



## Untangling health finances to drive better health outcomes

### PIONEERING THE CONNECTION OF HEALTH SAVINGS AND BETTER HEALTH BEHAVIORS

Optum Bank has led the advancement of employee engagement for health accounts for over six years, using a sophisticated data analytics and artificial intelligence model called the Health Finance Journey™ model and the 5 Stages of Saving and Spending. From the beginning, engaging consumers more in their health savings and movement across the 5 Stages showed they made better health decisions, including visiting urgent care facilities instead of the emergency room, using fewer out-of-network providers and engaging more in preventive care.<sup>1</sup> In addition, this model has helped Optum Bank account holders and employers to have higher than industry average HSA balances and higher percentages of investment assets.<sup>2</sup> Competitors have tried to mimic our model, but none have come close due to the volume of data available to Optum, with 25+ terabytes of health care and non-health-care consumer data powered by the Optum Consumer Engine™. The sophistication of this model demonstrates a correlation between finances, health behavior and now, health outcomes.

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This white paper introduces an advanced version of the Optum Bank® proprietary engagement tool, the Health Finance Journey™ model and the 5 Stages of Health Saving and Spending, Pathways level. This model uses advanced data analytics and artificial intelligence to demonstrate the correlation between saving money in your health savings account (HSA) with improved health outcomes across three health Pathways. The earlier versions of the model provided a comparison of employees' health behavior among the 5 Stages. Pathways takes that comparison a step further and demonstrates a relationship between moving along the 5 Stages and potentially improving health outcomes, therefore lowering health care costs for both employers and consumers.

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## FOUNDATION OF THE HEALTH FINANCE JOURNEY MODEL

The Health Finance Journey model is a proprietary, predictive model that fundamentally segments consumers into one of the 5 Stages of Health Saving and Spending — Decide, Open, Use, Manage and Optimize. Employers can choose to engage their employees with this model and the 5 Stages through three levels:

- 1 Standard 5 Stages of Health Saving and Spending** — proven to help employees move across the 5 Stages, resulting in more savings and better health behaviors.
- 2 5 Stages with microsegmentation** — overlays 20 microsegments across the 5 Stages to create more personally relevant messaging, resulting in more savings and better health behaviors.
- 3 5 Stages Pathways** — uses two years of claims data, artificial intelligence and other data sources to group employees into three Pathways: healthy and engaged, pre-chronic and chronic. We then use the predictive model to identify employees across the 5 Stages and, using multichannel marketing strategies, can move account holders across the stages, resulting in higher savings, lower risk scores and potentially healthier outcomes.

The Health Finance Journey model helps Optum Bank collaborate with an employer to create a custom marketing plan based on the 5 Stages, microsegmentation and Pathways. Using this model, Optum Bank demonstrates the strong relationship between one's finances, their health behaviors and, ultimately, their health outcome. Financial wellness and health are deeply intertwined, and helping employers understand that can lead to better equipping them to manage their population health and costs.

We have demonstrated over the last five years that through our marketing strategies and personalization of messaging, we can move people along the 5 Stages journey, better preparing them to pay for health care now and in the future. For example, using our 5 Stages microsegmentation model within a group of employees in the Open Stage, we saw a 19X lift in one-time contributions, an 11% lift in payroll contributions and a 36% lift in total contributions over our holdout group (those who received no marketing message).<sup>1</sup> These impressive results prove out our predictive model, the power of analytics and this unique segmentation model.

## 5 STAGES OF HEALTH SAVING AND SPENDING



### Defining predictive modeling and trigger-based marketing

Predictive modeling uses data mining and statistical science to forecast future results. Those results can then be used to identify key events in a customer or business life cycle. This predictive model helps Optum to provide more relevant messaging to those ready to move to the next stage or potentially moving into a different Pathway.

**Today, most people do not connect their finances to their health decisions and, ultimately, their health outcome.**

Consumers today do not recognize a connection between their finances, or even their HSA balances, with making better health decisions or having better health outcomes. We know that when they do make that connection, they are more engaged in saving and planning for the future. More than 40% of privately insured Americans face the risk of high out-of-pocket health care spending because they are enrolled in a high-deductible health plan (HDHP).<sup>3</sup> This growth in HDHP is creating substantial challenges for patients, providers and health care systems across the U.S. For patients, high cost sharing can lead many to forgo necessary care, such as high priority office visits, medications for chronic conditions and clinical preventive services, even when those services are exempt from cost sharing.



Recent new legislation and pending legislation expanding the health accounts frontier tells us that individuals are starting to understand the need to connect finances with health care needs. If some or all of the legislation passes, it will have a significant impact on the HSA industry, employers and account holders, including potentially expanding contribution of HSAs to the Medicare populations and increasing contribution limits to match deductible amounts.

**FINDING THE RIGHT PATHWAY TO BETTER HEALTH OUTCOMES**

The world is comprised of unique individuals, with no two exactly alike. Our bodies and minds are a fascinating and complex set of systems as well as our genetics and lifestyles. We relentlessly look for ways to help simplify the health care system, improve consumer and provider health care experiences and build solutions to improve outcomes. The 5 Stages Pathways model is an innovative marketing strategy to help us enable our account holders/employees to be better prepared for their health care needs given the complexity of individuals and the health system.

Through the Pathways model, Optum Bank found that intentionally planning and investing in an HSA can be correlated with improved health outcomes. We set out to see how moving across the Health Finance Journey and the 5 Stages could impact one's health outcome. Conducting a longitudinal study for a large national health insurer of individuals enrolled in an HSA for all of 2017 and 2018, we identified the following Pathways:

- 1 HEALTHY AND ENGAGED** — based on Consumer Health Ownership Segmentation™ (CHOS)\*
- 2 PRE-CHRONIC** — based on medical claims for members with pre-hypertension or pre-diabetes
- 3 CHRONIC** — based on the member having a major chronic condition, such as coronary artery disease, chronic obstructive pulmonary disease (COPD), heart failure, asthma and diabetes

\*Model "Jackie" segment where Jackie is a proactive health seeker and has the highest level of financial well-being and responsibility with no problem following doctor's orders when necessary.

## RISK SCORES TO CORRELATE HEALTH OUTCOMES

To measure the correlation between the stage movements and health outcomes, our data scientists use three measurements:

- 1. Total cost risk score** — based on an individual's risk of increased total health care cost in the next 12 months from the Optum proprietary predictive model, Impact Pro®.
- 2. Inpatient hospital risk score** — based on an individual's risk of an inpatient hospital stay in next 12 months from the Optum proprietary predictive model, Impact Pro®.
- 3. Medication adherence** — based on an individual's average percentage of days covered (PDC). Calculates the proportion between the number of days the drug was prescribed for and the number of days between refills.



## FACILITATING ENGAGEMENT IN CONSUMER HEALTH BEHAVIORS

The study of 246,000 individuals over two years suggests that moving along the 5 Stages from Open to any of the following stages such as Use, Manage or Optimize can be correlated with improved health outcomes. This means that consumers with high engagement are expected to save ahead for health-related expenses and to proactively manage their health which improves medication adherence and drives better health outcomes.



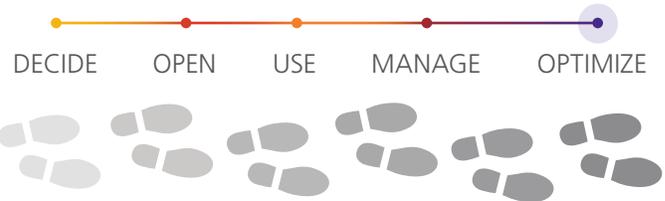
### Healthy and Engaged Pathway

Healthy and engaged members demonstrated significant improvement in health risk year over year (YOY) for consumers in the Optimize Stage compared to those in the Open Stage. This group represented 18% of the sample size. After controlling for factors like age, gender, income and geography, members in the Optimize Stage had the lowest change in risk scores compared to those HSA consumers in the Open Stage.

**Healthy and engaged HSA consumers who progressed to Optimize Stage had the lowest health risk score.**

Lower change in Total Cost Risk Score compared to those in Open Stage **5.8%\***

Lower change in Inpatient Hospital Risk Score compared to those in Open Stage **1.3%\***



\*Indicates statistical significance

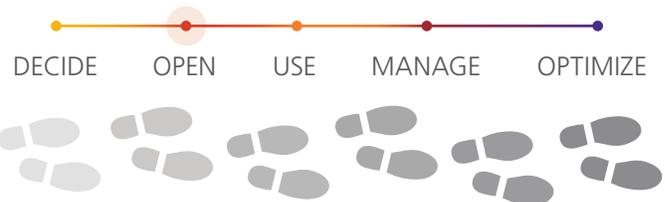


### Pre-Chronic Pathway

Pre-chronic HSA consumers who progressed past the Open Stage had a decrease in health risk scores. Pre-chronic members represented 8% of the sample size. The study compared those individuals that were in the Open Stage to those that were in all other higher stages such as Use, Manage or Optimize. Controlling for several factors including age, gender, household income and others, those who progressed to a higher HSA stage had a 6.3% lower change in total cost risk score and 1.2% lower change in inpatient risk score compared to those in the Open Stage in 2018.

Lower change in Total Cost Risk Score compared to those in Open Stage **6.3%\***

Lower change in Inpatient Hospital Risk Score compared to those in Open Stage **1.2%\***



\*Pre-chronic individuals have only hypertension and/or pre-diabetes diagnoses identified in their medical claims history, and represent 8% of 246k population analyzed.

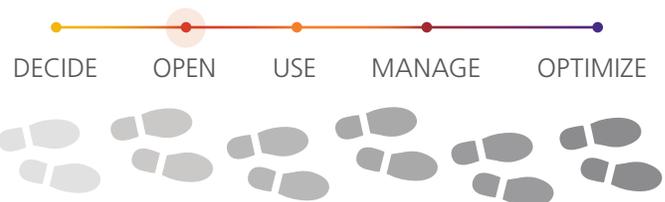


### Chronic Pathway

For those in the Chronic Pathway, HSA consumers that progressed past the Open Stage had a decrease in health risk scores including both their total cost risk score and their inpatient hospital risk score compared to those in the Open Stage. Those in the Chronic Pathway represented 25% of the sample size.

Lower change in Total Cost Risk Score compared to those in Open Stage **5.0%\***

Lower change in Inpatient Hospital Risk Score compared to those in Open Stage **1.1%\***



\*Indicates statistical significance. Chronic individuals have been diagnosed with conditions like asthma, diabetes, chronic obstructive pulmonary disease, coronary artery disease, and heart failure and represent 25% of the 246k population analyzed.



### TAKING YOUR MEDICINE IS NOT ALWAYS EASY

The third health outcome examined was medication adherence. Helping consumers make the right choices for their health and engaging the right behavior can be challenging if individuals cannot afford it or have to make trade-offs to pay for medications. Medication adherence can be one of the biggest obstacles to being on the right path to a healthier outcome, and is critical for improving clinical outcomes for those with chronic diseases.

In our study, there was a higher medication adherence rate for both Chronic and Pre-Chronic Pathways when they plan and save for future health care needs.

#### PRE-CHRONIC — medication adherence



Individuals in the OPTIMIZE Stage had an additional **6.5 days** of medication adherence compared to those in the OPEN Stage

#### CHRONIC — HSA members had better medication adherence when progressing through stages



Individuals who progressed past the Open Stage had an additional **5.8 days** of medication adherence compared to those in the OPEN Stage



Approximately **1 in 5 new** prescriptions are never filled.<sup>4</sup>

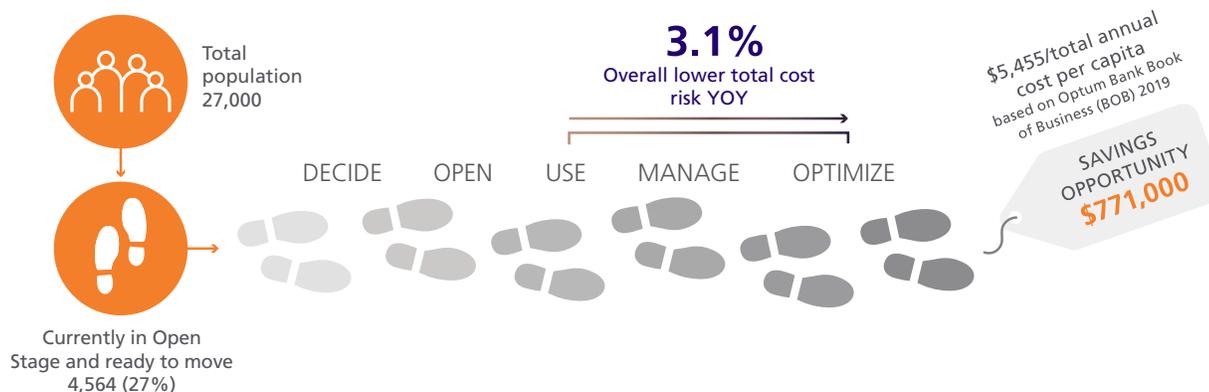
Direct health care costs associated with nonadherence have grown to approximately **\$100B–\$300B** of U.S. health care dollars spent annually.<sup>4</sup>

Looking at medication adherence results in the Pre-Chronic and Chronic Pathways demonstrates the need for consumers to continue to move along the 5 Stages of Health Saving and Spending to be prepared for future health care needs and to address the Pathway they are in today. Medication adherence is critical to preventing those in the Pre-Chronic Pathway from heading quickly into the Chronic Pathway. It is also critical in helping those in the Chronic Pathway to avoid worsening their condition.

## LOWERING HEALTH CARE COSTS IN INNOVATIVE WAYS

Optum Bank used the 5 Stages Pathways model to look at a population of a national retailer. With 27,000 employees having an HSA, this national retailer had 62% of their HSAs in the Open Stage — defined as those who chose a high-deductible health plan (HDHP) and opened their HSA but are not contributing. Using our predictive model, we analyzed if we were able to move 27% of those in the Open Stage to the Use, Manage or Optimize Stage through tailored messaging in our campaigns, the retailer could potentially save \$771,000 in health care costs while these HSA employees would lower their total health care risk for combined costs and potential inpatient risk costs by 3.1% year over year (YOY). That is a significant savings for the employer while helping employees to be more engaged, save money and have a potential healthier outcome. In addition, both employees and employers save money on taxes — the triple tax advantage of HSAs for employees and the payroll tax savings for employers.

### Analysis of 5 Stages Pathways for a national retailer with potential cost savings<sup>5,6</sup>



Optum Bank offers a comprehensive data report for clients showing the percent of employees in each stage, how many are ready to move to the next stage based on our predictive analysis, tax savings and other key data. This report can help employers make strategic decisions regarding health care costs, HSA contributions and usage.

### FIVE KEY STRATEGIES FOR CONNECTING FINANCES AND HEALTH DECISIONS

The study's ability to show lower risk scores and increase medication adherence connecting it to HSA savings and stages has a significant impact on employers' and employees' health care costs as well as employees' health outcomes. We should do all we can to encourage savings for health now and in the future.

#### Here are five key ways we can help employees move along the Health Finance Journey:

1. Tailor messaging to consumers based on where they are along their finance journey tied to their health Pathway to make it as personally relevant as possible.
2. Provide multichannel educational opportunities — as the more educated one gets, the more engaged they become and the more they save.
3. Reward consumers for engagement and savings by having employers contribute to their employees' HSAs and offer incentive and rewards programs.
4. Optum Bank clients can participate in our 5 Stages marketing programs to unlock the potential for HSA savings and the connection to health behavior.
5. Look to your HSA provider to provide innovation in segmentation and personalization with their marketing programs, or call Optum Bank to find out how to use the 5 Stages modeling to help engage your employees.

## ABOUT OPTUM BANK

Optum Bank is advancing the way we save, pay and invest for care, connecting the worlds of health and finance in ways that no one else can. Optum Bank is the #1 provider of health savings accounts, managing 5 million health accounts and over \$12 billion in assets. Optum Bank Payment Solutions include Optum Pay™ capabilities, an innovative payment platform that makes paying for health care easier and more efficient for people and health organizations. By developing proprietary technology and applying advanced analytics in new ways, Optum Bank helps reduce costs while guiding people to the right care for them.

## AUTHORS

**Alice Bluestone**, Principal Data Scientist, Optum Consumer Analytics and Data Science

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Alice Bluestone is a principal data scientist on the Optum consumer analytics and data science team. In her role she is focused on advancing analytics and predictive modeling solutions, and applying those to business problems in product development, marketing and operations. She has over 15 years of experience in healthcare research and analytics. Alice holds a Master of Science degree in computer science focusing on medical informatics and an MBA in finance and economics from the University of Chicago.

**Tami Eckstein**, Vice President, OptumHealth Financial Services

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Tami is the vice president of innovation and growth at OptumHealth Financial Services (OHFS). She joined UnitedHealth Group in July of 2008 with over 25 years' experience in the banking industry, predominantly at the intersection of operations and financial technology. Tami is focused on listening to our clients and taking their voice back into our business to drive innovative product and capability enhancements that truly further the goal of making the health system work better for everyone.

**Jana Gunn**, Director, Optum Consumer Analytics and Data Science

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Jana Gunn is the director of consumer analytics and data science for the customer office at Optum. In this role, Jana partners with stakeholders to embed analytics within marketing strategy, marketing campaigns, product development and operations across business lines. She has over 15 years of analytics expertise in the health care industry. Jana has a Master of Science degree in predictive analytics.

**Barb Page**, Vice President, OptumHealth Financial Services

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Barb Page is the vice president of marketing for OptumHealth Financial Services (OHFS). In this role, Barb is responsible for the marketing strategy and execution for OFS and Optum Bank. She brings over 30 years of financial services experience and health care expertise to the marketing arena for Optum. Barb has a master's degree in business communications and a Master of Science degree in health care leadership.

**Luke Salzwedel**, Senior Director, Customer Analytics and Strategy

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As the advanced analytics leader for the customer office, Luke is responsible for implementing cross-business capabilities to drive consumer engagement and satisfaction. Examples of the big data solutions supporting these efforts include offer management, member segmentation and NPS analytics. He is also an active member in the analytics community as a member on the business analytics board at Hamline University, served on Evanta's chief data officer governing body for Minneapolis, and is an active member of the MinneAnalytics community. Luke has a bachelor's degree in economics from Hamline University.

**If you are interested in learning more about how your company and employees can demonstrate improved behaviors and outcomes, and save on health care costs using the Optum Bank Health Finance Journey and the 5 Stages of Health Saving and Spending, please contact Optum Bank at 1-866-386-3409.**

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References:

1. Based on Optum Bank Book of Business (BOB) 5 Stages analysis 2019.
2. Based on Optum Bank Book of Business (BOB) and 2019 Midyear Devenir HSA Research Report (August, 2019). Industry average HSA balance is \$2,351 compared to Optum Bank average HSA balance of \$2,747 (including non-funded accounts). For investment assets, industry average is 22% of assets invested compared to Optum Bank average of 26% assets invested.
3. A survey of Americans with high-deductible plans identifies opportunities to enhance consumer behaviors. *Health Affairs*. March 2019 38:3.
4. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report. 11/17/17.
5. 3.1% lower total cost risk score on average in 2018 for members who progressed past Open HSA stage year over year. Expected total cost risk score reduction based on the Book of Business (BOB) analysis. May vary per client.
6. Peterson-KFF annual total health care costs include medical, pharmacy and rehabilitation expenditures.



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