WHILL

WHITE PAPER

Designing for Dignity:
Reshaping Perceptions of Mobility

2026

WHILL

Key takeaways

- Stigma, not physical limitation, is a primary reason why many people delay adopting mobility devices.
- Traditional medical-centered design cues can reinforce perceptions of dependency and patienthood.
- Emotional and psychological barriers, including internalized ableism and fear of permanence, strongly influence adoption.
- Design-forward mobility reframes devices as tools of agency, confidence, autonomy, and identity.
- Consumer-centric design improves independence and inclusion.
- Inclusive, aspirational design is critical as aging populations reshape mobility needs.

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90%

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The number of older adults who used a wheelchair increased from

4.7 per 100 people in 2011 to

7.1 per 100 people in 2019

with current users reporting physical difficulties that affected their outdoor mobility

> "I purchased a Whill C-2 power wheelchair it has made my day to day so much safer no more worrying about falling gives me more freedom to do things that I couldn't do."
>
> – LISA BAILEY

> "My Whill C2 has changed my life. I am more independent, confident, and safe in my new chair."
>
> – JENNIFER MTCA

The stigma crisis

A wheelchair user once shared a simple but devastating truth: they had given up going to the grocery store just two blocks away. While stigma and self-consciousness played a role, there were also physical realities — uneven sidewalks, slopes, and bumps that made even short distances exhausting or unsafe.

Mobility barriers are rarely just psychological or just physical. They are both. True dignity-centered design must address emotional stigma **and** functional performance.

For decades, wheelchairs and power mobility devices have been framed culturally as symbols of decline or dependency. These perceptions have shaped how devices are designed and marketed.

Much of the mobility category has been shaped by clinical standards, reimbursement requirements, and institutional procurement models, which historically prioritized functional qualification over consumer-style iteration. As a result, innovation has often focused on meeting clinical and coverage requirements, while aesthetics, personalization, and lifestyle were treated as secondary.

Clinical cues and standardized components can unintentionally signal "patienthood" in public, sometimes even overshadowing personal identity.

A study published in the International Journal of Environmental Research and Public Health found that disability stigma in low- and middle-income countries has served as a pervasive barrier preventing persons with disabilities from accessing equal opportunities. And when someone approaches a person using a traditional mobility device, observers may notice the equipment before recognizing the individual.

The result is a hidden crisis: people who could benefit from mobility assistance delay or even refuse devices that might significantly improve their quality of life.

Today, mobility is a universal human experience shaped by aging, injury, chronic conditions, or evolving expectations of independence.

Designing for dignity means recognizing mobility devices as more than “tools” but extensions of identity and choice.

The psychology of delay

Understanding why people postpone mobility device adoption reveals a complex interplay of psychological, social, and cultural factors.

Research published in the Disability and Health Journal shows that the decision to use a wheelchair is a complex, emotional process. It requires confronting people's deeply held fears about identity, permanence, social belonging, and inclusivity.

Six barriers to mobility adoption

Stigma remains the most immediate barrier. Mobility devices are still socially coded as symbols of frailty, aging, dependence, or disability. People often think less about what a device enables and more about how it might affect others' perceptions. The concern is rarely "Will this help me?" but rather "What will people think?" or "I don't want people to see me as that person."

Another study published in the Disability and Health Journal found that societal stigma can impact wheelchair users' mental health, with many participants noting that assumptions about their competence, intellect, and ability are made based solely on their wheelchair. The device becomes a marker that society "reads" before acknowledging the person.

Closely related is **internalized ableism**. Many individuals absorb society's negative attitudes about disability (independence = walking, strength, and youth). These internalized beliefs ("If I use a wheelchair, I've failed" or "I should push through the pain") create resistance to tools that could improve their lives. The cultural narrative creates a false binary: either you walk unassisted or you've given up.

Fear of permanence also plays a significant role. Accepting a wheelchair is often perceived as accepting a permanent state, even though mobility devices are frequently used temporarily or situationally. This perception persists despite evidence that mobility devices often lead to greater activity and improved health outcomes. The fear is tied less to the device itself and more to what it symbolizes about a person's life trajectory.

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Design and aesthetic baggage amplify these concerns. Traditional devices often look medical, institutional, or generic. When something resembles hospital equipment, it reinforces the feeling that using it means becoming a patient in public.

Another factor is **hope bias**. Many people delay adoption, believing their condition will improve soon. They wait, sacrificing present experiences while postponing solutions that could otherwise help immediately.

Finally, there's a **lack of visible role models**. Mainstream culture rarely shows aspirational, stylish, or powerful people using mobility devices. Without positive identities to step into, people are usually left with stereotypes.

The data to back it up

According to a study published in Disability and Rehabilitation, individuals who experienced fall-related injuries reported higher anxiety levels and used their mobility devices less frequently.

In an online WHILL user survey conducted among 109 device owners, 96% reported feeling safer, more stable, confident, or independent compared to prior mobility solutions. Many described the experience as "life changing."

This reflects a shift from stigma to empowerment, with mobility devices seen as tools of autonomy and not symbols of limitation.

Stigma vs. empowerment: Two competing narratives on mobility

Mobility devices support movement and communicate meaning. Long before someone uses a wheelchair or power chair, they absorb the cultural story attached to it. At the heart of mobility adoption lies a tension between two narratives: stigma and empowerment.

The stigma narrative frames mobility devices as symbols of decline. Medical-looking design positions users as patients rather than people in control, visually signaling dependency and loss of freedom. This can lead individuals to delay adoption, avoid visibility, or push through pain to preserve how they're perceived.

The empowerment narrative reframes mobility as a tool of agency. Here, mobility devices support choice, independence, and quality of life. Design-forward devices reinforce this shift by looking like premium technology rather than medical equipment.

Stigma isn't inherent to mobility. It's shaped by design, and what's designed can always be redesigned and made better.

Reshaping design to shift perception

HOW DESIGN FRAMING SHAPES PERCEPTION

Medical & reimbursement-driven frameworks	User-centric design approach
Optimized for clinical qualification	Designed for user experience and identity
Prescribed as equipment	Chosen as a product
Signals dependency	Communicates capability
Institutional aesthetic	Lifestyle-oriented design
Standardized functionality	Personalization, aesthetics, and performance
Frames mobility as medical need	Frames mobility as ownership and lifestyle

Consumer-centric design rethinks what mobility devices communicate and enable. WHILL's approach demonstrates how thoughtful design can create better mobility devices that people genuinely want to use.

Why design-first thinking matters

For decades, mobility devices were developed within medical and reimbursement-driven frameworks, optimized for clinical qualification rather than user experience or identity.

User-centric design changes that equation.

When mobility devices are designed like products people choose rather than equipment they're prescribed, the emotional experience shifts. Design-forward mobility communicates capability, not dependency, and invites ownership.

Treating users as customers reshapes priorities. For instance, a user-centric approach emphasizes personalization, performance, and aesthetics alongside function. Mobility devices become extensions of the self — much like cars, phones,

or bikes — allowing individuals to express their personalities (by choosing colors, adding accessories, integrating features, and swapping components).

Internal WHILL insights sourced from a 2023 online customer survey show how this shift affects perception.

- Nearly 90% of WHILL users say their device's design and features have helped change the negative perceptions often associated with wheelchairs.
- Other users reported feeling stylish (55%), independent (53%), confident (50%), and more stable (47%) while using their device.

Nearly

90%

of WHILL users

reported that design-forward features improved perceptions of their mobility device

Other surveyed users reported feeling:

- 55% Stylish
- 50% Confident
- 53% Independent
- 47% More stable

Design-forward mobility also alters social interactions. Instead of concern or overprotection, users report curiosity and positive attention. Comments shift from concern to interest: "What is that?" "Is it electric?" "That looks futuristic." The same individual experiences a completely different response based solely on the object they're using.

Positive social reinforcement encourages not just the use of such devices but also exploration and participation. When people feel proud of their mobility device, they're more likely to view themselves as capable and independent.

Reshaping design isn't just about aesthetics. It's about reframing mobility as a lifestyle experience. Smooth performance, quiet motion, intuitive controls, and thoughtful engineering all contribute to a sense of competence and control.

Where medicine meets modern design: A complementary approach

While design-forward mobility reshapes perception, design alone is not enough. Sufficient functionality remains essential.

The future of mobility is not about replacing the medical model; it is about strengthening it. Decades of expertise from occupational therapists (OTs), physical therapists (PTs), clinicians, and reimbursement systems have built a critical foundation in safety, ergonomics, and medical compliance. That foundation deserves respect.

WHILL integrates both approaches. Our devices are engineered to meet traditional clinical expectations while also delivering strong, consumer-centered design.

By combining medical knowledge with advanced engineering and modern consumer technology,

mobility devices can expand both safety and activity. This integration ensures that performance, durability, and regulatory standards are never compromised in pursuit of aesthetics.

In global markets such as the EU, Japan, and Australia, WHILL devices comply with insurance and regulatory requirements and are developed in coordination with users and medical institutions. In the United States, although mobility is not primarily insurance-driven, WHILL adheres to FDA medical standards.

Design enhances medicine; it does not replace it.

Real user outcomes

Differences between traditional and modern design translate into measurable user outcomes.

WHILL's online survey of C2, Ci, and Model F device owners also uncovered how innovative, thoughtful design nurtures a deeper sense of inclusion and independence among users:

- 90% of users reported that their WHILL has given them more of a sense of independence compared to traditional wheelchairs
- 76% believe that their devices provide more of a sense of inclusion compared to traditional counterparts
- 50% use their device daily for activities like visiting parks, visiting friends and family, moving around their homes, or going shopping, while 15% use it only when they travel

WHILL devices visually signal control and mobility, empowering users to become more independent and confident. It shifts the perspective surrounding mobility devices as a lifestyle, turning sentiments like "I need this because I'm a person with disability" into "I use this because it makes life better."

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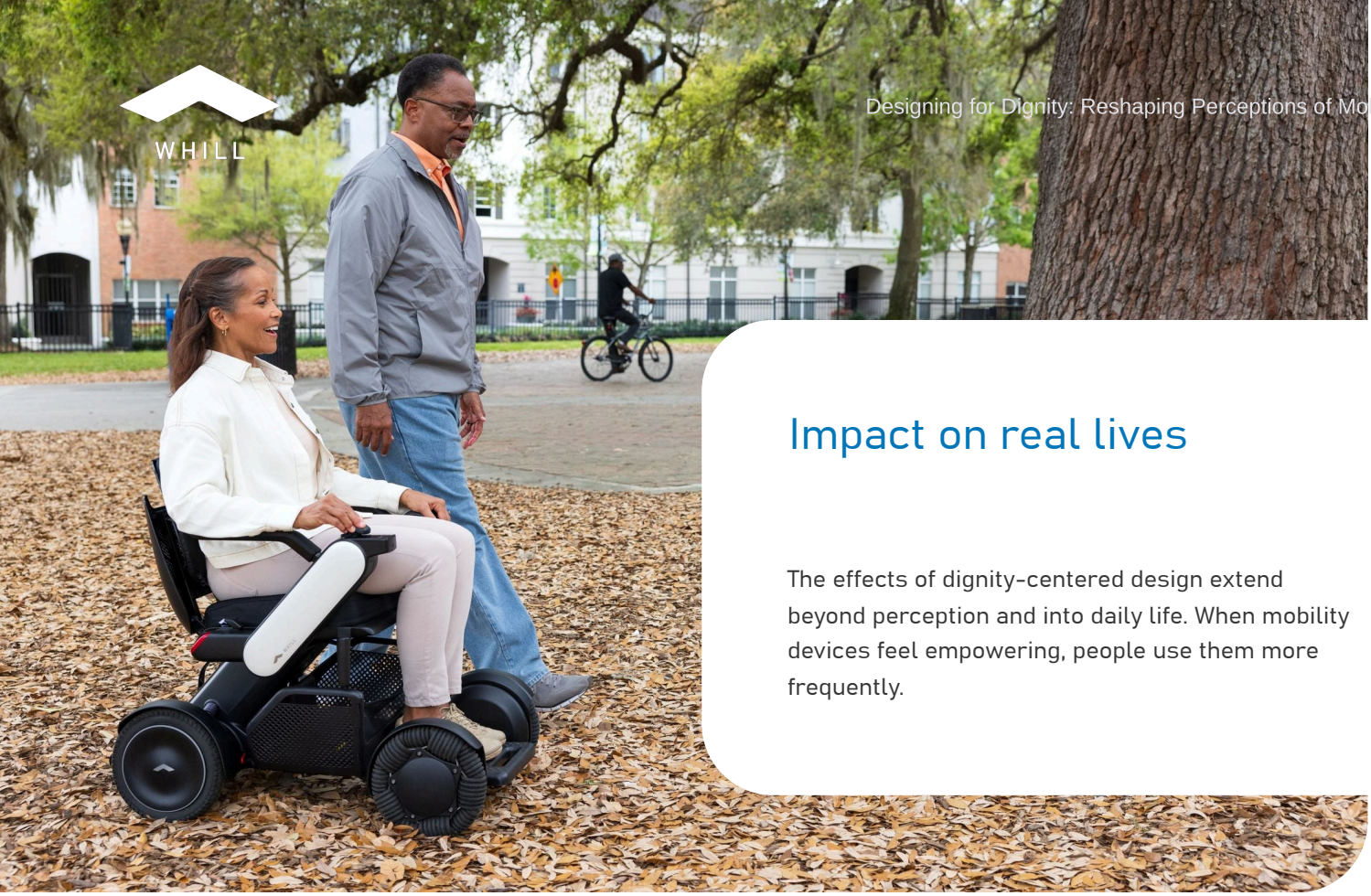

Impact on real lives

The effects of dignity-centered design extend beyond perception and into daily life. When mobility devices feel empowering, people use them more frequently.

Travel and social participation

Many people limit travel due to pain, fatigue, or anxiety about navigating large spaces. Design-forward mobility enables independent movement, allowing users to keep pace with family and avoid exhausting walks or uncomfortable assistance.

Social participation also improves. When mobility devices feel like part of a person's identity, users are more likely to attend events, meet friends, spark conversations, and spend time in public spaces. Per a study published in the Journal of Transport & Health, reduced self-consciousness can lead to increased visibility and engagement, which also creates opportunities for education and awareness.

One user shared their experience traveling with their power chair:

"Very satisfied with my wheel chair. I get compliments on its look and design. I love the ease of maneuverability and battery life. Flight travel is smooth and never complicated."

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Mental health outcomes

Mental and emotional well-being also benefit.

Reduced pain and fatigue are paired with increased confidence and energy. Users frequently report a sense of relief, not just physically but also psychologically, when their device supports them in a way that aligns with their identity.

Instead of users feeling like they're defined by their disability or having a sense of feeling "othered," thoughtfully designed autonomous mobility devices frame the user as an individual who uses technology to live fully.

One user described how their WHILL C2 gave them more freedom:

"My Whill C2 has given me a level of freedom that I haven't had in three years. I was able to take my Whill C2 into the woods, over tree roots, wet grass, branches, and all sorts of other places. It's amazing! I'm so grateful."

Autonomous airport services: Changing perceptions

WHILL's autonomous airport mobility services allow travelers to navigate terminals independently rather than being pushed.

According to WHILL, its autonomous mobility service has delivered close to 1,000,000 rides globally across dozens of airports and facilities, demonstrating real-world adoptions at scale. Since 2020, the service has also maintained a near perfect safety record with no reported injury incidents, reinforcing trust in autonomous mobility during transport in public spaces.

As a pioneer in commercial autonomous mobility deployment, WHILL has expanded adoption across airports globally. The technology has gained visibility through real-world use, with travelers openly documenting their experiences on social media and highlighting the system's role in improving terminal accessibility.

Josie Byzek, senior director of communications for the United Spinal Association, which represents 5.5 million wheelchair users, noted:

"For people who use canes and walkers, and for slow walkers, this is a great option."

From sympathy to respect

Traditional devices often trigger assumptions, overprotection, avoidance, or infantilization. Design-forward devices invite curiosity and respect. WHILL users report hearing positive remarks like:

- "Whoa, what is that?"
- "That looks awesome."
- "Is that autonomous?"

> "For people who use canes and walkers, and for slow walkers, this is a great option."
>
> – JOSIE BYZEK, SENIOR DIRECTOR OF COMMUNICATIONS FOR THE UNITED SPINAL ASSOCIATION

The shift is subtle but powerful: people speak directly to the user, ask questions, and recognize capability. From this positive attention, users gain a sense of pride, creating a ripple effect that encourages more frequent use of mobility devices.

These changes compound over time. Increased usage drives greater independence, reinforcing confidence and participation. Mobility stops being a last resort and becomes a proactive choice.

One WHILL user story illustrates this vividly. In a documented case, the durability and design of a WHILL device played a role in protecting the user during a serious accident, reinforcing not only trust in the product but also a sense of security and reliability in daily life.

The future of inclusive mobility

This conversation matters now more than ever because global populations are aging and expectations are shifting.

Aging populations

Older adults today are healthier, more active, and more engaged in travel, work, and social life — and they want to keep living fully.

Global population aging presents both challenges and opportunities for mobility innovation. The World Health Organization projects that 1 in 6 people will be 60 or older by 2030. By 2050, the numbers are projected to jump from 1 billion in 2020 to 2.1 billion. Meanwhile, the population of those 80 and above is expected to triple, reaching 426 million by 2050.

In the US, according to a study published in the Archives of Physical Medicine and Rehabilitation, wheelchair use among older adults rose from 4.7 per 100 people in 2011 to 7.1 in 2019. In 2023, 46% of older adults aged 75 and older reported having a disability, with 30% in the same age group experiencing difficulty walking or climbing stairs.

These demographics show the urgency of design innovation. The current and coming generations of older adults have different expectations. They've lived with consumer technology and have experienced personalization in virtually every product category.

In fact, the AARP reported that nearly 99% of adults aged 50 and up own at least one tech device (e.g., smartphones, wearable devices, smart home assistants). Their tech spending, mainly to replace older or broken devices (52%), has nearly doubled since 2019, rising from $394 to $753 annually in 2024.

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Tech convergence

Technological convergence accelerates this shift. Advances in autonomy technology and robotics have reshaped expectations, with people now expecting mobility solutions that feel intelligent and integrated into modern life.

As culture shifts toward more inclusive design, disability and aging are framed as design challenges instead of deficits. Inclusive design acknowledges that mobility needs exist on a spectrum and that good design benefits everyone.

For mobility to be truly inclusive, it must be aspirational. Devices should invite use and reflect how people see themselves instead of how systems categorize them.

To put it simply, the future of mobility belongs to solutions that prioritize dignity, autonomy, and identity alongside function.

Redefining how people experience mobility

Designing for dignity means recognizing that mobility goes beyond just focusing on movement. It's also about how people feel, how they're perceived, and how modern mobility devices can help them fully participate in life.

When wheelchairs and other mobility devices are framed solely as medical necessities, stigma persists and adoption is delayed. When they're designed as lifestyle technology, mobility becomes a choice rooted in confidence and freedom.

Dignity-centered mobility must integrate three pillars: medical credibility, technological innovation, and design excellence. Function enables safety. Technology enhances performance. Design restores identity.

When these forces work together, mobility devices become both clinically sound and emotionally empowering.

Design can transform mobility from something people resist into something they embrace. By putting dignity at the core of design, the future becomes more functional and more human.

About WHILL

WHILL was founded in 2012 with a mission to provide fun and innovative mobility solutions that redefine personal transportation. Operating in over 20 regions, WHILL offers a range of mobility products, from electric wheelchairs to autonomous mobility services, designed to give users greater independence through advanced technology and human-centered design. The company's award-winning devices have received recognition, including the iF Design Award, Red Dot Design Award, Good Design Award, and Best of CES Innovation Award.

For more information, visit whill.inc/us/.