

 **SENIOR HOUSING NEWS**

# Inside the Rise of Senior Living Virtual Reality

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# Table of Contents

- 2.** Key Takeaways
- 3.** Virtual Reality and Senior Housing: the products on the market
- 9.** The three main uses of VR in senior living
  - 10. VR use #1: resident happiness
  - 14. VR use #2: resident health
  - 17. VR use #3: staff training, recruitment and retention
- 20.** The Future
- 21.** Appendix

## About Senior Housing News

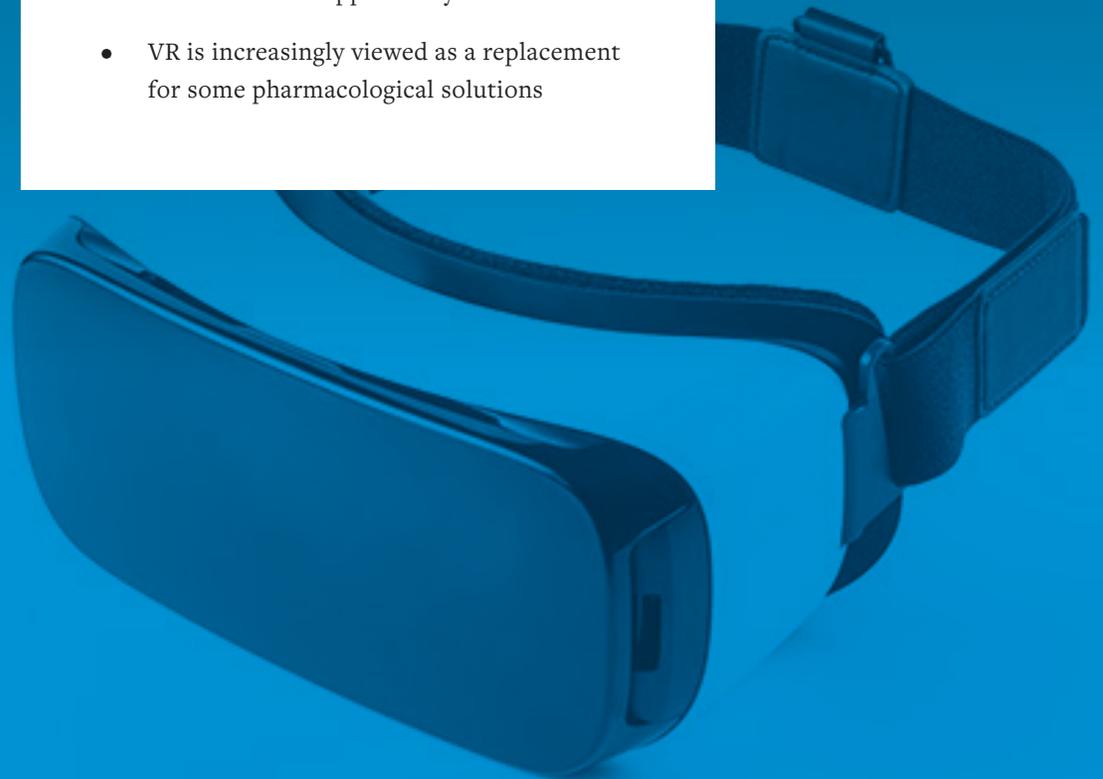
Senior Housing News (SHN) is the leading source of news and information covering the senior housing industry.

With a national reach of more than 30,000 professionals, SHN boasts a readership that includes senior housing operators,

developers, banking institutions, real estate investment trusts, private equity and service providers catering to the industry. SHN provides a cutting-edge and targeted platform unlike any other publication, giving you the opportunity to reach decision-makers every day

# Key Takeaways

- The influx of boomers combined with beneficial changes in price, data and technology is driving the rise of senior living virtual reality
- Operators are using virtual reality to address everything from resident isolation to dementia care to pain management to staff training
- Operators view VR as a driver of resident happiness because the content can be customized for individual residents
- AARP is investing heavily in VR companies in the senior space, driving further innovation and opportunity
- VR is increasingly viewed as a replacement for some pharmacological solutions



# Virtual Reality and Senior Housing: the products on the market

## Reasons for VR expansion in the senior housing market

- Baby boomers' increased comfort level with technology
- Movement toward non-pharmacological health solutions
- Technological improvements in quality and cost

After a decade of whispers, trials, pilots and promise, virtual reality (VR) now seems on the precipice of a boom in senior housing and senior care settings. A bevy of companies have cropped up over the past five years to tailor VR solutions directly to senior living, addressing resident isolation, dementia care and pain management.

The VR usage expansion is the result of a convergence of trends in senior living, health care and technology. There is the baby boomer wave and everything therein, most notably that generation's comfort level with technology compared to their Silent Generation predecessors, along with the increase in chronic conditions, including dementia.

There is the movement toward non-pharmacological health solutions, and the movement toward value-based care and preventative care. Then there are the changes

in technology, with virtual reality headsets improving in quality and decreasing in cost.

The result of those three trends is leading to a fourth, one that will turn up the heat on senior living-related VR even more: data. While hard proof showing the value and impact of VR in senior housing remains scarce, the early studies — albeit with limited sample sizes — along with observational records and anecdotal accounts demonstrate the promise this burgeoning technological opportunity has in the space.

And because Medicare-covered VR remains in the future, operators are paying for their virtual reality offerings typically as part of their activities budgets. The costs can run into the high thousands, though vendors note that these figures are in rapid flux due to changes in the construction of the technology. Costs also depend on the size of a given senior living organization.

### Five leading VR vendors in the aging space



	RENEVER	MyndVR	embodied labs	zenjoi	XRHealth
MAIN OFFERING	Experiences	Experiences	Staff Training	Health	Health
END-USER	Resident and family	Resident	Staff	Resident	Resident
FUNDRAISING	Roughly \$250,000	\$853,000	\$1,077,500	\$30,000	\$4,000,000

## What operators are buying

A senior housing operator bringing virtual reality to their community is essentially making two purchases. They are buying the hardware, known as the “kit” — the headset, typically a tablet that staff members use to direct the sessions and potentially other materials. (See sidebar.)

They are also buying the content and support services. This means the programs that run in the VR headset as well as, with some vendors, the ongoing platform and support services that help operator staff members run these offerings. Most vendors sell these in a subscription package, usually monthly and per community, while others sell or rent headsets with pre-loaded content.

The most important piece of the hardware is the headset, also known as the “goggles.” Senior Housing News spoke with five virtual reality companies providing services to senior living or in senior care settings.

Four of these five use an Oculus headset. Founded in 2012, Oculus hosted a Kickstarter campaign in April 2012 to raise \$250,000 to create the Oculus Rift headset for gamers. The campaign raked in \$2.4 million. Two years later, Facebook acquired the company for \$2.3 billion, leading to an explosion in its popularity.

To power their content, the early headsets were either tethered to a computer or included a clip-in smartphone. In 2017 and then 2018, Oculus launched two standalone models that require neither of those: the Oculus Go and the Oculus Quest. The company also released an updated version of the Rift in March of 2019.

The innovations have paid off: according to data from global market intelligence firm International Data Corporation, standalone VR headsets grew 417.7% in 2018 2Q, which the firm attributed in large part to the Oculus Go (and its Chinese counterpart the Xiaomi Mi VR), of which 212,000 headsets shipped in that quarter alone.

## What’s in a VR kit?

### A look at one from Embodied Labs

Hardware for VR comes in what’s called a “kit.” Along with the headsets, a kit can include a range of other items, such as a tablet or computer that staff members use to interface with what the residents see.

With locations in Los Angeles, Chicago and Greenville, South Carolina, Embodied Labs is a VR leader in the caregiver training space. The below list gives a sense of what their kit can include in terms of hardware, and its approximate cost, which includes assembly for a turnkey experience.\*

#### REQUIRED:

- **Laptop**  
MSI GS63VR Stealth Pro-469 15.6”
- **Headset**  
Oculus Rift plus 2 touch controllers and 2 proximity sensors
- **Leap Motion + mount**  
for hand tracking
- **USB cable**  
USB 3.0 Type A to Micro B, 10 feet

#### RECOMMENDED:

- **Carry-on travel case**  
Pelican Air 1535
- **Lid pockets for accessories**  
Pelican 1535 Lid Organizer
- **Cable organizer**  
Techflex Cable Sleeve ½” x 25’
- **Hygienic VR cover**  
Oculus Rift Leather Facial Interface
- **Velcro to secure lid organizer**  
Velcro 24” x ¾”

#### OPTIONAL:

- **HDMI cord**  
Mini Display Port to HDMI 4k Ready
- **HDMI cable**  
6 feet, for linking screenshare to TV

**TOTAL: \$2,499**

\* Like the other vendors in this report, Embodied Labs’ pricing is not finalized, due to the changing cost of consumer VR technologies as well as the various sizes and needs of the operator clients. This box merely offers an example.

## Rental vs. for-sale

MyndVR is the only company interviewed for this report that does not sell its headsets. They have a rental package that includes both the hardware and the pre-loaded content for a cost that ranges from \$200 to \$1,000 per month, depending on the number of kits.

This trend toward standalone headsets is crucial for seniors and senior housing, with headsets that are more mobile, lighter and less expensive. Rendeвер uses an untethered Oculus headset that places the user immediately in the platform, another key innovation to improve ease of use.

“It’s much simpler for our activity programmers to operate a wireless system,” says Brian Geysler, vice president of clinical innovation and population health of Westport, Connecticut-based Maplewood Senior Living, which uses Rendeвер to run eight-person VR “travel” sessions in assisted living. “All eight residents put the goggles on, and you’re in, and you’re controlling the content from the tablet. That’s it. It’s pretty simple.”

Another vendor, meanwhile, is charting its own direction. Founded in 2016, MyndVR sells virtual reality experiences for seniors. The company originally used the Samsung Gear VR for its headsets, but as of April 2019 they are switching to the VIVE Standalone Focus from Taiwan-based HTC Corporation. Like Rendeвер’s headset, the VIVE Focus offers a simple usage experience through its one-button, all-in-one setup. MyndVR CEO Chris Brickler made the change for three

main reasons. First, he views HTC as being mission-aligned with MyndVR around doing “goodness in the world.”

Second, the VIVE Focus headset they use is built specifically for educational and health care applications.

Third, HTC does not sell this headset to consumers, only enterprise-level operations.

“HTC is set up to support an enterprise-level operation of our scale,” Brickler says. “They’ve really done a great job of making a headset that is not geared for gamers and consumers, but geared for health care applications and education applications.”

The other expense with a virtual reality program are the ongoing services: the support and platform services, and the content. These are the “programs” that are broadcast to the user through the headsets. Most of the vendors interviewed for this report charge monthly subscription fees to content, generally in the low hundreds.

One that stands out as different is Boston- and Israel-based XRHealth, which has a three-tiered option: \$1 per use, \$99 per month for 100 sessions, \$1,000 per month for unlimited sessions.

## VR vendors: what they are selling

	 RENEDEVER	 MyndVR™	 embodied labs	 zenjoi	 XRHealth
HEADSET	Oculus Go	VIVE Focus	Oculus Rift	Oculus Rift CV1	Oculus Go / Quest
HARDWARE COST PER KIT*	~\$1,000	\$0 (rental only, no purchase)	\$2,499	\$5,000**	\$1,300-\$1,700
COST OF CONTENT + SERVICES	\$300-\$400 per month	~\$150 per month per kit	\$8,499 annual (\$708.25 per month)*	\$200 per month depending on resident count	\$1 per use \$99 per month for 100 sessions \$1,000 per month unlimited

\*This adjusts based on the size and needs of the community.

\*\* Zenjoi hardware cost accounts for setup and staff training, and also includes many other physical items that power its offering, including chairs, peddlers and a 50-inch TV. For a complete breakdown of Zenjoi’s kit, see page 14.

## How operators are paying for VR

For operators that want to start a virtual reality program, there are two categories of payments. There is the upfront cost, (except with the aforementioned MyndVR), which can run into the high thousands depending on the number of headsets purchased.

Then there is the monthly cost of the subscription and services, in the low-to-mid hundreds.

While for-profit operators can fund VR through various internal budgets, not-for-profits are using a mix of foundations and grants. Winona, Minnesota-based community Saint Anne of Winona offers assisted living, memory care, skilled nursing and adult day services, and is one of two communities in the Benedictine Health System with a virtual reality training program.

To launch their program, Saint Anne of Winona spent \$17,600 on hardware — that

was \$4,400 for the first two kits and \$13,200 for the next six kits. They funded this through a combination of their internal foundation and a \$40,000 grant from the Otto Bremer Trust.

“I think (VR) opens up your mind about ‘Wow, I’ve been doing my best to take care of this person, I’ve been doing the tasks I need to do, but maybe I haven’t been doing them as effectively ... to provide them with the best experience possible,’” says Jodi Barton, CEO of Saint Anne at Winona. “I think that for me was the biggest benefit.”

From January to March of 2019, memory care unit The Grove at Phoenix-based continuing care retirement community (CCRC) the Terraces of Phoenix brought in health-and-wellness VR vendor Zenjoi to run a trial with about seven residents and their families. The trial offered 15-20 minute sessions for residents at a cost to the Terraces of \$25 an hour.

## What operators are spending on senior VR

These four operators show different paths to a senior-centered VR program, where the seniors wear the headsets. One purchased equipment, one signed a two-year lease, one rented, one ran a trial. Here is what they spent:

	 MAPLEWOOD senior living	 Signature Pointe A LIFE CARE SERVICES® COMMUNITY	 American House SENIOR LIVING COMMUNITIES	 The Terraces of Phoenix a human good community
TOTAL COST	\$104,000 up front + \$49,920 annually for content and services	\$495 per month + \$750 upfront for activation and training*	\$750 for 72 hours	\$25 per hour
WHAT THEY GET	8 headsets + accessories per community for 13 AL communities  Content + ongoing platform and support services	3 kits Unlimited content	4 kits Pre-loaded content	1 kit Pre-loaded content
HOW THEY GET IT	Purchase	2-year lease	Rental	Trial
VR VENDOR	Rendever	MyndVR	Virtual Reality Rental	Zenjoi

\* This pricing represents MyndVR's 2.0 model. As a research partner of MyndVR, Signature Pointe Dallas's original lease was lower, and is not reflected here.

The company wants to continue its work with VR, but, as former Grove Program Manager Kaila Stephens told Senior Housing News, “obviously it’s a little pricey.”

The Terraces has identified three options for funding their forthcoming program. One is using its foundation. Another is funding it through the company’s capital expenses budget. The third is selling sessions directly to residents and their families, with a team from Zenjoi coming to the community and conducting sessions.

In San Francisco, not-for-profit CCRC Rhoda Goldman Plaza is also keeping an eye on the VR opportunity, albeit in a more reserved fashion. They welcomed Zenjoi for a demonstration with residents in late 2018, while bringing Embodied Labs in for a demonstration with staff. They have also been contacted by MyndVR.

Rhoda Goldman Plaza director of programming Emma Davis went through Embodied Labs’ “Beatriz Lab,” which puts caregivers into the role of a woman with Alzheimer’s.

## How to pay for VR: The insurance question

While there is no model yet for Medicare reimbursement, an increase in data could eventually lead to what Centers for Medicare & Medicaid Services (CMS) calls “sufficient, supporting evidentiary documentation” that is required to create a national coverage determination (NCD) — which is the CMS criteria that decides “whether an item or service is reasonable and necessary.”

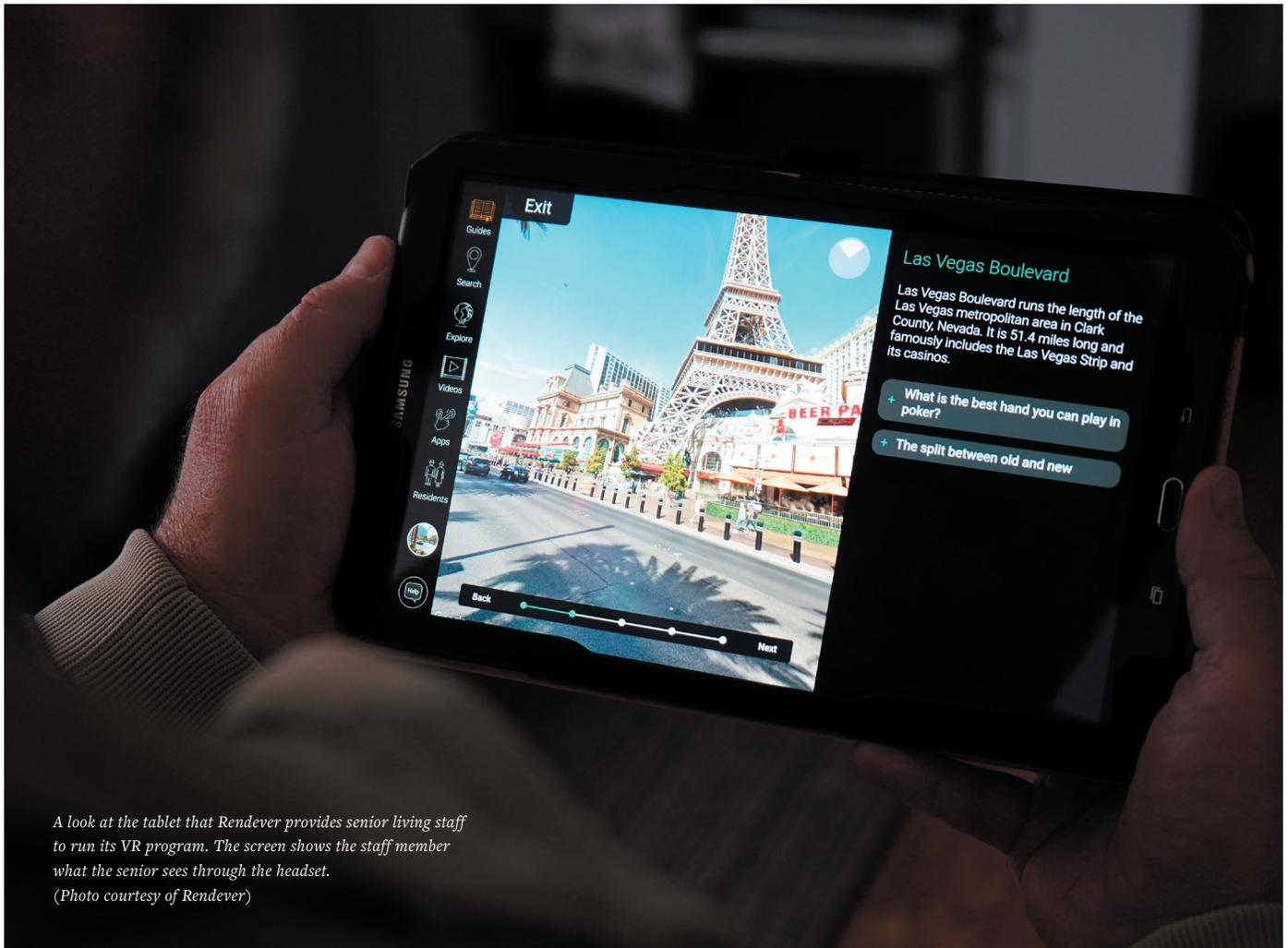
In a statement to Senior Housing News, a CMS spokesperson said that CMS has not established an NCD for virtual reality services “in any setting.” The

spokesperson added that “virtual reality services are not included in an established Medicare benefit category, meaning Congress would have to pass legislation to designate a new benefit category in order for fee-for-service Medicare to cover virtual reality services.”

Still, both operators and vendors interviewed for this report noted that while reimbursement remains in the future, they are working in various manners to expedite the process. In the meantime, operators are finding other ways to fund their VR programs:



BUSINESS TYPE	For-profit	Not-for-profit	For-profit	For-profit	Not-for-profit
HOW THEY'RE FUNDING VR	Activity and life-enrichment budget	Foundation and grants	Activities budgets and marketing budgets	Current: main community budget If they expand: life-enrichment and wellness department	If they expand: either the CapX budget or direct charges to families



A look at the tablet that Rendever provides senior living staff to run its VR program. The screen shows the staff member what the senior sees through the headset.  
(Photo courtesy of Rendever)

“I thought it was great, and I would love to be able to have it for my staff,” Davis says. “I think a lot of times a staff has a hard time for what it’s like for an individual with dementia navigating the world, and that training gets as close as you can get.”

She noted that the residents appreciated the Zenjoi experience, too. The drawback for either program, she said, was low resident demand combined with high cost.

“I thought (the Embodied Labs program) was relatively short for the cost, and that’s why it didn’t work for us,” she says. She noted that each lab was about eight minutes, with an upfront hardware cost of \$2,000 followed by the monthly subscription.

“We just weren’t able to find it in the budget,” she says.

That’s not a permanent deterrent, however. Davis says that her community’s move to Embodied Labs might make more sense in the future, once the vendor has added more scenarios to bulk out the training. And she views Zenjoi as “a creative way to encourage physical activation” for an isolated person.

“They can interact with it, even sitting in a chair,” she says. “They’re moving their arms (and) their brains are activated in a different way, so I really see that as a potential benefit.”

# The three main uses of VR in senior living

## How to train your staff to run your VR program

Even with a standalone VR headset that is not tethered to an additional power source, the VR experience is not necessarily intuitive for either the user or the staff member.

To assist this process, all five vendors interviewed in this report provide staff training sessions and onboarding services along with ongoing support and platform services. These services are all built into some portion of their pricing.

There are three possible end-users for virtual reality in senior housing: the residents, the staff and, in some smaller scenarios, family members.

“The industry is starting to realize that virtual reality is an avenue that really supports every single spoke of the senior living wheel,” says

Kyle Rand, co-founder and CEO of senior-centric VR vendor Rendeever.

“It’s really an avenue that tackles every major problem ... and brings this industry into the light as an industry that is adopting tech.”

In all, operators are essentially looking at VR for three possible uses:

- Improving resident happiness
- Improving resident health
- Augmenting staff training and improving recruitment and retention

The potential impact VR can have on resident happiness is summed up by recent work from AARP. In November of 2017, the organization released a study examining Medicare spending data and found that social isolation among older adults “is associated with an estimated \$6.7 billion in additional federal spending annually.”

This figure offers insight into just one of the potential benefits that AARP sees in bringing

VR to seniors. It sees health benefits as well. All of these benefits have led to additional AARP activism around senior-centric VR. AARP Innovations Lab has invested in Rendeever to spur social isolation solutions, and in medical company XRHealth, whose medical applications are all FDA registered.

Additionally, Embodied Labs won \$5,000 in 2018 as the AARP Innovation Labs Grand Pitch Competition winner.

“VR is a powerful tool for driving social connections in more intimate, immersive ways than traditional media,” AARP Innovations Labs Director Nigel Smith told Senior Housing News via email. “Examples include fostering connections

between residents, connections with their caregivers and loved ones living outside of the senior housing setting and connections with strangers in the world. In so doing, VR can address some of the underlying needs of seniors and caregivers.”

These connections are among the outcomes that virtual reality companies selling “experiences” seek to provide. Rendeever and MyndVR break down their resident experiences into three main areas: reminiscence therapy, travel and family bonding.

**“The (senior living) industry is starting to realize that virtual reality is an avenue that really supports every single spoke of the senior living wheel.”**

**Kyle Rand, co-founder and CEO, Rendeever**

# VR use #1: resident happiness

**Reminiscence therapy.** As part of the reminiscence therapy efforts that operators seek from VR, vendors are not merely offering residents a chance to travel to locations, but different times as well. This is particularly important for residents in memory support, for whom verbalization of memories can be limited.

Rendever is bringing seniors to their childhood homes and neighborhoods through a mix of techniques, such as Google Maps, or translating 2D family photos into immersive images.

MyndVR, meanwhile, has an episodic series called “A Road to Remember,” in which they spent nine months filming the historic Route

66, which runs from Los Angeles to Chicago. MyndVR films interactive tours of museums and zoos, and they did an agricultural series for seniors in Kansas who grew up on or around farms.

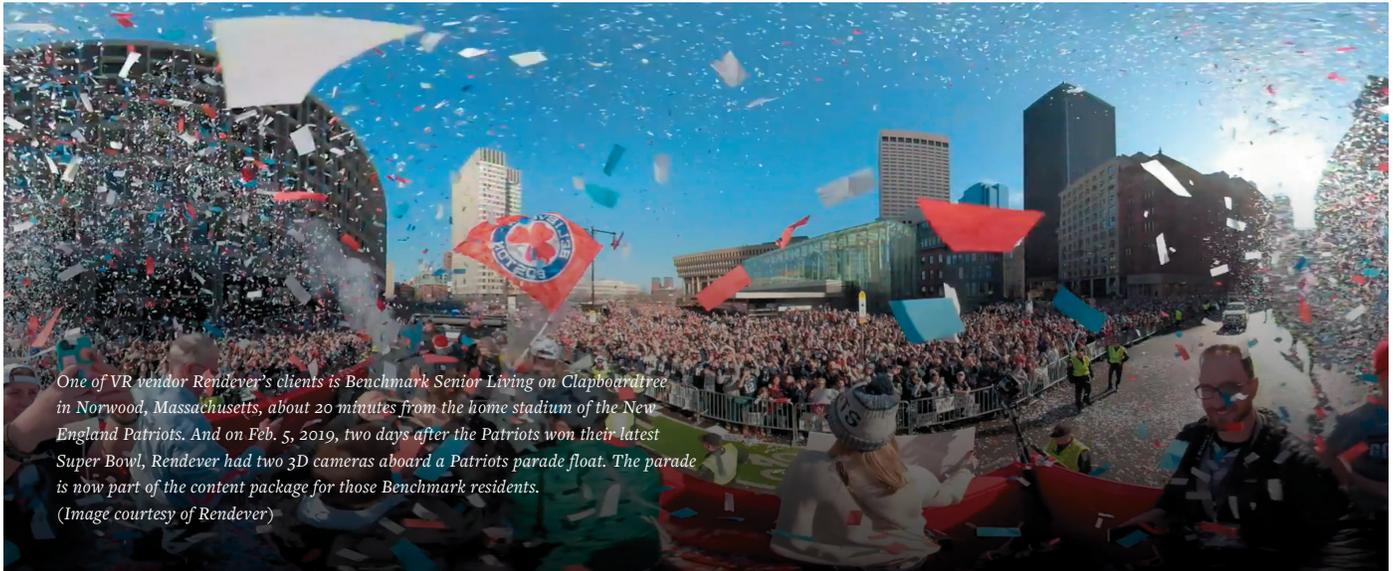
But the one they are most excited about is a form of music therapy designed for people with mild cognitive impairment. Brickler noted that rather than playing a Frank Sinatra song on an iPod for a person with dementia, they decided in 2018 to bring that person into a Frank Sinatra concert. They hired 35 actors to re-create a 1950s swing-jazz club, including a band playing “Fly Me To the Moon,” and filmed it all from the front row of the concert.

MyndVR now also includes access to content from New York-based Littlstar (whose clients include Disney and National Geographic) as well as 50 travel videos from Slovakia-based Sygic. All told, Brickler says MyndVR offers “hundreds of immersive experiences.”

## How VR addresses resident happiness

Senior living operators are using VR in large part to improve resident happiness and reduce isolation, through three types of experiences: reminiscence therapy, travel and family bonding.

	REMINISCENCE THERAPY	TRAVEL	FAMILY BONDING
EXAMPLE	<ul style="list-style-type: none"> <li>Go to your childhood home</li> <li>Attend a 1950s Frank Sinatra concert</li> </ul>	<ul style="list-style-type: none"> <li>Go on Safari</li> <li>Stand on the Eiffel Tower</li> <li>Go deep-sea diving</li> </ul>	<ul style="list-style-type: none"> <li>Go to a family wedding or a family vacation</li> <li>Family members film these</li> </ul>
BENEFITS	<ul style="list-style-type: none"> <li>Reminiscence therapy</li> <li>Trigger memories and conversations with loved ones</li> </ul>	<ul style="list-style-type: none"> <li>Leave the four walls of your community</li> <li>Create social interaction with fellow residents</li> </ul>	<ul style="list-style-type: none"> <li>Stay involved with family members</li> </ul>
VENDORS	<ul style="list-style-type: none"> <li>MyndVR</li> <li>Rendever</li> </ul>	<ul style="list-style-type: none"> <li>MyndVR</li> <li>Rendever</li> <li>Zenjoi</li> </ul>	<ul style="list-style-type: none"> <li>MyndVR</li> <li>Rendever</li> <li>Zenjoi</li> </ul>



One of VR vendor Rendever's clients is Benchmark Senior Living on Clapboardtree in Norwood, Massachusetts, about 20 minutes from the home stadium of the New England Patriots. And on Feb. 5, 2019, two days after the Patriots won their latest Super Bowl, Rendever had two 3D cameras aboard a Patriots parade float. The parade is now part of the content package for those Benchmark residents. (Image courtesy of Rendever)

**Travel.** At its most basic, virtual reality is about transporting its user to another place, and that is what the travel experiences do in senior housing. Both Rendever and MyndVR offer a mix of curated content and original content that they film themselves. They can take residents on trips to cities where they went years before, or ones where they've never been.

They can also take them on experiences that would be nearly impossible even in the best of health. At Bloomfield Hills, Michigan-based American House Senior Living Communities is running an experiences program with Virtual Reality Rental.

"We have residents with limited mobility, or those who are no longer able to travel as they once did," says Jacqueline Trost, American House vice president of marketing and communications. "Virtual reality allows them to have first experiences, or revisit locations and activities they hold near and dear."

That is the case for Rendever client Benchmark Senior Living, and its community in Norwood, Massachusetts, in the heart

of New England Patriots country. After the Patriots won the Super Bowl on February 3, 2019, Rand and his team wanted to bring residents to the championship parade. Rather than just film it, Rendever was able to place two virtual reality cameras on the Patriots' parade float.

**"VR is a powerful tool for driving social connections in more intimate, immersive ways than traditional media."**

**Nigel Smith, director of AARP Innovations Labs**

Residents who would not otherwise be able to attend the parade aren't just given the "you are there" experience — they're given a "you are on the float" experience. And they're given it together: the Rendever travel experiences are done as a group, with all the users seeing the same

scenes. To Rendever and its clients, that is the key to driving socialization and building intergenerational, communal experiences.

"Our residents were happily and actively engaged in the parade, looking for their favorite players and waving to the fans," says Benchmark's community technology specialist Tom Fitzpatrick. "They were in awe with the entire experience. Virtual reality and our partnership with Rendever enables us to provide experiences like this that can help our residents thrive."

## VR and physical health

One of the health benefits that VR brings to senior housing are physical activities, in which the user in the headset can use his or her hands to interact with virtual space.



**Family bonding.** Senior-related VR is combating familial separation in two ways. Among AARP's newest VR ventures is Alcove VR, an intergenerational virtual reality app the organization launched in a collaboration with RendeVer. The app joins seniors and their loved ones together in a virtual room, to let them feel more connected than phone calls or Face Time sessions.

The second solution is giving VR cameras to families for family gatherings, such as a wedding or a vacation. Families film these events, which can then be stored as part of the content package that residents can choose to watch.

### Outcomes and impact

The data around the impact on resident happiness is minimal. RendeVer administers user surveys measuring mood before and after use on a scale of 1 to 10, and has found a 40% increase in resident happiness levels after the virtual reality experience.

They also participated in a quality-of-life study led by The Goodman Group. The study looked at 44 IL and AL residents, ages 54 to 103, who participated in at least one VR session. They rated their levels of connectedness, hassles, uplifts and pain on a 10-point scale before and after their first use of the VR, and a month after participation.

Among the 39 who completed the questionnaire before and after the first session, there was a statistically significant decrease in hassles and pain, and an increase in uplifts. "Participants' written comments were overwhelmingly positive with few negative comments," the report concluded.

Aside from studies like that the anecdotal evidence is carrying the day.

"Residents and their families really love having this as an activity option. They think it's cool. ... It's a social thing. They talk about the experiences later at dinner," says Maplewood's Geysler. Maplewood is the very definition of "all in" on VR: they've rolled it out in all 13 of their AL communities, with eight headsets plus one tablet per community.

Their program comes from Rendeвер, so it's no surprise that Geysер views VR as a socialization tool, because that is the essence of Rendeвер's offering. By putting seniors into their travel scenes as groups, those trips on safari or to the Patriots parade allow all residents to experience the same scene simultaneously.

That, say Fitzpatrick, Geysер and Rand, is the key socialization element: all of the residents going in together is what spurs the conversation and socialization after the sessions, which is how Rendeвер addresses social isolation.

Maplewood's upfront investment in hardware was \$104,000; the one tablet per community

is pre-loaded with the Rendeвер Director software, which allows the community's Lifestyle Team to guide residents through the experiences.

**“To me, (VR) helps with the happiness factor, which is a very important piece of what we offer.”**

**Brian Geysер**, *Vice President of Clinical Innovation and Population Health, Maplewood Senior Living*

Maplewood then spends \$320 per month per community for the content and, crucially, ongoing and unlimited support and platform services, including Rendeвер's training of the operator staff members who run the programs. The total annual cost to Maplewood Senior Living

as an organization for content and services is just under \$50,000.

“To me, it helps with the happiness factor, which is a very important piece of what we offer,” Geysер says.

## What operators are saying about happiness impact

**“Residents and their families really love having this as an activity option. They think it's cool. ... They talk about the experiences later at dinner. To me, it helps with the happiness factor, which is a very important piece of what we offer.”**

**Brian Geysер**, *VP of Clinical Innovation and Population Health, Maplewood Senior Living*

**“Our residents were happily and actively engaged in the (Patriots Super Bowl) parade, looking for their favorite players and waving to the fans. They were in awe with the entire experience. Virtual reality and our partnership with Rendeвер enables us to provide experiences like this that can help our residents thrive.”**

**Tom Fitzpatrick**, *Community Technology Specialist, Benchmark Senior Living*

**“We feel it's a medical benefit to be able to take someone who is jerking all the time (due to Parkinson's) and have him in a calm state for a while. It's got to make him feel good, and he really enjoys the videos.”**

**Nancy McCarthy**, *Sales and Marketing Director, Signature Pointe Dallas*

**“We had one resident who was an Air Force veteran. He was a mechanic who never got to fly a plane during the war, and had always dreamed of flying a B-52. Through the VR experience, he was able to do just that! He couldn't stop talking about how great it was to be ‘Back on the military base’ to fly a plane.”**

**Jacqueline Trost**, *VP of Marketing and Communications, American House*

Areas of resident health that benefit from VR include:

- The physical-cognitive connection
- Depression and mental health
- Dementia

## VR use #2: resident health

The reduction of resident pain and the improvement of health is high on the mind of operators, and virtual reality vendors are working to produce solutions that address those areas. Some of these benefits center around virtual reality as simply a distraction during painful procedures or rehabs, reducing pain by redirecting the brain to other experiences.

But rather than just stemming the tide of pain, operators are now seeing VR health benefits. They are focusing on both physical and cognitive health for residents with a range of ailments, including dementia, Parkinson’s and depression.

### The physical-cognitive connection

Like MyndVR and Rendever, Zenjoi is offering experience-based programming, but with an added component that combines physical and cognitive exercises.

“What I was finding is that more and more research was converging on the notion that physical exercise can be very beneficial to ... not just mitigate dementia but help treat it,” says Zenjoi co-founder Jacob Hamman.

Guided by a 10-year study from the National Institute on Aging and the National Institute for Nursing Research that tested “the effectiveness of cognitive interventions in maintaining cognitive health and functional independence in older adults,” Zenjoi crafted a VR program that combines physical and cognitive training.

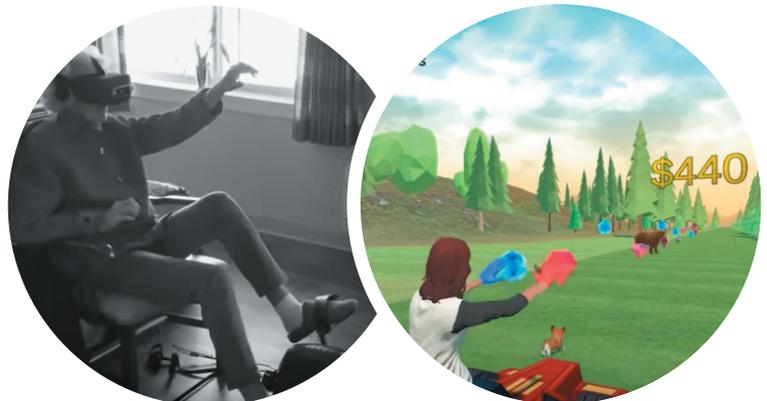
The program places seniors in what is essentially a lounge chair attached to a stationary bike. The headsets include the Leap Motion mounts, which insert the user’s hands into the virtual space, and colors one of them red and one blue. While pedaling physical pedals on the chair, residents are transported to a bike path adorned with red and blue gems. They must then reach their hands out and match the colored hand to the same-colored gem.

The inclusion of these elements explain the difference in hardware pricing between Zenjoi and the other vendors in this report. Along with the headset, Zenjoi’s VR kit comes with a 50-inch 4K flat screen TV, a laptop, the Leap Motion hand tracker, two collapsible exercise chairs, a peddling piece and a stepper piece.

Zenjoi is still in the early stages — the trial at The Terraces was in early 2019 and included this pedaling program. But it is working to capture data, including total pedal time, pedal intensity, accuracy by hand and heart rate monitoring over time.

### Zenjoi’s rehab VR program

VR vendor Zenjoi has developed a program that blends cognitive and physical tasks, placing seniors in a stationary bike, leading to both upper-body and lower-body physical activity within the virtual space. (Images courtesy of Zenjoi)



## Depression and mental health

The Benedictine Health System (BHS), based in Duluth, Minnesota, operates over 30 communities in five states, with two of these taking part in virtual reality, primarily around resident wellness and mental health. BHS began its VR work doing staff training with Embodied Labs and is now moving on to a partnership with MyndVR around resident mental and cognitive health.

“I look at this headset as not just entertainment — it’s really an intervention, just like a pill, but it’s being given in this virtual reality packaging,” says BHS Chief Medical Officer Dr. Neal Buddensiek. “When you get advanced depression with psychosis, then the pills have more value. But a lot of our residents aren’t living with severe depression. They’re living with mild-to-moderate depression. They’re living with social isolation. So I think that is a great area to see if this type of solution will work.”

Buddensiek likes what he sees so far, particularly the ability to tailor resident-specific solutions. He and Brickler are working on content that will allow residents with dementia to attend Mass services whenever they want, because BHS has residents who get nervous when they believe they are supposed to be in prayer.

“A lot of what we know about people living with dementia, we cannot customize the solution to their life story, because we don’t have all of those things in our building,” Buddensiek says. “For example, someone who was a marine biologist, there is truly no way we can provide them a customized aquatic intervention. So it really changes the game about non-pharmacological interventions. They’re as diverse as the human experience. You have to be very creative, and we’re not creative enough. We can’t be. We don’t have the money.”

## Existing data

While the production of quantifiable data around the impact of VR on pain relief remains in its nascent stage, some studies are beginning to show benefits. Among them:

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**Researchers:** Doctors at Cedars-Sinai Center for Outcomes Research and Education (Los Angeles)

**Publication date:** Summer of 2018

**Area of focus:** Economic analysis of VR therapy for pain among hospitalized patients

**Results:** “The average overall hospitalization cost-savings per patient for the VR program vs. usual care was \$5.39 (95% confidence interval -\$11.00 to \$156.17). Implementing a VR therapy program in the inpatient setting provided an average of \$5.39 (95% confidence interval of -\$11.00 to \$156.17) in cost-savings per patient when compared to usual care.”

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**Researchers:** Professors at San Raffaele Hospital (Milan)

**Publication date:** July 2015

**Area of focus:** Impact of VR during rehabilitation following a stroke

**Results:** “(Virtual reality based rehabilitation) appears to produce greater benefits in walking speed, balance and mobility for a given amount of rehabilitation time than standard rehabilitation after stroke.”

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The July 2015 study was done in conjunction with XRHealth, while MyndVR, RendeVer and Embodied Labs are all working on studies that they believe will bulk out the body of research around senior-centric VR.

“We’ve got all of these wonderful studies and research partners all over the country, and also in Canada,” Brickler says. “2019 is the year of efficacy for us.”



Among the examples of “physical travel” scenarios from MyndVR is this parachuting simulation. (Image courtesy of MyndVR)

### The staff time challenge

One element to consider around implementing VR is the time and training for staff just to run the program. It’s something that McCarthy and the Signature Pointe team view as the cost of doing business.

“I just think people have to be open to spending some time to working with seniors with VR,” McCarthy says. “It does take more bandwidth with staff. It is a resource constraint to have a one-on-one with somebody. But I think it’s a great technology for seniors because it takes them places where we can’t take them.”

## Dementia — Alzheimer’s and Parkinson’s

In December of 2018, Signature Pointe Dallas, managed by Life Care Services, signed a two-year contract with MyndVR to lease three headsets and unlimited content for a focus on residents with dementia. The team at Signature Pointe worked first on happiness and wellbeing, but they soon found a surprise benefit when working with a resident with advanced Parkinson’s.

“He’s very unsteady (with) very aggressive, jerking movements most of the time,” says Nancy McCarthy, sales and marketing director. “He spends most of the day in a jerking motion. ... We’ve noticed that when he’s in VR, he actually calms down, and there are no jerking motions. His body relaxes. He tends to like the more adventurous stuff ... and when he’s in those, his brain must be focused where he’s not jerking. It’s really interesting.”

Signature Pointe offers the VR sessions on Tuesday and Thursday from 11 to noon, just before lunch, and they’ve seen the resident with Parkinson’s better enjoy his lunch following the sessions compared to the other days of the week. His sessions last about 30 minutes. Once his goggles come off, he has remained free of tremors anywhere from 15 minutes up to an hour.

This is now directing the community’s observations and research. McCarthy wants to see if this gentleman’s post-session calming period will increase in length the longer he stays with the VR. As a result of the success, Signature Pointe is targeting its other residents with Parkinson’s.

“I want to see the program grow,” says Marilyn Davis, executive director at Signature Pointe. “This has been absolutely eye-opening for me to watch it and see what we’re doing, and to see how our clients respond to it and how much they enjoy it. ... As enough communities use this and the data is there, I absolutely think we’ll be able to see the medical benefits for what this does.”

## Current programs offered by Embodied Labs

- The Alfred Lab, for macular degeneration and hearing loss
- The Beatriz Lab, for Alzheimer's
- The Clay Lab, for residents entering hospice

# VR use #3: staff training, recruitment and retention

The challenges of working with seniors, especially those with chronic conditions, are immense. There are questions around technique and empathy. There are also added stresses. Selling residents on virtual reality sessions can take some doing. Selling staff members is much easier.

## Staff training

Saint Anne of Winona (SAW) helped launch BHS's work with virtual reality, teaming with Embodied Labs to teach staff members more about how to work with their residents. Barton sees this as a key addition to the BHS program, creating a more dynamic training experience that goes beyond PowerPoint presentations.

"I don't think it will ever substitute for the training we have to provide ... but there may be certain aspects of it that could be replaced," Barton says. "By far, this type of learning experience is far more valuable than what we can offer in the other platforms. ... You are actually experiencing what you are trying to learn about."

Embodied Labs' program offers a variety of role-playing scenarios that let users walk in the shoes of seniors living with a range of chronic diseases.

These labs run about eight minutes each. Along with letting the user experience life as the senior, the user can go into the senior's brain, so that users can see dementia's effects on the brain. Barton was part of the team that did the original test run with Embodied Labs, trying the Beatriz Lab.

## Embodied Labs' results



Embodied Labs currently offers three virtual reality scenarios that provide educational and empathy training for caregivers, senior housing staff and family members: the Alfred Lab for macular degeneration, the Beatriz Lab for Alzheimer's and the Clay Lab for end-of-life scenarios.

The company is working on two more for 2019. The Dima Lab launched in April, and focuses on Lewy Body dementia and Parkinson's. The Eden Lab is coming in the summer, and will focus on LGBT seniors.

In the meantime, CEO and founder Carrie Shaw and the team at Embodied Labs are studying outcomes around the three existing programs. What they are finding is an increase in empathy for the afflicted subject, an increase in each staff member's confidence around the ability to provide care, a decrease in sadness and fear around the care setting and an increased interest in using more VR in training scenarios.

For full results of the three existing labs, see the appendix on pages 21 and 22.



A screen that staff members can use to guide residents through Rendeвер's VR programming. (Photo courtesy of Rendeвер)

“It was then, after I went through the first module, I knew that it was something that I wanted to bring to Saint Anne of Winona,” Barton says.

As a result of this test, Barton and her team have made the Beatriz Lab mandatory for all staff members at Saint Anne of Winona, regardless of their position. The caregivers do it, obviously, but so does everyone else, from administrators to housekeepers.

“Our housekeepers are in and out of our resident or patient rooms oftentimes even more than ... the direct care staff,” Barton says. “So they are going to be interacting with these individuals and their families.”

**“After I went through the first module, I knew that it was something that I wanted to bring to Saint Anne of Winona.”**

**Jodi Barton, CEO, Saint Anne of Winona**

## Staff recruitment and retention

Today’s employment challenges in senior living have become another area that

operators are starting to address with VR. One idea is around stress relief. Rendeвер is now working with the University of Colorado Health System around staff anxiety, attempting to create and catalogue a decrease in burnouts by offering staff VR sessions when they are on their breaks.

“Everyone knows that health care nursing staff is burdened, and everyone in senior living is asking about retention,” Rand says. “I think having immersive, escapist ways to reduce stress is going to be a critical evolution.”

While the most popular headset brand among vendors in this report is Oculus (left), the VIVE Focus from HTC (right) is gaining traction too. (Photo courtesy of Embodied Labs)



The study is being conducted in three of the 12 hospitals where Rendever is currently rolled out, with results expected in mid-May of 2019, Rand says.

Another fundamental aspect of VR and staff is its potential impact on recruitment. In July of 2018, Embodied Labs won a \$250,000 award from the Gates Foundation to study the effects of VR on staff turnover, retention and recruitment.

BHS, meanwhile, is looking for data that proves VR's recruitment benefits, including its ability to connect with younger staff members.

**“That blew my mind. I didn’t think we would see that level of engagement in memory care, but we did.”**

**Chris Brickler, CEO of MyndVR**

“Having almost boring educational content, it’s not going to keep their interest and get them excited to work in (senior housing),” Buddensiek says. He sees engagement

opportunities for younger caregivers through VR, both for the depth of the training, and for the new reputation the technology could lend to an industry that younger workers could potentially view as staid.

“Hopefully, VR with that immersive experience ... will lead to much greater engagement and translate to providing better direct resident care,” he says.

# The Future

When the AARP's Nigel Smith looks at the next three to five years of VR in senior care, he sees growth driven by both business-to-business (B2B) and business-to-consumer (B2C) opportunities, with key performance indicators fueling wider adoption.

"In the senior housing space," he says, "(that) would be the impact on the quality of lives of residents."

That impact will be measured by the new studies coming from vendors. Rendevar, for instance, has its UC-Health study results around staff burnouts and anxiety reduction coming in May, and a study later in the summer of 2019 around pain reduction.

In April, MyndVR launched its MyndVR 2.0 initiative (including the move to VIVE Focus headsets), and as a part of the company's ongoing work, they are collecting data that they hope will lead to more usage, greater outcomes, greater affordability and eventually Medicare reimbursement. MyndVR just completed a national study around memory care, with 50% of participants showing positive reactions to the technology and only 25% responding negatively.

**"VR (is) just not mainstream right now. It's very shiny. There are a lot of shiny things that don't work. The key is to discern the shiny things that work from the ones that don't. This is a shiny thing that works."**

**Dr. Neil Buddensiek**, *Chief Medical Officer, Benedictine Health System*

"That blew my mind," Brickler says. "I didn't think we would see that level of engagement in memory care, but we did."

He also noted that the clinicians running the study — including Irvine, California-based Silverado — calculated a 25% improvement in positive behavioral change.

"That is something that gets to the bottom line for a lot of (operators)," he says.

Buddensiek says that BHS is planning an expansion of its program, now that testing with Embodied Labs is nearing completion, adding that they've seen "no significant negative responses, ethical concerns or safety issues thus far."

In the end, for Buddensiek and others, that is the most important outcome of all.

"VR — it's another intervention," he says. "It's just not mainstream right now. It's very shiny. There are a lot of shiny things that don't work. The key is to discern the shiny things that work from the ones that don't. This is a shiny thing that works."

# Embodied Labs Results

Carrie Shaw and the team at Embodied Labs are studying outcomes around their three existing VR programs, which offer users a look into the experience of seniors with macular degeneration, Alzheimer's and those who have been given an end-of-life prognosis. Here is a sampling of their findings:

## ABOUT THE STUDY

27 responses pre-assessment  
24 responses post-assessment

### Alfred Lab | Macular degeneration and hearing loss

I understand how living with hearing and vision loss may impact the daily life of a resident.

PRE-ASSESSMENT



POST-ASSESSMENT

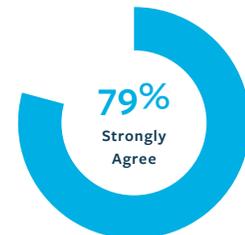


I understand the perspective of an older adult with hearing and vision loss.

PRE-ASSESSMENT



POST-ASSESSMENT

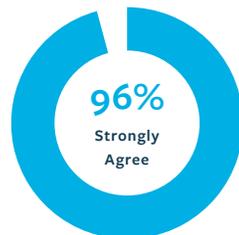


Embodying an older adult with hearing and vision loss in VR helps me learn about these conditions...

PRE-ASSESSMENT



POST-ASSESSMENT



I enjoy working with older adults.

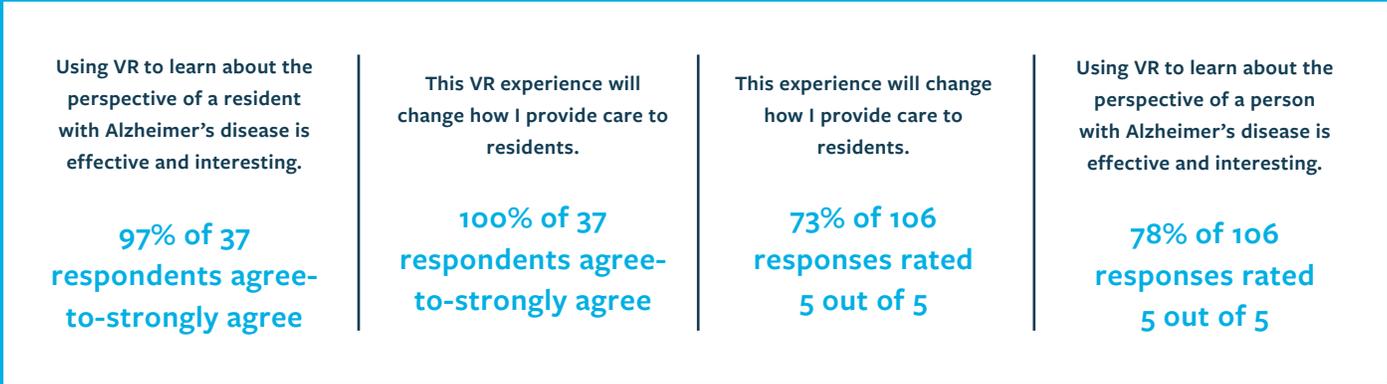
PRE-ASSESSMENT



POST-ASSESSMENT



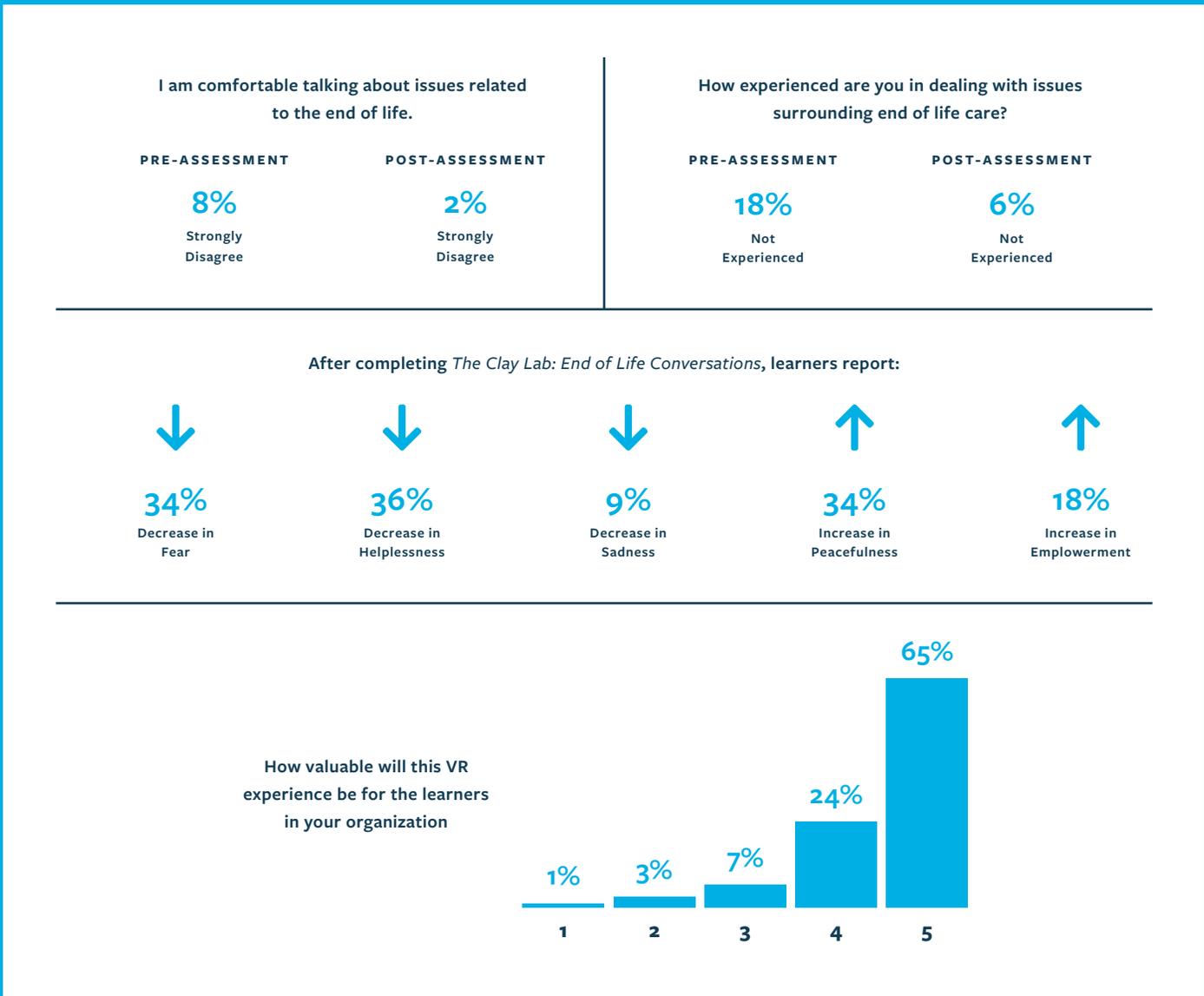
## Beatriz Lab | Alzheimer's



ABOUT THE STUDY

408 responses pre-assessment  
258 responses post-assessment

## Clay Lab | End-of-life



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