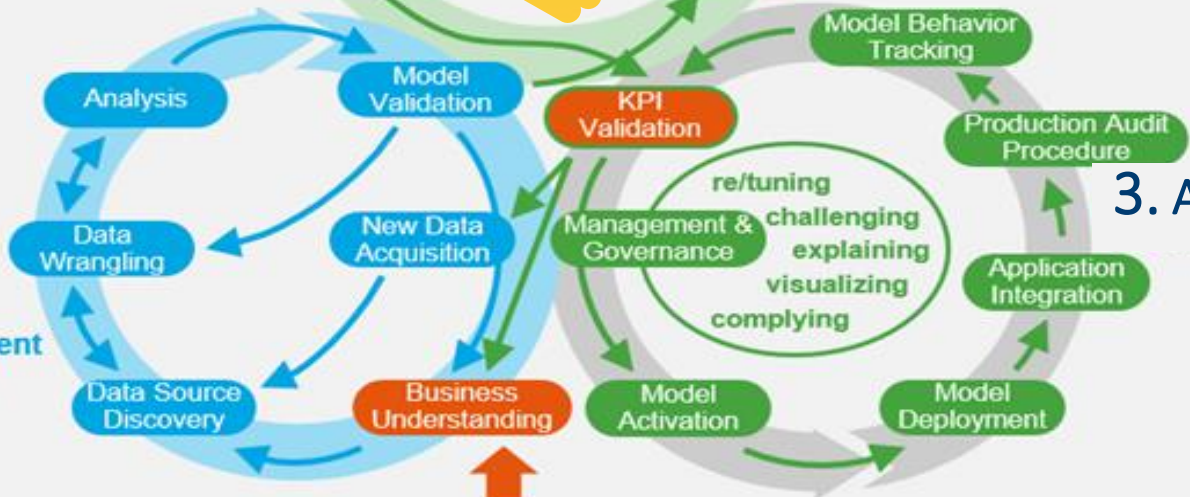
BONUS QUESTION:

How do we move from 'proof of concept' to scalable, fully supported operational analytic asset providing reliable, actionable insights to business users?



1. Analytical Model Dev Cycle

Development cycle



2. Release Cycle

We are here!

3. Activation

Understanding Segments: Rising Risk



Chronic Managed



At least 4 chronic conditions, 20% have severe mental health issues, have one hospital dominant condition, prevalent conditions are diabetes, hypertension, low back pain, and asthma



Engagement with PCP/Specialists and OP care, no significant ED/IP use



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- 1) Member may need to connect with BH specialist at clinic and/or need referral to specialty MH
- 2) Make sure member's conditions/medications are reviewed



Complex Managed



Has multiple medical conditions



Have high engagement with PCP/Specialists (on average 30+ OP visits), few IP/ED visits



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- 1) Clinic does review of patient on a regular cadence to ensure medical issues are addressed



Highest rate of specialist visits than any other segment



Highest prevalence of Cancer & Rheumatoid Arthritis compared to other segments



Understanding Segments: Rising Risk



Uncoordinated



Mostly in their 30's with no chronic conditions, 30%-40% have SUD and half use tobacco.



On average has 5+ ED visits, less likely to engage with PCP



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- 1) Connect member to SUD treatment and/or PCP
- 2) Connection to community resources that are age appropriate



Chronic Uncoordinated



Has at least 4 chronic conditions and 2 hospital dominant conditions, and on average takes medications with over 20 ingredients



Has had at least one unplanned IP stay, a couple ED Visits



50% of members in Chronic Uncoordinated segment are frail & 50% of them also use Ambulance (~n=1,800)



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- 1) Focus on IP transitions to ensure member has f/u appointment with PCP and med rec happens
- 2) Clinic focuses on medications and makes sure member's meds are correct and being taken
- 3) Ensure member is attending appointments and has support as needed to make sure they get needs met

Population Health Or Subpopulation Health?

Current State

- PHP teams working **VERY** hard and programmatically doing **GREAT** work
- Program-centric structure causing issues
 - Program-centric metrics
 - Lack of consistent data analytics
 - Program-centric documentation platform
 - Siloed programs and departments
 - Lack of proactive interventions



Desired State

- Care is delivered in a member-centric way
- We have the infrastructure to support working in a member-centric way (Regional Care Teams)
- Provider and member interactions with member-facing CO teams are coordinated
- We move from program impact to collective impact
- We have shared goals and metrics
- We have tools that are **member** not program-centric
- Demonstrated ability doing high quality and medical cost reduction



How we will get there

FROM	TO
Uncoordinated program-centric care	Coordinated member-centric care
Program Defining the Role	The Discipline Defining the Role
Siloed departments & programs	Integrated services
Uncoordinated efforts with providers	Coordinated efforts with providers
Sporadic Care	Continuity of Care
Multiple documentation platforms that aren't member centric	Member-centric documentation platform
Multiple documentation practices across programs and departments	Common documentation practices across programs and departments
Systems and structures that foster siloed interactions	Systems and structures that foster coordinated interactions
Reactive	Proactive and Responsive
Episodic pushes to address quality measures	Coordinated interventions that address Quality measures
Unreliable or uncoordinated data analytics	Reliable data to support population health (risk stratification, predictive analytics)



Why Focus on Rising Risk?

- Not currently on our “radar”
- Improved outcomes
- Match/Marry the right intervention with the right need
- Learn why those in RR move segments



Lessons Learned

- The addition of new and different populations require a recalibration of the model
- Cohorts are the most stable grouping – least amount of month to month churn
- The High RX segment is not as useful as we had originally thought
- Given recent data produced by the Oregon Pediatrics Improvement Project (OPIP) we need to separate and analyze children in the model



In process...

- How do we incorporate social determinants of health data and is there more accuracy in the model with the addition of this data?
- How do we meaningfully involve our network?
- How do we incorporate other public data sources?
- Should we purchase data based on the demographics of our membership?
- How often should we refresh this data?
- Does movement from RR to healthier segment mean our programs are working?



Thank you

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