MILLIMAN REPORT

Long-term care wellness initiatives

Key components of building and evaluating a sustainable program

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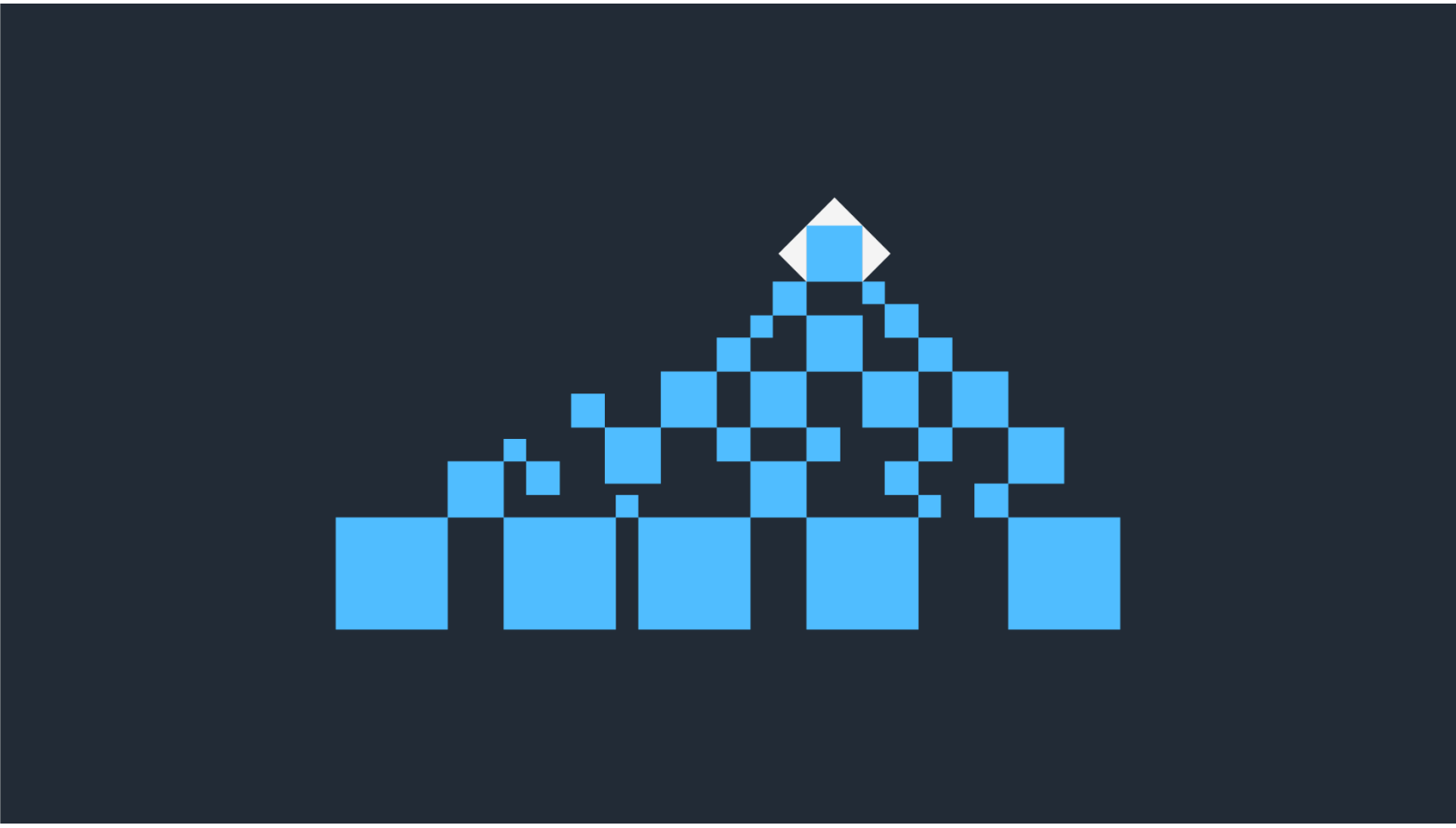

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1. Executive Summary

With the goals of improving sustainability of long-term care (LTC) blocks of business, implementing fewer rate increases, and greater product innovation, the private sector LTC insurance market has increased its attention on LTC wellness and aging-in-place programs. Wellness and aging-in-place programs are broad and vary but all share the overall goals to improve health outcomes, reduce the severity of future claims, and reduce overall LTC costs. Although the idea of wellness is not new in healthcare, LTC carriers and vendors have been intensely focused on it in the last few years, as proven wellness strategies that work in healthcare have shown promise in optimizing use of scarce and costly healthcare resources. It is important for stakeholders to understand the components of LTC wellness arrangements, as well as the practical issues and impediments that contribute to success and failure. Many in the LTC market believe increased knowledge sharing, technological improvements, and summarizing best practices can continue to increase the success of LTC wellness plan initiatives and the overall health and wellness of LTC policyholders. We have identified the following key themes:

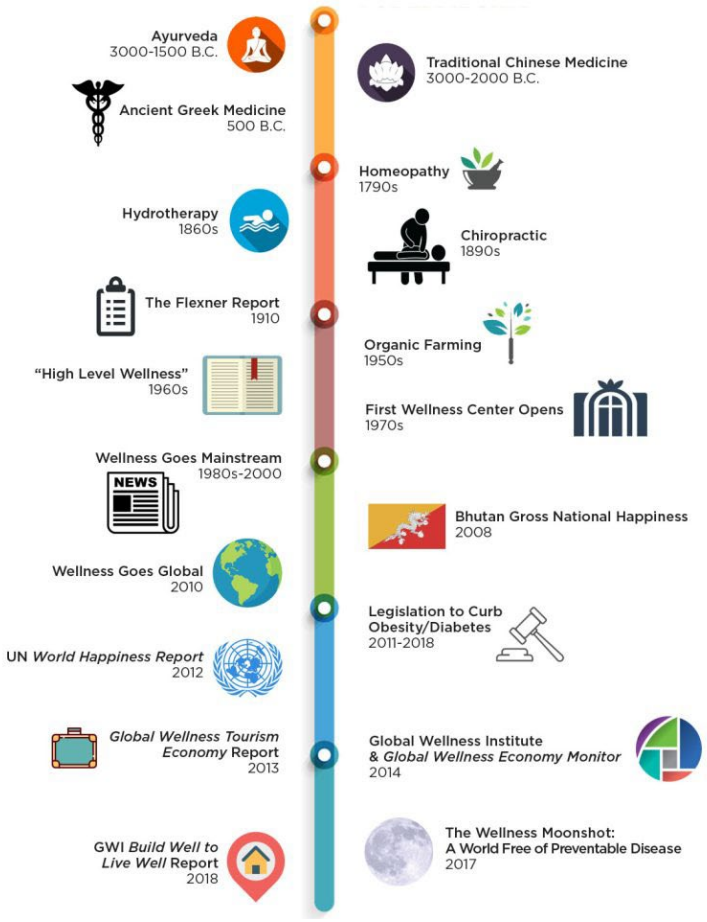
- **Engaging all stakeholders is important.** To successfully implement a wellness program, many stakeholders should be involved: policyholders, regulators, senior management, actuarial, finance, analytics, operations, legal, claims, communication, procurement, and vendors. The anchor stakeholder to the LTC wellness program is the policyholder. Without policyholder engagement the LTC wellness program will never be effective.
- **LTC wellness programs are organization-specific.** LTC carriers serve a broad range of policyholders across the country with a variety of needs, geographies, and cultural backgrounds. In addition, LTC product designs vary across companies; therefore, what works for one company may not work for another. Because wellness programs are organization-specific and difficult to generalize, we introduce a framework and guidance that LTC carriers can use across the LTC wellness program spectrum, leveraging learnings from wellness programs in general in the LTC market.
- **Effects of LTC wellness programs are nascent and it will take time to collect credible experience.** Published medical literature shows interventions such as medication management, socialization, prevention of falls, and early detection of strokes can lead to improved health outcomes for adults. These literature reviews do not necessarily intersect with the insured population of private LTC policies, which triggers a claim with two of the six activities of daily living (ADLs). Therefore, the LTC market is building its own programs and analysis to study the effectiveness of these interventions. When performing the studies, data can be difficult to collect. LTC carriers do not have access to their policyholders' medical history or health insurance claims. For those policyholders that do submit a claim, LTC providers do not always retain diagnosis information in a usable format for analysis. These issues are not insurmountable, but LTC carriers do need to plan for them. LTC carriers should also plan to collect data through policyholder outreach and on outcomes from the wellness vendors. There have been presentations on the results vendors and carriers have had in the wellness area. However, results are still early and it will take time to collect data.
- **Success has defined qualities.** Organizations should set out to define success metrics when designing their programs. Identifying success may look different to each organization. However, across organizations we can identify success as reduced claim costs; lower rate increases; high policyholder engagement; cost-effective, high-quality, and meaningful interventions that are valued by policyholders; policyholders aging-in place; and improved health outcomes for the policyholder.
- **LTC needs will continue to grow as the country ages.** As the country continues to age, labor and provider shortages will continue, especially in the home healthcare sector, and financial strain on public entitlement programs continues to increase, the demand for LTC financing options and efficient quality outcomes for aging-in-place will be vital.

In this paper, we outline the general steps and considerations for designing, evaluating risk, and measuring the results of LTC wellness programs. As stakeholders become more skilled at managing the practical details of LTC wellness and enhance their infrastructures to collect and process meaningful quality and savings metrics for their target populations, defining the key features that hinder or support the success of LTC wellness programs will become easier. In doing so, providers and stakeholders will refine and implement more sophisticated models to better manage LTC paid claims and policyholder experience.

2. Introduction

The Global Wellness Institute™ traced the tenets of wellness back to ancient civilizations, but the term has become a popular one in modern society and medicine. The use of the word "wellness" in the English language dates to the 1650s. In 1910, mainstream medical education moved to disease-oriented, evidence-based medicine. Our modern use of "wellness" started in the 1960s based on Halbert Dunn's concept of "high-level wellness" and gained momentum between 1980 and 2000. At the end of the 20th century, employers developed workplace wellness programs. Since 2000, the use of "wellness" in everyday life has reached a tipping point.[1] The graphic in Figure 1 from The Global Wellness Institute shows how broad wellness really is.[2]

FIGURE 1: THE EVOLUTION OF WELLNESS GRAPHIC



Source: "History of Wellness." Global Wellness Institute available at https://globalwellnessinstitute.org/what-is-wellness/history-of-wellness/

In 2019 84% of large employers offered a wellness program.[3] Employer wellness programs include things such as lifestyle and behavioral coaching, programs to help lose weight, smoking cessation programs, and health risk screenings.

In Medicare Advantage, plans offer wellness benefits through supplemental benefits such as vision, hearing, and dental exams, over-the-counter (OTC) benefit cards, meals, podiatry services, transportation, visitor and travel benefits, and acupuncture. These supplemental benefits began with the inception of Medicare Advantage in 2003 and their prevalence has only continued to increase.[4] These benefits are popular with members and offering them is key for plans remaining competitive in the Medicare Advantage market.

The growth of home and community-based services (HCBS) originally stemmed from the U.S. Supreme Court decision in Olmstead v. L.C. in 1999, which ruled that states have an obligation to ensure that individuals with mental disabilities live in the least restrictive, most integrated settings possible. This ruling meant that state Medicaid agencies must provide health services to beneficiaries who chose to live in the community or at home. As HCBSs have expanded, so too have managed long-term services and supports (MLTSS) programs, whose goals include increasing the predictability of state expenditures, aligning Medicare and Medicaid incentives in coordinated programs for Medicare-Medicaid eligibles, and improving care coordination.[5]

Life insurers typically have long-term relationships with their policyholders and any program that enhances the wellness of policyholders is beneficial to both. Currently, a few life insurance companies offer wellness programs or discounts on premiums if policyholders follow a healthy lifestyle (e.g., annual visit to the doctor, weight thresholds, free cancer screenings, and rewards for food shopping habits). Getting access to consumer behavior or health and wellness data helps life insurers manage their mortality risks. Consumer participation in such programs allows for increased engagement—enabling cross-selling opportunities and potentially lowering mortality and lapse rates.[6] The benefits of lower lapse and mortality rates must be weighed against the costs of running the program and concerns around data privacy, discrimination, and regulatory requirements. Wearable devices and wellness data present an opportunity for life insurance companies to differentiate in a competitive environment and offer programs that benefit both themselves and their customers.

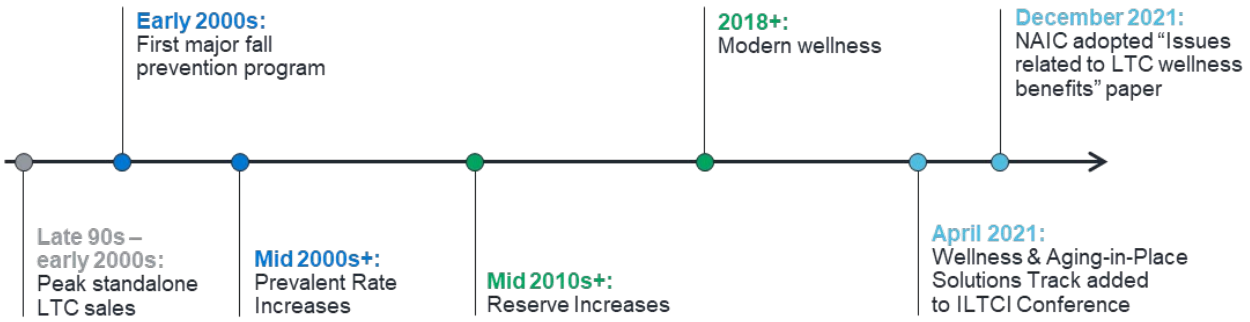
Wellness programs also interact with disability insurance in several ways. In the 1990s, disability insurers began to add employee assistance programs (EAPs) intended to reduce employee stress by assisting with stressful activities like finding childcare or care of an elderly parent. These programs offer counseling, referrals, and other services to employees who experience work-related or personal issues. Most group disability policies now include EAPs. Some disability insurance plans include a financial incentive to get well and/or stay healthy; for example, by covering all or part of the costs for cancer screenings and exams. Although more common in life insurance, some disability plans have different premium rates for tobacco users and nonusers, where the rates are higher for tobacco users, which provides incentives to quit using tobacco. To the degree that wellness programs increase productivity and reduce absenteeism, there could be a direct impact on leave and paid time off (PTO) plan utilization, which crosses into the disability realm when considered as a component of a holistic employer benefit strategy.

Workers' compensation is another area impacted by wellness program concepts. Traditionally, safety programs focused on proper lifting techniques, ergonomics, personal protective equipment (PPE), and other measures aimed at preventing illness and injuries. However, many employers are now incorporating wellness concepts into their workers' compensation strategies. For instance, on-site clinics are being used not only for initial treatment and rehabilitation but also for preventive health screenings. Return-to-work programs have long been a staple, helping injured workers resume employment in a limited capacity, if necessary. Additionally, vocational rehabilitation is available in some states, offering training and education to workers whose injuries prevent them from performing their previous jobs. Addressing the mental health aspects of physical injuries is also becoming a priority, with employers taking proactive steps to treat these issues to enhance overall employee well-being and facilitate a quicker return to work. By integrating these wellness initiatives, employers aim to create a safer, healthier work environment and reduce workers' compensation claims.

As LTC insurance blocks have aged, it has become apparent to the LTC market that, for many blocks of business, premiums collected will not be sufficient to cover future claims and expense. The U.S. Department of Health and Human Services (HHS) published a report titled "Exiting the Market: Understanding the Factors Behind Carriers' Decision to Leave the Long-Term Care Insurance Market."[7] The report reviewed the factors that caused many carriers to experience higher claims than initially expected, leave the market from selling new products, and seek rate increases on legacy blocks. The report included "a review of industry data as well as structured interviews with executives and decision makers from 26 major LTC insurance companies." The National Association of Insurance Commissioners (NAIC) also looked at similar factors in its report, "The State of Long-Term Care Insurance – The Market, Its Challenges and Future Innovations,"[8] and noted that nearly all insurers in the LTC insurance market have pursued corrective action after realizing the adverse experience on their legacy blocks of business.

The private LTC insurance market first offered wellness benefits in the early 2000s, with the first major fall prevention program being developed in 2003. Over time, carriers pursued other ways to manage their LTC liabilities. Rate increases were prevalent throughout the LTC market by 2010 and reserve increases became frequent over the next several years. By 2020, the current iteration of LTC wellness programs emerged, with several vendors offering a variety of wellness-related services specifically designed for LTC. The recent increase in wellness efforts has been driven by the desire of LTC carriers to pursue alternatives to managing their blocks other than premium rate increases and reserve increases. Figure 2 shows key milestones and events in the private LTC insurance market.

FIGURE 2: STANDALONE LTC INDUSTRY TIMELINE



LTC has some challenges and opportunities that do not appear in other insurance markets as they have pursued wellness initiatives. Insureds typically purchase coverage long before they become claimants and wellness needs may change significantly over the life of each policy. This may lead to challenges engaging insureds, in addition to overcoming trust issues that policyholders have developed because of persistent rate increases. Even with its unique challenges, LTC insurance can benefit from leveraging learnings from other wellness efforts.

In designing and implementing LTC wellness programs with private carriers, several stakeholders should be involved, including policyholders, senior leadership, attorneys, actuaries, healthcare providers, vendors, operations staff, and the claims departments. Getting buy-in from the various stakeholders is a key component of implementing a successful LTC wellness program.

The main body of this paper has the following sections:

- **Design considerations.** We discuss goal-setting and design considerations of the program including the importance of aligning it with overall quantitative and qualitative goals. We also discuss how various challenges, such as resource limitations, impact the program goals, and the importance of the various stakeholders' views in developing the goals. The tracking of results and outcomes should align with the plans for measuring effectiveness.
- **Risk sharing with vendors through value-based care.** We lay out the risk frameworks of an LTC insurer entering a relationship with a wellness vendor (e.g., performance risk, insurance risk, etc.). We also note contractual provisions between the wellness vendor and the LTC insurer to make sure the carrier transfers the appropriate and intended risks to the provider.
- **Modeling success: key items in evaluating effectiveness.** We discuss best practices for modeling and measuring the effectiveness of wellness programs, including various measurement schemes and the merits and caveats that go along with the different approaches. Additionally, we discuss how risk adjustment and measuring process and parameter risk can help the stakeholders understand what might be bending the cost curve (i.e., producing savings) versus other random factors.

- **LTC wellness assumptions in long-term projections.** We discuss actuarial considerations for incorporating the impact of wellness programs into reserve and long-term projection assumptions.
- **Case studies.** We discuss two anonymized case studies (both pre-claim and on-claim interventions). Within each case study, we talk about program design, risks associated with introducing the intervention, how to measure the success of the intervention, the outcomes of the intervention, and lessons learned.
- **Conclusion.** We describe emerging innovations and the future of LTC wellness program design and implementation, especially regarding technologies, such as machine learning, artificial intelligence (AI), and others.

A summary of definitions of key terms used throughout this paper in the context of the LTC wellness environment is provided in Appendix B.

3. Design considerations

Before embarking on implementing an LTC wellness program with an LTC in-force block, a carrier should identify the key stakeholders, set goals, and define success.

IDENTIFYING STAKEHOLDERS

The stakeholders for the LTC wellness program may have diverse needs that will need to be addressed when designing the program. For clarity in the paper, we refer to the person in charge of designing and implementing the wellness program as the program director. The program director will want to interview and assess the needs of the various stakeholders when designing the program:

- Policyholders are the ultimate recipients of the wellness programs, and the program should be something they value that is demonstrably impactful to their well-being in a positive way.
- Regulators and the NAIC have encouraged the innovation of LTC and the prevalence of wellness programs and have published guidance for considerations of LTC wellness program.[9]
- The carrier's legal department will want to consider various regulatory guidance and constraints for wellness programs as well as data privacy and Health Insurance Portability and Accountability Act (HIPAA) regulations for the policyholder.
- Actuarial, finance, and analytics departments can help set financial goals, design effectiveness studies, design data collection processes, set financial assumptions, perform feasibility studies, and quantify risk.
- Operations will need to help obtain contact information for the policyholders, manage the vendors, and implement the programs. Coordination with wellness programs offered or delivered by health insurers is also important. If the policyholder's health insurer already offers a program, then the LTC carrier may only need to motivate the policyholder to engage with the health plan's program instead of having to incur the expense of having a separate program. This may be difficult for the LTC carrier to know without asking the policyholder directly and / or forming relationships with all health insurers.
- Claims departments can offer insights on the type of claims and what interventions might help to avoid policyholders' need for assistance with ADLs and defer future claims. For on-claim wellness programs, they can also help coordinate with vendors.
- Communication teams at the company will interact with the policyholder and offer them information on the wellness programs. This may include outreach to encourage enrollment in the programs.
- Procurement will help contract with external vendors that the company contracts with for wellness programs.

Both stock and mutual companies have long-term goals for their capital and cash flow. Typically, senior management and the board of directors will set overall strategy for what programs they would like their policyholders or customers to receive, with the goal of being consistent with the company's mission and its brand while, at the same time, making sure they align with the amount of capital that the company has available to invest.

SETTING GOALS AND DEFINING SUCCESS

Once the program director interviews stakeholders, they can start to set goals and define success.

In healthcare, in general, the goal for most payers and programs is the triple aim—improving the health of populations, enhancing the experience of care for individuals, and reducing the per capita cost of healthcare. A fourth aim could be ensuring healthcare providers have the resources and tools they need to be successful—leading to less burnout and enhanced joy in work. As private LTC is part of our larger healthcare experience, the company can use these larger goals as a framework to define company goals. LTC-focused wellness programs generally also align the target with reducing incidence (typically triggered with needing assistance with two of six ADLs) or utilization. This should reduce overall LTC paid claims, similar to reducing the per capita cost of healthcare.

Financial outcomes

For financial outcomes, reducing incidence of claims, shortening lengths of stay by quicker recoveries, transferring to or staying in less costly sites of care, or delaying claims could translate into reducing LTC paid claims in total. Because the duration of an LTC block is quite long, the financial outcome should be set for a specific period. Claim reductions in the next year may be more modest than long-term claim savings but will be easier to measure. Companies will also look at return on investment (ROI) metrics, which we discuss in a later section.

Nonfinancial outcomes

Measuring whether the health of populations has improved and analyzing the experience of individuals can be more challenging compared to financial outcomes. There are a variety of nonfinancial outcomes, some of which are easier to measure than others. Examples include quality and patient experience indicators, among others.

To measure the health of the population, the company may want to look at specific indicators or quality measures to measure the quality of the program offered. For example, the Centers for Medicare and Medicaid Services (CMS) released the first-ever HCBS quality measure set to promote consistent quality measurement within and across state Medicaid HCBS programs. The measure set intends to provide insight into the quality of HCBS programs and enable states to measure and improve health outcomes for people relying on long-term services and supports (LTSS) in Medicaid. They are leveraging the Personal Outcome Measures (POMs): Clinical Quality Language (CQL) and Consumer Assessment of Healthcare Providers and Systems (CAHPS®). Improved incidence and mortality may also be a way to quantify these measures.

An additional nonfinancial metric that may be of interest is patient experience, which can be estimated using metrics such as CAHPS . The healthcare industry has also adopted net promoter score (NPS) from the banking industry as a more simplified way to measure patient experience. However, the effectiveness of using NPS in healthcare is inconclusive.[10] Other surveys may complement NPS. Despite the need to validate NPS more, we have seen its prevalence in measuring start-up vendors.

ENGAGEMENT

Patient engagement is critical to the success of the program. Studies have shown that patients being involved in their own care leads to higher-quality, safer, and improved outcomes.[11,12,13] The literature has defined multiple measurements to identify the amount and quality of patient engagement, shared decision making, and empowerment in healthcare decisions.[14] LTC insurers seek to engage policyholders to take care of their health earlier on to prevent or delay the assistance for ADLs and offer more services for claimants.

One of the challenges that LTC carriers have had is the lack of a relationship with their policyholders. For legacy blocks that have been in force for years or even decades, carriers may not know how to contact their policyholders beyond a mailing address used for premium payment notices. Newer products are seeking to build wellness benefits in from the ground up. Once carriers begin to contact their policyholders, the policyholders may have distrust or skepticism of the motivation for the outreach. Therefore, the legacy carrier may need to do work to build trust.

Companies may try contacting policyholders through traditional mailing, email, web portals, phone calls, and text messages. These methods have varying success rates depending on the demographic and they can range in costs. For example, traditional mailing and phone calls are more expensive than other passive outreach strategies. In healthcare, texting is also becoming more prevalent.[15] Stratifying policyholders before engagement based on need and receptiveness can help outreach be more successful. If companies are able to communicate with policyholders through short message service (SMS) texting, this could lower cost and increase engagement rates over other outreach methods. Some vendors or companies may also use incentives to motivate members to engage in wellness programs.

After the company begins outreach, they will want to measure contact success rate, initial response, initial engagement, receptiveness, ongoing engagement, and subsequent experience. In addition, determining which policyholders acted on the information provided through the intervention can help companies assess whether the outreach was successful and aid in the estimation of potential savings.

PROGRAM STRUCTURE

Decisions about the program structure will be based on the defined goals. Program structure typically includes choosing the group of policyholders, selecting the type of intervention to offer them, partnering with a vendor, outreaching to the policyholder, engaging with the policyholder, and measuring the outcome and success of the vendor's program. Program structure can vary based on the status of policyholders (e.g., on-claim versus pre-claim), demographic composition of intended participants (e.g., focused on certain attained ages), and type of intervention being offered (e.g., health screenings versus fall prevention), among other variables. The LTC carrier may offer customized programs to subsets of policyholders to maximize impact. A key consideration is how the specific intervention will help policyholders.

Predictive models and bias

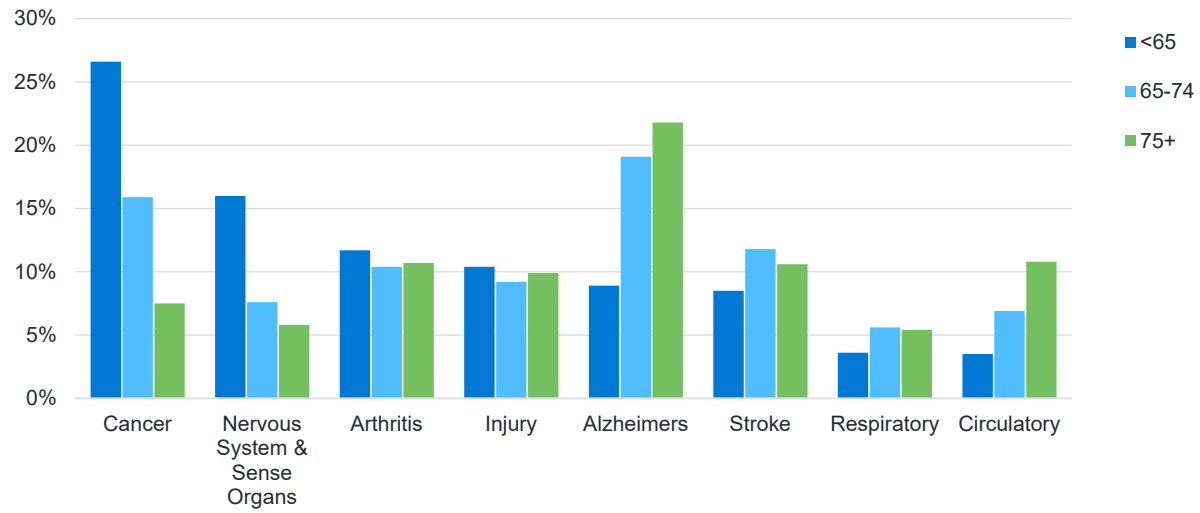
LTC carriers and wellness providers can use predictive models to stratify policyholders within LTC wellness programs to refine programs and to provide more appropriate levels of outreach and support based on each member's estimated risk level.

To ensure that prioritization and stratification happen equitably, it is important for carriers to evaluate the models and stratification process to determine whether there is evidence of unfair discriminatory outcomes for members. We define unfair discrimination in this setting as individuals with the same health status and policy characteristics receiving lower prioritization from the carrier for intervention due to their membership in a certain protected class.[16]

Causes of LTC claims

Figure 3 summarizes claim incidence by diagnosis, based on the Society of Actuaries (SOA) 1984-2007 Long-Term Care Intercompany Report and Tables.[17]

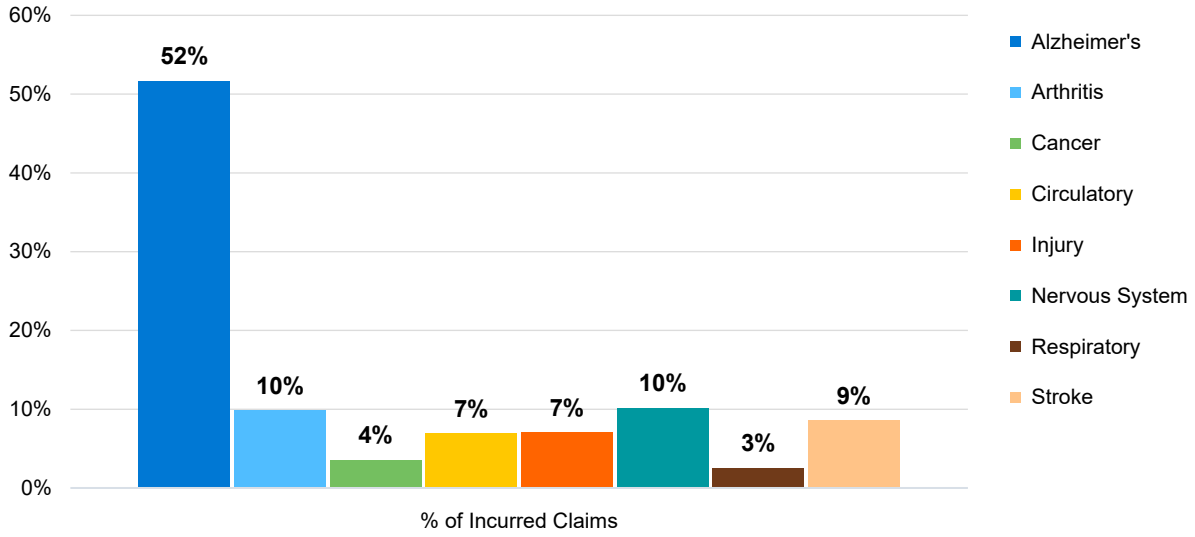
FIGURE 3: LTC CLAIM COUNT DISTRIBUTION BY ATTAINED AGE AND DIAGNOSIS – SOA STUDY



Source: SOA 1984-2007 Long-Term Care Intercompany Report and Tables, page 94, Figure 20.

Figure 4 summarizes present value of incurred claims by diagnosis, where available for diagnoses that comprise at least 1% of claims, from the Milliman Long-Term Care Guidelines (Guidelines). The high distribution of incurred claims due to Alzheimer's disease reflects both the high frequency and high severity of cognitive claims. The Guidelines provide a flexible, but consistent basis for the determination of morbidity for a wide variety of long-term care benefit packages. The Guidelines can be used to anticipate future claim levels, evaluate past experience, and establish interrelationships between different LTC insurance coverages. The 2020 edition of the Guidelines is based directly on 900,000 claims and 63 million life-years of exposure. The 2020 study includes 15 of the top 20 LTC companies based on lives in force. This significant amount of data makes the Guidelines a credible baseline for developing morbidity assumptions.

FIGURE 4: LTC PRESENT VALUE OF INCURRED CLAIMS DISTRIBUTION BY DIAGNOSIS – MILLIMAN 2020 LTC GUIDELINES



Each company will want to look at its own claim experience, to the extent diagnosis information is available. If they wish to offer a fall prevention program, for example, they might expect it to impact those with injury diagnoses (between 5% and 10% of the population based on Figures 3 and 4) and also to prevent a head injury (which might appear in the nervous system category). Based on Figure 3, a cancer intervention program may make sense for younger populations. Cancer screenings can work and the cost of screening is often covered by health insurers. The program designer may wish to use the claim distribution of the population as well as the expected clinical expectation of each disease to help guide decisions.

While the distribution of incidence can illustrate the prevalence of claims by diagnosis category, distributions of paid claims can provide additional detail regarding the severity of claims by diagnosis. Both distributions may be of interest to wellness program designers.

POTENTIAL INTERVENTIONS

Interventions are continuing to evolve with start-ups and existing companies introducing new and innovative devices and ideas into the continually growing market. Some of these companies are bringing their ideas to the Medicaid and Medicare Advantage areas first, while others are focused on the private LTC insurance market. Although payment reimbursement and patient data availability will vary among the different insurance markets, the actual interventions can benefit all patients. We highlight seven interventions here (note that we do not intend our list to be exhaustive).

- **Fall prevention** is multifactorial, impacted by management of polypharmacy, the number and types of medications the individual is taking, multiple available screenings, and mitigating fear of falling, mobility issues, poor balance, hearing impairment, and cognitive impairment.[18] The cost of falls for the healthcare market in a report published by Brooks Rehabilitation in November 2023 was $29 billion paid for by Medicare, $12 billion paid for by private payers, and $9 billion paid for by Medicaid.[19] Recently CMS rolled out a value-based program for skilled nursing facilities (SNFs) that will reward SNFs value-based purchasing dollars for preventing falls.
- **Medication management** sees clinical pharmacists playing a critical role within LTC settings. They conduct thorough reviews of medication records to ensure safe and effective medication use, focusing on accuracy, interactions, adverse effects, lab results, and more. Collaboration between pharmacists, healthcare providers, and caregivers improves medication therapy, reduces adverse events, and enhances patients' quality of life.[20]

- **Reducing social isolation and loneliness** (perceived isolation) can also have impacts on overall health outcomes of the LTC policyholder.[21] Policyholders may welcome interventions that target social isolation and loneliness. The COVID-19 pandemic exacerbated this issue.
- **Mitigating cognitive issues**, which are a leading cause of claims at older ages. The Centers for Disease Control and Prevention (CDC) predicts that 14 million people will have dementia by 2060. Alzheimer's disease represents 60% to 80% of dementia, with 10% represented by vascular dementia, which is linked to strokes. Other dementias include Lewy body dementia, front-temporal dementia, mixed dementia, and reversible causes.[22] The Alzheimer's Association and pharmaceutical companies are conducting significant research to be able to enhance early detection and prevention of Alzheimer's disease. As they make more progress here, there may be more options for wellness in this area.
- **Some preventive screenings** have been recommended by the U.S. Preventive Services Task Force.[23] LTC carriers could offer some of these screenings to their policyholders to catch risk factors and diseases in their preliminary stages. Interventions can then be implemented prior to these diseases progressing to a point where LTC services are required.
- **Provider networks** are one of the tools used by health plans to reduce costs and provide incentives for high-quality and cost-effective care for consumers. By identifying providers that consistently meet quality and safety metrics and are more efficient relative to their peers, health plans attempt to advance and improve the provision of high-quality care.[24] LTC carriers have begun to implement similar care networks.
- **Care concierge programs and marketplaces** help coordinate members on claim to use appropriate high-quality providers and provide access to additional durable medical equipment (DME) that may improve their health outcomes while on claim. Care concierge teams work with policyholders and their family members to identify and coordinate care services. Marketplaces are online portals that policyholders can use to shop for a variety of services from vetted providers to help support their independence. The goal of these programs is to help the member recover faster and to keep them at home (or in their desired location) longer.

DATA

Having appropriate data for the program can impact the initial outreach, engagement, and maintenance of the program, in addition to the measurement of program effectiveness (see Section 5). Therefore, data elements, structure, and availability should be planned and considered in the design portion of the LTC wellness program. Carriers may not have updated mailing information to contact the policyholder, which can make engagement difficult. Data collection, analysis, and storage requires investment by both carriers and vendors.

LTC carriers may have limited access to their policyholders' medical histories or health insurance claims and typically only receive this information when they go on claim. For those who do have LTC claims, the providers do not always accurately or completely populate diagnosis information on the claim. Fortunately, with the proper policyholder authorization and data-sharing compliance measures, LTC carriers can gain access to additional data on their policyholders through various sources, which can include information such as updated contact information, medical and pharmacy claim histories, consumer data, and health-related social needs.

4. Risk sharing with vendors through value-based care

As part of the goal-setting process and later evaluation, the organization will want to think about the key risks that the business is taking on.

LTC RISKS

LTC profitability can be highly volatile,[25,26] with large impacts due to minor changes in assumptions for incidence, claim terminations, utilization, expenses, and interest rates. Besides the "insurance risk" (both process and parameter risk) in LTC insurance, there is also the performance risk of providers delivering appropriate care to policyholders. Performance risk relates to inefficiency, suboptimal quality, and inflated cost of care. In addition, fraud waste and abuse inherent in the healthcare system can contribute to performance risk.

LTC carriers implementing wellness programs may seek to reduce liability and insurance risk. In addition, the carrier should consider the impacts of the program on performance risk. Ideally, a wellness program also improves efficiency and quality for the policyholder and reduces fraud, waste, and abuse. Evaluating vendors and internal programs in the LTC wellness space will need to consider both financial and nonfinancial outcomes, and whether the outcomes align with the goals of the program. A program can be a promising idea on paper, but the wellness provider must be able to implement it effectively.

PARTNERING WITH VENDORS

We have seen LTC carriers partnering with a variety of vendors offering wellness-related services. Vendors offer different programs including (but not limited to) websites for policyholder education, general healthcare screenings, assessments of cognitive health, care concierge services, caregiver support, fall prevention, and coordination with community care. Note that contractual provisions between the wellness vendor and the LTC insurer can be structured to transfer and/or share risk between the two parties. Both parties should be aware of the risks that are being transferred and account for them appropriately within their business.

Vendor Goals

Achieving the defined goals can require partnerships. Our work evaluating partnerships in value-based care can help us form a framework and guiding principles that will also be useful in LTC wellness programs. That framework and the guiding principles include value, quality, sustainability, and adaptability.

- **Value.** The importance, worth, or usefulness of something. In the context of a wellness program, the carrier will want to consider offering a program that the policyholder will value.
- **Quality.** Ideally, the policyholder will be receiving high-quality service and support from the vendor partner that is delivering the services.
- **Sustainability.** Achieving a positive ROI for both the vendor and the carrier will allow the company to continue to offer the program for a long time. The program design should allow for time to see meaningful behavior change, engagement, and success metrics.
- **Adaptability.** These are innovative programs, and the carrier and vendor will need to learn and adapt quickly. Scheduling regular meetings (e.g., monthly or quarterly) may be beneficial for both the carrier and the vendor. It is important that data is available for both parties and clear metrics are selected for analysis and tracking. Key questions to consider include whether the same solution works in each market and/or for each policyholder, and whether can you use a risk score or other stratification tools to help you identify policyholders that may need more help than others.

Vendor Contracting

When the LTC carrier partners with a vendor to deliver wellness services they will enter into a contract. It is important to take a step back to make sure that the contract meets the guiding principles that the carrier established in the initial goal-setting process. Broad items to keep in mind in structuring these contracts are noted below. More detailed legal review is also important.

- **Vendor fees.** The vendor could get paid a per member per month (PMPM) fee or a per life fee on a longer-term basis, such as annually. In some cases, the partner may choose to take risk on fees. Actuarial consequences may need to be evaluated and understood by the carrier and vendor. The LTC carrier should avoid transferring insurance risk to the wellness provider that the provider cannot manage.[27] For example, guaranteeing claim savings to the insurance company will incentivize a provider to reduce claims; however, large shifts in demographics or catastrophic claims would introduce insurance risk that the carrier is likely better equipped to manage than the provider. This is an important component of sustainable partnerships between LTC carriers and their vendors. Questions to consider include:
  - Is any risk sharing achieving the desired goals?
  - If the wellness provider takes on risk, should it be holding reserves?
- **Quality incentives and withholds.** An arrangement can include a pay-for-performance (P4P) aspect. P4P adjusts the payment arrangement to include incentives for higher quality of care and in some cases disincentives for lower quality (such as withholds). The objective of this is to ensure customers are getting the experience that an LTC carrier would like them to have for their brand. The LTC carrier should vet the operational and clinical model that the LTC wellness provider will deliver to the policyholders. Questions to consider include:
  - How will the carrier hold the vendor accountable?
  - Can the carrier make sure the vendor is meeting certain service level agreements (SLAs) or other quality metrics?
  - Are these metrics credible and easy to measure?
- **Data sharing between partners.** Wellness providers will need the carrier to provide the claims and administrative data feeds to provide the right care to policyholders. Additionally, if these data feeds are what the carrier will be using to hold the vendors accountable, then the vendors have additional incentive to receive and review this data. The wellness provider may also be able to obtain additional data about policyholders when it is interacting with them. Questions to consider include:
  - What data will a carrier get back from wellness providers?
  - With what frequency will the carrier send data to the wellness provider and vice versa?
  - Can the parties agree to predetermined layouts stated in the contract?
- **Contractual terms and conditions.** Some risks can be mitigated using contractual terms and conditions. Although we would recommend consulting with internal or external legal counsel for compliance with laws and regulations, some brief considerations include:
  - Termination clause
    - If there is a termination clause, how will the fees get paid? Will they be prorated?
  - Dispute clause
    - This defines a process that escalates gradually, starting with sharing reports and requested information, then sharing data, and then an audit. It also clarifies who would be financially responsible for compiling and reconciling the data. If an audit is necessary, it clarifies how to choose a third-party auditor and who would be financially responsible for the audit. An industry norm is that the party requesting the audit would be financially responsible, or the cost would be shared between the two parties.
  - Unusual circumstances
    - As we learned from the COVID-19 pandemic, unexpected outcomes may emerge. The contract should be adaptable and reconsidered in these cases. From a contracting and financial perspective, what degree of catastrophe or unusual circumstances can the contract absorb?

5. Measuring success: key items in evaluating effectiveness

LTC carriers and vendors will want to evaluate the program to consider whether to continue to offer programs, modify them, or discontinue them. Evaluating the programs from a quantitative perspective (i.e., performing effectiveness study or measuring success) will require a robust data analysis. Below we discuss key considerations in measuring the effectiveness of LTC wellness programs from a quantitative perspective.

WHAT ARE WE MEASURING?

One of the first steps in measuring the results of a wellness program is determining the appropriate metric to measure. Quantitatively, the LTC carrier will be looking for "savings," the difference between an expected benchmark and the actual. The benchmark may be developed from the experience of a control population or based on an analysis of historical experience.

The "savings" could be indicated by changes in paid claims, incidence, claim termination, and/or transfers. Pre-claim programs may measure changes in incidence rates or paid claims to estimate financial impact. On-claim programs may measure changes in paid claims, claim termination rates (disabled deaths and recoveries), and/or transfers to estimate financial impact.

Another key consideration is the structure of the study that you plan to perform to evaluate the wellness program. If control and intervention groups will be used, they will need to be developed prior to the rollout of the wellness program. Ensuring the groups are appropriately similar in size and policy, benefit, and demographic distributions can be difficult given the size and variety of many LTC blocks. Other study structures may also be used. How the study structure may impact the implementation or timeline of the wellness program and the data that will be collected should be considered.

DATA SOURCES

To measure the effectiveness of an intervention, the actuary will need policy and claims data from the LTC carrier. The actuary can also use information about the intervention, outreach, engagement, and results from the intervention in the analysis. In addition, the actuary can also use industry benchmarks and risk score models, where appropriate.

INTERVENTIONS OF INTEREST

It is important to understand that the interventions and the data sources should clearly distinguish the type of intervention. For example, if there is an intervention on a pre-claim population, there should be certain data fields on the in-force file that indicate which policyholders were offered the intervention and which policyholders engaged in the intervention, with associated dates of engagement. These dates will be important for the actuary to consider when measuring the effectiveness of the intervention.

HYPOTHESIS DEVELOPMENT

Understanding the intervention will help form a plausible hypothesis. Interviewing clinicians and reading literature reviews can help formulate the initial hypothesis. Additionally, it is important to be realistic about how long it will take to see the intended effects. Evaluations that take place too soon risk incorrectly concluding that there was no impact.

As an example, consider an intervention that provides health and/or cognitive screenings and identifies health issues earlier than they would otherwise be detected. A plausible hypothesis may be that the screenings identify health issues earlier so that policyholders can engage in treatment in earlier stages of a disease, reducing overall severity of the disease and in some cases the impact. An implausible hypothesis would be that the screenings can reduce influenza or COVID-19.

CREDIBILITY

Credibility is a measure of the predictive value of the data.[28] If 100 people took the intervention, it may be hard to assess whether there is an impact, especially if it is a pre-claim program, as this population is too small to be credible given relatively low average incidence rates. LTC experience already has material random variation in paid claims and the components of paid claims, both from process risk and parameter risk.[29,30] Even if the actuary or data analyst determines that the experience during the wellness program is credible, the actuary should consider how to isolate savings from changes due to random variation of the measurement variable (e.g., incidence, paid claims, etc.).

Because LTC claim incidence is a relatively infrequent event, a large number of policyholders need to be included in any analysis of incidence for the results to be considered statistically credible. One way to reduce the number of policyholders needed for a credible analysis of a pre-claim wellness program is stratifying the population to increase the average risk of those included in the program. This should result in more observable events (i.e., claim incidences) occurring during the study window, thereby increasing the credibility.

Another possible way to validate the results of the study would be to look externally and see whether other companies offered the same or similar programs on similar blocks of business. Looking to see whether impacts are consistent with what other carriers observe can help the actuary get comfortable with the reasonableness of the range. As noted, companies differ in both product design and offerings and that should be considered when comparing programs.

Additional discussion of credibility is included in Appendix A.

TIME PERIOD

Time period selection for the analysis will be key. The actuary will want to consider what other initiatives were happening that could impact claim experience and other external factors that could create noise in the study (e.g., rate increases, COVID-19). The actuary will also want to make sure there is enough data after the interventions occurred to observe the impacts of the intervention. In addition, the further into the future you project the impact, the more you will have to consider the impacts of parameter risk on your projection.

CONFOUNDING EFFECTS AND SELECTION BIAS

Confounding is a situation in which the effect of the intervention on the LTC outcome is distorted by the presence of another variable. Measurement will be impacted by confounding effects. The policyholder will be impacted by factors such as other interventions, socioeconomic trends, and political or environmental conditions that can also influence outcomes. For example, a person who lives in a colder climate may be subject to more falls due to ice than someone in a warmer climate. Therefore, if geography is not adjusted for in a fall prevention program, those in the warmer climate may look like they have had more successful interventions.

In addition, claims can be impacted by operational transformations, premium rate increase rollouts, and other factors that could change both the control and intervention groups over time, making it difficult to isolate just the impact of the intervention. For example, in the data supporting the Guidelines, we observed, in 2020 and 2021, a decrease in incidence of 20%, an increase in claim termination rates of 20%, and a decrease in transfer rates by 15%, due to the COVID-19 pandemic. If the intervention happened during this period, the actuary would have to consider it as one confounding effect.

Selection bias is another important consideration that can impact observed results. If policyholders are self-selected into the program, then selection bias may skew the results. For example, consider a program that offers free health screenings to policyholders. If all policyholders are offered the screening, the results for policyholders who had the screening may not be comparable to results for policyholders who did not. If the health of policyholders who elected the screening is better (or worse) than average, then selection bias may skew the analysis and lead to observed results magnifying (or masking) the true impact of the program.

MEASUREMENT OF SAVINGS

The actuary will need to consider the amount of data available and the type of intervention to decide how to best measure savings (e.g., reductions in incidence or paid claims). The actuary should consider a variety of items when selecting a measurement method. As noted above, selection bias will be a key issue that may make assessing the effectiveness of any intervention difficult.

To best estimate the effectiveness of a treatment, the actuary would use a randomized control trial (RCT) that would measure the difference in outcomes between a group of people of sufficient size to be statistically credible that are randomly assigned to receive the treatment and a separate group of people randomly assigned to not receive the treatment (i.e., a control group), such that their observable and non-observable characteristics would be equally distributed across both groups.

For assorted reasons, an RCT is not a realistic scenario for many carriers. However, while the carrier and vendor may not have set up an intervention group and control group beforehand, they may still want to measure the program effectiveness. In other cases, there will be an intervention group and control group, but not everyone in the intervention group will enroll in the program, or the group sizes are not large enough to assess credible differences in experience. The actuary will need to account for less than 100% engagement rate, with associated potential selection bias, when comparing the intervention group to the control group.

Some other considerations include, but are not limited to, the following:

- It may be difficult to determine whether any measured savings is due to different demographic changes, selection bias, or other confounding effects of the intervention. If setting up intervention and control groups to run contemporaneously, the actuary will want to make sure the two groups have similar demographic and benefit characteristics.
  - Detailed baseline assumptions can help reduce the impact of uneven risk profiles in intervention and control groups. While key characteristics such as age and gender should be evenly distributed between groups, if possible, many other characteristics often influence LTC experience and controlling for all confounding variables may be impractical. However, actual-to-expected (A:E) analyses with a detailed expectation can account for partial imbalances across some characteristics of intervention and control groups.
- In the case where intervention and control groups were not established prior to the rollout of the program, observational study with matching (e.g., propensity scores) or other mechanisms for balancing important covariates can help. This can also be useful to understand differences in enrolled versus non-enrolled subpopulations within the intervention group.
- If risk scores are calculated periodically, tracking trends in scores over time may provide useful indicators. Care should be given to understand what data is used to calculate the risk scores and how long it may take for any changes in behavior and/or experience to influence the calculation of the factors.

We will walk through some specific examples of this design in the case studies.

6. LTC wellness assumptions in long-term projections

Moving estimated LTC savings and related expenses into actuarial assumptions for long-term projections used for gross premium valuation or cash flow testing will require rigor that meets Actuarial Standards of Practice (ASOPs). Setting up a rigorous effectiveness study and pointing to actuarial standards and other best practices will be important for justification.

The actuary will also need to understand whether the impacts of the wellness program will be one-time or recurring. In addition, the actuary will want to understand whether any recurring impacts will result in additional morbidity improvements if the program continues. Actuarial Guideline LI (AG 51) requests that the company justify any morbidity improvement based on company experience. To determine whether wellness program impacts should be incorporated into long-term projection assumptions, the actuary can use specific ASOPs to guide the actuary and the company.

Companies' results may vary due to the characteristics of their blocks, the interventions that they have chosen, and the success of the interventions. Therefore, this paper cannot prescribe putting LTC wellness savings impacts in actuarial projections. To the extent that a wellness program moves from a pilot stage to full implementation, and it is integrated into the policy and benefits administration, companies may determine that this operational shift merits reflection in projected expenses and paid claims. However, the ASOPs provide a useful framework for evaluating the appropriateness of including savings impacts into assumptions.

We have highlighted key ASOPs here, but we expect that others could be appropriate depending upon the circumstances.

- ASOP 1 (Introductory ASOP)
  - The assumptions regarding the long-term impacts of the LTC wellness program should be reasonable if they are material. Measurement of the LTC wellness program will need to be practical to enter the actuarial assumptions.
- ASOPs 7 (Analysis of Life, Health, or Property/Casualty Insurer Cash Flows), 18 (Long-Term Care), and 22 (Statement of Actuarial Opinion Based on Asset Adequacy Analysis for Life Insurance, Annuity, or Health Insurance Reserves and Other Liabilities)
  - The actuary should review these ASOPs and make sure the impact fits into the assumption-setting and reserving-setting process laid out in the ASOP.
  - Cash flow testing could evaluate a range of scenarios where the impact of the LTC wellness program is less impactful, neutral, or negative. with varying quantity ranges.
  - Expense assumptions should account for the cost it will take to maintain the wellness program including both external vendor costs and internal full-time equivalents (FTEs).
  - Continually monitoring experience will allow the actuary to see how the LTC wellness impact changes over time and impacts each assumption.
  - The actuary should consider choosing time periods that are consistent and do not double-count projected future savings.
- ASOP 23 (Data Quality)
  - For an effectiveness study, the actuary should consider what data exists and its data limitations.
- ASOP 25 (Credibility Procedures)
  - The effectiveness study needs to consider credibility (discussed in detail in Appendix A). A helpful data point for the actuary may be to consider the savings impact of similar interventions observed in external sources outside of the company's own data. For example, if the company has a fall intervention program, how successful have programs for fall interventions been outside of the market.

- ASOPs 21 (Responding to or Assisting Auditors or Examiners in Connection with Financial Audits, Financial Reviews, and Financial Examinations) and 41 (Actuarial Communications)
  - The actuary will need to communicate the actuarial justification of the assumed future impact of the LTC wellness program to regulators, the leadership team, and auditors.
- ASOP 42 (Health and Disability Actuarial Assets and Liabilities Other Than Liabilities for Incurred Claims)
  - This ASOP recommends considering how the carrier's business practices may materially affect the cost, frequency, and severity of claims.
  - It also recommends considering risk-sharing arrangements (see Section 4 above regarding partnering with vendors).
  - Successful wellness programs are intended to impact the long tail of future LTC liabilities.
- ASOP 56 (Modeling)
  - Modeling of the LTC wellness program should be consistent with assumption setting.

7. Case studies

The following case studies provide illustrative results from hypothetical LTC wellness programs under near-ideal conditions. The choice of these case studies does not intend to offer an opinion on whether LTC programs are generally successful.

PRE-CLAIM CASE STUDY

In this case study, we will assume that a company implemented a fall prevention program on its standalone LTC block. It also has life insurance policies issued to a subset of the LTC policyholders. The case study is illustrative and does not represent any current company's offering or process.

Goals

Customer satisfaction, improved mortality for its life insurance product, delayed and avoided claims for its LTC product, and reduced future LTC claims by engaging policyholders in earlier interventions. The company wishes to break even on its ROI, build trust, and improve brand recognition with its policyholders.

Designing the program

The company first examined current and historical claims for its policyholders to identify which type of intervention it would like to roll out to policyholders. In this case, the company decided to start with a fall prevention program. They contracted with an outside vendor to deliver the service and paid them a PMPM fee. To assess the effectiveness and feasibility of the program, the company set up control and intervention groups at the onset of the program so they could better evaluate whether it reduces claims. They added plans for a broader rollout on the milestone list if it was determined the program was effective.

The company ran risk scores on its policyholders to predict those who were the highest risk of claim and had a risk profile that indicated they may benefit from the intervention. The company offered the program to policyholders in the top 10% of the risk stratification. To identify the top 10% riskiest, the Milliman LTC Advanced Risk Analytics (LARA) pre-claim risk model can generate risk scores and help identify which members may benefit from early intervention, before they reach severe stages of LTC needs.[31]

The company offered access to a website with educational material for policyholders with lower-risk profiles. It performed policyholder outreach and engagement with mailings, phone calls, and text messages.

Data collection

The company began recording which policyholders it offered the program to, when they were offered the program, and the results of the fall prevention screening. It did this at an individual level so that it could merge this information with its policyholder claims and administrative data and the risk score output provided by Milliman LARA. In addition, it received information back from the vendor on the results of the outreach and program offering.

Analysis and measurement

After a year of offering the program, the company decided to measure the success. Before performing the data analysis, it first developed a plausibility of hypothesis. Based on the company's review of its prior claim data, it's known that falls are the initial cause of 10% of claim incidence and it expects to see about 25% of these claims avoided as a result of the program (in Figure 6 we see the enrolled group had about a 6.8% reduction in incidence rather than the estimated 3%). In addition, preventing falls may also improve health outcomes for claimants with cognitive impairment. Even though the cognitive claims did not begin due injuries, the policyholders still may experience falls that make claims longer or more severe. Because the implementation of the program is expected to reduce claims immediately, the company believes one year is an appropriate time to measure the results.

Because control and intervention groups were established, experience was easier to measure and compare than if there was not a control group and it was necessary to create a proxy group after the fact. Incidence is a metric that can be reviewed in the preliminary phases because it requires less time to see impact than claim duration. In this case the analysis considered engagement rate, risk scores of those who did not enroll, and risk scores of those who did. However, not everyone who received outreach enrolled in the program and not everyone who enrolled followed up to the next step. You should also consider how noncompliance factors into the overall measurement. Propensity score matching can be used to help align expected experience within the various subgroups.

Results

The table in Figure 5 shows the illustrative components of this pre-claim population. The hypothetical results in Figure 5 illustrate a more ideal situation where the control group and intervention group are both large and have the same expected likelihood to enroll and the same risk characteristics, allowing us to create control subgroups that align with the intervention subgroups. In most cases it will be difficult to create subgroups that have the exact same average age, average risk score, and A:E ratio, either because identification of these subgroups is challenging or because the underlying mix of subgroups between the control and intervention groups is different.

FIGURE 5: ILLUSTRATIVE LTC PRE-CLAIM WELLNESS PROGRAM EXPERIENCE DETAIL

POPULATION	POLICY COUNT	AVERAGE AGE	ACTUAL CLAIMS (A)	EXPECTED CLAIMS (E)	A:E RATIO	AVERAGE RISK SCORE
Total LTC Block	300,000	76	5,018	4,969	1.01	1.00
Top 10% Riskiest	30,000	83	2,957	1,432	2.06	9.33
Control Group	**15,000**	**83**	**1,478**	**716**	**2.06**	**9.33**
Did Not Enroll (Estimated)	11,250	83	1,053	537	1.96	8.86
Enrolled (Estimated)	3,750	83	425	179	2.37	10.73
Intervention Group	**15,000**	**83**	**1,449**	**716**	**2.02**	**9.33**
Did Not Enroll (Estimated)	11,250	83	1,053	537	1.96	8.86
Enrolled (Estimated)	3,750	83	396	179	2.21	10.73
Assessment Results Unavailable	187	83	21	9	2.36	10.73
Assessed as Not High Risk[1]	1,313	83	97	63	1.54	7.05
Assessed as High Risk[1]	2,250	83	278	107	2.59	12.87
Did Not Access Follow-Up Services[2]	1,012	83	131	48	2.71	12.87
Accessed Follow-Up Services[2]	1,238	83	147	59	2.49	12.87

[1] High risk is assessed by the vendor in this example.
[2] Services provided by vendor as follow-up to risk assessment.

The expected claims are based on the Milliman LTC Guidelines, which adjust incidence by key characteristics such as age, gender, benefit period, elimination period, and others. The risk scores are based on Milliman LARA output, which account for medical and pharmacy claims and social determinants of health, in addition to demographic and benefit characteristics, to predict a claim incidence on an individual level.

In this ideal example, the population not enrolled had the same actual and expected claim experience across the control and intervention groups. Therefore, there were no unbalanced confounding effects biasing the results. The table in Figure 6 summarizes the impact of the program across cohorts and illustrates the estimated reduction in claim incidence.

FIGURE 6: ILLUSTRATIVE LTC PRE-CLAIM WELLNESS PROGRAM IMPACT SUMMARY

POPULATION	POLICY COUNT	AVERAGE AGE	ACTUAL CLAIMS (A)	EXPECTED CLAIMS (E)
Control Group: Enrolled (Estimated)	3,750	83	425	179
Intervention Group: Enrolled	3,750	83	396	179
Incidence Reduction (Enrolled)			**6.8%**	
Control Group: Not Enrolled (Estimated)	11,250	83	1,053	537
Intervention Group: Not Enrolled	11,250	83	1,053	537
Incidence Reduction (Not Enrolled)			**0.0%**	
Control Group: Total	15,000	83	1,478	716
Intervention Group: Total	15,000	83	1,449	716
Incidence Reduction (Total)			**2.0%**	

[1] High risk is assessed by the vendor in this example.

As illustrated in Figure 6, the intervention group as a whole had approximately 2% fewer claims than the control group. Comparing the results for the groups in total accounts for the impact of less than 100% engagement and may provide a more complete assessment of the overall impact of the program depending on the payment arrangement with the vendor. This view also mitigates the potential impact of selection bias.

Based on the company's prior claim history, the average present value of paid claims for claim caused by a fall is $60,000. Therefore, the reduction in incidence of 29 claims translated to a potential claim savings of over $1.7 million, which is less than the cost of the program and results in positive ROI. As noted above, the program may also reduce claim severity for those with cognitive impairment, offering an additional avenue for savings that is not included in Figures 5 and 6. It also excludes the potential mortality impact for policyholders with both the company's life and LTC products. Conversely, the savings estimate may be reduced (but not eliminated) if claims were delayed, rather than prevented.

While this analysis suggested claim savings of approximately 2%, the appointed actuary determined that further analysis was required prior to updating projection assumptions. The actuary suggested analyses by attained age that also included a longer period of time to confirm the incidence reductions persist beyond the first year of the program.

Nonfinancial outcomes

For the primary nonfinancial outcome, the company looked at the net promoter score. In addition, it conducted a survey of the participants to see how they perceived the program. Both the net promoter score and survey results indicated that policyholders viewed the program favorably.

Next steps and ongoing monitoring

Based on the results from the first year, the company decided to continue the program. It periodically re-stratifies its population by refreshing risk scores and it performs outreach to all policyholders in the highest 10% of risk who have not previously enrolled in the program. The company monitors ongoing enrollment, assessment results, and follow-up service utilization statistics quarterly to make adjustments to the program as necessary.

ON-CLAIM CASE STUDY

In this case study, we assume that the company is offering a care concierge program to its claimants. The case study is illustrative and does not represent any current company's offering or process.

Goals:

Customer satisfaction, reduced facility transfer rates and utilization rates by helping policyholders age-in-place, increased/faster claim recovery rates. The company wishes to generate a 15% net ROI and build trust with its policyholders.

Designing the program:

The company spent time with the claims department in designing this program as it had insight into the claimants it was interacting with. In addition, unlike the pre-claim population, the company had HIPAA authorizations for these policyholders. The company intends to offer the program to all home health claimants, but for the purpose of understanding the initial effectiveness of the vendor, it set up control and intervention groups at the onset. Once the company has seen effectiveness for two years, it will roll this out to all home health claimants.

Data collection:

Data collection was easier for the on-claim population because already there was a lot of information being collected on each claimant as part of the benefit eligibility assessment and ongoing claim evaluations. However, the more active participation with the care concierge vendor allowed the claims department to have more insight into the policyholder's diagnosis information and condition, which it used to supplement its existing claim data sources.

Policyholder outreach and engagement data were provided by the vendor, including the date of outreach and a qualitative assessment of the engagement by the vendor. Additionally, the vendor provided an itemization the various services requested by the claimants and coordinated by the vendor.

Analysis and measurement:

This case study has the ideal structure where all home health claimants enrolled in the program are actively engaged with their care concierge. If actual engagement rates are less than 100%, consideration should be given to the proportion of claimants not engaged and their expected experience.

Because the participants are already on claim, incidence rates are not the proper metric to review. Instead, we look at paid claims over the first year after engagement. The expected paid claims are dependent upon claim termination rates—disabled life mortality and recovery—and utilization rates that are assumed in the expected calculation. If there is margin built into disabled life reserve calculations, then the actuary should consider using more best estimate assumptions for the calculation of expected claims for this purpose. If assumptions with margin are used in the analysis, apparent savings when comparing actual to expected claims may be due to a margin in the assumptions rather than actual savings.

Results:

The table in Figure 7 summarizes the paid claims after the first year of the program. Both the control and intervention groups have slightly lower paid claims than expected. However, the A:E ratio for the intervention group is lower than that of the control group, suggesting savings of 0.7% or $800,000.

FIGURE 7: ILLUSTRATIVE LTC ON-CLAIM WELLNESS PROGRAM EXPERIENCE – YEAR 1

POPULATION	CLAIM COUNT	ACTUAL PAID CLAIMS (A)	EXPECTED PAID CLAIMS (E)	AVERAGE ACTUAL PAID CLAIMS	AVERAGE EXPECTED PAID CLAIMS	A:E RATIO
Control Group	3,000	$109,410,638	$109,575,000	$36,470	$36,525	0.9985
Intervention Group	3,000	$108,610,740	$109,575,000	$36,204	$36,525	0.9912
Paid Claim Reduction		**$799,898**				**0.7%**

In addition to the aggregate results shown in Figure 7, it may be useful to analyze results across various demographic (e.g., gender, age, marital status), benefit (e.g., daily benefit amount, lifetime benefit pool, inflation protection option), and claim (e.g., diagnosis, duration of claim prior to program) characteristics. Results may vary across these characteristics and suggest that adjustments could be made to the program. Over time, as more credible experience emerges, additional metrics such as utilization, disabled mortality, recovery, and transfer rates can also be analyzed.

The hypothetical program cost was $600,000 (note that this hypothetical cost is not based on any real life program costs). The estimated savings of $800,000 produces a net ROI exceeding the 15% target.

For this illustration, we assumed that the product is comprehensive with 100% reimbursement and identical benefits in all sites of care. To the extent that reimbursement levels vary between sites of care (e.g., the home health care daily benefit is 75% of the facility daily benefit), keeping claimants independent in their homes, rather than in a facility, could generate more savings than illustrated in Figure 7.

Nonfinancial outcomes:

For the primary nonfinancial outcome, the company looked at the net promoter score. In addition, it conducted a survey of the participants to see how they perceived the program. Both the net promoter score and survey results indicated that policyholders viewed the program favorably.

Next steps and ongoing monitoring:

Based on the results from the first year, the company did not revise their plan to wait until two years of effective experience was available prior to expanding the program to all home health claimants. The company monitors ongoing engagement and paid claim data monthly to make adjustments to the program as necessary.

Conclusions

Identifying the best intervention(s) for a carrier's policyholders, designing an appropriate study structure that limits selection bias and produces credible data, and performing a robust analysis of results are necessary to determine whether an LTC wellness program produces claim savings. Without proper consideration of these tenets, LTC wellness programs may be implemented in a manner that results in subsequent evaluation of the results being unable to credibly assess whether the wellness program meaningfully impacted policy behavior or claim experience.

An evaluation is an essential part of understanding what impact LTC wellness is having, for whom and in what circumstances, and helps inform future decisions program continuation and further rollout. There is no ‘‘one size fits all’’ solution for a good LTC wellness program or a good evaluation: the LTC carrier must tailor the project to the population at hand, with consideration for the types of policies in its block of business. Understanding the overarching principles and standards is the first step toward a good evaluation. Alignment of those overarching principles will help in implementing these interventions and making them successful and sustainable.

Appendix A: Deeper Dive Into Credibility

BACKGROUND

The infrequency of certain LTC events (e.g., claim incidence or transfers between sites of care), coupled with the limited size of most blocks of business, results in experience that may not be considered fully statistically credible. Even within very large blocks of business that are generally credible overall, certain subsets of experience that may be of interest may not be fully credible when considered on their own (e.g., females ages 95 or greater).

An additional consideration is the applicability of historical experience to future expectations. If there have been material changes that result in historical experience no longer being applicable, then the credibility of that data is of little concern. An actuary should consider both the applicability and credibility of historical data as part of any analysis.

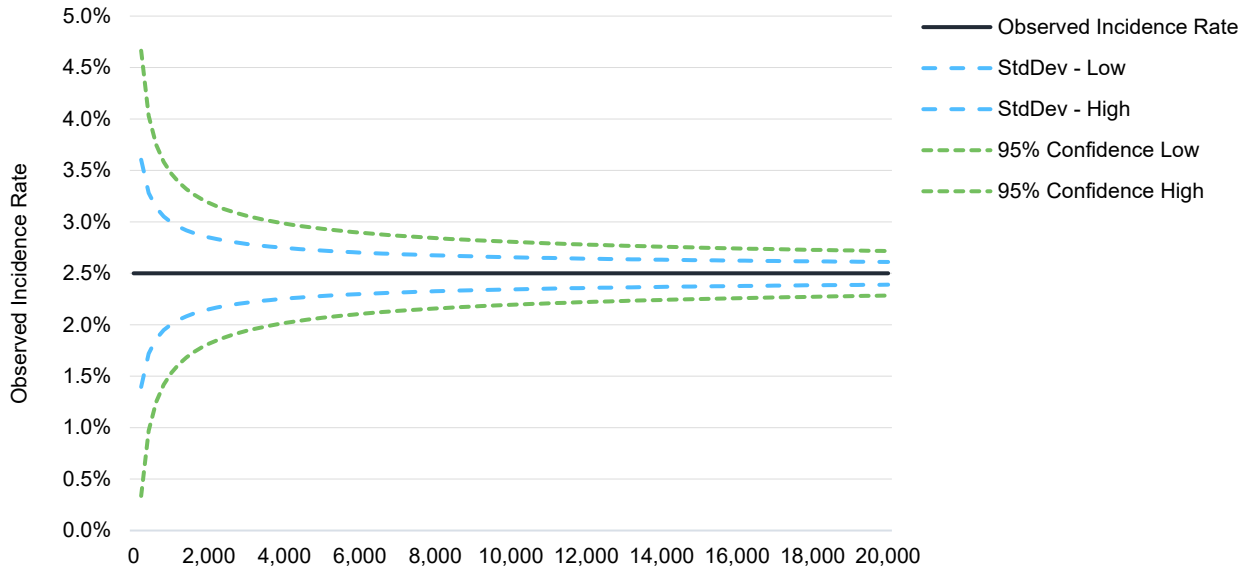
The *Long-Term Care Credibility Monograph*, published by the American Academy of Actuaries, provides additional information on the use of credibility theory in LTC actuarial work, with a focus on developing assumptions.[32]

CREDIBILITY VS. STATISTICAL POWER

When developing assumptions, LTC actuaries consider the credibility of the historical experience. Given certain assumptions about the statistical distribution and variance of the data being measured (e.g., deaths, claim counts, etc.), actuaries can determine the number of events needed for data to be considered "fully credible." Section III of the *Long-Term Care Credibility Monograph* summarizes the theoretical background for these estimates. Using this theory, actuaries can assess the accuracy and confidence of estimates based on historical data. As an example, if you assume claims follow a Poisson distribution, a credibility threshold of 1,082 claims is sufficient to say that you are 90% confident that the estimated incidence rate is within 5% of the true value.[33]

If claims are assumed to follow a binomial distribution, Figure 8 illustrates a 95% confidence interval, along with plus and minus one standard deviation, around an observed incidence rate of 2.5%. As the number of life-years increases, the confidence interval around the observed rate narrows.

FIGURE 8: 95% CONFIDENCE INTERVAL FOR 2.5% INCIDENCE RATE; BINOMIAL DISTRIBUTION



When measuring the potential impact of an LTC wellness program, the statistical significance and power of a study may be of more interest than the credibility of the estimates. As an example, assume that a study is designed with the goal of determining whether differences in outcomes exist between a test group and a control group. The null hypothesis may be that there is no difference in outcomes between the two groups. The study's significance level is the probability of rejecting a true null hypothesis (i.e., avoiding a false positive or Type I error). The study's power is

the probability of correctly rejecting a false null hypothesis (i.e., avoiding a false negative or Type II error).[34] Part of the judgment of any study is determining the appropriate balance between minimizing the significance level and maximizing the power.

Results of a study can be considered statistically significant when the observed difference between the experience in the two groups is larger than a predefined critical value, given a specified significance level. Hypothesis testing can help answer questions such as, "How many policyholders need to be included in the study (i.e., what sample size is necessary) to be 90% confident we will detect a difference in incidence of 15%?"

In the evaluation of LTC wellness programs, stakeholders are most often interested in whether results for the test group are *better* than the control group, not just whether the results are *different*. As such, actuaries should consider performing one-sided, rather than two-sided, statistical tests. Additionally, the calculations vary depending on whether you are measuring a binary variable (e.g., did a policyholder have a claim or not) or a continuous variable (e.g., paid claim amounts).

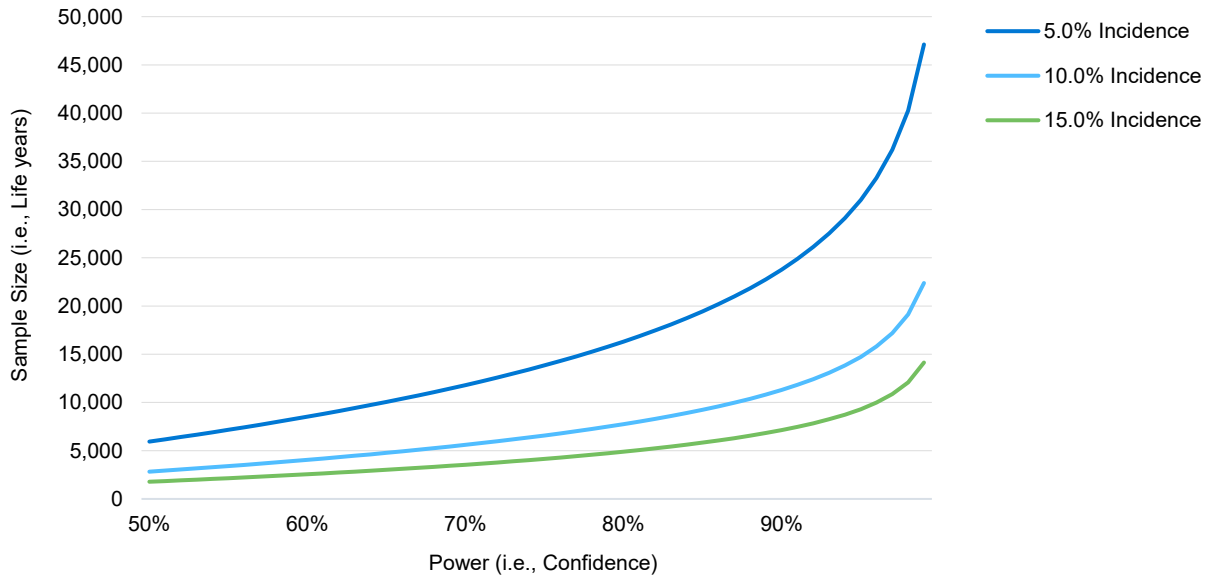
The following examples provide additional detail on the calculations for a binomial variable such as incidence. The variability of paid claim amounts due to benefit differences across policies introduces further complexity into the calculations for a continuous variable. When measuring results for an on-claim program, actuaries should consider multiple metrics to assess statistical credibility, significance, and power. Potential metrics include utilization rates and variances in paid claims from expected values, in addition to average paid claim amounts.

Statistical power examples

As noted above, the required sample size in a one-sided hypothesis test of a binomial variable will vary depending on the significance level, power, and observed experience rate. This is illustrated in Figures 9 and 10.

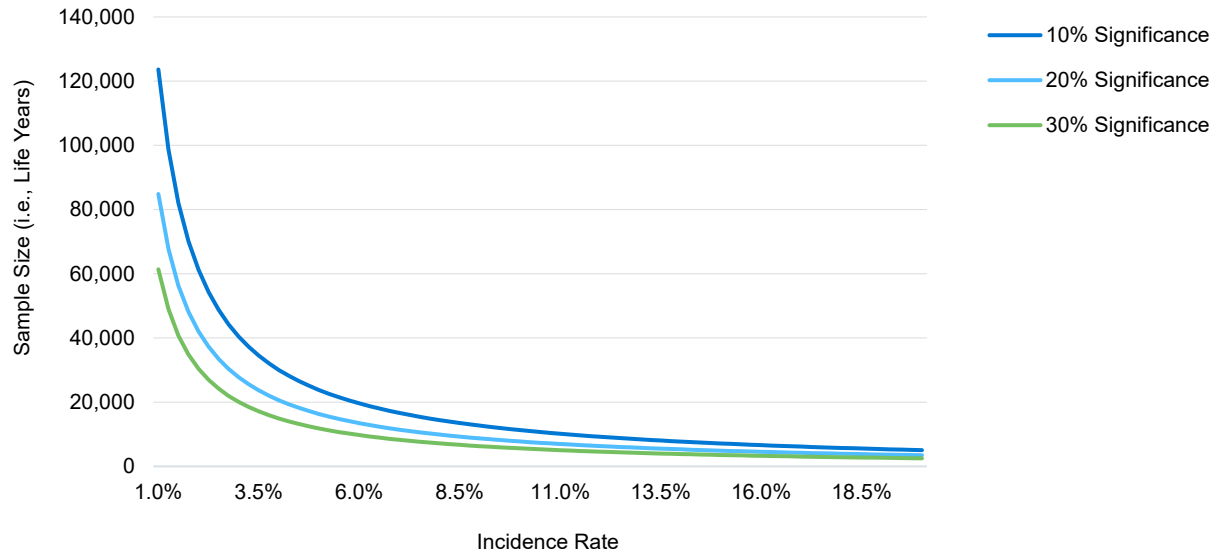
Figure 9 illustrates this variance for multiple incidence rates and power levels, with a constant significance level of 10% and a true difference of 10%. Within the figure, the slope of the lines demonstrates how the required sample size increases as the power level or incidence increases. The relationships between the lines for a given power level illustrate how the required sample size decreases as the incidence rate increases. This is a function of the increased frequency of events assumed in the data.

FIGURE 9: SAMPLE SIZE FOR 10% SIGNIFICANCE AND 10% TRUE DIFFERENCE; VARYING INCIDENCE RATES AND POWER LEVELS



An alternative view is presented in Figure 10. In this graphic, the power is held constant at 90% and the true difference is held constant at 10%, but the incidence rates and significance levels are allowed to vary. Within this view, the slope of the lines demonstrates how the required sample size decreases as the incidence rate increases. The relationships between the lines for a given incidence rate illustrate how the required sample size increases as the significance level decreases.

FIGURE 10: SAMPLE SIZE FOR 90% POWER AND 10% TRUE DIFFERENCE; VARYING INCIDENCE RATES AND SIGNIFICANCE LEVELS



Both Figures 9 and 10 illustrate that, for an incidence rate of 10%, approximately 11,000 policyholders are required within the sample to ensure 90% confidence in measuring a difference in incidence of 10% (i.e., 100 basis points) at a significance level of 10%. Increasing the base incidence rate, increasing the significance level, or decreasing the power level are all options that can be considered to reduce the required sample size.

Appendix B: Glossary of Terms

Activities of daily living: Basic standards to assess individuals' functional capacity. Examples include bathing, continence, eating, dressing, toileting, and transferring.

Aging-in-place: When an older adult can stay in their preferred dwelling for as long as possible as opposed to moving into a residential facility.

Credibility: Actuarial Standard of Practice (ASOP) No. 25 defines credibility as "a measure of the predictive value in a given application that the actuary attaches to a particular set of data," and it defines full credibility as "the level at which the subject experience is assigned full predictive value, often based on a selected confidence interval."[35] Credibility is a concept for describing both the reliability of past experience data and the predictability of future experience data.

Effectiveness study: An efficacy study calculates the performance of an intervention under ideal circumstances. An effectiveness study refers to the intervention's performance under real work conditions.[36]

Engagement rate: Number of engaged participants divided by the number of total eligible participants.

Insurance risk: This type of risk is related to the normal variation in demand for medical services over time and differences in utilization within segments of insured populations.[37]

Intervention: Focus on modification of risk factors and behavior change with the goal of improving some observable health outcome.

Long-term care product: "A policy, contract, or arrangement providing LTC benefits, either on a stand-alone basis or as part of a plan that provides other benefits as well (except where the LTC benefits are an immaterial feature). The plan may describe requirements for benefit eligibility, covered services, benefit amount, benefit payment duration (including short-term and long-term), maximum benefit amount, and other coverage features."[38]

LTC wellness program (program): An initiative aimed to improve policyholders' aging experience through various interventions with the goals of increasing policyholders' ability to age-in-place and wellness.

Matching: A technique used to create baseline equivalence between participants and nonparticipants.

Parameter risk: The risk associated with using imperfect information to assess probabilities.

Performance risk: Performance risk relates to inefficiency, suboptimal quality, and inflated cost of care. Elements of reducing performance risk can include attainment of care efficiency gains and quality targets, and reduction of operating costs resulting from efficient work. In addition, fraud, waste, and abuse inherent in the healthcare system can contribute to performance risk.

Process risk: The risk associated with random chance.

Propensity score matching (PSM): A statistical matching technique that attempts to estimate the effect of a treatment, policy, or other intervention by accounting for the covariates that predict receiving the treatment.

Randomized control study: Type of research study design where the program designer randomly selects individuals and places them into separate groups in which each group receives a separate set of treatments. The analyst measures and compares outcomes by group, usually against a control group in which there was no treatment.

Wellness: Improve health outcomes, reduce severity of future claims, and reduce overall LTC claim costs.

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