

Generational AI:

Digital inclusion for aging populations

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Atlantic Council

GEOTECH CENTER



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TABLE OF CONTENTS

- INTRODUCTION 1**
 - 1.1 Background 1
 - 1.2 Why focus on older adults? 1

- USE CASES AND UNIQUE CONSIDERATIONS FOR OLDER POPULATIONS 2**
 - 2.1 Use cases 2
 - 2.1.1 Considerations: design 3
 - 2.1.2 Considerations: development 3
 - 2.1.3 Considerations: deployment. 4

- EXISTING GAPS IN THE DIGITAL INCLUSION OF OLDER ADULTS IN THE AI LIFECYCLE. 4**
 - 3.1 Gap 1a: incomplete or biased data on older adults 4
 - 3.2 Gap 1b: lack of inclusion of older adults in AI design and development 5
 - 3.2.1 Recommendation 1: forge data-inclusion and transparency standards to integrate the experience of older adults in AI design and development. 6
 - 3.3 Gap 2: limited digital literacy and algorithmic awareness of older adults 6
 - 3.3.1 Recommendation 2: empower user education and literacy for older adults, while ensuring proportional and appropriate modes of consent.. 7
 - 3.4 Gap 3: limited corrective action post-AI deployment. 8
 - 3.4.1 Recommendation 3: establish a standard of care through monitoring, evaluation, and impact assessments.. 8

- CONCLUSION 8**

INTRODUCTION

As artificial intelligence (AI) applications become ubiquitous in products and services, it is more important than ever to ensure that they are appropriately aligned for positive use and avoid exacerbating social exclusions for an aging population. Easily integrated into both existing and new processes, artificial intelligence is defined by the Organisation for Economic Co-operation and Development (OECD) as a system that analyzes input to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments.¹ While the integration of AI will affect nearly every population, it will do so in various ways depending on factors unique to each industry and population segment. Based on discussions with leaders in equity, AI, and aging, and additional research, the following brief outlines the unique considerations for older adults within the AI lifecycle, barriers to digital inclusion that older adults experience regarding AI and suggested near- and long-term solutions to advance digital inclusion and mitigate biases against older adults, while supporting practical AI innovation, AI policy, and healthy aging.

1.1 Background

AI applications amplify the environment in which they are created, reflecting the preferences or biases of their development teams or datasets, which may compound data, algorithmic, or societal biases at scale as AI is integrated into everyday uses of emerging technologies. This issue is particularly salient for aging populations—a sizeable, but often neglected, population segment of users of emerging technologies such as AI. Following the release of OpenAI’s ChatGPT tool in November 2022, the widespread integration of AI accelerated a digital world where technology began to shape society as much as society shaped technology, and those lacking access or inclusion in AI discourse could be left behind. There are many positive use cases for AI with aging populations, such as improving community health, individual wellness, health equity, and supporting productivity and social relations.² However, without proper guidance to align AI design and deployment with responsible, inclusive, and equitable practices, these

technologies can also lead to further ageism, confusion, or general misuse.

In particular, age and its intersection with other dimensions of access—including income, race, language, and gender—dramatically influence an individual’s ability to fully access, benefit from, and contribute to the digital world.³ When older adults undergo social exclusion within the digital world, this has widespread effects on their quality of life and the equity of an aging society.⁴ Intertwined with additional forms of exclusion such as economic, institutional, socio-political, territorial, and symbolic, social exclusion can be amplified by digital systems developed or deployed without inclusive practices.⁵ A common misperception exists that older adults are ill-suited for the digital realm and incapable of using technology, and this misperception of older adults as technologically illiterate hinders the full consideration of their needs as users during the design and deployment of AI technologies. Researchers can be influenced by ageist sentiment, potentially affecting AI products and services that might manifest harms of allocation (distribution of resources and opportunities) and representation (how groups are represented and perceived by society).⁶ In reality, older adults can have rich knowledge and technical and occupational skills that will be lost if digital tools are inaccessible. Involving older adults in development and discourse around AI can reduce ageist stigma in design, research, and society, and can promote older adults’ agency and unique voice in society.⁷

Aging and technology influence one another, creating a co-constitution that elevates the need to ensure that the development and implementation of AI technologies are done in ways that empower older populations rather than disengage or disregard them.⁸ Guidance and policies that include and engage older adults in AI development and deployment can foster broader inclusion, as the demographic cuts across various protected statuses and minority identities. Empowering the inclusion of older adults supports them in acting as agents of enhancing more comprehensive inclusion across AI. This change is necessary to ensure responsible and equitable AI for all.

1.2 Why focus on older adults?

The global population is rapidly aging and that trend is set to continue, with an expected 1.4 billion people aged sixty

1 “OECD AI Principles Overview,” Organisation for Economic Co-Operation and Development, November 29, 2023, <https://oecd.ai/en/ai-principles>.

2 “Request for Information (RFI) on Strengthening Community Health Through Technology; Correction,” Federal Register, April 2, 2022, <https://www.federalregister.gov/documents/2022/02/04/2022-02289/request-for-information-rfi-on-strengthening-community-health-through-technology-correction>.

3 Philip Meylan, et al., “Digital Inclusion for All: Ensuring Access for Older Adults in the Digital Age,” *Foreign Policy Analytics* (2023), 2, <https://fpanalytics.foreignpolicy.com/wp-content/uploads/sites/5/2023/03/2023-a-FPA-AARP-digital-inclusion-final.pdf>.

4 Kieran Walsh, Thomas Scharf, and Norah Keating, “Social Exclusion of Older Persons: A Scoping Review and Conceptual Framework,” *European Journal of Ageing* 14, 1 (2016), 81–98, <https://link.springer.com/article/10.1007/s10433-016-0398-8>.

5 “Achieving Equitable Healthy Aging in Low- and Middle-Income Countries: The Aging Readiness & Competitiveness Report 4.0,” AARP, 2023, 34, <https://www.aarpinternational.org/file%20library/arc/aging-readiness-competitiveness-report.doi.10.26419-2fint.00053.001.pdf>.

6 Charlene H. Chu, et al., “Digital Ageism: Challenges and Opportunities in Artificial Intelligence for Older Adults,” *Gerontologist* 62, 7 (2022), 948, <https://academic.oup.com/gerontologist/article/62/7/947/6511948>; Mark Diaz, et al., “Addressing Age-Related Bias in Sentiment Analysis,” *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, April 2018, <https://dl.acm.org/doi/10.1145/3173574.3173986>.

7 Ittay Mannheim, et al., “Inclusion of Older Adults in the Research and Design of Digital Technology,” *International Journal of Environmental Research and Public Health* 16, 19 (2019), 3718, <https://www.mdpi.com/1660-4601/16/19/3718>.

8 Alexander Peine and Louis Neven, “The Co-Constitution of Ageing and Technology—a Model and Agenda,” *Cambridge University Press Ageing and Society* 41, 12 (2020), 2846, <https://www.cambridge.org/core/journals/ageing-and-society/article/coconstitution-of-ageing-and-technology-a-model-and-agenda/0778C39BAE292B6E-B409E91B04440124>.

and older by 2030—a 56-percent increase from 2017.⁹ Recognizing this, the United Nations designated 2021–2030 as the Decade of Healthy Ageing to secure healthy and dignified futures for older adults.¹⁰ By 2034 in the United States, Americans over sixty-five are projected to outnumber the population of youth under eighteen; by 2060, they will represent more than one-quarter of the US population.¹¹

The impending demographic shifts, both within the United States and across the world, will have significant market implications. Older adults already qualify as the wealthiest age group in the world, but big tech companies often overlook them despite their purchasing power.¹² However, their spending on new technologies is surging. US adults over fifty were estimated to spend \$912 on tech on average in 2023, up 130 percent from 2019.¹³ By 2030, their total tech expenditure could reach \$108 billion, with their economic contributions in the United States potentially tripling to \$26.8 trillion by 2050.¹⁴ As companies race to launch AI-enabled products to serve consumers, they are incentivized by first-mover advantage and profits to create generalized products. These incentives and practices can not only overlook populations willing to engage in technological movements, like older adults, but can also create a misalignment between the outcomes of these products. Processes and incentives that encourage businesses to receive funding and develop people-first models will help advance technological equity.

It is critical to include older adults in technological-development discourse, particularly with regard to AI, to achieve equitable digital development. With a positive view of technology's societal impact, older adults are not only adopters but also advocates for their peers. Whether through their impact on medical, emotional, or social health, such as active community engagement and integration to stave isolation and exclusion, AI policies must consider the unique needs of the aging population, ensuring digital inclusion and engagement across all facets of life, at home or work, to positively impact the lives of older adults and promote healthy aging. Older adults continue to live healthier lives, remaining engaged in independent economic and informal community activities, while actively contributing to many different societal roles.¹⁵ Despite their impact, many technology and AI policies and frameworks are not explicitly considering older adults when

addressing specific demographics, including the March 2024 United Nations AI Resolution and the draft UN Global Digital Compact. To ensure digital inclusion across the entire AI lifecycle, comprehensive AI design, development, and deployment policy should consider the aging population's unique circumstances and capabilities.

USE CASES AND UNIQUE CONSIDERATIONS FOR OLDER POPULATIONS

2.1 Use cases

Many AI-enabled technologies currently on the market and utilized by older adults focus on health or chronic disease management, instead of more universal applications for productivity or entertainment.¹⁶ Rather than supplementing a normal phase of life, many of these existing health-focused AI technologies for older adults treat aging as a problem that technology can solve.¹⁷

Like the general population, older adults may interact with AI directly and indirectly. When considering direct interactions, most are within the category of ambient assisted-living (AAL) health technologies, such as wearables that may monitor physical decline or disruptions in patterns, including falls or heart perturbations.¹⁸ Beyond wearables, older adults may directly interact with health technology such as cognitive orthotics (automated reminder systems), home technologies such as voice-assistant technology, or digital companion tools. Indirectly, older adults may interact with AI through AI-generated content and algorithms utilized by service providers, such as healthcare, financial, or housing services.

When products apply to all people for all purposes, their effectiveness wanes, and their resulting generalized outputs may eventually negatively affect subsets of the population. Designing, developing, and deploying AI-enabled technologies specifically designed with, rather than for, populations can alleviate this misalignment. Many of these principles constitute best practices for user design across many technologies and experiences, but it is important to emphasize how these best practices can be used to better integrate and support older

9 "Ageing and Health," World Health Organization, October 1, 2022, <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>.

10 Justyna Stypinska, "AI Ageism: A Critical Roadmap for Studying Age Discrimination and Exclusion in Digitalized Societies," *AI & Society* 38, 2 (2022), 665–677, <https://link.springer.com/content/pdf/10.1007/s00146-022-01553-5.pdf>.

11 "Emerging Technologies to Support an Aging Population," Committee on Technology of the National Science & Technology Council, 2019, <https://trumpwhitehouse.archives.gov/wp-content/uploads/2019/03/Emerging-Tech-to-Support-Aging-2019.pdf>; Luke Rogers and Kristie Wilders, "Shift in Working-Age Population Relative to Older and Younger Americans," United States Census Bureau, June 25, 2020, <https://www.census.gov/library/stories/2020/06/working-age-population-not-keeping-pace-with-growth-in-older-americans.html>.

12 Meylan, et al., "Digital Inclusion for All."

13 Britne Kakulla, "2023 Tech Trends and the 50-Plus," AARP, January 5, 2023, <https://www.aarp.org/pri/topics/technology/internet-media-devices/2023-technology-trends-older-adults/>.

14 "Expanding Digital Inclusion for Aging Populations," Foreign Policy Analytics, 2022, <https://fpanalytics.foreignpolicy.com/wp-content/uploads/sites/5/2022/09/Expanding-Digital-Inclusion-Aging-Populations-AARP.pdf>.

15 "Human Rights of Older Persons: The Data Gap," United Nations General Assembly Human Rights Council, 2020, <https://undocs.org/A/HRC/45/14>.

16 Mannheim, et al., "Inclusion of Older Adults in the Research and Design of Digital Technology."

17 Diaz, et al., "Addressing Age-Related Bias in Sentiment Analysis."

18 Katherine Wild, et al., "Unobtrusive In-Home Monitoring of Cognitive and Physical Health: Reactions and Perceptions of Older Adults," *Journal of Applied Gerontology* 27, 2 (2008), 181–200, <https://journals.sagepub.com/doi/10.1177/0733464807311435>.

adults in AI use cases, as their circumstances are often overlooked. As older adults interact with AI-enabled technologies, there are considerations unique to their age that affect interactions with the following stages of the AI lifecycle: design, development, and deployment.

2.1.1 Considerations: design

When designing AI technologies inclusive of the needs of older adults, four considerations should be reviewed, including:

- function, form, and compatibility;
- sensory abilities;
- cognitive abilities; and
- the overall diversity of older adults.

Designers should consider creating technologies that support healthy aging and complement human interaction, which are essential for maintaining relationships and community. Functionality is critical; it is important to address the real needs of older adults, rather than just the most publicized ones. Additionally, designers must also consider cognitive, sensory, and physical-ability variations within this group. Technologies that are cumbersome or ineffective are likely to be disregarded by older adults, but this should not be mistaken for a lack of interest or ability. Designing interoperable tools and processes that are easily compatible with existing habits and lifestyles alleviates a significant barrier to technology adoption. Furthermore, while age may be a factor in sensory decline, it does not automatically imply cognitive decline. Recognizing this diversity through design would empower older adults by placing agency back in their hands.

Beyond function, AI developers need to view older adults as a diverse group with intersecting characteristics, rather than a uniform group defined solely by age. This approach is essential to mitigate ageism and social bias within AI design. Social bias often arises from multiple dimensions and can disproportionately affect older adults, especially those with disabilities, those living alone, those with less education, and those who are non-native English speakers.¹⁹ By identifying and addressing these intersecting inequalities from the design stage, AI developers can “drive multidimensional change and maximize impact” of their solutions.²⁰ This perspective shift is critical to creating a more inclusive and effective approach that caters to older adults’ needs.

2.1.2 Considerations: development

During the development of AI technologies, five considerations for older adults that should be top of mind include:

- internet access;
- variety of platforms;
- interoperability;
- diversity of end users; and
- validation processes.

Internet access is a crucial determinant of how older adults may engage with AI-enabled technologies, influencing the when, where, and how of their interactions. This access varies significantly across different environments, such as home, work, or community settings, and can depend on the device used, whether it is a computer, tablet, or smartphone. Notably, many existing AI-enabled services designed for older adults—such as Medicare Part D signup, telehealth, and financial services—are optimized for larger screens and not mobile phones, potentially excluding those primarily using smartphones for internet access.²¹ To promote digital inclusion among older adults, it is essential to consider the range of internet and device access levels and the platforms they use.

Moreover, in the context of older adults using AI, the actual end users of these systems can be quite diverse, extending beyond older adults to include younger adults, informal and formal caregivers, clinicians, family members, and other groups across the continuum of care. These additional users facilitate access for the approximately 1.3 million Americans living in assisted-living facilities and eight hundred thousand in nursing homes. For providers and caregivers who assist older adults, adopting digital technologies hinges on seamless integration with existing technology, workflows, and systems.²² Interoperability is critical to lower barriers to technology use and support integration with current practices and lifestyles. The positive impact of AI-enabled tools and processes can only go so far if adopters are overburdened by excessive interfaces and devices. Applications for AI in long-term care offer benefits beyond just monitoring, including social connections, detection, and clinical uses such as pain assessment and medication adherence. They can automate tasks, increasing staff interaction time with residents and enhancing overall patient care.²³ Recognizing the diverse roles of end users, from older individuals to long-term care (LTC) staff and clinicians, is vital throughout gerontechnology’s design, development, and deployment.²⁴ Additionally, consistent and framework-aligned output-validation processes can enable developers to mitigate any biases present throughout development. These processes will help development teams course correct within testing and sandbox environments before reaching consumers. This approach helps mitigate bias, ensure technology fluency, and safeguard user agency.

19 Meylan, et al., “Digital Inclusion for All,” 6.

20 Ibid., 7.

21 “Aging Connected: Exposing the Hidden Connectivity Crisis for Older Adults,” Humana Foundation and Older Adults Technology Services, 2021, 6, <https://agingconnected.org/report/>.

22 “Community Connected Health Stakeholder Engagement Summary Report,” White House Office of Science and Technology Policy, May 2022, <https://www.whitehouse.gov/wp-content/uploads/2022/05/05-2022-Summary-of-CCH-Stakeholder-Engagement.pdf>.

23 Barbara Barbosa Neves, et al., “Artificial Intelligence in Long-Term Care: Technological Promise, Aging Anxieties, and Sociotechnical Ageism,” *Journal of Applied Gerontology* 42, 6 (2023), 1278, <https://journals.sagepub.com/doi/10.1177/07334648231157370>.

24 Gerontechnology refers to the intersection of technology and aging.

2.1.3 Considerations: deployment

In deploying AI technologies, there are three key considerations to ensure digital inclusion for older adults, including:

- enhancing digital literacy;
- fostering algorithmic awareness and transparency; and
- ensuring informed consent or appropriate, proportional alternatives.

A 2021 survey by Foreign Policy Analytics revealed that 54 percent of US adults over fifty wanted better digital skills, yet 37 percent lacked confidence in using technology.²⁵ This gap in confidence and skill highlights the need for improved digital literacy—the understanding of digital tools, including AI. Deploying tools that are already compatible with the lives of older adults, whether through interoperable interfaces or through the backend of existing systems, helps relieve the burden on individuals to improve digital literacy. By enabling tools that are more advanced and impactful versions of existing processes, innovative solutions can empower older adults, caregivers, and healthcare providers without burdening them with the responsibility of understanding complex technical processes or an excessive number of systems. Equally important to literacy and interoperability are algorithmic awareness and transparency, which involve being informed about when and how AI systems are utilized, particularly understanding how an individual’s data may be used, which can better empower older adults to interact with these systems. A lack of information about an algorithm or a gap in awareness around whether an algorithm is in use can lead to what researchers call an algorithmic divide.²⁶ This gap can prevent effective engagement with technology, exacerbating digital exclusion.

Informed consent extends beyond just acknowledging, through disclosure, the use of AI. It includes understanding how the system uses one’s data, its impact on outputs, and ongoing data utilization. Fundamental to informed consent is algorithmic awareness, which indicates communication informing or knowledge of algorithms in use. Careful consideration must be taken to utilize consent practices proportional to the type, use, and output of algorithms. For instance, there are particular use cases where the likelihood of harm from not using data, or delayed use of data, outweighs the likelihood of harm from using data, such as privacy concerns for a patient, user, or population. At a minimum, disclosure of the use of AI informs awareness while utilizing advanced tools for positive outcomes that mitigate the harms of delayed use or inaction. Insufficient algorithmic awareness can lead to lower or inadequate use of applications, diminishing their representation in data sets that train and validate AI. From a market standpoint, lower algorithmic awareness can also make the older population appear as a less relevant audience to private companies developing and deploying AI.²⁷ This can reinforce a cycle of

digital exclusion, especially because AI tools are predominantly developed and implemented by private companies that might overlook the older demographic. If tech companies do not adequately consider older adults, this can create a negative feedback loop, where their exclusion from AI development leads to further digital exclusion.

EXISTING GAPS IN THE DIGITAL INCLUSION OF OLDER ADULTS IN THE AI LIFECYCLE

When considering policy or programming to support the digital inclusion of older adults in AI, four significant barriers should be addressed. They are:

- incomplete or biased data on older adults;
- lack of inclusion of older adults in AI design, development, and post-deployment feedback;
- limited digital literacy and algorithmic awareness of older adults; and
- adaptive monitoring and evaluation.

These process gaps can perpetuate digital ageism, where ageism is reflected in the “design, development, and implementation of AI systems and technologies and its resultant data.”²⁸ Understanding these gaps in digital equity helps inform potential near- and long-term solutions to support the digital inclusion of older adults throughout the entire lifecycle of a technology.

Each gap can be addressed by a recommendation that centers on empowering older adults, while increasing the efficacy of AI algorithms and applications. Fostering inclusion can alleviate the misconception that older adults are technophobic when, in reality, many are willing and able to engage in interfacing with new technologies. Most recommendations can be implemented across private industry, civil-society organizations, universities, and local governments, which do not face the same bureaucratic lag of the federal government. To address each gap, priorities suggested for the multistakeholder field of AI development, deployment, and governance are:

- forging data-inclusion and transparency standards;
- empowering user education and literacy for older adults, while ensuring proportional and appropriate modes of consent; and
- establishing a standard of care through monitoring, evaluation, and impact assessments.

²⁵ Meylan, et al., “Digital Inclusion for All,” 5.

²⁶ Stypinska, “AI Ageism.”

²⁷ “Ageism in Artificial Intelligence for Health,” World Health Organization, February 9, 2022, <https://www.who.int/publications/i/item/9789240040793>.

²⁸ Charlene H. Chu, et al., “Age-Related Bias and Artificial Intelligence: A Scoping Review,” *Nature Humanities and Social Sciences Communications* 10, 510 (2023), 1, <https://www.nature.com/articles/s41599-023-01999-y>.

3.1 Gap 1a: incomplete or biased data on older adults

The challenges in AI technology development for older adults stem from two significant gaps in data handling: the scarcity of representative data and the oversimplification of existing data into broad, uniform categories. The issue starts at the data-origin and training phase of AI systems, where biases can be introduced due to ineffective or incomplete data labeling and annotation. These practices often reflect ageist assumptions, treating older adults as a uniform group without considering their diverse abilities and needs.²⁹ Such biases in data sets become amplified when applied in AI technologies.

One of the critical issues is the lack of comprehensive data on older adults, particularly when training generative AI models. Often, data collected on older adults focus on those living independently, neglecting those in long-term care facilities or multigenerational households. This oversight leads to a significant gap, as living arrangements do not necessarily correlate with the ability or inclination to utilize new technologies. As a result, AI applications developed with such data fail to align the needs and realities of a substantial portion of the older population. Moreover, generative AI models often suffer from sampling bias, as sources like social media, where older adults are less represented, are commonly used for data collection.³⁰ The result creates invisible users, as older adults' considerations and experiences are not considered in technological design, development, and deployment, making their interests and values negligible to processes.³¹

The problem extends to the qualitative aspects of data used in AI. Research on supervised learning models (models with labeled data) has found a polarizing effect in age coding, with adjectives such as young, younger, and youngest often scored more positively than adjectives such as old, older, and oldest.³² The semantic bias in sentiment analysis, crucial in sectors like marketing and politics, reflects cultural and historical biases encoded in the data. Furthermore, in data collection, older adults are frequently lumped into broad categories, such as those fifty-five and older or sixty-five and older. This approach fails to capture the nuanced experiences at different stages of aging, unlike the more specific age categorizations used for younger adults.

Addressing these issues is particularly urgent in healthcare technologies, a sector heavily utilized by older adults.³³ The prevailing view of older adult data as a minority or edge case in AI development leads to technologies that do not ade-

quately serve this significant user group. The public feels this exclusion, with a majority of older Americans feeling that modern technology is not designed with them in mind.³⁴ Policies promoting the inclusion of diverse and detailed data from older adults are essential for developing equitable AI applications, especially in healthcare, where the impact of exclusion can be most profound.

3.2 Gap 1b: lack of inclusion of older adults in AI design and development

The development of AI-enabled technologies often overlooks the specific needs of diverse user groups, particularly older adults. While universal design is a common approach, it is crucial to recognize the value of actively involving various end users, including older adults, in the design process. This involvement can range from low-level engagement, such as completing questionnaires or consultations, to more intensive forms of participation, such as participating as an equal partner in design processes.³⁵ Such inclusion can significantly shape the development of AI technologies, ensuring they meet the diverse needs of all potential users.³⁶ Often, older users are only engaged in initial interviews or post-design evaluations, limiting their impact on the development process.

Participatory design, in which users actively contribute to the creation process, reflects democratic principles and can be particularly empowering for older adults. This approach aligns the design with the users' actual needs and can significantly bridge digital divides. There are several motivators for involving older adults in the design process. First, it fosters a deeper understanding and learning environment, which is critical to overcoming digital exclusion. Second, designing with the users' needs in mind results in higher-quality products more likely to be accepted and used by the target population, such as ensuring interoperability with existing processes to lower barriers to adoption. Last, and perhaps most important, participatory design returns agency to older adults, allowing them to contribute as experts of their own experiences and needs.³⁷

However, a significant challenge in achieving this inclusive design approach is the lack of diversity in technology-development teams. The tech industry, particularly in Silicon Valley, skews toward younger demographics, with the median age significantly lower than the national workforce average.³⁸ This age gap can perpetuate ageist biases and create uneven power dynamics, often excluding the perspectives and needs of older adults. The continuous exclusion of older adults from the design process reflects and reinforces so-

29 Ibid., 12.

30 Ibid., 12; "Human Rights of Older Persons."

31 Chu, et al., "Digital Ageism," 949.

32 Diaz, et al., "Addressing Age-Related Bias in Sentiment Analysis," 1.

33 "Ageism in Artificial Intelligence for Health."

34 Kakulla, "2023 Tech Trends and the 50-Plus."

35 Björn Fischer, Alexander Peine, and Britt Östlund, "The Importance of User Involvement: A Systematic Review of Involving Older Users in Technology Design," *Gerontologist* 60, 7 (2019), e514, <https://academic.oup.com/gerontologist/article/60/7/e513/5644100>.

36 "How Can AI Positively Impact Aging Populations?" private roundtable, Atlantic Council, Washington, DC, August 6, 2023.

37 Fischer, et al., "The Importance of User Involvement," 516.

38 Joe Kita, "Workplace Age Discrimination Still Flourishes in America," AARP, December 30, 2019, <https://www.aarp.org/work/age-discrimination/still-thrives-in-america/>.

cial ageism. This can lead to internalized ageism among older adults, reducing their willingness to engage with new technologies. Such a pattern of non-use further exacerbates their exclusion, creating a feedback loop of digital marginalization.³⁹ Addressing this gap requires a conscious effort to include older adults in technology design and development, ensuring their unique perspectives and needs are adequately represented and addressed.

3.2.1 Recommendation 1: forge data-inclusion and transparency standards to integrate the experience of older adults in AI design and development.

The AI Ethics Guidelines Global Inventory, which covers 146 English documents from various sectors such as government, private, civil society, and international organizations, reveals that only a minority (23.3 percent) recognize ageism as a bias in AI.⁴⁰ This oversight is significant, given the diverse and growing population of older adults interacting with AI technologies. The United States has made some progress, with the nonbinding September 2022 White House Blueprint for an AI Bill of Rights acknowledging age and older adults as classes deserving protection from algorithmic discrimination. This recognition is a crucial step toward addressing the unique needs of older Americans in AI equity. However, there is a need for policies that actively mitigate ageist systemic risks, such as design and discourse exclusion, to avoid the high probability and impact risks associated with ageism and social exclusion.

Improving practices to include representative data on older adults in AI design and development is crucial to mitigate bias from the outset and lay a foundation for equity throughout AI's lifecycle. Transparency in AI, particularly in disclosing which demographics are included or excluded in datasets, is essential for understanding an AI tool's purpose and limitations. Engaging older adults in design can not only create more innovative products, but also increase adoption of innovative tools by considering interoperability with existing practices. Additionally, fostering intergenerational interactions can be a powerful tool in reducing ageism.⁴¹ Policies encouraging such interactions between people of different generations—whether in community, educational, or employment spaces—can help alleviate intergroup prejudice and stereotypes, benefiting older adults and younger developers. Ensuring inclusion and understanding are applied to educating current and new generations of AI professionals can operationalize policy that encourages inclusive practices.

While frameworks and regulations take time, steps to create inclusive discourse can be implemented almost immediately. Many mainstream debates and conversations regarding fairness and inclusivity in AI fail to consider age as a critical dimension. Elevating the necessity to acknowledge and discuss how age intersects with AI, and how AI intersects with age, is crucial to encouraging tech equity within both technology companies and policymaking bodies. Although the recent executive order on AI from the White House, “EO 1411 Safe, Secure, and Trustworthy Development and Use of AI,” mentions bias nine times, it falls short of explicitly considering the unique needs of different age groups. Additionally, the April 2024 first draft of the United Nations Global Digital Compact notably only includes children as a specific age group when citing the need for age diversity in designing and developing technologies.⁴² Similarly, the United Nations' first AI resolution, A/78/L.49, adopted in March 2024, only explicitly states gender, race, and disability as notable gaps within data and connectivity divides.⁴³ Policymakers might consider including age, and specifically referencing older adults as a specific age group, alongside protected statuses such as race and sex, to ensure a more inclusive approach to AI development and regulation.

3.3 Gap 2: limited digital literacy and algorithmic awareness of older adults

A 2017 Pew Research Center survey highlighted that nearly half of the older adult respondents needed assistance to set up or learn to use new electronic devices.⁴⁴ The finding underscores the challenges faced by older adults who have adapted to technological advancements later in life, particularly as digital literacy becomes more complex with the advent of artificial intelligence. The lack of understanding and confidence in navigating these technologies can lead to an accessibility gap, affecting independence, productivity, and engagement with AI systems. Furthermore, insufficient digital literacy can expose older adults to risks like misuse of AI systems or social engineering, such as misaligned uses of generative AI by malicious actors including misinformation campaigns, cyber schemes, voice spoofing, and phishing.

Older adults' perceptions of AI-enabled tools vary, with 60 percent of Americans aged fifty and above surveyed by AARP saying that they are undecided about generative AI's impact.⁴⁵ Some may view AI-enabled tools as intrusive, while others see them as empowering aids for independent living, supporting their private lives with extra safety assurance through moni-

39 Hanna Köttl, et al., “But at the Age of 85? Forget It!: Internalized Ageism, a Barrier to Technology Use,” *Journal of Aging Studies* 59 (2021), 100971,2, <https://www.sciencedirect.com/science/article/pii/S089040652100061X?via%3Dihub>.

40 Chu, et al., “Digital Ageism,” 951.

41 “Ageism in Artificial Intelligence for Health.”

42 “Global Digital Compact: Zero Draft,” United Nations Tech Envoy, April 1, 2024, 7, https://www.un.org/techenvoy/sites/www.un.org/techenvoy/files/Global_Digital_Compact_Zero_Draft.pdf.

43 “Seizing the Opportunities of Safe, Secure and Trustworthy Artificial Intelligence Systems for Sustainable Development,” United Nations General Assembly, 2024, 6, <https://documents.un.org/doc/undoc/lt/d/n24/065/92/pdf/n2406592.pdf?token=sWlanlBbjqTKiQbDMJ&fe=true>.

44 Monica Anderson and Andrew Perrin, “Tech Adoption Climbs Among Older Adults,” Pew Research Center, May 17, 2017, <https://www.pewresearch.org/internet/2017/05/17/tech-adoption-climbs-among-older-adults/>.

45 Brittnie Kakulla, “Older Adults Embrace Tech but Are Skeptical of AI: 2024 Tech Trends and Adults 50-Plus,” AARP, December 19, 2023, <https://www.aarp.org/pri/topics/technology/internet-media-devices/2024-technology-trends-older-adults/>.

toring and alert tools.⁴⁶ This dichotomy underscores the importance of proportional consent, which involves clear and comprehensive agreements on data collection, usage, and implementation as they relate to the purported use of the data. Proportional consent is based on the practice of proportionality in data protection, where “proportionality requires that advantages due to limiting the right are not outweighed by the disadvantages to exercise the right.”⁴⁷ Proportional consent is especially critical to the equitable deployment and use of many AI applications, and is particularly salient to the applications most likely to be used by older adults.

In addition to the plethora of AI-enabled healthcare applications used by or for older adults, research in 2016 found that older adults are more likely to access personal information-management applications than other age groups.⁴⁸ These applications, which often include sensitive and personal information about a user, such as frequent contacts and locations, require clear communication about data accessibility, usage, and privacy. Older adults, more likely to use personal management applications, need assurance about who can access their data and how their data will be used, in order to build trust and ensure they remain in control of their information. Addressing this gap requires improving the digital literacy of older adults and ensuring transparent and user-centric design in AI technologies.

3.3.1 Recommendation 2: empower user education and literacy for older adults, while ensuring proportional and appropriate modes of consent.

The National Artificial Intelligence Advisory Committee (NAIAC) recommends a national AI literacy campaign to equip the public with the resources and knowledge needed to understand, embrace, trust, or adapt to an AI-infused world.

To succeed, these AI literacy initiatives should involve collaboration between various groups beyond the federal government, including industry, nongovernmental organizations, and academia. These programs can be most effective with older populations when conducted by technologically adept peers in trusted community organizations, including churches and libraries.⁴⁹ Beyond similar-age peers, intergenerational support can also help build trust and confidence in utilization and understanding. A critical component of digital literacy is contextualizing AI and algorithms to better understand that their outputs are not ground truth, and they will never be free of bias. Most outputs will approximate the data available within a model’s dataset and, therefore, should always be subject to human questioning or objection. Advances in digital literacy work in tandem with consumer trust. As older adults learn how to interact with AI systems and what the limitations of those systems are, they will be

Digital Literacy for Caregivers

There is a window of opportunity to provide digital literacy not only to older adults but also to those who may support them. Further development support for caregivers, such as virtual learning networks or application programming interface (API) integrations to minimize disruptions to user-facing systems, can help caregivers successfully integrate AI tools for good in their work with older adults.

Ageist tendencies can also appear in gerontology professionals’ understanding, implementation, application, and uptake of AI technologies. New systems can reinforce these inequities and lead to further exclusion.

Comprehensive efforts to elevate digital literacy and algorithmic awareness among caregivers can mitigate potential negative power dynamics when older adults are not the primary end users of an AI technology.

better prepared to make informed decisions on when to utilize or rely on outputs from AI-enabled tools.

Increasing AI literacy is crucial to addressing digital and algorithmic divides. However, any efforts to do so must also consider the unique needs of older adults and the intertwined relationship between consent and AI literacy. AI literacy should increase awareness and critical understanding and should empower individuals to understand their options when choosing whether to engage with AI tools. Creating a foundation of trust via algorithmic awareness enables methods of proportional consent that balance data rights while mitigating possible harms of complicated and costly consent models, which can delay the positive output of algorithmic processes or even lead to exacerbated harms. Especially in cases of AI in healthcare, time is of the essence. Modernizing consent practices to include proportionality protects the agency of individuals, while also allowing technologies to make positive impacts. The non-binding Blueprint for an AI Bill of Rights notes the necessity of informed consent and the ability to withdraw consent. Withdrawn consent will remain a key component of modernized consent practices for AI. Within healthcare, multiple organizations are working toward principles and codes of conduct for health AI centered around patient consent, includ-

46 Peine and Neven, “The Co-Constitution of Ageing and Technology,” 2852.

47 “Necessity and Proportionality,” European Data Protection Supervisor, last visited March 18, 2024, https://www.edps.europa.eu/data-protection/our-work/subjects/necessity-proportionality_en#:~:text=In%20the%20context%20of%20fundamental,disadvantages%20to%20exercise%20the%20right.

48 Andrea Rosales and Mireia Fernández-Ardèvol, “Beyond WhatsApp: Older People and Smartphones,” *Romanian Journal of Communication and Public Relations* 18, 1 (2016), 27, [https://journalofcommunication.ro/index.php/journalofcommunication/article/view/200.](https://journalofcommunication.ro/index.php/journalofcommunication/article/view/200)

49 Meylan, et al., “Digital Inclusion for All,” 5; Köttl, et al., “But at the Age of 85? Forget It!” 6.

ing the National Academies of Medicine, the Coalition for AI Health, the Health AI Partnership, and the OECD AI Principles and Classification Framework.

3.4 Gap 3: limited corrective action post-AI deployment

AI systems are highly adaptable and evolve rapidly, requiring policy solutions that continuously safeguard the interests of specific populations, such as older adults, in varying and evolving contexts. As the World Health Organization emphasized in 2022, “if governments, intergovernmental agencies, public–private partnerships and nongovernmental organizations do not exercise sufficient oversight of AI technologies,” older populations cannot trust that AI technologies are designed or deployed appropriately on their behalf.⁵⁰ Without this oversight, there is a risk of eroding public trust, which is an essential function of healthy democracies.

The current lack of thorough monitoring and evaluation of AI systems, mainly those used by older adults, risks exacerbating exclusion from design and development and issues that can be scaled by AI applications including fraud, data misuse, and misinformation. The misalignment of AI systems with their intended purpose can render them ineffective or harmful. Implementing AI solutions without fully understanding the users’ needs can be counterproductive. Regular assessments and adjustments are essential, especially in the context of AI-enabled healthcare technologies that are frequently targeted at older adults. Ongoing evaluations by international and civil-society organizations invested in technological and aging equity—such as the World Health Organization, the United Nations through the new Global Digital Compact or UN AI Resolution, AARP, the Center for AI and Digital Policy, OECD, the World Economic Forum, Data and Society, or new initiatives—can ensure these technologies remain functional, safe, and aligned with their intended purpose.

3.4.1 Recommendation 3: establish a standard of care through monitoring, evaluation, and impact assessments.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) Recommendation on the Global Ethics of AI, adopted in 2021, emphasized the need for continuous monitoring, evaluation, and impact assessments of AI applications to align these applications with ethical standards. In the long term, continuous monitoring and evaluation will be critical to safeguard individuals and communities against exacerbation of harm through AI applications. This alignment can be made possible by building processes and systems for impact assessments that will not only track and quantify the impact of AI systems, but also provide thresholds and processes for when and how to take corrective action on AI systems.

The current liability structure of AI systems is insufficient. Despite widespread daily interaction with these systems, there is a lack of accountability for ensuring fair and just outcomes

beyond frameworks. A duty of care should be established for automated systems collecting data, ensuring the systems are not trusted without question and are subject to human review. Establishing a standard of care through industry best practices of monitoring, evaluation, and impact assessments will enable technologists to correct and rectify programs that become misaligned or otherwise cause harmful results. Policymakers should enforce these standards by requiring corrective monitoring and action to provide a layer of consumer protection that will be especially necessary for groups that face more bias than others, including older adults.

CONCLUSION

The recent developments in guidelines, frameworks, and agreements signify a positive shift toward enabling digital inclusion for older populations. These developments are crucial to safeguard against biases inherent in AI-enabled technologies, biases that can significantly impact older adults throughout the various stages of the AI lifecycle. The path forward demands not just the inclusion of older adults in AI, but also their empowerment. As AI products and services become intertwined with daily life, advocating for the rights and needs of the aging population becomes more critical. This approach will pave the way for an equitable landscape where older Americans are not merely passive recipients, but active contributors and beneficiaries of the AI revolution.

This progress, however, is just the beginning. Realizing an inclusive digital environment requires continuous efforts in both the short and long terms. These efforts should focus on amplifying the voices of older adults in AI discourse, ensuring their perspectives and experiences shape the development and application of AI technologies. By doing so, we can create a future where AI not only serves the diverse needs of all age groups, but also respects and values the unique contributions of older adults. Ultimately, this will lead to a more just and equitable society where the benefits of AI innovation are shared by everyone, regardless of age.

⁵⁰ “Ageism in Artificial Intelligence for Health.”

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Caroline Thompson is an assistant director at the GeoTech Center, where she manages projects and research at the intersection of geopolitics and emerging technologies, with a particular focus on artificial intelligence. Thompson joined the GeoTech Center upon completing the Atlantic Council Young Global Professionals Program. Before joining the Atlantic Council, she interned with the US Department of State at the embassy in Budapest and worked in higher education and software. Thompson is proficient in French, and her areas of interest include innovation, data bias, national security, and artificial intelligence.

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