# RETHINKING CARE IN AN AGING AMERICA

## How startups are responding to changing trends in the care continuum

A **Village Capital** Insight Report

SEPTEMBER 2018

# Executive Summary

From March through June 2018, Village Capital and Kaiser Permanente ran an investment-readiness program for startups that are responding to changing trends in the care continuum. We selected 10 startups from more than 100 that applied to the program, and in the course of due diligence we observed several trends. This report shares our insights on opportunities for investors across three categories:

**Caregiving**
In this section we explore the human element of caregiving and the growing needs of informal caregivers (unpaid family and friends), formal caregivers (paid home health aides), and employees at senior housing and care facilities. By 2020 there will be an estimated 45 million **informal caregivers** in the US, and we're seeing a growing market for startups that help to make their efforts more efficient. Meanwhile, demand for **formal caregivers** will continue to grow as more seniors age in place, and struggling care agencies have shown that they are open to ideas on how to upskill their workforce and improve retention. Finally, **senior housing and care facilities** are moving toward value-based care and integrating into the healthcare continuum, opening up a new market for startups.

**Clinical Insights**
In this section we explore the increased demand for technology that can help people detect, and ultimately manage, health issues before they become serious enough to require hospitalization. **Remote patient monitoring** tools have advanced rapidly over the past decade, but the sector has recently become more attractive for investors as new federal and state regulations unlock additional avenues for payment, and value-based care gains more traction with care providers. Likewise, the **point-of-care diagnostics** sector has continued to evolve, with advances in genomic and molecular profiling and a greater push toward precision medicine that is driving the decentralization of lab testing.

**Financial Planning**
In this section we explore the financial considerations of retirement and the tools that are being built to help people manage their nest egg. Over the past three decades the burden and risk of retirement planning has shifted from employers to employees. As healthcare costs during retirement continue to rise, we're seeing **financial planning** startups use fintech and big data to help people plan for retirement, enroll in safety net programs and avoid fraud.

Village Capital helps entrepreneurs bring big ideas from vision to scale. Our mission is to reinvent the system to back the entrepreneurs of the future. Our vision is a future where business creates equity and long-term prosperity. Since 2009, we have supported more than **1,000** early-stage entrepreneurs through our investment readiness programs. Our affiliated fund, VilCap Investments, has provided seed funding to more than **75** program graduates.

**Health is one of Village Capital's core areas of practice. To date, VilCap Investments has funded 13 early-stage startups working around healthcare and technology.**


**Programs so far in Health**


**Health startups have participated in Village Capital health programs**


**Investments in Health**

## INTRODUCTION

America's system for senior care is unsustainable.

On the one hand, the system is about to receive a major shock: we're about to have more senior citizens than at any time in American history. In the next 45 years the number of Americans over the age of 65 will more than double,[1] thanks to Baby Boomer demographics and lengthening lifespans.

Meanwhile, these rising seniors are approaching retirement age in the worst financial shape in decades. In 2007 the average American family had a median $35,000 in retirement savings; six years later, after the Great Recession, that figure was slashed in half. Today, one-in-five Americans has no nest egg at all.[2]

This is a global challenge that has already been felt in countries with aging populations like Japan and Italy. It is particularly worrisome in the United States, which already spends more on healthcare and sees worse outcomes than other developed countries. With government debate around healthcare progressing at a glacial pace, we'll need to find other ways to make our system more efficient and prepare for changing demographics.

This report builds on insights from **Health US 2018**, a venture development program Village Capital hosted in collaboration with Kaiser Permanente to support 10 early-stage startups that are working to improve the aging experience. We've identified dozens of startups that are improving care across the care continuum and beyond the clinic, including many that extend beyond the traditional understanding of "health tech", like workforce development companies improving conditions for caregivers and fintech companies helping people plan for retirement.

The companies in this report represent the tip of the spear for redefining life and care after 65. We're excited about their potential to remove barriers to access, have an impact on the lives of seniors and help us expand our capacity to care for each other.

**Allie Burns**
**Managing Director, Village Capital**

# INSIGHTS

The startups in our Health US 2018 program represent the future of innovation around aging. Read on to see what we're learning in the following categories:

**CAREGIVING**

*Informal Caregiving*

*Formal Caregiving (Home Health Aides)*

*Senior Housing and Care Facilities Operations*

**CLINICAL INSIGHTS**

*Remote Patient Monitoring*

*Point-of-Care Diagnostics*

**FINANCIAL PLANNING**

*Financial Health in Retirement*

**Contributors to this report:**

- Allie Burns, Managing Director, Village Capital
- Allyson Plosko, Health Manager, Village Capital
- Victoria Fram, VilCap Investments
- Lewam Kefela, VilCap Investments
- Stephen Wemple, Investment Analyst, Village Capital

SUBSECTOR

# Informal Caregiving:

## *Support for the family and friends who support seniors*

## THE UPSHOT

**The sector:** While many people associate elderly care with nursing homes and assisted living facilities, the reality is that 65% of seniors in need of long-term care will rely exclusively on informal caregivers: family and friends who provide unpaid care to help a senior stay in their home longer.[3] By 2020, the number of informal caregivers in the US will reach 45 million,[4] representing an estimated $470 billion in unpaid labor.[5] Data has shown that informal caregivers play an outsized role in an individual's health outcome,[6] but there are still relatively few tools available for caregivers to navigate their loved ones' care journeys.

**What it means for startups:** This is a nascent space that has room for growth. The average caregiver spends $509 a year on tools designed to make their lives easier.[7] Startups are using new technology to automate caregivers' work and help them connect to physicians, social workers and healthcare providers. There is a growing B2C marketplace of young, tech-savvy caregivers who are looking to improve efficiency. There is also a growing B2B opportunity, as health systems and long-term care insurers are heeding evidence that shows that reducing caregiver burnout can lead to cost savings in the form of reduced care utilization in the long run.[8]

## MAJOR PLAYERS

There are no large players in this space. Informal caregivers typically tap into community resources - non-profit organizations dedicated to supporting family caregivers like the **Rosalynn Carter Institute for Caregiving** and the **Benjamin Rose Institute on Aging,** or Area Offices of Aging, which are regional government agencies dedicated to supporting and providing resources for seniors and their caregivers. Insurance providers also provide care coordinators for their beneficiaries, which in some cases work with family caregivers to connect them to resources, like caregiving training programs.

## INDUSTRY INVESTMENT ACTIVITY

| COMPANY | $ RAISED | INVESTORS |
|---|---|---|
| **Purple Binder** - provides a knowledge management system for social workers integrating social services into healthcare | **Undisclosed (Dec 2017)**[9] | ***ACQUIRED*** by Healthify |
| **Care At Hand** - provides a platform that uses observations from non-medical staff, including community health workers and home health aides, to predict hospitalization and readmission risks | **Undisclosed (Jun 2016)**[10] | ***ACQUIRED*** by Mindoula Health |

# Informal Caregiving: Support for the family and friends who support seniors

## DRIVERS OF INNOVATION

- **Employers are beginning to offer caregiver support as a workplace benefit:** A substantial majority (72%) of informal caregivers work more than 30 hours a week,[11] and employers lose an estimated $38 billion a year in productivity as employees balance work and caregiving responsibilities.[12] In response, some employers are starting to offer caregiver support: as one example, CBS Corp recently began offering employees, their parents and in-laws access to Health Advocates, a company that helps caregivers navigate Medicare enrollment and claims questions and issues.[13] This represents a new revenue opportunity for startups.
- **Informal caregivers are more amenable to technology**: Caregivers skew young: the average informal caregiver is just over 49 years old,[14] and 35% of people between the ages of 18 and 35 have performed caregiving duties.[15] These generations have significantly higher levels of digital literacy and technology expectations than seniors, making them prime targets for tech-enabled innovation.[16]

## CHALLENGES

- **Establishing a reputation:** Penetrating the market can be especially challenging for early-stage companies. Informal caregivers lead busy lives, and one study found that 58% of caregivers were not able to distinguish which technology solutions were best for their situation.[17] Caregiver advocacy groups attempt to guide informal caregivers to appropriate solutions, but these resources are also fragmented and challenging to sort through. Early-stage companies attempting to scale within this market will need to create unique partnerships that allow them to build credibility.
- **Integrating into the traditional health system:** Informal caregivers have always struggled to interact in the confines of the traditional healthcare system. The rise of care coordination tools in the middle part of this decade was spurred in large part by the difficulty that informal caregivers had in managing the clinical components of their loved ones' care. Even as the health system attempts to link the health and education of the informal caregiver to the patient, it is not clear who will potentially own this new workflow and the affiliated responsibility.

## EARLY-STAGE COMPANIES TO WATCH:

TAILOREDCARE
Stronger Families. Better Outcomes.

**TCARE** prevents family caregiver burnouts with a Medicaid-approved and evidence-based SaaS solution.

Tending

**Tending** guides seniors and their families through care transitions using technology-enabled services.

OnGuardian

**OnGuardian** provides families with a care management platform that allows care teams to leverage Amazon Echo and Alexa to share information, tasks, and updates.

SUBSECTOR

# Formal Caregiving:
## *Solutions for the home health aide workforce*

## THE UPSHOT

**The sector:** As more seniors prefer to "age in place", or live longer at home, there will be a growing need for home health aides (HHAs), the paid workers who provide basic, non-medical care in the home for individuals who are too sick or frail to care for themselves. Although HHA positions are the third-fastest-growing job in the country, the home care agencies that dominate the industry struggle with high turnover and workforce issues. Home care agencies have a turnover rate more than double the rate for registered nurses,[18] and more than three-quarters of home care providers said that caregiver shortages was the number one threat to their business.

**What it means for startups:** Home care agencies are seeking ways to increase retention and incentivize people to join the caregiver workforce. Startups are responding by leveraging new technologies, as well as process innovations from other industries, to upskill caregivers and train them for specializations. Other startups are creating the infrastructure to match caregivers with work, responding to the market misalignment that leads to low wages and missed employment opportunities.

## MAJOR PLAYERS

The workforce issues in the formal caregiving space are being addressed from multiple angles, including hiring, training and upskilling. The major players in hiring are traditional job posting sites like **Care.com, Indeed** and **Craigslist**. The market for training and upskilling formal caregivers has two leading incumbents, the **Institute for Professional Care Education** (acquired in 2016 by OnCourse) and e-learning provider **Relias Learning** (acquired in 2014 by Bertelsmann). Traditional credentialing institutions like universities, community colleges, online universities and job-specific credentialing programs are also competitive in the space. In some cases, senior care agencies will partner with these institutions to provide access to educational and upskilling opportunities.

## INDUSTRY INVESTMENT ACTIVITY

| COMPANY | $ RAISED | INVESTORS |
|---|---|---|
| **CareLinx** - provides a way for families to find and screen for the best caregiver | **Undisclosed (Sep 2017)** | ***ACQUIRED*** by General Global Assistance |
| **IPCED -** a leader in caregiver training and compliance solutions for the assisted living and home care industries | **Undisclosed (2016)** | ***ACQUIRED*** by OnCourse Learning |
| **Relias Learning** - a supplier of online education courses and training materials for workers in the healthcare and disabled-care fields which drives better hiring and higher employee retention | **$540M (2014)** | ***ACQUIRED*** by Bertlesmann |
| **Hometeam** - provides personalized care planning, expert caregiver matching, and technology-enabled care management services to improve health outcomes and family well being | **$43.5M (Feb 2016)** | Kaiser Permanente Ventures & others |

## Formal Caregiving: Solutions for the home health aide workforce

### DRIVERS OF INNOVATION

- **Care agencies are investing in upskilling to combat high turnover:** Despite the difficult physical and emotional demands of the job, HHAs are some of the lowest-paid workers in the healthcare industry, making on average $10.11 an hour. Home care agencies and entities that employ caregivers have a turnover rate that hovers around 36%,[19] more than double the turnover rate for registered nurses.[20] To address this, several startups are introducing solutions that upskill caregivers so that they can advance, earn more and stay on the job. For example, CareAcademy is the official training partner of CareLinx, allowing CareLinx to improve onboarding and retention through better training of their new hires.
- **The federal government's shift to value-based care:** In April 2018 the Centers for Medicare & Medicaid Services issued a Call Letter that allowed Medicare Advantage plans, which cover 33% of American seniors, to cover certain in-home care functions.[21] This is a boon for startups that supply in-home services and have struggled to gain traction with consumers. For instance, Home Team, which is one of the most well funded companies in this space, responded by pivoting from a consumer-facing model to a model that will be reimbursed by Medicaid and Medicare.[22]
- **Formal caregivers will be in-demand as families become far-flung and seniors are left with a void that informal caregivers used to fill:** Traditionally, family members have taken care of their older relatives. However, social norms are changing. A 2016 study by the National Academy of Sciences found that "Families have fewer children ... and adult children often live far from their parents." This is creating an imbalance: while the number of people who need care is expected to increase by 84% by 2050, the number of potential family caregivers is only set to rise by 13%.[23] This shortage of family caregivers leads to an even greater need for technology solutions that can augment the formal caregiver workforce.

### CHALLENGES

- **HHAs as end users present unique challenges:** Many home care agencies rely on browser-based tools, like Monster or Indeed, to recruit HHAs, leaving a swath of the workforce untapped simply because they don't have access to a laptop or desktop. Roughly one quarter of HHAs live below the federal poverty line, which means they are nearly twice as likely to rely on smartphones to access job information and applications as those with higher incomes. The success of a startup in this market requires an HHA to engage in some capacity with the solution, and will require a thorough understanding of the unique needs of this demographic and the channels that are best used to reach them.
- **Care agencies are fragmented and local:** Home care is a fragmented industry, with a few large franchisors and thousands of facilities scattered across the country. These facilities tend to be ingrained in the community, serve small customer bases, and have long-standing, entrenched relationships with inpatient and outpatient facilities. This makes customer acquisition costs higher for startups.

### EARLY-STAGE COMPANIES TO WATCH:

CareAcademy™

**Care Academy** helps care agencies improve three key areas: recruiting, onboarding, and retention by providing online professional development to teach and upskill caregivers of seniors

ReciproCare

**Reciprocare** is an online B2B marketplace that helps senior care providers find caregivers and helps caregivers find jobs.

KindlyCare

**Kindly Care** is a B2C caregiver/care recipient marketplace that acts as a back office provider, pairing individuals with caregivers and then managing the tax and financial arrangements.

SUBSECTOR

# Senior Housing and Care Facilities: *Modernizing facilities for senior care*

## THE UPSHOT

**The sector:** In the second quarter of 2018, senior housing and care facility occupancy levels hit a decade low (87.9%). Senior care and home operators are pressed to differentiate themselves and prove their value to consumers and healthcare providers. At the same time, value-based care is on the rise, leading to new incentives from insurers, providers and regulators, and pushing operators to embrace their clinical functions.

**What it means for startups:** Some housing and care facility operators are investing in technology and innovation as a differentiator. Startups have the opportunity to help senior housing and care facility operators create or enhance their value for seniors. Some startups are helping modernize facilities with technology that can offer more engaging and customized experiences for seniors to drive better health outcomes. Others are focused on the business side of facility operations, such as helping analyze large quantities of data to glean business intelligence insights or offering upskilling solutions, staff retention products and tools to augment the workforce.

## MAJOR PLAYERS

Some of the biggest care communities are investing in innovation. **Revera,** a senior housing organization that has more than 500 locations across Canada and the United States, committed $20 million in 2017 for "pilots and innovation focused on seniors". **Front Porch**, a large senior care operator with communities in Southern California, recently launched its Center for Innovation and Wellbeing. The major companies currently serving care facilities are EHR companies like **PointClickCare** and **ElderMark,** and technology and device companies like **GreatCall,** which builds a broad range of software and hardware products ranging from smartphones outfitted for seniors to care coordination platforms. There are currently no major players providing business intelligence solutions for senior housing communities, but the aforementioned companies are best positioned to penetrate the space either as a channel partner, by building their own products, or acquiring companies to have an additional product line.

## INDUSTRY INVESTMENT ACTIVITY

| COMPANY | $ RAISED | INVESTORS |
|---|---|---|
| **GreatCall** - the creator of the Jitterbug phone and other health and safety solutions for seniors | **$800M (Aug 2018)**[24] | ***ACQUIRED*** by Best Buy |
| **viaDirect** - provides analytics and market intelligence for post-acute care providers | **Undisclosed (Aug 2018)**[25] | ***ACQUIRED*** by PlayMaker Health |
| **SigmaCare** - a leading electronic health record (EHR) vendor for the long-term post-acute care market | **Undisclosed (Jun 2017)**[26] | ***ACQUIRED*** by MatrixCare |
| **Assets from NTT DATA** - acquired to launch **Cantata Health, LLC**, which designs, develops, installs, and supports advanced Revenue Cycle Management and Electronic Medical Record applications for long term care facilities | **Undisclosed (Apr 2017)**[27] | ***ACQUIRED*** by GPB Capital |

## Senior Housing and Care Facilities: Modernizing facilities for senior care

### DRIVERS OF INNOVATION

- **Shift to value based care is integrating senior care facilities into the healthcare continuum:** One of the lasting impacts of the Affordable Care Act has been the incentive to move toward value-based care, which has encouraged hospitals to work with downstream institutions like senior housing and care facilities. For example, in June 2018 ManorCare, a large regional senior housing community, was jointly acquired by real estate investment trust WellTower and Promedica, the 15th-largest healthcare system in the US. This deal represents the trend of greater coordination between senior housing providers and health systems, with the goal being to strengthen links in the care continuum and generate cost savings by preventing patients from boomeranging back into the hospital.
- **Seniors are entering care facilities older, bringing a new set of challenges:** Seniors are living at home longer and delaying entry into housing and care communities. This means that facilities are working on average with older, frailer and higher-acuity residents who have increased risk for falls, higher prevalence of chronic conditions and greater memory issues. Startups are developing new tools to help operators train specialized staff, manage residents' health, and integrate with existing external healthcare tools and solutions.
- **Labor shortages drive a need for training and education:** Senior living facilities will need to recruit 1.2 million new workers by 2025 to meet the needs of the aging population.[28] Eight out of 10 senior care executives list labor shortages as a primary concern and risk in the coming years.[29] Facilities are already beginning to seek creative solutions for finding and retaining employees, like creating shared pools of staff, implementing referral programs for employees, and investing in education and training programs. They are also looking for outside help: 51% of senior care organizations reported that they would increase spending on training and education programming in 2018.[30]

### CHALLENGES

- **High turnover of staff at care facilities:** Turnover is not only a problem for senior care executives; it also presents a challenge for startups that are selling employee-facing technology solutions for care workers. Due to the frequent churn of staff, solutions need to be intuitive and require limited training. Otherwise, they run the risk of being abandoned by a new group of staff before they can realize their full potential.
- **Risky nature of senior care operations means limited interest in capital expenditures:** Senior housing and care facilities operate on very thin margins for a variety of reasons, including the extensive service component of their business and fluctuations in occupancy. Relatively small macro-level changes can have serious financial ramifications: for instance, Brookdale, the largest senior housing and care operator in America, reported a $517 million net loss in 2017 because of higher wages and a worse-than-expected hurricane season. In this environment, startups are competing for a small pool of available capital, making the articulation and demonstration of their value proposition to the care facility an absolute necessity.

### EARLY-STAGE COMPANIES TO WATCH:

Veritage Solutions

**Veritage Solution** improves the way senior care operators make decisions by integrating data systems and delivering business intelligence through SaaS-based data warehouses.

RENDEVER

**Rendever** is a virtual reality platform that helps seniors in long-term care facilities experience the outside world.

soundmind

**SoundMind Intelligence** is a conversational AI tool that empowers seniors and helps care facilities to better understand their residents.

SUBSECTOR

# Remote Patient Monitoring:
## *Advances in telehealth*

## THE UPSHOT


**The sector:** In July 2018 the health insurance giant Humana acquired Kindred Healthcare, which covers three million people via Medicare Advantage plans, and in doing so sent a clear signal: they are betting that the future of healthcare will be in the home.[31] Dozens of new technologies are helping care providers follow the activities of patients at home, such as monitoring their vital signs and catching small changes, such as a weight increase or changes in bathroom habits, that can be early warning signs of something more serious. These insights allow clinicians to provide interventions that are earlier, more accurate, less invasive and/or less expensive.

**What it means for startups:** Remote patient monitoring (RPM) has been around for several years, but finding the right target customer has so far held back many early-stage startups in this space. However, a recent rise in telehealth-friendly laws in many states, combined with new reimbursement policies for chronic care management, are finally starting to unlock RPM's potential.

## MAJOR PLAYERS

RPM is by no means a new industry and has a number of large device manufacturers in the space. **Boston Scientific, Philips Healthcare, Honeywell** and **Medtronic** are examples of large players in the overall patient monitoring space that also provide remote monitoring solutions. Telehealth companies, like **Teladoc** and **American Well,** also operate in this space by giving patients the ability to see clinicians in the comfort of their home.

## INDUSTRY INVESTMENT ACTIVITY

| COMPANY | $ RAISED | INVESTORS |
|---|---|---|
| **HealthSense** - a provider of passive remote monitoring, emergency response and wellness management solutions for the senior care continuum | **Undisclosed (Dec 2016)** | ***ACQUIRED*** by GreatCall |
| **VitalHealth Software** - develops cloud-based eHealth solutions for people with chronic diseases | **Undisclosed (Dec 2017)** | ***ACQUIRED*** by Phillips |
| **Vios Medical** - a Minnesota-based provider of patient management information systems focusing on clinical workflow automation and remote patient care services | **$102M (Oct 2017)** | ***ACQUIRED*** by Murata (Japanese electronic manufacturer) |

## DRIVERS OF INNOVATION

- **Value-based payment contracts will nearly double by 2020:** Value-based care is picking up steam: 59% of all healthcare payments are expected to be tied to a value-based contract by 2020,[32] up from 29% in 2016.[33] This shift towards value-based care is good news for RPM companies, since their return on investment is generally tied to reducing care utilization and demonstrating cost savings generated as a result of earlier detection and intervention.
- **New federal and state regulations are unlocking revenue opportunities:** As of January 1, 2018, physicians can bill for select RPM services under Current Procedural Terminology (CPT) code 99091. Meanwhile, the passage of the CHRONIC Care Act in February 2018[34] gives Medicare Advantage plans more flexibility to cover telehealth services, which could potentially include RPM, depending on what the Secretary of CMS decides to include.[35] Finally, 20 state Medicaid programs reimburse for RPM,[36] compared to 10 states five years ago.[37] All of these developments have created new ways for physicians to bill for using RPM solutions and services, driving revenue opportunity for RPM startups.
- **Advances in machine learning are speeding up data analysis:** Connected home monitoring devices are not new: in 2016, there were 4.9 million devices running in homes across the country.[38] This presents a treasure trove of information for physicians, but it is not practically feasible for clinicians to sift through large volumes of data on a patient in hopes of finding a needle in a haystack. The value of many RPM startups lies not in collecting data but in making sense of it, and advances in microprocessors, such as the graphic processing unit and Google's tensor processing unit, have fueled growth in machine learning, which has in turn made data analysis faster and more useful.[39]
- **As seniors age in place remote monitoring will become more important:** 87% of seniors want to spend their final years in their home.[40] However, as seniors live longer, they are likely to outlive their ability to drive by seven to 10 years.[41] RPM will play an important role for seniors who live far from healthcare, lack reliable transportation or simply want to age in place.

## CHALLENGES

- **Regulations differ from state to state:** Only 23 states have enacted "telehealth parity" laws, which require private payers to reimburse physicians for services delivered virtually in the same way they would if those services were delivered in person.[42] This has been a challenge for all telehealth companies. On top of that, RPM companies in particular face an even more ambiguous regulation landscape. As noted above, only 20 states' Medicaid programs currently reimburse for RPM. While optimism has emerged at the federal level with the Center for Medicaid and Medicare Service's unbundling of CPT code 99091, which creates an avenue for physicians to get paid without having to bill other management service codes, it remains unclear whether this will push commercial payers towards RPM coverage.[43]
- **Cybercrime and privacy concerns:** The healthcare industry is twice as likely to experience a cyber attack, like ransomware, malware or compromised EHRs, as other industries.[44] A recent anonymous survey found that several healthcare delivery systems and vendors believe that at least 100 of their patients have been impacted by a cybersecurity incident.[45] Consumers generally have limited faith in companies' ability to protect their data,[46] and this skepticism could hinder adoption of some more intrusive RPM products that have the potential to pick up on more than just health-related issues (like voice or movement capturing). While the Health Insurance Portability and Accountability Act (HIPAA) was passed to give patients (consumers) more control over who sees their health data, concerns still exist.

## EARLY-STAGE COMPANIES TO WATCH:

**Nonnatech** combines machine learning with passive health monitoring to detect early signs of patient deterioration and prevent hospitalization.

**Moving Analytics** provides digital, remote cardiac rehabilitation and secondary prevention programs for cardiovascular disease patients.

**Nymbl Science** combines medical science with mobile technology to measure gait, improve balance and prevent falls amongst seniors.

**Multisensor Diagnostics** enables the detection of early signs of disease progression to facilitate real-time triaging of patients using a monitoring solution that measures more than 10 vital health parameters in under 30 seconds.

SUBSECTOR

# Point-of-Care Diagnostics:
## *Rapid detection to save lives*

## THE UPSHOT


**The sector:** In-vitro diagnostics (IVDs) are tools that analyze biological specimens to help diagnose or monitor a communicable or chronic disease. These tools influence approximately 60% of clinical decision-making.[48] The rise of value-based care has incentivized the use of point-of-care (POC) tools in the home and at local clinics, moving care outside the hospital and helping care providers recommend more targeted treatment.

**What it means for startups:** There are significant opportunities for startups to develop tools for early detection of chronic or communicable diseases. The growth in preventive and personalized medical care is increasing the demand for easy-to-use devices that can be used at the point of care to detect disease earlier and/or help inform clinicians of the treatment with the highest potential efficacy based on a patient's specific attributes. Existing market solutions tend to be expensive, imprecise, and inconvenient for both clinicians and patients.

## MAJOR PLAYERS

The IVD market is dominated by several diversified incumbents, including **Roche**, which is expected to hold 17% of the market by 2020, **Siemens** and **Abbott.**[47] These companies primarily supply lab testing equipment to a variety of settings, including hospitals and commercial labs. **Quest Diagnostics** and **LabCorp** run a near-duopoly on the independent commercial diagnostic testing market in the United States. Quest Diagnostics performs services for roughly 30% of Americans every year, while LabCorp processes 500,000 specimens a day. The sheer number of tests performed by these two organizations means they have economies of scale that can make it difficult for early-stage ventures to compete.

## INDUSTRY INVESTMENT ACTIVITY

| COMPANY | $ RAISED | INVESTORS |
|---|---|---|
| **Fast Track Diagnostics** - provides syndromically grouped real-time PCR multiplex kits to allow doctors to test for multiple pathogens from one sample | **Undisclosed (Dec 2017)**[49] | ***ACQUIRED*** by Siemens Healthineers |
| **Alere** - a rapid, POC diagnostics manufacturer focused on cardiometabolic disease, infectious disease, and toxicology | **$5.3B (Oct 2017)**[50] | ***ACQUIRED*** by Abbott Laboratories |

## Point-of-Care Diagnostics: Rapid detection to save lives

### DRIVERS OF INNOVATION

- **Advances in genomic and molecular profiling:** Decreasing sensor costs and advances in technology, like microarrays, microfluidics and genomics, are allowing clinicians to factor genome or molecular profiles into the selection of the most appropriate therapy for a patient. The end goal is for all therapeutic selections to incorporate genomic and molecular profiling. This is creating demand for diagnostics that can rapidly assess an individual's disease and provide insights into specific features that can help clinicians use the best treatment for that individual patient.
- **Rise of retail clinics and decentralization of lab testing:** CVS Health's Minute Clinics and other similar retail clinics offer basic screening services, such as A1c and Hepatitis C checks, along with diabetes care management. Over the next two years, Minute Clinics will roll out services to address four of the most common chronic diseases — hypertension, depression, asthma and hypercholesterolemia. One challenge facing retail clinics is that they do not have the laboratory infrastructure to do things in-house as a hospital would. As these clinics, especially CVS Health, continue to roll out services targeting chronic disease monitoring and take more patients out of the traditional health system, they will need easy-to-use, reliable POC diagnostic solutions that fit better into their workflows.
- **Global rise in human infectious disease outbreaks spur need for better surveillance:** The number of infectious diseases is rising, in part because of increased mobility of people between countries, but also because of other factors like deforestation and global warming.[51] There is a need for extreme diligence and early detection to ward off a potentially devastating pandemic. For example, in the case of Ebola, it is not possible to detect the presence of the virus in an individual until after symptoms were present. Clinics and transportation hubs are just a few of the organizations that will need quicker, more accurate testing to prevent the outbreak of a pandemic.
- **Price sensitivity is driving lower cost testing:** Traditionally, LabCorp and Quest Diagnostics have run a near-duopoly in the lab services market. However, as the push to decrease the cost of lab testing continues, their dominance will be challenged. Their competitive advantage has been their size, infrastructure and resulting economies of scale. This centralized model of healthcare is fading, opening up opportunities for new and smaller entrants.

### CHALLENGES

- **Lab service reimbursement rates are on the decline:** The push for lower-cost testing has been a big challenge for all diagnostics companies. In 2017 Medicare cut payments for clinical lab tests by $670 million. As one example of the impact, Quest Diagnostics anticipates that it will see a 4% decline in Medicare payments received in 2018 and a 10% drop in 2019.[52]
- **Requirement for Food and Drug Administration (FDA) approval creates high barriers to entry:** Getting a diagnostic device to market can take several million dollars in capital because of the need for regulatory approvals from the FDA and others. In 2010, survey data showed that the average company spends approximately $31 million to get a 510(k) clearance; i.e., a certification that a product is as safe and effective as an existing device on the market.[53] This figure may go down as the FDA continues to explore ways to expedite clearances, but high upfront capital costs will likely remain a significant hurdle for startups.

### EARLY-STAGE COMPANIES TO WATCH:

**BrainFX** provides a proprietary digital platform to clinicians to assess seven cognitive skills, such as attention and memory, and recommends a treatment plan for areas of deficiencies.

**Tasso** sells Hemolink, a virtually painless, easy to use, and affordable blood collection device, to lab testing companies.

**Day Zero Diagnostics** uses genome sequencing and machine learning to modernize infectious disease diagnosis and treatment.

SUBSECTOR

# Financial Health in Retirement: *Fintech for Seniors*

## THE UPSHOT

**The sector:** In 1960, half of private sector workers in America had an employee-sponsored pension plan.[54] By 2016 that had fallen to 15%.[55] As the burden and risk of retirement planning has shifted from employers to employees, more of the retirement planning process has been left in the hands of workers, including moving money into a retirement account, navigating tax laws and determining how to invest – let alone saving enough for retirement. According to AARP's 2017 Financial Innovation Frontiers study, Americans would be "far better prepared [for retirement] if they could turn to trusted financial innovators who could guide them as they spend, save, borrow, invest, insure, and plan their financial lives."[56] However, finding a practical and sustainable way to do this has long vexed both economists and healthcare providers.[57]

**What it means for startups:** Fintech as a sector is on the rise, with 293 new fintech companies (and $5.3 billion raised) in 2018 alone, though there has been little investment so far in fintech companies focused on technology-enabled retirement planning aimed at consumers, in large part because a viable pricing model has not emerged. There is a huge need for solutions that ease the financial insecurities of aging Americans, such as those that help people begin planning their retirement finances earlier in life, give seniors more financial control and protection, help informal caregivers manage their care recipients' finances, and help low-income seniors enroll in safety net programs that alleviate the immediate financial burden of old age.

## MAJOR PLAYERS

There are a number of high-profile personal finance, retirement planning and financial advising companies like **Mint, Wealthfront, Honest Dollar, Personal Capital** and **Finicity** that largely target millennial populations. There are no clear leading solutions addressing the unique financial challenges facing today's seniors and those approaching retirement.

## INDUSTRY INVESTMENT ACTIVITY

| COMPANY | $ RAISED | INVESTORS |
|---|---|---|
| **Honest Dollar** - a provider of affordable 401(k) alternatives to small and medium sized businesses | **Undisclosed (2016)**[58] | ***ACQUIRED*** by Goldman Sachs |
| **Mint** - an online service to help individuals track and manage their finances | **$170M (2009)**[59] | ***ACQUIRED*** by Intuit |
| **LearnVest** - aims to help users cut expenses and invest their money via certified financial planners who offer customized expertise based on financial needs and goals | **$250M (2015)**[60] | ***ACQUIRED*** by Northwestern Mutual |

## DRIVERS OF INNOVATION

- **Healthcare costs during retirement are increasing:** Retirement planning will only become more important as out-of-pocket healthcare expenses increase over the course of a lifetime. Americans are living longer than ever, and chronic diseases are on the rise as people live a more sedentary lifestyle:[61] four out of five Americans over the age of 65 will suffer from at least one chronic health event.[62] There is a great need for solutions to help people better prepare for their healthcare expenses during retirement:[63] a 2018 estimate found that the average retired, 65-year-old couple will need $280,000 to cover healthcare expenses during retirement, though households closest to retirement age have an average of only $17,000 saved.[64]
- **Retirement planning sits squarely on the shoulders of workers today:** As mentioned above, pensions have been on the decline for decades, as 401(k) plans gained popularity in the 1980s and 1990s. The growth of the gig economy has accelerated the trend toward workers managing their own retirement finances, since contract workers are not even eligible for a 401(k). Contract workers are expected to outnumber full-time positions within the next decade,[65] creating significant opportunities to help workers navigate the retirement planning process.
- **Fraud and financial scams targeted at seniors are prevalent:** The quickest-growing category of crimes committed against the elderly is financial,[66] with seniors losing roughly $39.4 billion each year through fraud and scams.[67] As people become more comfortable sharing personal information online, they will need tools that protect financial information, alert them to potential fraud or identity theft, and provide a streamlined way to recover money.

## CHALLENGES

- **The path to revenue for retirement planning companies has proven difficult:** Retirement planning has long vexed economists in both the public and private sectors. Public sector pension plans are badly underfunded, with conservative estimates placing the deficit at more than one trillion dollars.[68] Long-term care insurance hasn't fared any better: fewer than 15 companies offer some type of long-term care insurance today, down from 100 in the 1990s, as insurers have been forced to increase rates and roll back benefits.[69] To reach the largest possible number of individuals, startups will have to rethink the consumer as the ultimate customer, since many consumers do not have the discretionary income to purchase services. Startups potentially need to think about other entities that stand to financially benefit from individuals being better insulated from financial disasters, and tap into those entities as customers.
- **Low digital literacy makes customer acquisition difficult:** Seniors (especially those over 80 years old) have lower digital literacy levels than younger consumers, which can add a barrier to adopting tech-based financial management solutions.[70] Startups should also be aware that according to one recent survey, older customers are more likely to prefer working directly with a human when managing their finances.[71] This challenge should diminish as future generations reach retirement age, but startups should still be conscious of the value of having a human component.

## EARLY-STAGE COMPANIES TO WATCH:

ADVOCATIA SOLUTIONS

**Advocatia:** Streamlines medicaid enrollment for people who don't know they qualify for a particular plan.

EVERSAFE

**EverSafe:** Protects seniors against fraud, scams, and financial exploitation with a software-based personal detection and alert system

Silver Bills

**SilverBills:** Provides a transparent, technology solution to the problem of bill paying with a high degree of personal service and attention.

# Health US 2018 Program

## PROGRAM CURRICULUM:

### WORKSHOP 1:
*Are you solving the right problem?*

**Day 1**
Introductions
Origin Stories
Intro to VIRAL & Milestone Planning
Value Proposition

**Day 2**
Product Demos
Peer Due Diligence
Customer Discovery

**Day 3**
Peer Due Diligence
Market Mapping
Investability Plan

**Day 4**
Peer Due Diligence,
Trial Rank #1

### WORKSHOP 2:
*Do you have the right people & partners?*

**Day 1**
Customer Discovery Updates
VIRAL Milestone Plan
Planning Your Raise
Investor Meetings

**Day 2**
Peer Due Diligence
Measuring Your Impact
Business Model Mapping
Building a Team PT 1

**Day 3**
Peer Due Diligence
Financials Narrative
Partner Engagement & Strategy
Stakeholder Forum

**Day 4**
Peer Due Diligence
Trial Rank #2

Trial Rank #3

### WORKSHOP 3:
*Are you ready for investment & scale?*

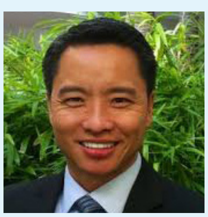
**Day 1**
Trial Rank #3 Review
Exit Strategy
Building a Team PT 2
Peer Due Diligence

**Day 2**
Peer Due Diligence
Mock Board Meetings
Financial Peer Review

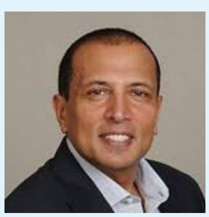
**Day 3**
Hot Seat
Term Sheet Negotiations
Investor Forum

**Day 4**
Pre-Mortem
Peer Due Diligence
Final Rank

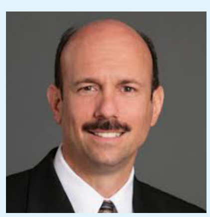
## PROGRAM ADVISORY BOARD:



**Alex Go**
CEO, *LivWell Health*



**Amul Patel**
Director, Product Integration & Delivery, *Blue Shield California*



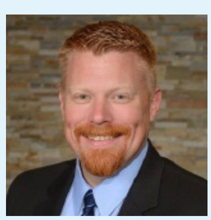
**Bruce Chernoff**
President, *SCAN Foundation*

**Dennis Depenbusch**
Director, New Venture Initiative at *Blue Cross Blue Shield of Kansas*

**Faz Bashi,**
Chair, Digital Health & Science Screening Committee, *Life Science Angels*

**John Vu**
VP, Strategy, Community Health, *Kaiser Permanente*

**Mary Jo Potter**
Founder & CEO, *Healthcare Angels*



**Robert Heyl**
VP, *Lacuna Health*

**Sam Lee**
Senior Director of Entrepreneurial Growth *Dr. Reddy's Laboratories*

**Sarah Thomas**
VP of Product, *Seismic*
Executive-in-Residence, *Aging2.0*

# TRENDS AROUND STARTUPS THAT APPLIED

## MAKEUP OF FOUNDERS

**61%** of companies from outside SF, Boston, NYC

**49%** have at least 1 founder born outside the US

**FEMALE FOUNDERS**

**43%**

**MINORITY FOUNDERS** (black or latino)

**19%**

## EXPERIENCE

**88%** of teams have "lived experience" with aging-related challenges
experienced the problem themselves or through a close friend or family member

**73%** of companies are serving health care providers
hospitals, caregivers, senior care facilities, etc

**61%** of teams have a founder with past health care experience

## COMPANY INFORMATION

**3.23 YRS**
Average age of company

**29%** had issued a convertible note
average amount: **$269K**

**45%** of teams have a founder with a PhD

**57%** of founders have previously started a company

**47**
Average age of founder

**41**
Median age of founder

*For more information go to **https://vilcap.com/program/health-us-2018**

# Health US 2018 Cohort

**METRICS :** Helping patients | Helping informal and in-the-home caregivers | Helping care providers

**Advocatia** (Chicago, IL): Streamlines engagement, screening and enrollment for hospitals to improve the lives of their underserved community.

**PharmaCCX** (Boston, MA): Increases global access to innovative medicines by allowing market forces to rationally price drugs.

**CareAcademy** (Boston, MA): Provides online professional development to teach and upskill caregivers of older adults.

**Reciprocare** (Baltimore, MD): Provides an online B2B marketplace that helps senior care providers find caregivers and helps caregivers find jobs.

**Moving Analytics** (Los Angeles, CA): Provides virtual cardiac rehab and secondary prevention programs for cardiovascular disease.

**Tailored Care Enterprises** (Madison, WI): Prevents caregiver burnouts with an enterprise Software-as-a-Service (SaaS) solution used by care management professionals.

**Multisensor Diagnostics** (Baltimore, MD): Performs a rapid medical assessment of 10+ vital health parameters in 30 seconds and facilitates real-time triaging for remote monitoring.

**Tending** (San Francisco, CA): Guides seniors and their families through transitions of care planning with technology-enabled services.

**Nonnatech** (New York City, NY): Combines machine learning with passive patient monitoring to enable the detection of patient deterioration before symptoms begin to appear.

**Veritage Solutions** (Houston, TX): Integrates the senior care facility market and delivers business intelligence through SaaS-based data warehouses.

# ENDNOTES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