Overview of Segmentation of High-Need, High-Cost Patient Population

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Affordable, quality health care. For everyone.

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Outline

- Why Segmentation is Important
- Framing: the bio-psycho social framework
- Methodology
- What we learned: results
- Limitations
- Where this leads us: potential use case

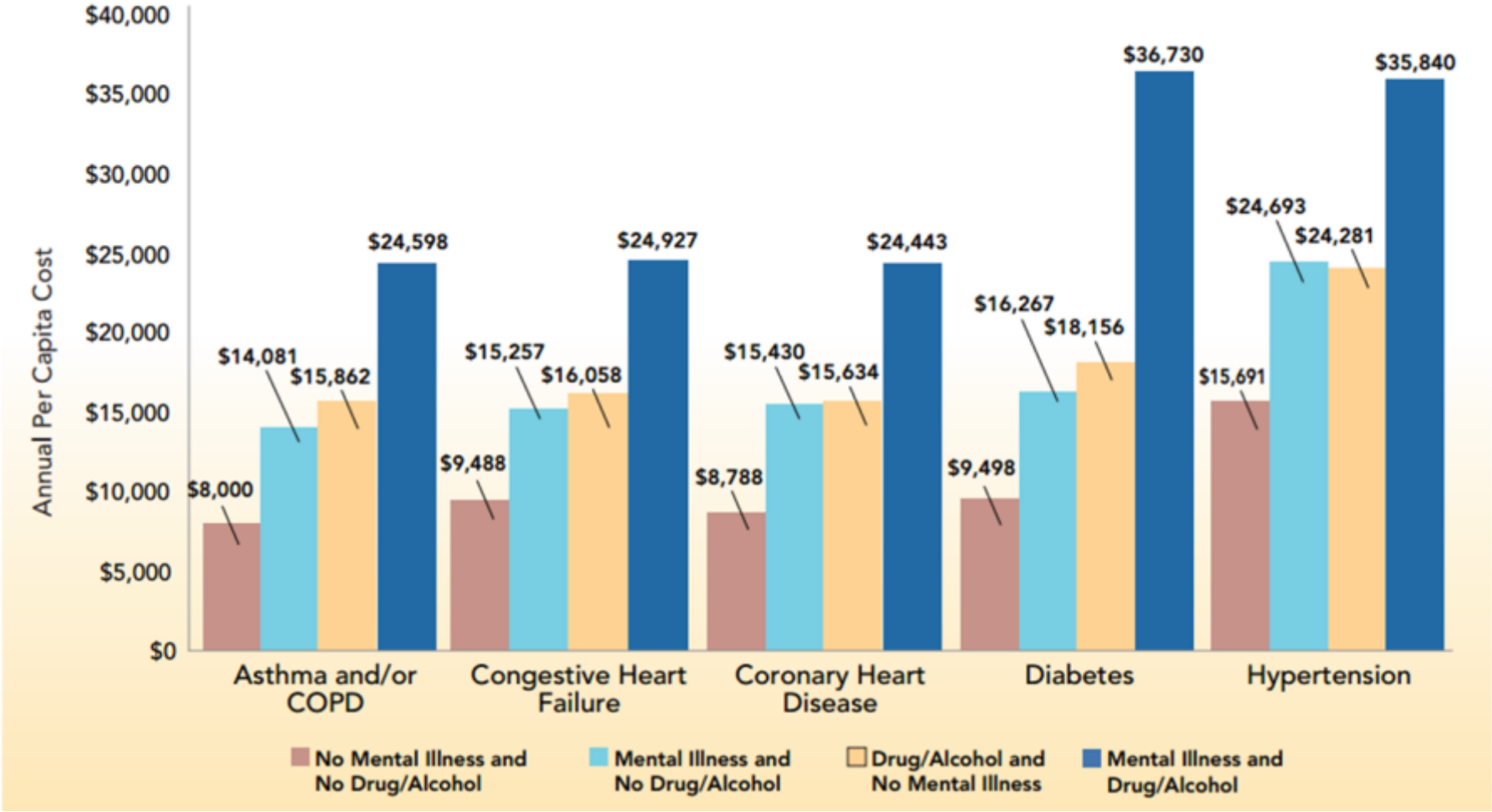
Rationale for Segmentation Strategy for High-Need, High-Cost Population

- The high-need, high-cost population is heterogeneous
- Identification of key subgroups helps to better understand unique needs and challenges of each segment
- Segmentation can help target and tailor care to high-need patients

Before We Begin . . . Recognize a "Bio-Psycho-Social" Framework to Health

- Many factors influence health status, including behavioral health, social service needs and environmental context (McGinnis et al. 2002, Freedman et al. 2011, Taylor et al. 2015)
- Ideally, need to apply a comprehensive framework to address concerns of high-need patients
- A bio-psycho-social framework recognizes and encourages the integration of medical, behavioral and social needs to better treat a unique patient

Behavioral health issues lead to greater healthcare costs in a Medicaid population



Source: C. Boyd et al. Clarifying Multimorbidity Patterns to Improve Targeting and Delivery of Clinical Services for Medicaid Populations. Center for Healthcare Strategies Data Brief, December 2010

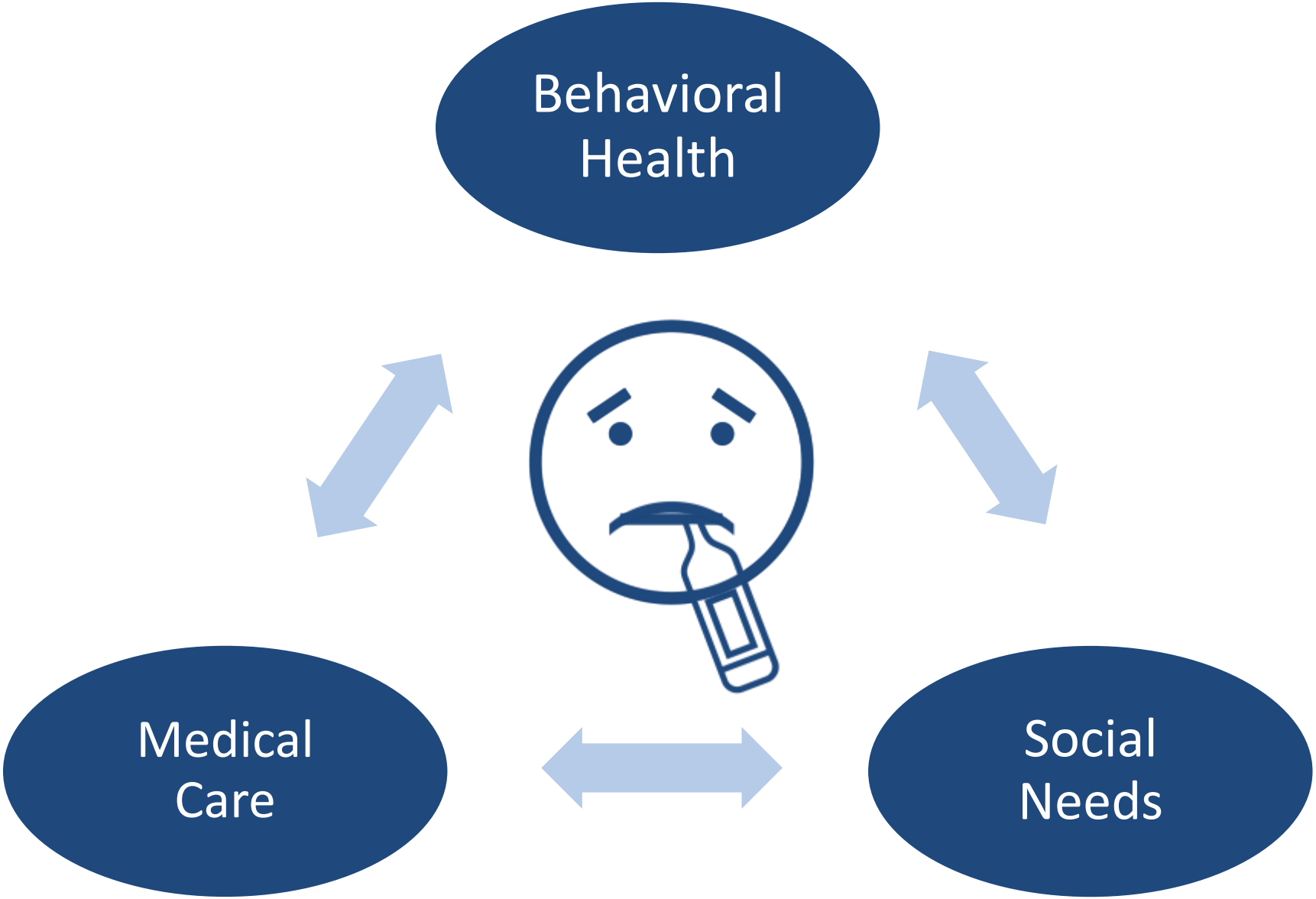
Addressing behavioral and social needs improve outcomes, lowers expenditures

Formerly Homeless People Had Lower Overall Health Care Expenditures After Moving Into Supportive Housing – Wright et al, Health Affairs 2015

Residents' Self-Reported Survey Outcomes Before And After Moving Into Supportive Housing

Outcome	Year before moving in	First year after moving in
Use of health care services		
At least one hospitalization	65%	26%**
Average number of hospitalizations[a]	2.5	0.6**
At least one ED visit	62%	48%**
Average number of ED visits[a]	2.8	1.9
Had a designated primary care provider	73%	89%**
Access to care and well-being		
Had unmet physical health needs	79%	48%**
Had unmet mental health needs	45	17**
Physical health was fair or poor	80	54**
Mental health was fair or poor	80	63**
Was "not too happy" in life	59	14**

Bio-Psycho-Social Framework



Why Does This Matter? Who Might Use it? How?

A typology can assist health system leaders, payers and policymakers to:

- understand population
- select programs or practices to meet the needs of the segments of the population
- identify and develop workforce
- identify and overcome payment and policy barriers

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Methodology

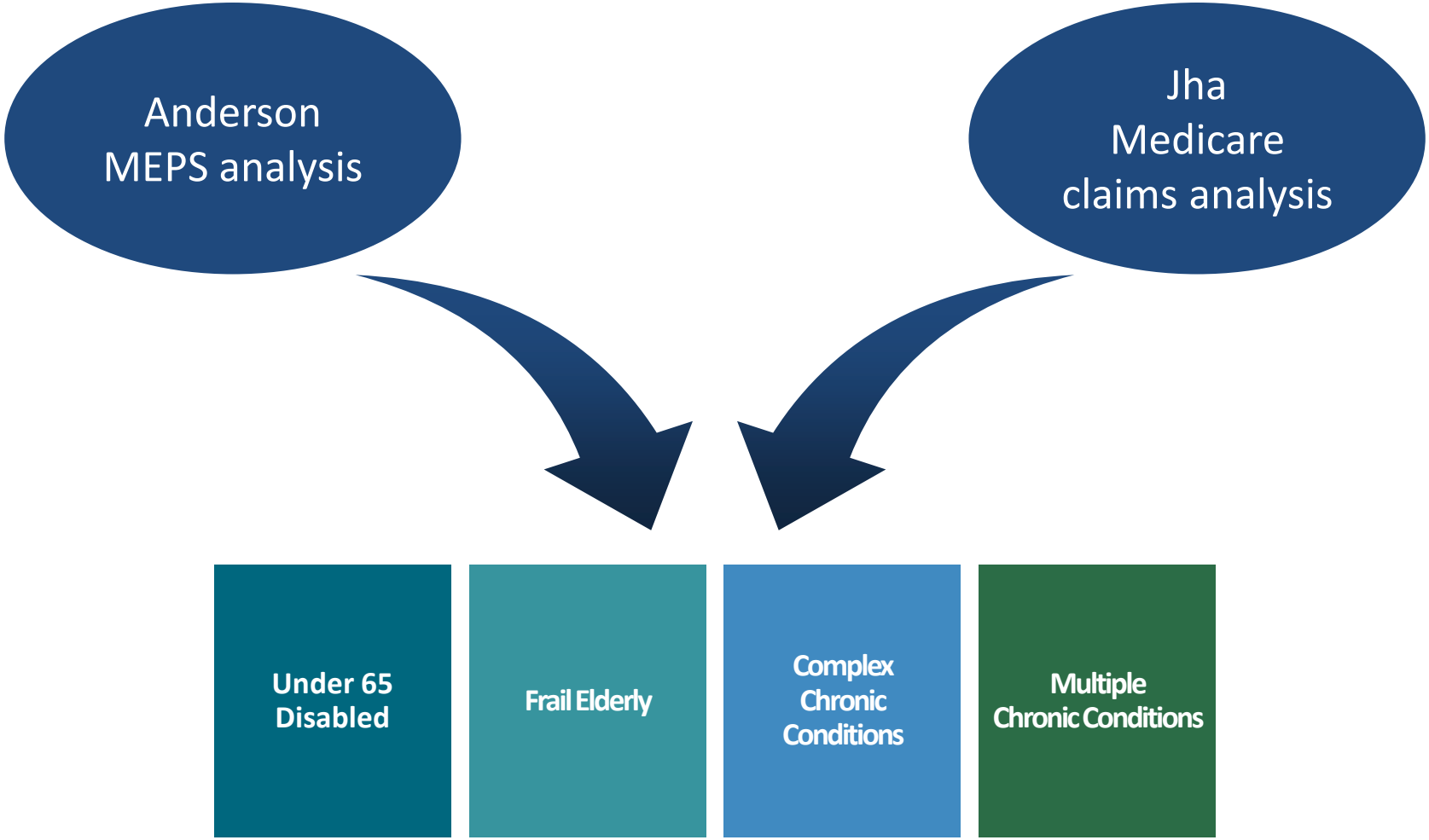
1. Reviewed empirical analysis
2. Reviewed segmentation literature
3. Reviewed program-related information
   - Program evaluations, case studies, extensive Internet searches
4. Conducted interviews with health system leaders, program leadership and payers
5. Created matrix to show collected information by identified subgroup
   - If subgroup straddled multiple populations (e.g. homeless patient with complex medical problems) we separated into smallest, discrete unit possible

Methodology, continued

5. We analyzed and clustered similar population subgroup units together
   - Systematically reviewed
   - Consulted clinicians and experts about literature and our process
6. Created segmentation headings to reflect the cluster of subgroup population units
7. Presented with our external advisory group (leaders, stakeholders) to obtain feedback and refine headlines/categories

See Appendix B for an overview of our approach

What We Learned From Empirical Analysis



What We Learned from the Segmentation Literature (n=10)

- Variation in quality and rigor
- Several approaches developed to assist with risk-adjustment and payment
- Segments identified affirmed those derived from empirical analysis
- Additional segments identified:
  - Advanced illness
  - End-of-life
  - Children with complex conditions

DENVER HEALTH
Medical Plan, Inc.

Tier	# of Patients	Avg Chrgs 8/10 – 8/11 Year before Tiering Date	Avg IP Stays 8/10 – 8/11 Year before Tiering Date	Avg Chrgs 8/11 – 8/12 Year after Tiering Date	Avg IP Stays 8/11 – 8/12 Year after Tiering Date	Avg Chrgs 8/12 – 8/13 2 Years after Tiering Date	Avg IP Stays 8/12 – 8/13 2 Years after Tiering Date
1	38	$859	0.00	$5,987	0.18	$6,479	0.13
2	1,367	$6,853	0.07	$12,274	0.16	$13,208	0.12
3	197	$30,800	0.61	$39,678	0.62	$34,587	0.56
4							
Tot							

Tier	CRG Status	# of Patients	Avg Chrgs 8/10 – 8/11 Year before Tiering Date	Avg IP Stays 8/10 – 8/11 Year before Tiering Date	Avg Chrgs 8/11 – 8/12 Year after Tiering Date	Avg IP Stays 8/11 – 8/12 Year after Tiering Date	Avg Chrgs 8/12 – 8/13 2 Years after Tiering Date	Avg IP Stays 8/12 – 8/13 2 Years after Tiering Date
1		38	$859	0.00	$5,987	0.18	$6,479	0.13
2	1 - Healthy	1	$1,643	0.00	$9,520	0.00	$32,090	1.00
	3 - Single Minor Chronic Disease	1	$3,295	0.00	$0	0.00	$4,847	0.00
	4 - Minor Chronic Disease in Multiple Organ Systems	1	$4,550	0.00	$0	0.00	$710	0.00
	5 - Single Dominant or Moderate Chronic Disease	430	$3,845	0.04	$6,622	0.08	$10,889	0.10
	6 - Significant Chronic Disease in Multiple Organ Systems	915	$7,820	0.08	$14,682	0.20	$14,183	0.13
	8 - Dominant, Metastatic and Complicated Malignancies	11	$31,568	0.36	$11,46	0.18	$5,165	0.00
3								
4								
Tot								

Tier	CRG Status	Base CRG	Avg Chrgs 8/10 – 8/11	Avg IP Stays 8/10 – 8/11	Avg Chrgs 8/11 – 8/12	Avg IP Stays 8/11 – 8/12	Avg Crgs 8/12 – 8/13	Avg IP Stays 8/12 – 8/13
1			$859	0.00	$5,987	0.18	$6,479	0.13
2	1 - Healthy		$1,643	0.00	$9,520	0.00	$32,090	1.00
	3 - Single Minor Chronic Disease		$3,295	0.00	$0	0.00	$4,847	0.00
	4 - Minor Chronic Disease in Multiple Organ Systems		$4,550	0.00	$0	0.00	$710	0.00
	5 - Single Dominant or Moderate Chronic Disease		$3,845	0.04	$6,622	0.08	$10,889	0.10
	6 - Significant Chronic Disease in Multiple Organ Systems	6141 - Diabetes and Other Dominant Chronic Disease	$62,105	1.00	$84,393	3.00	$803	0.00
		6143 - Diabetes and Other Moderate Chronic Disease	$11,542	0.16	$22,256	0.37	$12,136	0.15
		6142 - Diabetes and Asthma	$8,822	0.08	$11,039	0.12	$23,045	0.20
		6145 - Diabetes and Other Chronic Disease Level 2	$6,242	0.11	$11,359	0.16	$10,877	0.11
		6144 - Diabetes and Hypertension	$5,919	0.03	$10,612	0.12	$13,938	0.12
		6270 - Two Other Moderate Chronic Diseases	$1,066	0.00	$3,940	0.00	$2,420	0.00
	8 - Dominant, Metastatic and Complicated Malignancies		$31,568	0.36	$11,467	0.18	$5,165	0.00
	9 - Catastrophic Conditions		$25,302	0.50	$45,214	0.38	$37,637	0.38
3			$30,800	0.61	$39,678	0.62	$34,587	0.56
4			$67,959	1.70	$52,404	1.07	$81,615	0.89
Total			**$18,038**	**0.36**	**$20,802**	**0.34**	**$25,157**	**0.28**

What We Learned from Program Literature (n=56) and Interviews (n=15)

- Utilization v. condition-based approach
- Additional segments emerged:
  - Behavioral health
  - Poverty and social determinants to health
- Important variables to consider when designing programs:
  - Amenability to change
  - Patients who are persistently high-cost

KAISER PERMANENTE®

Four Segments:

1. No chronic conditions
2. 1+ chronic conditions
3. Advanced Illness
4. Extremely frail, near end-of-life

Combined clinicians' observations with EHR and utilization (claims) data

bellin health

Four Segments:

1. High-need patients who make use of the health system
2. Very high-risk who are not actively engaged
3. Patients at low risk who nonetheless have high spending; and
4. Patients who are relatively healthy and have little interaction with the system

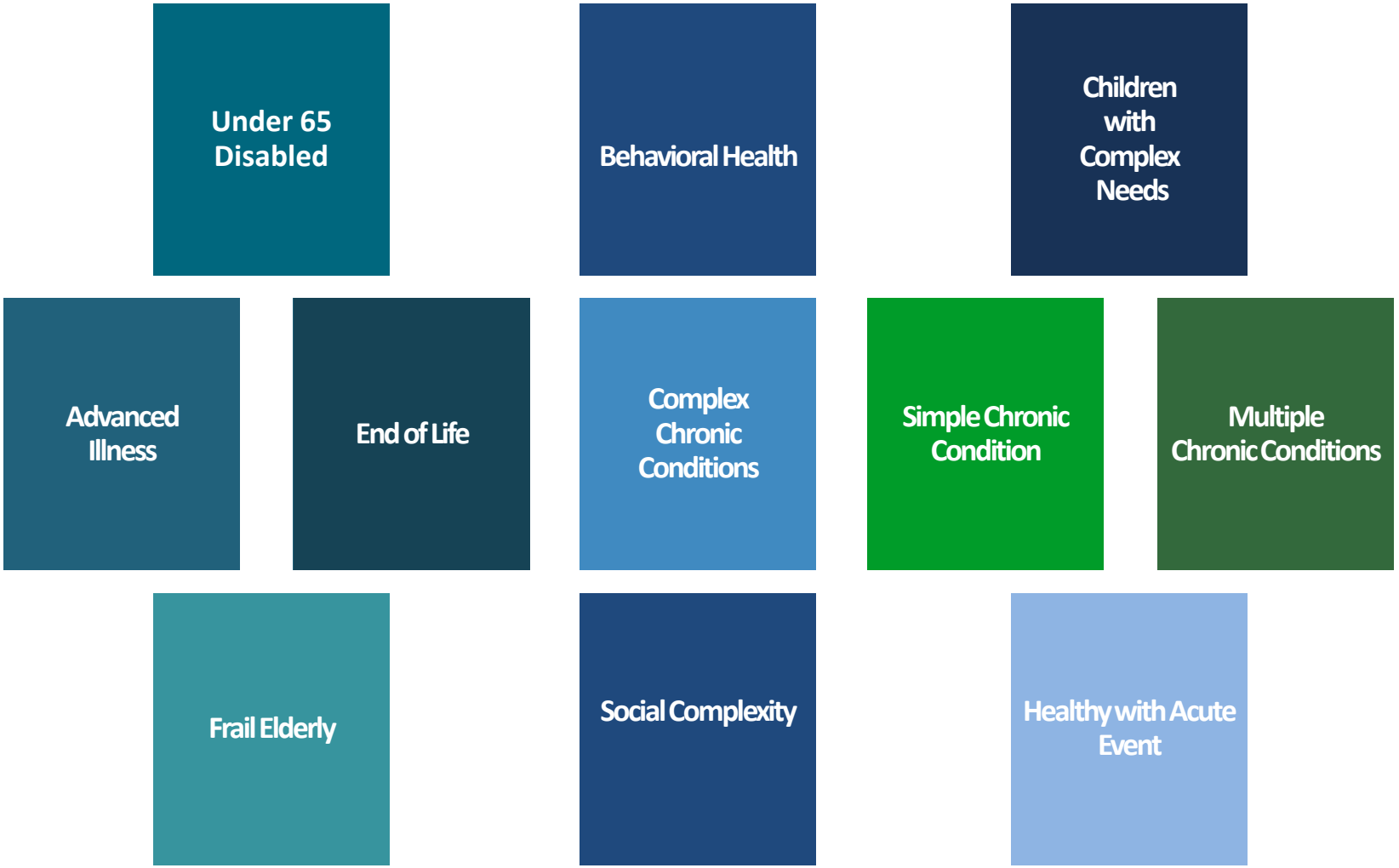
Data on Social Determinants:

- zip code
- health insurance status
- bills in collection

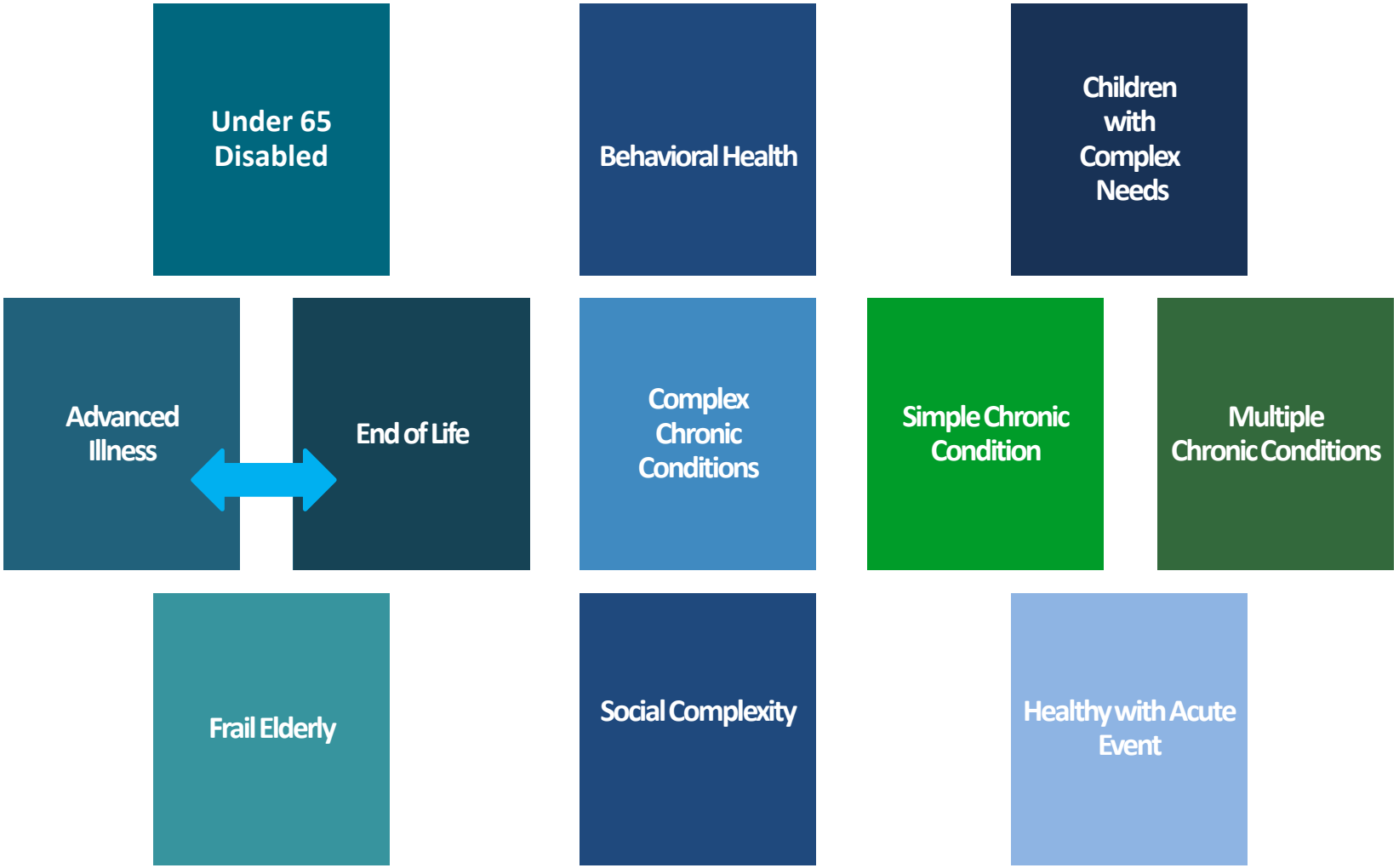
What We Heard from Our External Advisory Group

- Start with the bio-psycho-social framework
- Be cautious, but proceed. Only 1st iteration.
- Do not lump behavioral health and social service needs together. They cut across all segments
- Launch systematic analysis to hear from patients to refine and test whatever you come up with

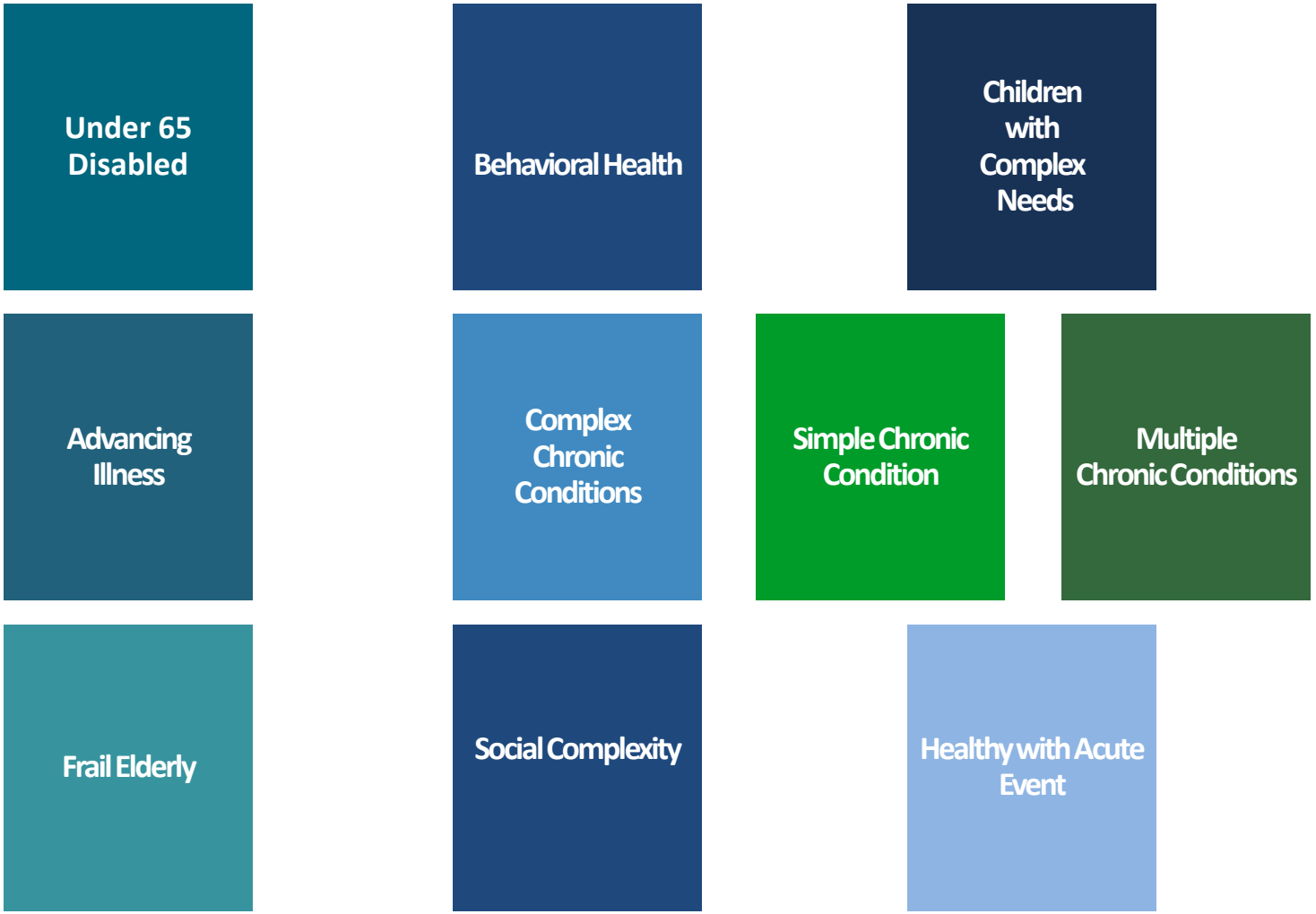
Commonwealth Fund Typology



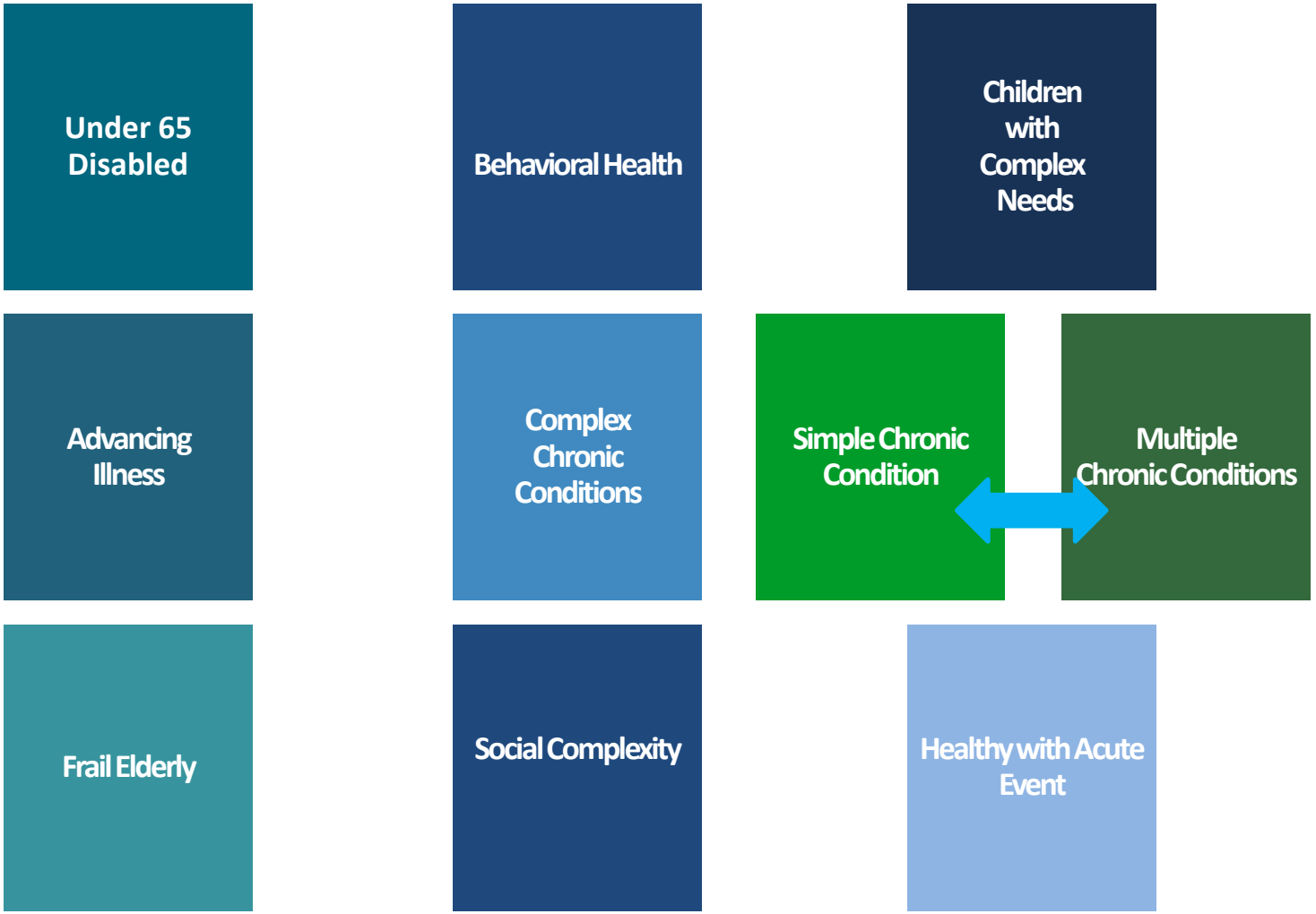
Commonwealth Fund Typology



Commonwealth Fund Typology



Commonwealth Fund Typology



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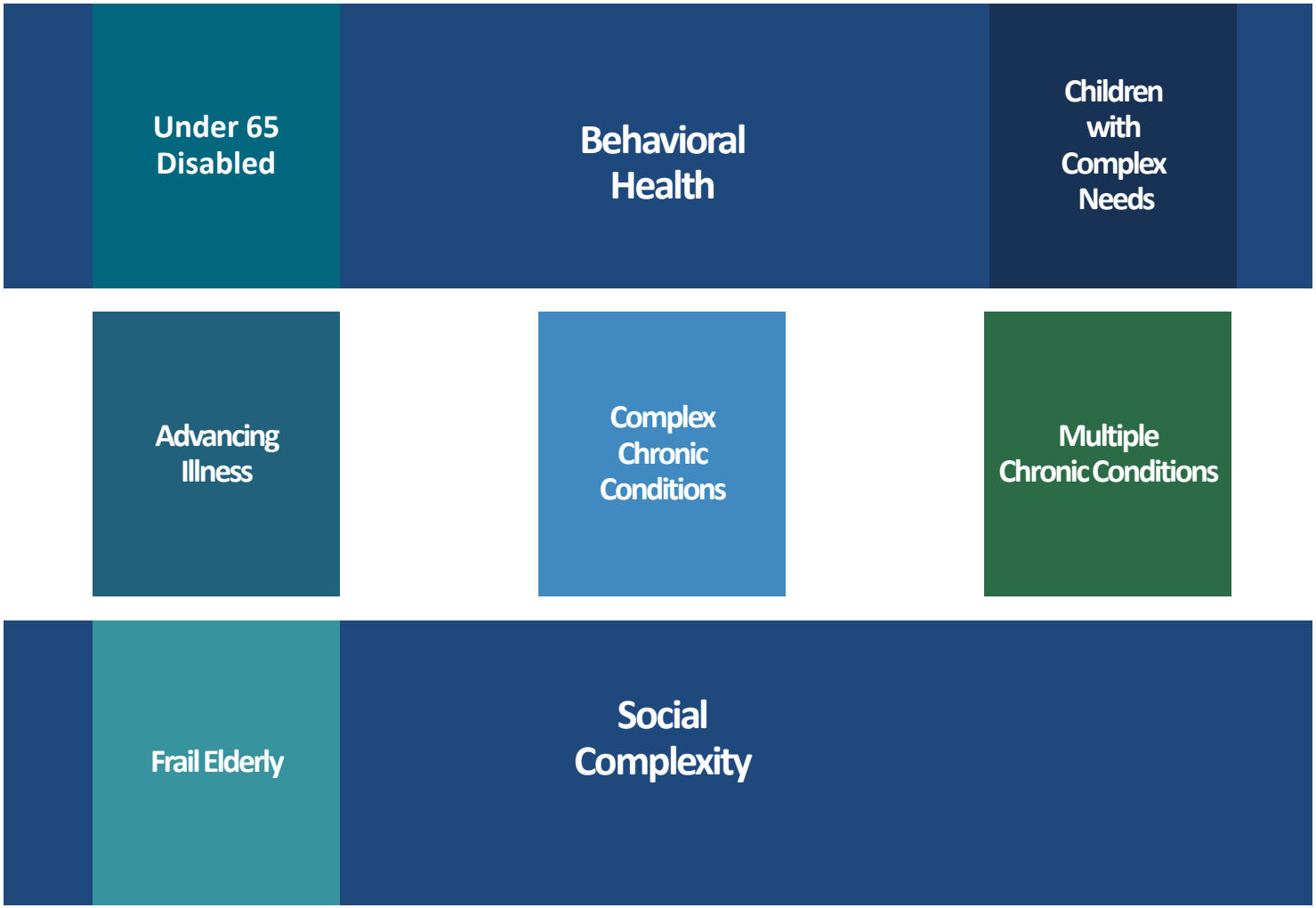
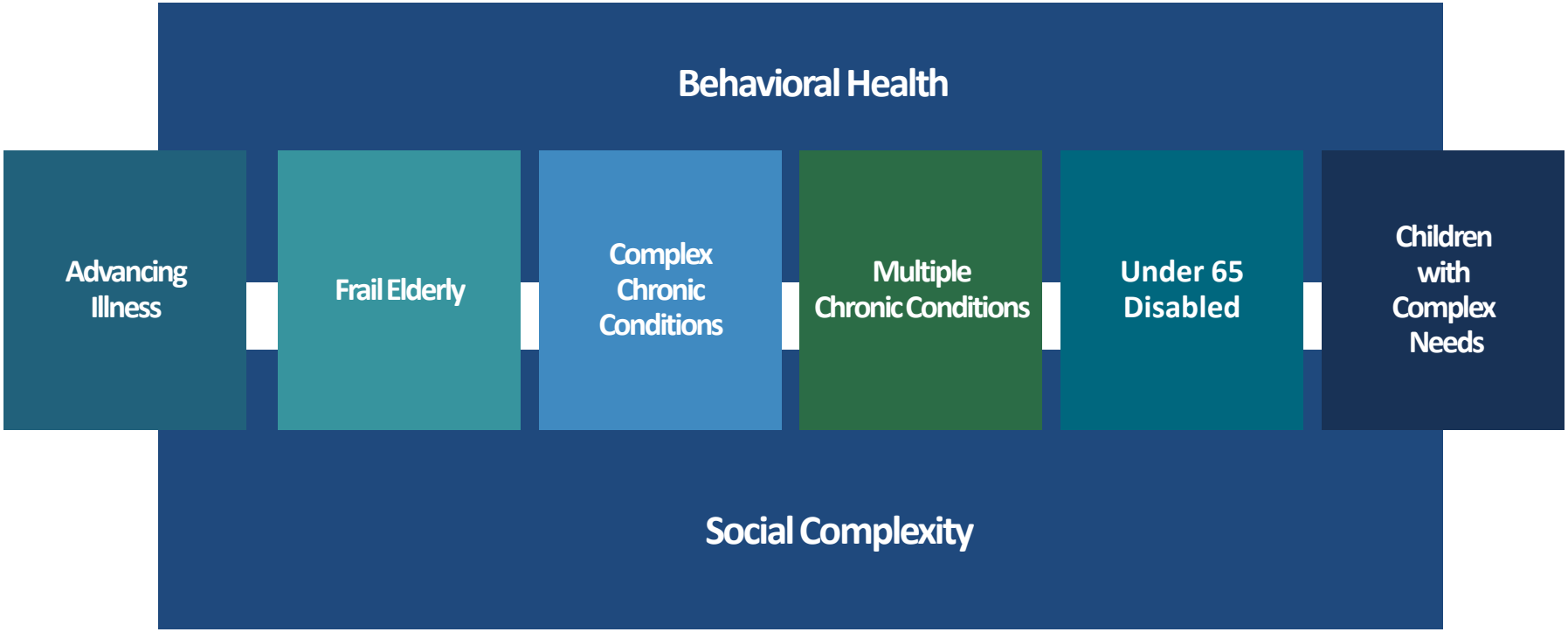


Commonwealth Fund Typology



Limitations/Challenges

- There are multiple plausible segmentation strategies. Approach depends on audience and purpose
- Results not intended to be immediately relevant to directing clinical decisions at the front lines of care
- Limited data sources – ideally, need information from patients, social service agencies and interoperable systems

Direction Takers

13%

- View physicians as the most credible source of information and look to them for direction and guidance
- Likely to go to the doctor at the first sign of a health concern
- Tend to ignore medical advice only when it's difficult to work recommendations into their routines.

Best approach:
The current one. They're looking for and are happy to follow doctors' orders

Balance Seekers

18%

- Dedicated to their health and wellness but don't pay as much attention as do Direction Takers when it comes to what doctors tell them
- They prefer to come to their own conclusions about what success looks like after seeking information on treatment via the internet as well as friends and family

Best approach:
Presenting them with options and choices, while stressing the consequences of each

Willful Endurers

27%

- Live for the here and now and put current pleasures over future health
- Resistant to changing habits
- Only visit the doctor when they absolutely must

Best approach:
As the toughest groups to work with, they need simple steps and immediate gratification

Priority Jugglers

18%

- So busy with other responsibilities, they invest less in health and wellness, but are proactive about the health of their loved ones
- Put off dealing with their own health issues until problems are too big to ignore or interfere with their responsibilities

Best approach:
Appealing to their sense of duty and responsibility by pointing out that others depend on their health

Self Achievers

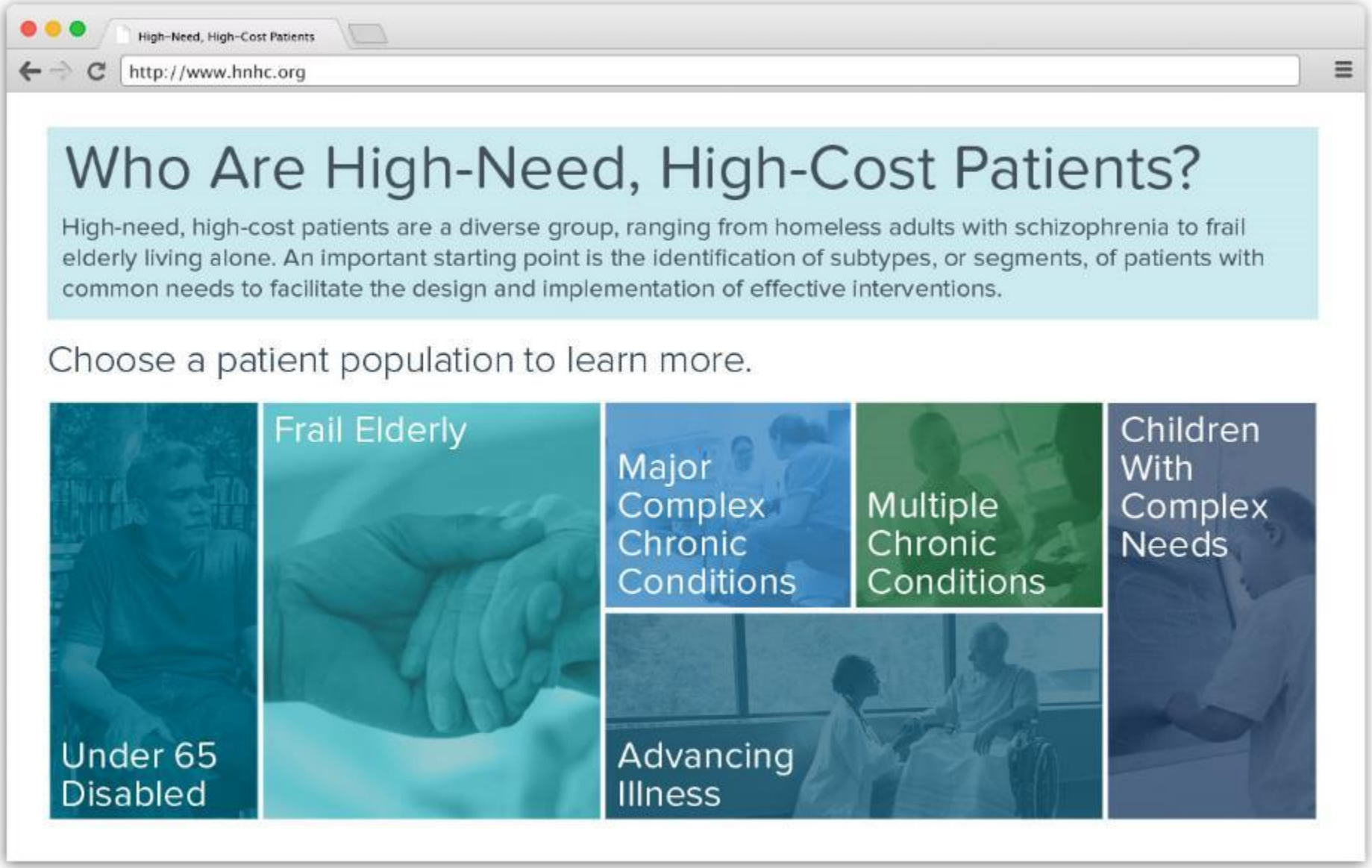
24%

- The most proactive about health and wellness but more likely than Balance Seekers to prioritize doctors' advice
- Very task-oriented and will stay on top of health issues with medical check-ups and screenings
- Willing to tackle challenges if given measurable goals

Best approach:
Provide health education and tasks along with baseline measures and tracking tools to reinforce their progress

Source: c2b Solutions

A Potential Use Case



A Potential Use Case

High-Need, High-Cost Patients

http://www.hnhc.org

Frail Elderly

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DATA PROFILE

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CHART 1

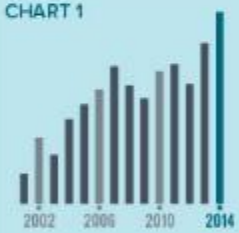

CHART 2

PERSONA

HEAR HIS STORY

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PROMISING PROGRAMS

ALL FRAIL ELDERLY

- Program A
- Program B
- Program C

BEHAVIORAL HEALTH NEEDS

- Program A
- Program B
- Program C

SOCIAL COMPLEXITY

- Program A
- Program B
- Program C

Conclusion

- Segmentation is messy
- NAM needs to be clear about audience and purpose of segmentation
- This is just a one iteration – not definitive
- Claims-based approach is limited. Need comprehensive data (recent NAM report)
- Medical care alone is not enough to improve outcomes and lower costs of care for high-need, high-cost patients