# Dementia Innovation Readiness Index





The Global Coalition on Aging (GCOA) and Alzheimer's Disease International (ADI) are pleased to present the Dementia Innovation Readiness Index - the first-ever effort to comprehensively survey, quantify, and analyze innovation readiness in dementia on a global scale. The purpose of the Index is to prompt and guide discussions about how best to develop and implement innovative solutions for dementia - one of the most devastating and confounding challenges of the 21st century.

We launched this project because our world faces a global dementia crisis, which demands immediate and ongoing innovation toward the prevention and treatment of dementia and in solutions in care for the people and families coping with the condition. Dementia - and its immense health, societal, and economic impacts - constitutes a complex and unprecedented burden for nations, healthcare systems, and affected individuals. As the global population ages, dementia prevalence is soaring, and national health systems struggle with escalating needs. The crisis will deepen unless we take urgent, sustained, and comprehensive action toward new and collaborative solutions.

The Index is intended to clarify the barriers to and enablers of innovation and, from those learnings, identify opportunities to adopt supportive approaches across the diverse areas of need in dementia. Evaluating the best data sources available and tapping into the expertise of dementia and aging experts across science, public policy, advocacy, and industry, we identified 10 overarching categories contributing to dementia innovation, evaluated those across G7 countries, and pinpointed key opportunities driving substantive, long-term progress in the disease area.

We would like to thank the more than 40 experts who contributed their valuable time and insights to the Index. Their knowledge, leadership, and commitment to tackling the global scourge of dementia will be critical factors in driving future innovation.

Our goal is that the Index is merely a starting point for assessing innovation readiness. Moving forward, GCOA and ADI are interested in expanding the scope of the Index to include G20 countries and beyond. A broader focus will increase the impact of the Index by encouraging innovation in every country, highlighting best practices around the world, and catalyzing international collaboration to fight dementia.

Sincerely,

### Marc Wortmann

### Michael W. Hodin

Executive Director Alzheimer's Disease International Chief Executive Officer Global Coalition on Aging

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# Methodology

### Framework

The Dementia Innovation Readiness Index was created based on primary and secondary data sources collected and analyzed by the Global Coalition on Aging (GCOA) and Alzheimer's Disease International (ADI). The primary data sources consist of interviews and surveys with global key opinion leaders and subject matter experts (including scientists, advocates, regulators, researchers, business leaders, and people with dementia, representing thousands of stakeholders in the fight against the disease), as well as expert input from GCOA and ADI members. The secondary data sources consist of existing research gathered from global authorities including ADI, the World Health Organization (WHO), and the Organisation for Economic Co-operation and Development (OECD).

# In order to measure innovation readiness, the Index aims to uncover and clarify the following:

- Where innovation in dementia is currently occurring;
- The enablers of innovation in prevention, treatment, and care; and
- The barriers to innovation in prevention, treatment, and care.

# To that end, the Index evaluates dementia innovation across 10 categories:

- Strategy & Commitment
- Government Funding
- Education & Workforce
- Early Detection and Diagnosis
- Regulatory Environment
- Access to Care
- Prevention & Risk Reduction
- Business Environment
- Care Standards
- Built Environment

Each category consists of a set of indicators (a total of 60), according to which each category is scored. The categories and indicators were developed based on insights from existing indices measuring innovation in other sectors and an assessment of the current dementia innovation landscape.

Though important innovations are occurring globally in dementia, the scope of this index is the G7 countries: Canada, France, Germany, Italy, Japan, the United Kingdom (UK), and the United States (US). The goal is to apply this methodology to evaluate the innovation readiness of other countries in future indices.

### Scoring

Scores were generated from surveys and interviews. Survey respondents were asked to designate a score of one, two, or three in each indicator for one or several countries, based on the respondent's area of expertise. In interviews, scores on the three-point scale were derived based on qualitative inputs from subject-matter experts. Insights from the interviews have also informed the qualitative analysis in the Index. In the case of the UK, the results are comprehensive when possible, but in the case of differences between national health systems the results refer to England only. Additionally, secondary data (see Appendix B for secondary data and sources) was used to supplement inputs from surveys and interviews.

GCOA and ADI scored each country's performance in each indicator on a three-point performance scale (see Appendix A for performance scale) based on our combined analysis of qualitative and quantitative data, with a three representing high performance, a two representing moderate performance, and a one representing low performance.

### Calculations

### Category Scores

A country's category score represents the sum of its scores for that category's indicators, as a percentage of the total possible score that could be achieved. The value is multiplied by 10 in order to rate each country's category score on a scale from 1 - 10.

### Category Weights

In addition to determining each country's performance, the Index weights each category based on its relative importance as a driver of dementia innovation.

Weighting for the categories is based upon input from survey and interview participants, who were asked to rate each category on a three-point scale, with three signifying high importance for driving innovation, two signifying moderate importance, and one signifying low importance. The average score for each category determines that category's weight.

### Weighted Country Scores

Finally, the Index combines each country's category scores and each category's innovation weight to measure a country's overall performance in advancing innovation in dementia treatment, prevention and care.

Each weighted country score is derived by adding all weighted category scores for that country and dividing that sum by the total possible weighted country score.

### Total Category Score Calculation

Sum of scores across all indicators

x 10

Total possible score

### Weight Calculation

Sum of category weighting scores

Total number of category's weighting score inputs

### Total Weighted Country Score

Sum of product (country's category score x category weight)

Total possible weighted country score

Dementia Innovation Readiness Snapshot

The following snapshot summarizes our findings of G7 countries' dementia innovation readiness.

The snapshot consists of each country's total weighted score and performance across all 10 categories that collectively represent the underpinnings of an innovative environment. Higher overall and category performance indicates where innovative practices are emerging and helps identify examples of innovation readiness.

# The Index Snapshot



Germany

Overall Score

Strategy & Commitment

Government Funding

Education & Workforce

Regulatory Environment

Business Environment Care Standards

Access to Care
Prevention & Risk Reduction

Built Environment

Early Detection & Diagnosis

France



Italy

7.29

7.11

8.04

7.56

7.22

4.33

8.13

5.19

8.67

7.00

7.78







Italy

UK US



Japan



00 01 02 03 04 05 06 07 08 09 10

**United Kingdom** 



**United States** 



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# Summary By Category

"This innovative approach has the potential to allow for a better preparation and reaction to the global challenge of dementia"

**Pr Yves Joanette, Ph.D.** Chair, World Dementia Council In each category, indicators that had a performance in the **75th percentile are labeled green**, indicators that had a performance below the **25th percentile are red**, and indicators **between the 25th and 75th percentile are represented in yellow**.

Through our assessment of these enablers and barriers of innovation, we identified opportunities to improve the environment to foster and integrate innovation in dementia treatment, prevention, and care. The following summary by category provides an indicatorlevel assessment of G7 countries' performance in each category as well as overall implications for future innovation.

# **Strategy & Commitment**

The need for strong, clear, and enduring strategy and commitment to dementia by government and institutional leadership emerged in the Index as the most important factor for driving innovation. Experts note that while national plans help put dementia in scope for national leaders, making dementia a national priority requires much more focus, attention, and collaboration.

# Political leadership and prioritization of dementia creates national momentum and requires continuous efforts to drive progress and innovation

A country's strategy and commitment to dementia is powerfully conveyed through its political leaders at the highest levels and strong institutional prioritization. Political leadership has been most effectively demonstrated by former UK Prime Minister David Cameron and former French President Nicolas Sarkozy. Cameron's efforts led to the Prime Minister's Challenge on Dementia, which provided a groundwork for a national multifaceted effort, stimulated key public-private partnerships that brought increased funding for dementia research and engaged important international organizations, such as the World Health Organization (WHO) and the Organisation for Economic Cooperation and Development (OECD), and the broader international community. When political leaders communicate the importance of dementia by placing it at the top of their agendas, they help facilitate an understanding of the unmet needs of people with dementia and their families and the broad economic implications, generating widespread support among key stakeholders.

However, political leaders can be transitory in their relevance, and priorities shift with changing leadership. Changes in political priorities such as in France or major shifts in international arrangements like Brexit can cause uncertainty, even in stable and committed political environments, and have the potential to introduce setbacks. Institutional prioritization currently evident in Japan and Canada supports leadership at the national level as well as in regional government where much of the relevant decision-making occurs. Still, further integration is needed. For instance, while the US national plan provided a roadmap for government activity, it did not create a position within government to coordinate issues relevant to people with dementia across the research, treatment, and care spectrum.

Further, experts cited opportunities to increase the engagement of civil servants to support innovation through specific trainings for chief dementia officers or other leadership positions



specifically for dementia, but no such programs are known to exist.

### Advocacy by people with dementia and caregivers is on the rise, but the nature of dementia can still make full inclusion difficult

There are numerous examples of disease areas that have benefitted from patients serving as advocates to draw attention from government. The voices of people with dementia are increasingly being heard, but unfortunately, advocacy by many people with dementia may not be practicable for a variety of reasons. It can also be challenging for many caregivers to effectively advocate due to the complex and demanding nature of caring for someone with dementia. This leaves advocacy in the hands of proxy representatives, which, while increasingly effective in drawing international attention to dementia, has not yet leveraged the political attention equal to that of breast cancer or HIV/AIDS when those disease areas were brought into global prominence.

In addition, often misaligned messaging about dementia creates a barrier to effective advocacy. Some advocacy has focused on positioning dementia within the scope of disabilities, which recognizes the long-term nature and diverse needs of people living with the condition. Others place dementia under the umbrella of mental health issues, which can misrepresent the underlying diseases that cause neurodegeneration and their progressive nature. Index of both research and care, as well as cross-disciplinary stakeholders, to address the plan's multi-faceted activities and monitor and evaluate progress. Within their respective dementia plans, the UK and Japan are

"Political leadership needs to go beyond declaring dementia a priority. Governments need to implement operational strategies to coordinate innovation in dementia across ministries."

**Dr. Yuko Harayama** Ph.D., Professor Emeritus at Tohoku University

### National plans set priorities, foster engagement, and create accountability

National plans align leaders, heighten awareness, and facilitate collaboration through clear goals. However, the priorities identified by these plans and their implementation efforts vary widely by G7 country. Effective national plans require engagement of, at a minimum, government entities and

Within their respective dementia plans, the UK and Japan are regarded as having the best approaches to care, and the US and the UK are considered the best for research innovation. Canada's non-governmental plan, which was driven by the Canadian Alzheimer's Society, also reportedly has a strong approach to care. The UK and Japan are viewed as having the strongest international engagement, and Canada's non-governmental plan stands out as the best at integrating new applications of big data. In Germany, a number of the federal states have plans, but there is not an over-arching national strategy, and in Italy, the country is working to implement a recently launched strategy. In all cases, experts note that caution is needed to avoid models that are too reliant on a "check-box" system to measure a plan's success, as it may fail to adequately address ongoing developments and needs.

# **Government Funding**

While most G7 governments have been increasing funding for dementia research and development, a level of commitment that meets the immense need has yet to be seen. Further, while a cure still eludes us in the near future, people currently living with dementia and the next generation need much greater attention to care. Unfortunately, dementia care, including leading-edge services, technologies, payment systems, and other innovations, has just started to gain attention from some G7 governments.

### Funding may be increasing for dementia research — but not enough and not in congruity with the unmet need

Most G7 countries are maintaining or increasing spending in research and development (R&D), and the general level of commitment to spending of this kind is strong. However, even where the level of funding for research into Alzheimer's and related dementias has increased in line with or more rapidly than funding for R&D as a whole, experts report that the level of investment when scaled against the level of need remains markedly low. Universally, there remains a barrier to funding when it is applied on a zero-sum basis, where one disease area may gain while another may lose, instead of a consideration of the overall economic benefit of supporting scientific research and making advances against conditions like dementia that are costly to the health system. Government funding also requires a long-term commitment in this area because of the need to grow the field and generate research knowledge on a complex condition, which should not be disrupted by shifting political priorities and economic factors.

### Increased investments in innovations for dementia care will help ensure high-quality care and more choice in where and how care is provided and paid for

Experts report that there is a difference in the commitment to government funding for research and care across the G7 countries. The US was raised as an example in which the argument surrounding the need for investment in the development of treatments has been more engaging for policy makers, while innovative research into care has not been widely included in investment priorities. Japan, facing a shortfall of care support for the projected aging population, is said to be attempting to increase care funding, as well as supporting research for assistive technologies in dementia. Experts state



that there is still a pressing need for greater investment to improve care services and mechanisms that allow for greater user choice, including long-term care funding options that are not currently adequately supported.

### The barriers that restrict coordination, collaboration, and creativity in many of the current funding programs that are intended to drive innovation must be removed

Experts state that there is a need to investigate at an international level how to effectively evaluate and select projects to fund in order to foster and accelerate innovation. There are concerns that further use of challenge and prize grants will be disconnected from coordinated research efforts within response-mode funding programs, and complaints remain that many funding processes are slow and too conservative in project selection. This is partially perpetuated by funding silos that do not allow for comingling of public and private funding in a number of major funding streams for dementia research, as well as barriers within the research review and approval environment. The EU's Innovative Medicines Initiative, available in the UK, France, Germany and Italy, is cited by experts as a successful approach to removing obstacles for funding for innovative projects.

### Public-private partnerships have succeeded at jump-starting investment in prevention and treatment, but not yet for care

Public-private partnerships have been particularly encouraged in Alzheimer's treatment development because much of the expertise and innovative practice reportedly exists in the private sector, particularly in the areas of prevention, novel drug targets and research infrastructure. However, this model has not been similarly applied to care or care research, and there are opportunities to engage further on non-pharmacological interventions to produce a greater foundation of evidence.



# **Education & Workforce**

Improvements, from higher education curricula to recruitment of care workers, must be made to solve for the dearth of appropriately trained professionals needed to advance research, knowledge, and skills across the medical field, including caregiving capabilities to meet the specialized needs of people with dementia. The Index highlights the urgent need for leadership, incentives, and clearer communication about the opportunities in these fields to ensure a robust career pipeline for the sector.

### A major effort to recruit geriatricians, geriatric specialists, and elder caregivers is urgently needed to meet current and future demand

There is an increasing demand to draw professionals into specialized geriatric fields across the G7 countries, as experts report that the overall workforce is estimated to be too small to meet patient need. Professional care workforces are a key component of ongoing training and to disseminating innovative care practices. In the care sector, labor regulations often do not reflect innovative working models such as support for older workers, which may impact associated costs and retention of skilled care providers. Experts suggest that the care sector needs more support to recruit and retain quality workers because of the growing demand. To this end, the development of some assistive technologies in Japan is aimed at reducing caregiver workload through new approaches to time-consuming activities. Experts also state that there is no compensation incentive available to specialize in aging and dementia-related fields, despite the projected need.

Projections across the G7 anticipate a growing need for specialists at the doctor level, but in the US experts report that the number of geriatricians is declining, and the number of neurologists is not increasing rapidly enough to meet the need of the aging population. One potential solution identified in Alzheimer's Disease International's 2016 report and in the WHO's draft Global Action Plan is increased task shifting from specialists to primary care.

### There is a dire need to grow the workforce of researchers, public health workers, and elder caregivers to capitalize on innovation

There are not enough researchers moving into the dementia field currently, driven in part by low funding levels available in dementia versus other disease areas. However, experts suggest that there may be opportunities to develop joint protocols for



dementia and other disease areas that would help to catalyze the development of research findings. Experts also highlight existing gaps in the research community that could be drivers for innovation in dementia, including the need for expertise in bioinformatics and the interpretive scientific workforce, which has been outpaced by the development of measurement science and the generation of large data sets. This low workforce saturation applies to biomarker development as well.

Similarly, the public health workforce is shrinking overall, while demand for public health professionals is increasing with the global rise of non-communicable diseases. This is precipitated by the lack of prominent or widespread training programs for public health professionals to specialize in dementia.

### An increase in dementia training is needed across all levels of care

There is not enough elder care training available and in use across care levels, from doctors and health care providers to paramedical professionals. Even in countries that are well-represented in dementia-relevant medical professional societies, there exists a quality gap between care from specialized

professionals and care from more commonly accessed general practitioners (GPs) and other medical professionals. For example, in most G7 countries, dementia training for GPs is widely variable and while continuing education is available, it is not required for dementia. This means that sufficient training for dementia depends on the initiative of doctors to add to their base of knowledge. Turnover in GP offices was cited as a concern for people with dementia because of the likelihood of needing to find and familiarize themselves with a new GP who would adequately understand their condition. This might be less significant if GP training on dementia was more robust. Additionally, paramedical professionals across the G7 are reported to be inadequately trained and integrated into the care pathway for people with dementia.

Data is not readily available on specialty training programs for people who work with the elderly, but some experts suggest that there need to be mandates, incentives or the removal of barriers to drive training in geriatric fields. Experts also note that where elder care training exists, it is challenged by a lack of new innovation that would fundamentally change the landscape. There has been stagnation in improving training and outcomes.

# **Early Detection & Diagnosis**

Earlier detection and diagnosis for the purposes of understanding, studying, and treating dementia from the earliest stages of its progression arose as a resounding theme across the Index. Experts suggest utilizing a combination of new and existing diagnostic tools, training across multiple levels of the medical profession, and more effective communications about the potential research and personal benefits that can accompany early diagnosis.

# Earlier detection and diagnosis are essential for understanding the progression of dementia and innovation for treatments

Early and accurate detection that leads to diagnosis is essential to ensure that people with dementia receive the treatment, care, and support they need. However, amongst providers there persists a hesitancy to establish a diagnosis because of the challenge differentiating early stage dementia from age-related cognitive decline and a lack of urgency due to limited available treatments. People with dementia have characterized diagnosis at an early stage as a chance to make lifestyle changes that promote quality of life, as well as to "contribute" in some way (e.g., research, advocacy, or community organizing). They also report that after receiving a diagnosis they are able to contextualize incidents from as long as several years prior that would indicate the onset of symptoms. However, until more reliable diagnostic tools become available to health care providers, there is a risk of inaccurate diagnosis that would gravely impact individual patients. A balanced approach between an early diagnosis that would benefit research and the needs of patients would be the most conducive to fostering innovation.

# Reliable diagnosis rates are largely unavailable, and lack of standardized diagnostic tools impedes comparisons

Diagnosis rates for dementia are a priority for most G7 countries, driven by governments or NGOs. However, a diagnosis of "dementia," rather than an underlying neurodegenerative disease, can be highly variable and subjective. Without a standardization of diagnostic steps within health systems, experts note that ensuing measures used to calculate diagnosis rates are not comparable between countries. Experts agreed that the UK and parts of Canada have been able to generate relatively accurate data on dementia prevalence and diagnosis rates, and France may also be able to do so in principle, but at



Presence of reliable, publicly available diagnosis rates

Cognitive assessment included as part of elderly medical/social care

General practitioners (GPs) able to diagnose and treat dementia

Sufficient training and professional support for GPs to recognize, evaluate, and diagnose dementia

Timely specialist availability for referral and diagnosis



this stage other G7 countries may lack the ability to centralize necessary data at the national level.

# Optimizing the use and sequence of current and future diagnostic tools could increase early diagnosis and therefore enable innovation

There is a need to expand the evaluation of and access to diagnostic tools and optimize the sequence in which they are used to achieve the most accurate results. For instance, the use of sporadic testing may not be as effective as a comprehensive case history would be in supporting diagnostics, but clinical practice is rarely set up to support this model. There is also not enough attention paid by health care professionals to agevariability at onset, which can impact the needs of a person with dementia, and co-existing conditions that may affect overall health. GPs may be approached regarding atypical symptoms or symptoms in younger patients that would require essential knowledge regarding dementia to make an appropriate referral.

Imaging technology has been a promising avenue of investigation, but also demonstrates the rate of errors in current diagnostic practices, especially in early stages of disease progression. Biomarker indications of Alzheimer's and related dementias would help to overcome the current uncertainty, and once developed for use in clinical settings may be more widely available. However, because the majority of diagnosis is done under the supervision of specialists, there is a lack of understanding about how future diagnostic techniques, like biomarkers, will be made available to the general population. Experts recommend an ongoing discussion and understanding of applicable diagnostic tools used in combination or a series that will offer the optimal process for early intervention. and referrals for every case of suspected dementia can result in long waiting lists for specialist appointments. Across the G7, experts note that the number of available specialists in some geographic regions can be quite low, especially in rural communities, making the practical considerations of accessing a specialist more onerous for the patient.

# Increased training across the medical field and use of standardized diagnostic tools can expedite diagnosis and provision of care

Experts identify a bottleneck at diagnosis that negatively impacts the rest of the care pathway. GPs have limited time with patients, but are responsible for sending patients to specialists and may not be adequately trained in the criteria for referrals. Experts in the US note that GPs are "unprepared" to diagnose, and existing tools for building their knowledge base are insufficient. In Germany, additional training for GPs to evaluate dementia is voluntary. In Italy, experts report that most GPs refer patients to specialists rather than make the diagnosis, in part because GPs are insufficiently trained.

GPs use different processes to identify dementia across countries, so that in some health systems they are expected to make the diagnosis in the majority of cases, whereas in others they primarily refer patients to a neurologist or other specialist. All G7 countries allow for access to specialists, but experts raise that their skills are often best employed in complex cases,

A proposed solution by some experts would be greater taskshifting in diagnosis to other health care providers, with proper training and knowledge, to reduce the time and cost of establishing a diagnosis. Future routes to diagnosis would engage a broader range of medical professionals, including advanced practice nurses and physician assistants.

"Patients will need access to imaging in order to track the disease's progression for diagnosis and treatment."

Dr. Philippe Amouyel, M.D. Ph.D.

# **Regulatory Environment**

Without any breakthrough science in the field of dementia treatment and prevention, the regulatory process has yet to be truly tested. However, regulators still have a role to play in encouraging innovation – including clearer guidance on endpoints and the need for study designs that evaluate dementia in its earliest stages. Experts caution that while collaboration and shared learnings are needed, they are not always synonymous with a clear pathway.

# Elevated attention to endpoints for Alzheimer's and related dementias would increase innovation

Regulators across G7 countries are reported to be working diligently to adequately address the area of unmet need in dementia. The US Food and Drug Administration (FDA) has provided clear guidance with regard to Alzheimer's disease in particular, but experts highlight the continued need for meaningful endpoints. Until new models can be developed based on an improved understanding of the diseases that cause dementia, regulators are likely to continue evaluating new drugs using old models (e.g., considering a diseasemodifying treatment using endpoints that were appropriate for a symptomatic treatment). Experts suggest that regulators could support innovation by remaining open to considering innovative treatments with the broadest possible guidance, including considering dementia as a test case for approval pathways. Additionally, experts suggest that the FDA and other G7 regulatory bodies should address the perceived requirement for co-primary endpoints in Alzheimer's disease. Most other diseases are only required to demonstrate effect on a single primary endpoint, and experts urge that this should be the case for Alzheimer's disease and related dementias as well.

Additionally, regulators can drive innovation through collaboration with research organizations, other regulators and other stakeholders, and by identifying gaps in basic research. The European Medicines Agency (EMA) is perceived to be more progressive in the acceptance of new research, offering new guidance, while the FDA review system shares insights and reacts privately to applicants on issues. The FDA and Japan's Pharmaceuticals and Medical Devices Agency (PMDA) have recently updated guidance to better reflect early stages and considerations for study design.



# Canada France Germany

### More aggressive and earlier detection and diagnosis will support better and more effective inclusion of people with dementia in clinical trials

A barrier to innovation in the regulatory environment is the bottlenecks that complicate inclusion of patients in clinical trials. As new treatments are developed – particularly treatments that target people with early to moderate dementia – action for earlier detection and diagnosis is critical to ensure adequate participation in trials. More effective inclusion of people with dementia in clinical trials will help accelerate the review of innovative treatments by regulators by supporting the development of relevant data.

# Patient voice is important to the regulatory process, but the condition can make full inclusion challenging

The integration of patient input in the regulatory process has been a priority for regulatory bodies in the G7, but for dementia there are specific challenges related to differing responses between people with dementia and caregivers regarding cognition and function, as well as in identifying the areas of greatest unmet need. As the disease progresses, these disparities can complicate the reliability of patient data. There currently is no systematic way to integrate patient and caregiver voice in this area, and the further development of mechanisms would help to support innovation through understanding of the value to people with dementia.

### Shared learning opportunities for regulators may support harmonization, but openness to innovative approaches is still needed

Regulators are meeting across regions to specifically discuss issues related to dementia, supporting regulatory harmonization, better approaches to early disease stages, and biomarkers and clinical endpoints, though critics question whether these meetings have systemic impacts. Experts also raised the concern that a consensus among regulators might lead to the adoption of a more conservative approach in order to build agreement, but others were optimistic that the results would reflect a willingness to embrace innovative approaches, specifically citing clinical trial design as an area for which a broad approach is needed. Further opportunities exist to apply a collaborative approach at the national level, as experts report that individual regulators like the FDA do not have joint forums to discuss issues within the country.

# Gaps in science on dementia pathologies pose a challenge to regulators and organizations involved in regulatory process

Significant gaps still exist in scientific knowledge related to the pathological processes of the diseases that cause dementia. Experts suggest a working group of statistical analysts for drug development – comprised of regulators, industry and academia – could assist in overcoming some of the inconsistencies in clinical trial design and methodology. In other instances, additional knowledge would address current barriers, such as the exclusion of cognitive measures as a single outcome.



### Accelerated review exists, but bottlenecks can slow entry into programs

The FDA, EMA, Health Canada and the PMDA all have priority review programs that are applied in other disease areas currently and are available to compounds for Alzheimer's disease and related dementias. However, these programs and their ability to support a review for treatments for dementia have not been tested by a real-world example. Experts expect that access points for an accelerated regulatory process will be used increasingly when progress is made against the development of disease-modifying treatments, but suggest that they would be better suited if Alzheimer's disease were treated as a test case.

# **Access to Care**

Options for accessing dementia care vary widely across G7 countries, yet the need for innovations in care is universal. Urgent innovations for supporting, implementing, and scaling advances in how people with dementia receive care include clinical trial expediency, a better care pathway for all parties involved, and choices for where and how that care is provided.

# People diagnosed with dementia need better access to and awareness of post-diagnostic support

Access to care is a critical factor in how people with dementia experience support and management for their condition, as well as other health concerns they may have. There was general agreement that GPs may be ill equipped in a baseline understanding of dementia, but specialists (e.g., neurologists) are sometimes difficult to access after a diagnosis had been made, and even when accessible, their role is unclear. There is global variability regarding access to post-diagnostic support – it exists in many places, often provided by the non-profit sector, but there are barriers to awareness. People with dementia report that they felt "put on a shelf" or "sent home to die" once they were diagnosed, and were only able to find appropriate support when they or a caregiver was proactive.

### Access to care varies within countries by region and by care provider

Specialized care can be subject to geographic variability, and data on the wait times for getting an appointment is not collected in a centralized system in most G7 countries. Similarly, access to specialized diagnostic tools can vary, subject to a reported lack of urgency when little can be done medically for the patient, as in the case of dementia. Some people with dementia report that while they were able to easily access advanced diagnostics, dementia information was not commonly available in specialist offices like information on other disease areas.

### Care pathways for people with dementia and caregivers are undefined

Following diagnosis, people with dementia report that they and their caregivers were uncertain about their ability to access specialized care for their condition. None of the G7 countries are reported by experts to have adequately addressed the development of a robust treatment pathway. For individuals,

•	•	•	General practitioner wait time
•	•	•	Advanced diagnostic wait time
•	•	•	Access to advanced diagnostics relative to other diseases
•	•	•	Dementia specialist wait time
•	•	•	Access to post-diagnostic support
•	•	•	Access to in-home care (medical and non- medical)
•	•	•	Availability of specialty housing
•	•	•	Access to caregiver support (training for family caregivers, respite care, etc.)
•	•	•	Estimated wait time for infusion therapy
•	•	•	Availability of clinical trials
•	•	•	Reimbursement for innovative therapies across disease types
•	•	•	Availability of assisted living and nursing homes

Canada

France

Germany

people with dementia compared the experience with other disease areas with which they were familiar, and described the dementia care pathway as being disjointed. They report that their knowledge of the care pathways for co-existing conditions, such as stroke, are more established and integrate multiple medical professional fields. In the UK, which was perceived to excel at early detection and diagnosis, subsequent steps for managing dementia are reported to be inconsistent. In Italy, the care pathway varies greatly by region, compounded by the nation-state government structure that makes the national picture difficult to reliably assess.

There are opportunities for a more seamless approach to Caregiver support is not standardized and is infrequently supported by government dementia care from diagnosis and throughout the progression of the condition. Experts recommend greater integration For people who have been diagnosed with dementia or their of paramedical support such as occupational and speech caregivers seeking support, such resources do exist at varying therapists. In some cases, unsuitable measures to evaluate levels in many places across the G7, primarily provided by the the value of paramedical professional support to people with non-profit sector. However, there is little available support of dementia created barriers to access. Similarly, palliative care caregivers in a standardized or consistent way, particularly was raised as an area needing greater integration to the care by government funding. Non-profit sector support is largely pathway for dementia. focused on training and support groups rather than the provision of respite care in many areas, and experts report a shortage of respite care across G7 countries. Respite care can provide critical support to family caregivers and support a



# Access to Care (continued)

higher quality of life for people with dementia. In many cases, caregivers report that they do not have easy or direct access to the available resources and even less opportunity to provide feedback. People with dementia also raise that there is little available support for them to learn self-management strategies that promote their independence while living with the condition.

# People with dementia deserve choice in the type and level of care they receive along the care continuum, but options today are limited due in large part to government payment systems

In-home care, though widely available across G7 countries, can vary greatly in types and quality of services provided. Both public and private funding options exist, with high-quality care alternatives to social care emerging from the private sector. Some US stakeholders estimate that only a small percentage of dementia care is provided by professional caregivers, while the bulk is provided through informal care. In several of the G7 countries, the ability to prescribe in-home care is supported by national insurance or other public funding. Experts raise that in some instances government funding for care is aimed at an institutional model and has been slow to shift to one that allows for greater flexibility. Further, with more specialized and personalized care required for people with dementia, the care wanted by the individual or the family may differ from what is deemed necessary by the government. Options for the type and level of care as well as multiple mechanisms for funding should be evaluated across the continuum of care in order to foster patient choice and innovation. Additionally, there is a lack of the digital infrastructure needed to share information related to care, which makes novel public-private partnerships more difficult and limits care choices for people with dementia.

# Clinical trial expediency can be facilitated through new and more deliberate approaches to recruitment

There are numerous challenges to recruiting for clinical trials, including low diagnosis rates, lack of physician referrals, stigma, and limited understanding by people with dementia and caregivers of the value of clinical trials. Further, without a modernized standard for Alzheimer's drug approvals – one that has alignment on endpoints and seeks to address the disease early in its progression – there will continue to be barriers to effectively designing and running clinical trials for Alzheimer's and related dementias.

Even small trials for diseases that cause dementia can take years to execute because of recruitment challenges, according to experts, and there is a pressing need to reach people with dementia earlier in the progression of their condition. Ideally, people suspected to have dementia would be considered as candidates for clinical trials before they have been referred to a specialist because of the delay involved in waiting for a diagnosis. In Europe, international collaboration is particularly critical to accessing a large patient population to adequately populate clinical trials, particularly in rarer forms of dementia, and there are a number of publicly and privately funded studies using cohorts in multiple countries. Even when there is a high level of density of clinical trials for a population, other barriers to enrollment exist including an absence of practical support and a lack of referral to relevant trials.

Due to the serious, and ultimately fatal, nature of the diseases that cause dementia, some people with the condition are eager for access to trials and are willing to assume greater risk, while others report finding the trial protocols frightening and they did not see value in overcoming logistical barriers in order to participate. Education and awareness efforts are needed within the general population to support clinical trial recruitment to combat a reported lack of awareness and engagement outside of research centers.

# **Prevention & Risk Reduction**

While efforts are taking place across all G7 countries to elevate awareness of Alzheimer's disease and dementia, broad public understanding of the disease, its prevalence, and ways to prevent it has yet to incite urgent action from the general public. Even though barriers to data collection, gaps in the existing science, and the stigma associated with the disease exist, the condition's impacts on people of all ages must be communicated now and must be part of any country's overall strategy to reduce non-communicable diseases.

### Dementia should be regularly included in public health surveillance

In order to understand the population-wide impacts of dementia, countries need reliable information on the incidence, prevalence and mortality of the condition. Experts report that national-level data on primary care is not readily available in many of the G7 countries, and in examples like the US, the data was not robust because of the difficulty in centralizing information under a multipayer model. The US is reported to have added dementia to public health observation at the national level, but examples of coding direct or indirect cause of death or other data to include dementia could occur only through regional efforts. However, health systems in the UK and Ontario, Canada have been successful in collecting health data for public health surveillance of dementia and could demonstrate models for others.

# Public health agencies do not comprehensively include dementia messaging in public health campaigns

Public health agencies have several major priorities consistently across the G7, and dementia has not been fully integrated into consideration in the same way. Lifestyle campaigns that do include dementia are not penetrating the public narrative in a meaningful way. Experts report that people who have not internalized healthy lifestyle messages do not find messaging around dementia to be motivating and are looking for simpler solutions. Engagement of younger people has also been



Canada

France

Germany

suggested as an area of untapped resource, which would help to reduce the stigma of dementia as well as raise awareness.

# Gaps in the science of dementia pathologies make prevention and risk reduction campaigns challenging

The prevailing barrier for effective prevention or risk reduction campaigns is the lack of definitive evidence aimed specifically at the diseases that cause dementia. While managing cardiovascular risk factors may have additional benefits for reducing risk, delaying symptoms or allowing for a higher quality of life with dementia, other modifiable factors are of uncertain tangible benefit. There are issues within the G7 countries regarding acceptance of recommendations related to risk reduction, based on gaps in the current science. In the US, there has been greater acceptance of lifestyle interventions for vascular dementia. Europe seems to be more accepting of lifestyle factors that would impact the risk for Alzheimer's disease. Preventive research has not been sufficiently funded or explored within the research community to develop the necessary evidence base to inform public health activities.

Italy	Japan	UK	US
•	•	•	•
•	•	•	•
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# **Business Environment**

Private-sector leaders across pharmaceuticals, technology, and care services have long been innovating to find medicines, diagnostic tools, and better methods of caring for people with dementia. Concurrently, financial services and insurance providers are also innovating to find new ways to pay for the increased demand for long-term care. New, creative, and non-traditional responses to the disease will be catalyzed by incentives that encourage investment in business innovation, which is essential for meeting the demand.

# Patent protections are strong, but need to be better enforced and extended to provide the best incentives for innovation

Experts note that current patent lengths were a disincentive for private sector investment of resources in to dementia treatments, and paired with the high rate of failure, have caused some private interests to divest in the area. There is an opportunity to support the business environment further by exploring mechanisms that will help to reduce the risk involved in treatment development. Tax and patent incentives are viewed by experts as an opportunity to draw privately owned compounds off the shelves and into the drug development pipeline. Timelines for patents pose a particular challenge for Alzheimer's disease and related dementias because of the required time for drug development in this area, reducing the profitability of any marketable compound. A number of experts have suggested that extending market exclusivity would benefit dementia, but in much of the G7 it was considered to be "politically unfeasible" to change existing patent laws solely for the diseases that cause dementia, and it is unlikely that regulators will take other steps to extend timelines. Additionally, experts raise the negative assessment of extending patents, which might alter payers' perceptions of the value for new treatments, especially if they only have a minor impact on slowing progression.

# A push/pull incentive balance can accelerate research across the development pipeline

Some incentives are designed to push further private investment into a research area, while others are positioned to pull promising treatments through the



development process more quickly. Each option can provide valuable benefits, depending on the stage of private-sector research. Both approaches are reported to have been employed in some combination by each of the G7 countries. Experts note that an incentive structure may not be necessary to address barriers in dementia, since the potential market is quite large once the science is able to address the unmet needs, but it is challenging to demonstrate a potential return on investment at this stage of scientific understanding for dementia relative to other disease areas. Incentives are also relevant to research into drug repurposing, which is often unprofitable for the private sector. With additional support, private investment may be able to capitalize on measures to support orphan drugs (for rarer forms of dementia) and other considerations that would facilitate reimbursement that have been used in other disease areas.

# Lack of incentives for creating early diagnosis tools deters research and discovery in the area

There is no capital incentive for the development of early and accurate diagnostics, which is holding back other aspects of research and discovery for dementia. In cancer, researchers have at times bundled these tools with a treatment course to boost profitability, but the model has not yet been translated to Alzheimer's or related dementias.

### Privacy laws dampen data-sharing efforts and international collaboration

Improved infrastructure is needed to enable technological progress in care, alongside improved data sharing and better engagement with the business community to make the most of innovation. Privacy laws can inhibit data sharing, particularly across international borders. The EU Data Protection Regulation impacts over half of G7 countries – and how they interact with those outside of the EU as well. Close attention must be paid to how the protection of pseudoanonymized or anonymized personal data can still be leveraged to support medical and care research because of applicability to innovation in dementia.

# Tax structures and labor laws that are unsupportive to private-sector providers can prevent innovations in care from reaching care recipients

There are no reported tax incentives within the G7 that would directly support innovative care development, though there are efforts within the private sector to support professional caregivers by developing a gold standard within the industry. Labor laws and tax structures can disincentivize formalized in-home care services, which leads to a workforce that is not specialized for dementia. This is a noted concern for experts in Italy, but is applicable across the G7. While care solutions are unlikely to be consistent across the G7 countries because of cultural and workforce differences, there is an opportunity to address improved care choice and standards through the business environment.and workforce differences, there is an opportunity to address improved care choice and standards through the business environment.

	"A lengthened period of market exclusivity
-	targeted at breakthrough Alzheimer's
ł	treatments could encourage investment in
C	research, treatment, and care."
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•	George Vradenburg
f	Founder and Convener of CEOi
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# **Care Standards**

Recognizing many gaps in the care pathway, experts highlighted the importance of viewing dementia care across the entire care spectrum - considering disease stage, care setting, and care provider. The Index found that all G7 countries are struggling in this respect, and calls for increased international collaboration that encourages the sharing of quality standards and best practices for positive outcomes.

### Improving care research and standards can improve quality of life for people with dementia

There is a global opportunity for greater investment in dementia care research and the establishment of improved care standards for people with dementia. There is a reported lack of support for people with dementia who are adequately managing their condition, and additional access to specialists for these individuals is not offered. However, people with dementia report that utilizing occupational and physical therapists has improved their quality of life and reduced their risk of traumatic injury. There is also a reported reluctance in some areas to supply medical services for people with dementia that would have a benefit to their quality of life (e.g., cataract surgery or hearing aid evaluation) because of their condition. These services also may not have an established protocol for supporting people with dementia during these procedures that would address their unique needs. Japan has trialed mechanisms for in-patient care that would integrate an easily recognizable marker or record indication to make the care pathway for co-existing conditions better combined with cognitive function.

The greatest challenge is adequately meeting the needs of individuals who are isolated, living alone or in remote areas. Similarly, pilot programs for innovative care models can be difficult to adjust to be suitable for a variety of settings and different populations. The best quality care may be in-home, but this option can be logistically challenging, and across the G7 may not be accessible due to current payment models. People with dementia report a desire for better international collaboration to promote areas of good practice, noting popular examples such as the Dementia Village in the Netherlands as an innovative care model. However, other models of care may be more



difficult to apply because of the complexity of needs in later stages of dementia due to the unique challenges the condition creates.

### Informal caregiving is underappreciated, misunderstood, and must be brought to light and destigmatized to ensure adequate support

Informal caregivers frequently do not define themselves by the term, instead focusing on the relationship that has precipitated caregiving, and the lack of identification as a caregiver can be a barrier to seeking training and support options. There is a persistent lack of signposting to available services, exacerbated by a lack of understanding among informal caregivers regarding what needs they have that may be unmet.

### Technology can be deployed to create efficiencies for caregivers and improve workflow for clinicians

The integration of electronic medical records, care flow charts and medical e-monitoring have successfully demonstrated the critical role of technology in innovative medicine, but barriers still exist for health systems where there is a disincentive to share clinical data outside of the medical practice, making the generation of robust data sets more difficult. In Japan and Germany, experts report that there has been progress made in the expansion of technology into patient experience and support, in addition to clinical applications. However, technology has yet to successfully demonstrate improved outcomes or reduced cost in dementia that would facilitate widespread uptake.



France

Germany

Canada

this area.

Italy	Japan	UK	US
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•	•	•	•
•	•	•	•
•	•	•	•

# **Built Environment**

Physical environment and access to transportation can make a difference in how and when people with dementia receive care and how people with the disease are perceived. Governments, communities, global institutions, and the private sector are making progress towards dementia-friendly and age-friendly infrastructure, community programs, and education and training. Wider uptake of these types of efforts will be critical success factors in ensuring the safety and inclusion of those with dementia.

### Mobility has a substantial impact on quality of life and access to care

The physical environment impacts how people with dementia receive in-home support, medical care outside the home, and how they navigate the communities in which they live. Mobility will impact the course of their disease as well as their motivation to seek diagnosis and treatment. For example, if a person with dementia cannot reach a doctor's office, diagnosis and therapy can be delayed, and this may be compounded if the person with dementia is reluctant to seek support because of perceived consequences or stigma. People with dementia report that in addition to their cognitive symptoms, they may also have trouble interpreting their physical environment, such as inclines and curves, while they are otherwise mobile and capable. These challenges may have cascading effects in the event of a fall or other injury as a result of dementia symptoms that can reduce a person's overall quality of life. Areas of consideration within the built environment include the design and location of facilities, mobile treatments and localized access to advanced care, Dementia Friendly Environments and other urban planning considerations.

In non-urban areas, there is a reliance on friends and family for mobility in older populations, which increases in instances of people with dementia. Disincentives like automatic revocation of a driver's license create barriers to diagnosis by reinforcing fears over losing independence and deepening stigma. Clinical trials are rarely set up to address these challenges, which can limit the diversity of socioeconomic and demographic participation.



Policy on drivers' license (cognitive test or drivers' license taken away after diagnosis)

Mobility considered for enrollment in

Commitment to WHO's network of agefriendly cities

# Canada France Germany

### Policies on driving privileges following a diagnosis of dementia can be inadequately considered and vary within countries

G7 countries do not typically have a common, country-level policy for licensing, and support for people with dementia is provided alongside other disability services at the local level. For example, in the US several states require that physicians report cognitively impaired drivers; other states put the onus on family members of the individual. When a dementia diagnosis may affect the ability to drive, experts have recommended periodic testing to evaluate ability. However, a person with dementia may have to self-fund regular assessments of safe-driving ability, which creates an additional financial burden related to the condition.

People with dementia may give up their licenses voluntarily or restrict their driving to familiar routes, in which case they report a heavy dependence on navigational technology. Experts were critical of efforts by municipalities to impose geographic driving restrictions, saying that route limitations (e.g., a person with a dementia diagnosis would be prohibited from driving past a school) did not take into account the limitations of people with cognitive impairment to retain new information in this way. Instead, greater support for community-based mobility options was seen by experts as an effective way of supporting people with dementia and reducing mobilitybased disincentives for diagnosis.

Public transportation can be challenging to navigate for people with support within communities for people with dementia. dementia Canada has made a significant commitment to agefriendly cities, alongside Provincial Advisory Groups Public transportation is typically not a suitable to direct the work of dementia-friendly communities. replacement for self-driving for people with dementia who Dementia-friendly communities have not gained the are no longer able to safely operate a vehicle, as many traction in the US witnessed in other G7 nations, but there of the same issues may arise. Additionally, trouble with is an increasing focus on aging in place and in-home care navigation and symptomatic issues - balance, hearing, that is likely to draw further attention to the program. etc. - can affect their ability to successfully use public Experts note that efforts to spread dementia-friendly/ transportation systems. Further, the level of available inclusive programs would be aided by more diverse assistance may not be consistent across transportation stakeholder engagement such as first responders, the systems or sufficiently support a person with cognitive business community and other touchpoint groups. impairment. In instances where public transportation

may be unfamiliar for a person with dementia, it would be impractical to expect him or her to start using the system to maintain independence.

Paratransit services that support people with disabilities can be supportive of people with dementia, but have distinct limitations. The most effective mobility options for people with dementia are those that are so-called chairto-chair, rather than curb-to-curb, providing support from leaving home through visiting the destination and returning home, without time constraints.

### Dementia-inclusive community programs can help support people with dementia and allow them to live in their communities longer

Overall, there is a trend in G7 countries towards promoting dementia-inclusive communities. Japan was an early leader in this work with its Dementia Friends program, which was adapted by the UK and other countries to build



1	"We need to pay more attention to the
	different levels of assistance that are
5	needed. Some people with dementia
1	might need curb-to-curb transportation,
•	others might need door-to-door
	transportation, and still others might
	need assistance getting through the door
	and to their final destination."

Dr. Nina Silverstein Ph.D., University of Massachusetts - Boston

# Summary By Country

Most dementia policies including national Alzheimer or dementia plans are a result of consistent advocacy efforts by national Alzheimer associations. These associations unite people living with dementia, family caregivers, and experts with a dedication to the cause. This Index provides them a valuable tool to campaign for changes in health systems and better conditions for innovation including more funding for research, not only in G7 countries but all around the world.

Marc Wortmann Executive Director, Alzheimer's Disease International barriers, and opportunities for innovation.

The performance for each country in a given category is determined by calculating the sum of that country's scores across all indicators as a percentage of the total possible score that could be achieved.

# The summary by country section shows a breakdown of each country's performance across each category of innovation readiness. There are also country-specific insights on the enablers,

# Canada

Canada has demonstrated international leadership, as well as a national commitment to dementia with an effort to shift diagnostic services to general practitioners (GPs) and create capacity for specialists to engage on complex cases. Through widespread use of the Montreal Cognitive Assessment, GPs are able to make accurate assessments in most health regions, though gaps in educational resources still exist.

Canada has successfully integrated dementia research with companion initiatives that support the Dementia Research Strategy including e-health and program delivery initiatives within the health system. However, funding for public-private partnerships in research was said to be focused on small companies, and more attention could be given to commercial applications and scalable products.

In Canada, there is also a strong model for care including public provision of in-home care and specialty housing.



# France

France was the first European country to launch a national dementia plan in 2001, but a shifting political landscape has reduced the prominence of French leadership in international dementia forums in recent years, according to experts. However, much of the potential for fostering and integrating innovations remains, along with a commitment to research spending and an attractive environment for EU funding for research. Diagnosis of dementia in France is made by specialists, but is coordinated with GPs to smooth care pathways and to allow a support plan to be developed.

Medical care in France is supported by government funding, but additional care and support costs may be privately funded.



France's 2008-2012 plan reportedly increased funding to retirement homes and care homes for people with dementia. While the care homes seem to be widely accessible, they may not be the right option for varying stages of the disease. Training for care professionals in dementia is not mandatory, but an early national strategy created and incentivized a qualification for health care professionals in elderly care. The non-profit sector in France has piloted a number of support and respite programs for informal caregivers, as well as partnering with the government to develop training initiatives.

# Germany

Germany is viewed internationally as a research leader for the Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE), the German Research Institute for Neurodegenerative Diseases, which conducts advanced research and fosters scientific collaboration with EU and non-EU partners. For innovative treatments, experts said that Germany is viewed as particularly leading in the availability of reimbursements to increase patient access. Germany is seeking to improve long-term care in ways that may benefit people with dementia through a new legislative approach to expand the criteria for Activities of Daily Living (ADLs) and add guality of life measures such as mobility, communication ability, behavior, autonomy, emotional coping, life and social interactions. These broader assessment measures relate to maintaining how a person interacts with his or her environment, rather than the time needed to provide baseline care and support.

The Bundeszentrale für gesundheitliche Aufklärung (BZgA,) the Federal Centre for Health Education, has included some information about dementia risk reduction in public health messaging. Germany has made efforts to increase diagnosis rates through medical societies and a national alliance, reaching an estimated 50% diagnosis rate of projected prevalence. However, GPs are not required to perform cognitive testing. Post-diagnostic support is present in the guidelines for GPs, but there is not a regular system or standard for how information is distributed to patients. There has also been a growing effort for Dementia-Friendly Communities driven by local alliances, leading to promotion by the health minister in a campaign similar to other G7 countries. Germany's public transportation system provides support for people with disabilities, which includes dementia. Individuals can choose to opt-in to receive the additional support.

"One challenge to diagnosis is ongoing training for general practitioners. General practitioners are required to do continuing education every year, but they can choose what they study – they're not obligated to study geriatric medicine."

Sabine Jansen, Deutsche Alzheimer Gesellschaft e.V.



# Italy

Some areas of Italy are considered by experts to be successful models for dementia care, though there may be other challenges within the dementia care pathway, including tax laws that disincentivize professional care. Experts report wide variability in the immediacy of access to diagnostic specialists depending on whether the visit was privately or publicly funded, with state-funded patients reportedly experiencing long delays for appointments. While GPs are reported to be connecting through professional societies to discuss issues related to dementia, they are not consistently engaging with other types of stakeholders that might provide additional insight. While Italy does participate in the global non-communicable disease alliance, it reportedly does not have a formalized domestic non-communicable disease alliance that includes dementia, and there is no public health surveillance for prevalence, incidence and mortality for dementia. However, a recently developed dementia strategy has been launched, and additional attention and resources are likely to be directed to meeting its goals in the future.



"Access to dementia specialists is tricky. If you use the public health system, there is a long waiting list up to six months before you can see a dementia specialist. If you go private, the waiting list is shorter, but you don't have access to the economic support for disability."

Mario Possenti, La Federazione Alzheimer Italia

# Japan

Japan has successfully drawn societal attention to support for people with dementia, driven in part by demographic projections of rapid population aging that will have a direct impact on the care workforce. Experts report that Japan is generating a public sentiment of social responsibility to understand and appropriately support people with dementia. There has also been a unique effort to develop and deploy assistive technologies to improve the caregiving experience and deploy technology that could help people with dementia navigate their communities through sensors and smart lighting, for example. Further, Japan's Tsukuba Strategic Zone, which provides legal and tax incentives to organizations that locate in a specific geographic area to promote innovative science and technology, has prioritized projects that investigate living with personal care robots.

Japan's Orange Plan has proposed shifting the onus of caregiving so the public has a greater level of responsibility

in helping people with dementia in their community. The government now runs trainings for the public to better understand dementia. People who complete the training receive orange bracelets so that they can be easily identified by people with dementia as someone who can help them.

Experts report that the Japanese government is reviewing how long-term and institutional care is managed to address the associated costs covered by the public and private sectors. Japan is also working toward a different approach to public-private partnerships that would allow greater flexibility, but also considers some areas of investigation better served by a single funding source.



# **United Kingdom**

In addition to a strong perceived political and institutional commitment to addressing dementia nationally, the UK has some of the best examples of successful public-private partnerships in the Dementia Research Institute and the Dementia Discovery Fund, the latter of which was created specifically to fund innovative and novel targets. These efforts are possible because of strong public and government support for basic research, according to some experts.



However, there is reported variability in the quality of memory clinics and a disconnect between primary and secondary health care providers within the UK's care landscape. The UK is leading efforts to shift societal attitudes toward dementia, and experts note the use of public health messaging in these efforts.

# **United States**

The US is a world leader in government investment into dementia research, but opportunities exist to improve engagement with the international community, especially politically. Increasing spending in R&D was described as a "bright spot" in US policy, including increased funding for dementia. However, US measures to support preventive care that integrates cognitive testing and supports diagnosis for dementia, like the Medicare Annual Wellness Visit, have low uptake among eligible users despite no cost.

Since the US health system involves multiple payers, experts described the trend for innovations in care as following a pattern wherein innovations are first adopted by individuals, then by commercial insurers, and finally by government programs. This can create create enormous variability in access to care based on insurance coverage and overall economic status. Geriatric education centers for medical professionals in the US are not standardized, but there are efforts to establish best practice recommendations. In the US, action for dementia-friendly communities is taking place on a municipal and statewide level, but there has not been a dedicated effort by the federal government.

"Private-public partnerships are encouraged by government – particularly in the Alzheimer's space. So much innovation is happening within private companies that are developing treatments, and a lot of the highly specialized expertise is within those companies."

Cynthia Bens, Alliance for Aging Research



# Appendix A: Performance Scale

Category	Indicator	Score of 1	Score of 2	Score of 3	Category	Indicator	Score of 1	Score of 2	Score of 3
Strategy & Commitment	Visible, continuous political leadership	Not significant political leadership	There's some political will, but it is either just emerging or does not appear to be enduring	Strong political leadership	Government Funding	Prioritizes innovative research, treatments or care	Government funding structure does not prioritize funding for innovative research, treatments or care	Government funding structure moderately prioritizes funding for innovative research, treatments or care	Government funding structure strongly prioritizes funding for innovative research, treatments or care
	Participation and leadership in international forums	Country's participation in international forums is limited	Country participates in international forum from time to time	Country is represented in leadership at major international forums and/ or hosts international forums	Early Detection &	Campaign by stakeholders	There has not been an	There are efforts to	Strong national leadership
	Presence of national dementia plan*	No plan at all	Non-governmental plan or strategy	Governmental plan	Diagnosis	detection and diagnosis of dementia	by major stakeholders	diagnosis	an effort to improve detection and diagnosis
	Implementation of national dementia plan	There is no local, regional or national strategy	There have been efforts to create a national strategy, but it has not been	Plan has been officially adopted at the national level and is being widely		Presence of reliable, publicly available diagnosis rates*	20-50%	50-80%	80%+
	Efficacy of national	There is little or no	formalized by government leaders There is limited	implemented Plan is engaging a broad		Cognitive assessment included as part of elderly medical/social care	Cognitive testing is not included	Cognitive testing is included but limited	Cognitive testing is comprehensively included
	dementia plan in creating engagement	engagement as a result of the plan	engagement or a select group of stakeholders involved	range of stakeholders		General practitioners (GPs) able to diagnose and treat dementia*	Unable to diagnosis	Some diagnostic abilities	Able to provide full diagnosis
	Monitoring and evaluation of national dementia plan	Strategy is rarely updated with progress tracked	Strategy is periodically updated with progress tracked	Strategy is updated regularly with progress tracked		Sufficient training and professional support for	No		Yes
	Commitment to Dementia- Friendly Communities	nentia- No commitment to Not participating in WHO Participating in WHO es dementia-friendly global network, but has global network of communities demonstrated other forms age-friendly cities and	Participating in WHO global network of age-friendly cities and		GPS to recognize, evaluate, and diagnose dementia	There is little or no	There is moderate	There is easy affordable	
			of commitment	communities and has other forms of commitment		availability for referral and diagnosis	access to specialists for a dementia diagnosis	access to specialists for a dementia diagnosis	access to specialists for a dementia diagnosis
	Inclusion of dementia in disability rights	No inclusion	Aspects related to dementia are included, but dementia is not explicitly stated	Dementia is explicitly included in disability rights	Access to Care	General practitioner wait time	More than 2 months	1 – 2 months	Less than 1 month
Government Funding	Change in overall research and development funding*	Total R&D funding has trended downwards	Total R&D funding has trended flat	Total R&D funding has trended uwpards		Advanced diagnostic wait time	More than 2 months	1 – 2 months	Less than 1 month
	Change in government funding for dementia research	The dementia research budget has decreased relative to inflation	The dementia research budget has remained constant relative to inflation	The dementia research budget has increased relative to inflation		Access to advanced diagnostics relative to other diseases	There are significant differences	There are some differences in access	There are no obvious differences in access to specialized diagnostics for people with dementia as
	Change in government funding for dementia care	Dementia care spending is decreasing relative to demand	Dementia care spending is staying the same relative to the demand for services	Dementia care spending is increasing to improve services		Dementia specialist wait	More than 2 months	It frequently takes between	compared to those with other diseases
	Amount of government R&D budget dedicated	Less than 35 million USD	35 – 75 million USD	Over 100 million USD		time	More than 5 months	1 – 3 months to see a specialist	specialist in less than 1 month
	Incentivizing public-private	Government does	Government moderately	Government strongly		Access to post-diagnostic support	Post-diagnostic support is limited or does not exist	Post-diagnostic support exists, but barriers to access exist	Post-diagnostic support readily exists
	partitersnips	development of public- private partnerships	development of public- private partnerships, or only under specific conditions	development of public- private partnerships		Access to in-home care (medical and non-medical)	Low access to in-home care	Moderate access to in- home care	Access to quality, affordable in-home care is not difficult

\*Denotes that an indicator was scored based on secondary data

\*Denotes that an indicator was scored based on secondary data

Category	Indicator	Score of 1	Score of 2	Score of 3	Category	Indicator	Score of 1
Access to Care	Availability of specialty housing	Specialty housing is unavailable	Specialty housing is available in some instances	Specialty housing is widely available and affordable	Business Environment	Ease of doing business for private sector*	Performance of less than two in Global Competitiveness Repo
	Indicator         Care       Availability of specialty       Sp         Access to caregiver       Caregivers, respite care, etc.]       Indicator         Indicator       Caregivers, respite care, etc.]       Modified therapy         Indicator       Caregivers, respite care, etc.]       Modified therapy         Indicator       Modified therapy       Modified therapy         Indicator       Caregivers, respite care, etc.]       Modified therapy         Indicator       Modified therapy       Modified therapy         Indicator       Caregivers, respite care, etc.]       Caregivers, respite care, etc.]         Indicator       Caregivers, respite care, etc.]       Caregivers, respite care, etc.]         Indicator       Caregivers, respite care, etc.]       Caregivers, respite care, etc.]         Indicator       Caregivers, respite care, etc.]       Caregivers, respite care, etc.]         Indicator       Caregivers, respite care, etc.]       Caregivers, respite care, etc.]	There is limited or no caregiver support available	There is access, however some barriers to utilizing services exist	There is access to quality, affordable caregiver support services	Education & Workforce	Representation in medical/	Wide representation
	Estimated wait time for infusion therapy	More than 2 months	1 – 2 months	Less than 1 month		professional societies	of country in relevant societies
	Availability of clinical trials*	Less than .5 trials per 100K over age 65 [One standard	.5 – 1.9 per 100K over age 65 (within one standard	3.3 trials per 100K over age 65 (1 standard deviation		Availability of geriatric- specific training programs	Low number of geriat training programs
		deviation below)	deviation)	above average)		Specialist saturation*	42.7 – 66.7% of doctor specialists
	Reimbursement for innovative therapies across disease types	Reimbursement unavailable	Reimbursement available, but only for a few innovative therapies	Reimbursement for innovative therapies widely available		Elder care social worker saturation	Low saturation of wor
	Availability of assisted living and nursing homes*	Less than 40 beds in residential long-term care facilities per 1,000 people aged 65+	40-54 beds in residential long-term care facilities per 1,000 people aged 65+	54+ beds in residential long-term care facilities per 1,000 people aged 65+		Nurse saturation*	Less than 9.9 per 1,00 residents
Regulatory Environment	nvironment Dementia regulation No In process of being Yes issues are clear and reflect updated latest scientific findings		Availability of ongoing training for eldercare professionals	No			
	Relevant regulatory bodies' willingness to drive innovation in regulatory science	No	Some officials have expressed willingness, but not across the regulatory body	Yes		Integration of paramedical professionals into dementia care	Poorly integrated
	Priority review for therapies – available for dementia*	Priority review is unavailable for dementia	Priority review is available, but not for dementia treatments	Yes, priority review is available for dementia treatments		Rate of population with	Less than 21% of
	Patient involvement in drug review process	Patients are not included	Patients are included	Patients fully included in the regulatory and review		secondary degree*	population has secon degree (one standard deviation below avera
		review process	regulatory and review process	process	Care Standards	Government implementation of quality measures	Quality measures are neither implemented being planned for
Business Environment	Government subsidies or tax incentives across disease areas	Government does not subsidize or provide tax incentives for private research	There are some subsidies or tax incentives for private research	Government widely subsidizes or provides tax incentives for private research		Government support of innovative care services	No obvious evidence
	Patent protection – length and strength	Patents are not well protected	Patents have moderate protection	Patents are well protected		Processo of incountions in	There is not a slow
	IP protection*	Performance of less than three in Global Competitiveness Report	Performance of three to five in Global Competitiveness Report	Performance over five in Global Competitiveness Report		technology to improve care delivery	effort around technolo innovation

\*Denotes that an indicator was scored based on secondary data

### re of 1

e of less Jobal ness Report

### Score of 2

Performance of 2 – 3 in Global Competitiveness Report

Some representation

### Score of 3

Performance of three or more in Global Competitiveness Report

relevant of country in relevant societies of geriatric Moderate number of geriatric training programs Irams of doctors are 66.7 – 80.7% of doctors are specialists on of workers

9 per 1,000

Moderate saturation of

9.9 – 11.9 per 1,000 residents

workers

Negligible representation of country in relevant societies

High saturation of geriatric training programs

More than 80.7% of doctors are specialists

High saturation of highly trained workers

11.9+ per 1,000 residents

Yes

% of as secondary standard low average)

sures are emented or ed for

a clear ł technology Moderately integrated

21% - 51% of population has secondary degree (within one standard deviation of average)

Quality measures are planned by government, but not yet implemented

The government has developed a limited effort to support care innovations

Use of technology is often discussed but few programs exist to encourage the

development

Well integrated

51% of population or more has secondary degree (one standard deviation above average)

Quality measures implemented by government to help improve healthcare outcomes

The government is actively driving care innovations

Technology is a central focus for improved care delivery

\*Denotes that an indicator was scored based on secondary data

Category	Indicator	Score of 1	Score of 2	Score of 3
Care Standards	Transfer of care models between disease areas	No, and there are not models from other disease areas that should be used in dementia care	No, and implementing models from other disease areas should not be a focus	Care models are being implemented from other disease areas
Prevention & Risk Reduction	Participation of dementia organizations in global non-communicable disease alliance*	Country's dementia association does not participate in non- communicable disease alliance		Country's dementia association participates in non-communicable disease alliance
	Dementia in public health surveillance	No data is collected	Some data is collected, but is limited or of poor quality	There is regular data collection on dementia prevalence, incidence and mortality
	Completion of lifestyle campaigns that address risk factors for dementia	No lifestyle campaigns have launched that include dementia at this time	Lifestyle campaigns have been launched that include dementia, but as part of broader health messaging	Stakeholders have successfully launched lifestyle campaigns specifically related to dementia risk factors
	Dementia risk factors included in other public health campaigns	Dementia has never been included in other public health campaigns	Dementia is included in some public health campaigns	Dementia is consistently included in other public health campaigns
Built Environment	Support system in transportation for people with dementia	Little to no transportation options are open for people with dementia	Some transportation options are open for people with dementia	Transportation options are widely available for people with dementia
	Policy on drivers' license (cognitive test or drivers' license taken away after diagnosis)	Lose driver's license automatically	Some procedures exist to evaluate continued ability to drive	Cognitive test once diagnosed is required
	Mobility considered for enrollment in trials	There are little to no transportation options available to people enrolling in clinical trials	There are some transportation options available for people enrolling in clinical trials	Transportation options are widely available for people enrolling in clinical trials
	Commitment to WHO's network of age-friendly cities*	Isn't represented in network and hasn't shown other types of commitment	Isn't represented in network, but has shown other commitment to age- friendly cities	Is represented in network

\*Denotes that an indicator was scored based on secondary data

# Appendix B: Secondary Data & Sources

# Secondary Data

Data Point	Canada	France	Germany	Italy	Japan	UK	US	Data Point	Canada	France	Germany	Italy	Japan	UK	US
Presence of a national plan	Non-governmental strategy (1) Link: http://www.alsheimer. ca/-/media/Files/national/ Advocacy/CADDP_Strategic. Objectives.e.pdf	Yes (2) Link: https://www.alz.co.uk/ sites/default/files/plans/ At/heimer.Plan.2008-2012: France-ENG.pdf	No; Bavaria (3) and Saarland (4) have regional plans Bavaria link: <u>https://www. atr.co.uk/sitea/default/files/</u> plans/Bavaria-english.pdf Saarland link: <u>https://www.</u> atr.co.uk/sitea/default/files/ plans/saarland-english.pdf	Yes Link to presentation [5]: https://www.alx.co.uk/sites/ default/files/plans/faly.pdf Link to unofficial translation [6]: https://www.alx.co.uk/ sites/default/files/plans/faly. english.pdf	Yes Link (7): <u>https://www.alz</u> . co.uk/dementia:plans/ national-plans	Yes Link to England Plan I®: http://www.gov.scot/ Besource/00/2/00/23/72.pdf Link to Scotland Plan I9: http://www.gov.scot/ Besource/00/2/00/23/72.pdf Link to Wales Plan (10): http://gov.wales/docs/dhss/ publications/110/202dementiaen, pdf	Yes Link to US Plan (11): <u>https://</u> aspe.hhs.gov/report/national. plan-address-alzheimers: disease-2016-update	General practitioner able to diagnose and treat dementia	Yes Link: http://www.alzheimer, sal-/media/Files/national/ Core-lit-brochures/Gatting_a_ Diagnosis_e.pdf [20]	Limited diagnostic ability (21) Link: <u>http://www.</u> alzheimer-europe.org/ Policy-in-Practice2/ Country-comparisons/2012- National-Dementia- Stategies-diagnosis: Ireatment-and-research	Yes [22] Link-http://www. alzheimer-europe.org/ Policy-in-Practice2/ Country-comparisons/2012- National-Demontia- Strategies-diagnosis: Irreatment-and-research	Limited diagnostic ability (23) Link: http://www. at/heimer.europe.org/ Policy-in-Practice2/ Country-comparisons/2012- National-Dementia: Strategies-diagnosis- treatment-and-research	N/A - no registration system of general practitioners (24) Link: http://alxheimerstaday, elsevier.com/Content/PDE/ How.should_a_national_ dementia_policy_interac_ with the public_health_and_ social-care_systems.pdf	No (England) (25) Link:http://www. alzheimer.europe.org/ Policy:in:Practice2/ Country-comparisons/2022- National-Dementia- Strategies-diagnosis: Ireatment:and-research	No [26] Link: <u>https://www.nia.nih.gov/</u> alz <del>heimers/topics/diagnosis</del>
Commitment to WHO network of dementia-friendly communities (12)	Yes Link: <u>https://extranet.who.int/</u> sree/Reports?op-vs&path=/ WH0_H0_Reports/G2t/PROD/ EXT/GNAFCC%202	Yes Link: <u>https://extranet.who.int/</u> sree/Reports?op=vs&path=/ WHO_HQ_Reports/62/PROD/ EXT/GNAECC%202	No	Yes Link: <u>https://extranet.who.int/</u> scree/Reports?opeys&paths/ WHO_HO_Reports/S21/PROD/ EXT/SNAFCC%202	Yes Link: <u>https://extranet.who.int/</u> sree/Reports?op-ys&path=/ WHO_HO_Reports/62t/PROD/ EXT/GNAFCC%202	Yes Link: https://extranet.who.int/ sree/Reports?op=vs&path=/ WHO_HQ_Reports/G2//PROD/ EXT/GNAECC%202	Yes Link: https://extranet.who.int/ sree/Reports?op=vs&path=/ WHO_HQ_Reports/62v/PROD/ EXT/GNAECC%202	% of doctors that are specialists (27)	52.45% Link: <u>Stats OFCD org</u>	53.62% Link: <u>Stats OECD.org</u>	58.03% Link: <u>State OECD.org</u>	77:34% Link: <u>State OECD org</u>	N/A	<b>71.91%</b> Link: <u>Stats OECD.org</u>	88.08% Link: <u>Stats.0ECD.org</u>
Trend in change in total domestic R&D funding (13)	Decrease Link: <u>https://data.oecd.org/</u> rd/groas-domeatic-spending: <u>on-r-d.htm#indicator-chart</u>	Increase Link: <u>https://data.oecd.org/</u> rd/gross-domestic-spending- on-r-d.htm#indicator-chart	Increase Link: https://data.cecd.org/ rd/gross-domestic-spending- on-r-d.htm#indicator-chart	Increase Link: https://data.oecd.org/ rd/gross-domestic-spending- on-r-d.htm#indicator-chart	Flat Link: https://data.coecd.org/ rd/gross-domestic-spending- on-r-d.htm#indicator-chart	Flat Link: <u>https://data.oecd.org/</u> rd/gross_domestic-spending= ond.htm#indicator-chart	Increase Link: <u>https://data.oecd.org/</u> rd/gross_domestic-spending_ on_r_d.htm#indicator_chart	Dementia trials per 100,000 of population aged 65 and over (28) and (29)	4.361317014 Link (28): <u>www.clinicaltrials.gov</u> Link (29): <u>https://esa.un.org/</u> unpd/wpp/DataQuery/	2.753411306 Link (28): <u>www.clinicaltriats.</u> goz Link (29): <u>https://esa.un.org/</u> unpd/wpp/DataQuery/	1.12615241 Link (28): <u>www.clinicaltriats.</u> gox Link (29): <u>https://esa.un.org/</u> wppd/wpp/DataQuery/	0.72382658 Link (28): <u>www.clinicatiriats.</u> gox Link (29): <u>https://esa.un.org/</u> unpd/wpp/DataQuery/	0.266922592 Link (28): <u>www.clinicaltriats.</u> gov Link (29): <u>https://esa.un.org/ unpd/wpp/DataQuery/</u>	1.705534285 Link (28): <u>www.clinicatirials.</u> gox Link (29): <u>https://esa.un.org/</u> unpd/wpp/DataQuery/	2.610395342 Link (28): <u>www.clinicaltriats.</u> gov Link (29): <u>https://esa.un.org/</u> unpd/wpp/DataDuery/
Government funding of neurodegenerative diseases, in millions USD (14)	38 Link: <u>http://www.eecd.org/</u> health/addressing-dementia- 9789264231726-en.htm	170 Link: <u>http://www.oecd.org/</u> health/addressing-dementia- 9789264231726-en.htm	115 Link: <u>http://www.oecd.org/</u> <u>health/addressing-dementia-</u> 9789264231726-en.htm	6 Link: <u>http://www.oecd.org/</u> <u>health/addressing-dementia-</u> <u>9789264231726-en.htm</u>	40 Link: <u>http://www.oecd.org/</u> health/addressing-dementia_ 9789264231726-en.htm	75 Link: <u>http://www.eecd.org/</u> health/addressing-dementia- 9789264231726-en.htm	1,671 Link: http://www.oecd.org/ health/addressing-dementia. 9789264231726-en.htm	Long-term care recipients in institutions other than hospitals, % of total aged 65 and over (30)	3.4% Link: <u>Stats.OECD.org</u>	4.3% Link: <u>Stats.OECD.org</u>	4.1% Link: <u>Stats.OECD.org</u>	N/A	2.7% Link: <u>Stats.OECD.org</u>	4.2% Link: <u>Stats OECD.org</u>	3.3% Link: <u>Stats OECD org</u>
Government funding of dementia R&D, in millions USD (15)	31 Link: <u>http://www.oecd.org/</u> <u>health/addressing-dementia-</u> <u>9789264231726-en.htm</u>	55 Link: <u>http://www.oecd.org/</u> <u>health/addressing-dementia-</u> <u>9789264231726-en.htm</u>	n/a Link <u>: http://www.oecd.org/</u> <u>health/addressing-dementia-</u> <u>9789264/231726-en.htm</u>	n/a Link: <u>http://www.oecd.org/</u> <u>health/addressing-dementia-</u> <u>9789264231726-en.htm</u>	21 Link: <u>http://www.oecd.org/</u> health/addressing-dementia- 9789264231726-en.htm	49 Link: <u>http://www.oecd.org/</u> health/addressing-dementia- 9789264231726-en.htm	625 Link: http://www.oecd.org/ health/addressing-dementia_ 9789264231726-en.htm	Long-term care recipients at home, % of total aged 65 and over (31)	N/A	<b>6.2%</b> Link: <u>Stats.OFCD.org</u>	8.9% Link: <u>Stats OECD.org</u>	5.3% Link: <u>Stats OECD.org</u>	9.8% Link: <u>Stats OECD.org</u>	<b>6.9%</b> Link: <u>Stats.OECD.org</u>	2.7% Link: <u>Stats OECD.org</u>
Government expenditure on long term care, % of GDP (16)	1.1 Link: <u>State OECD.org</u>	1.3 Link: <u>Stats OECD.org</u>	1 Link: <u>Stats OECD.org</u>	0.6 Link: <u>Stats.OECD.org</u>	1.9 Link: <u>Stats OECD.org</u>	1.2 Link: <u>Stats OECD.org</u>	0.5 Link: <u>State OECD org</u>	Median approval time for priority review; new active substances	210 days (32) Link: http://bmjopen.bmj.com/ content/bmjopen/5/5/e006816, full.pdf	264 [EMA] [33] Link: http://cirsci.org/sites/ default/files/CIRS_R&D_57_ ICH_%20approval_%20 times_2005-2014_%20 06072015.pdf	264 (EMA) (34) Link-http://cirsci.org/sites/ default/files/CIRS_R&D_57_ ICH_%20approval_%20 times_2005-2014_%20 06072015.pdf	264 (EMA) (35) Link-http://cirsci.org/sites/ default/files/CIRS_R&D_57_ ICH_%20approval_%20 Immes_2005-2014_%20 06072015.pdf	275 (36) Link: http://cirsci.org/sites/ default/files/URS_R&D_57_ ICH_%20approval_%20 times_2005-2014_%20 06072015.pdf	264 [EMA] [37] Link: http://cirsci.org/sites/ default/files/CIRS_R&D_57_ ICH_%20approval_%20 Imme_2005-2014_%20 66072015.pdf	243 (38) Link: <u>http://cirsci.org/sites/</u> default/files/CIRS_RRD_57_ ICH_%20aptroval_%20 times_2005-2014 %20 6072015.ddf
Government expenditure on long term care, per capita (17)	635.9 (Canadian dollar) Link: <u>State OECD org</u>	420 (Euro) Link: <u>Stats OECD org</u>	371.5 (Euro) Link: <u>Stats OECD org</u>	(169.4) Euro Link: <u>Stats OECD.org</u>	70,985 (Yen) Link: <u>Stats OECD.org</u>	334.3 (Pound) Link: <u>Stats OECD org</u>	292.9 (USD) Link: <u>Stats OECD org</u>	Burden of government regulation (39)	3.8 Link: <u>http://reports.weforum.</u> org/global-competitiveness-	2.9 Link: <u>http://reports.weforum.</u> org/global-competitiveness.	3.9 Link: <u>http://reports.weforum,</u> org/global_competitiveness-	1.9 Link: <u>http://reports.weforum.</u> <u>org/global.competitiveness.</u>	3.6 Link: <u>http://reports.weforum.</u> <u>arg/global-competitiveness.</u>	3.9 Link: <u>http://reports.weforum.</u> org/global-competitiveness-	3.6 Link: <u>http://reports.weforum,</u> org/global-competitioness.
Presence of reliable diagnosis rates (18) (19)	20 – 50% of cases are documented and reported in high income countries Link to #https://www. alz.co.uk/research/ WorldAlzheimerReport2011. adf	20 - 50% of cases are documented and reported in high income countries Link to 18: <u>https://www. alc.co.uk/research/</u> <u>WorldAltheimerReport2011.</u> <u>ndf</u> Link to 19: <u>http://</u>	20 – 50% of cases are documented and reported in high income countries Link to 18: <u>https://www.</u> alc.co.uk/research/ WorldAlheimerReport2011. pdf Link to 19: <u>http://</u>	20 – 50% of cases are documented and reported in high income countries Link to 18: <u>https://www.</u> aic.co.uk/research/ <u>WorldAlzheimerReport2011.pdf</u> Link to 19: <u>http://</u> researchbriefings.parliament.	20 – 50% of cases are documented and reported in high income countries Link to 18: <u>https://www.</u> alc.cou//research/ WorldAlzheimerReport2011. ndf Link to 19: <u>http://</u>	67% Link to 18: <u>https://www.</u> alz.co.uk/research/ WorldAlzheimerReport2011. adl Link to 19: <u>http://</u> researchbriefings.parliament. uk/ResearchBriefing/ Summany/SN02007Hfullreport	20 – 50% of cases are documented and reported in high income countries Link to 18: <u>https://www.</u> <u>ak.co.uk/research/</u> <u>WorldAlzheimerReport2011.</u> adf Link to 19: <u>http://</u>	Intellectual property protection (40)	competitiveness-rankings/ 5.8 Link: http://reports.weforum, arg/global.competitiveness- report-2015-2016/ competitiveness-rankings/	competitiveness-cankings/ 5.8 Link: http://reports.weforum. org/global-competitiveness. report-2015-2016/ competitiveness-cankings/	5.7 Link: http://reports.weforum. org/plobal_competitiveness_ report_2015_2016/ competitiveness_rankings/	4.1 Link. <u>http://reports.weforum.</u> org/global_competitiveness_ report_2015_2016/ competitiveness_rankings/	6.1 Link: http://reports.weforum. org/global-competitiveness- report-2015-2016/ competitiveness-rankings/	Competitiveness-rankings/	5.8 Link: <u>http://reports.weforum</u> arg/global_competitiveness_ report_2015-2016/ competitiveness_rankings/
	Link to 19: <u>http://</u> researchbriefings. partiament.uk/ ResearchBriefing/Summary/ SN07007#fullreport	researchbriefings.parliament, uk/ResearchBriefing/ Summary/SN07007#fullreport	researchbriefings.parliament. uk/ResearchBriefing/ Summary/SN07007#fullreport	uk/ResearchBriefing/ Summary/SN07002#fullreport	researchbriefings.parliament, uk/ResearchBriefing/ Summary/SN07007#fullreport		researchbriefings.parliament. uk/ResearchBriefing/ Summary/SN07007#fullreport	Data exclusivity (41)	8 years Link: <u>http://www.ifpma.org/</u> wp-content/uploads/2016/01/ IEPMA_2011_Data_Exclusivity_ En_Web.pdf	10 years Link: <u>http://www.ifpma.org/</u> wp-conteni/uploads/2016/01/ IFPMA_2011_Data_ Evclusivity_En_Web.pdf	10 years Link: http://www.itpma.org/ wp-content/uploads/2016/01/ IEPMA_2011_Data_ Exclusivity_En_Web.pdf	10 years Link: http://www.ifpma.org/ wp-content/uploads/2016/01/ IEPMA_2011_Data_ Exclusivity_En_Web.pdf	8 years Link:.http://www.ifpma.org/ wp-content/uploads/2016/01/ IEPMA_2011_Data_ Exclusivity_En_Web.pdf	10 years Link: <u>http://www.ifpma.org/</u> wp-content/uploads/2016/01/ IEPMA_2011_Data_ Exclusivity_En_Web.pdf	5 / 12 years Link: <u>titp://www.ifpma.org/</u> wp-content/uploats/2016/01/ IEPMA_2011_Data_ Exclusivity_En_Web.pdf

Parenthetical citations in this table reference the source list. The source list and full citations can be found on page 50.

Parenthetical citations in this table reference the source list. The source list and full citations can be found on page 50.

Data Point	Canada	France	Germany	Italy	Japan	UK	US
Practicing nurses per 1,000 residents (42)	9.8 Link- <u>https://data.oecd.</u> org/healthres/nurses. htm#indicator_chart	9.6 Link: <u>https://data.oecd.</u> org/healthres/nurses. htm#indicator_chart	13.4 Link- <u>https://data.eecd.</u> org/healthres/nurses. htm#indicator_chart	6.2 Link: <u>https://data.oecd.</u> org/healthres/nurses. htm#indicator_chart	11 Link: <u>https://data.cecd.</u> org/healthres/nurses. htm#indicator-chart	8.2 Link- <u>https://data.oecd.</u> org/healthres/nurses. htm#indicator-chart	1132 Link- <u>https://data.oecd.</u> org/healthres/nurses. htm#indicator_chart
Rate of population with tertiary education	55.2% (43) Link- <u>https://data.eecd.org/</u> eduatt/adult-education-level. htm#indicator-chart	16.4% (44) Link: <u>http://data.worldbank.</u> org/indicator/SE.TER.CUAT. BA.ZS?locations=FR	27.6% [45] Link- <u>https://data.eecd.org/</u> eduatt/adult-education-level. htm#indicator-chart	17.5% (46) Link: <u>https://data.oecd.org/</u> eduatt/adult-education-level. htm#indicator-chart	49.5% [47] Link: <u>https://data.cecd.org/</u> eduatt/adult-education-level. htm#indicator-chart	43.5% (48) Link: <u>https://data.oecd.org/</u> eduatt/adult-education-level, htm#indicator-chart	44.6% [49] Link <u>https://data.oerd.org/</u> eduati/adult_education-level. htm#indicator_chart
Labor force participation rate of people 65+ (50)	13.4% Link- <u>https://data.oecd.org/</u> <u>eduatt/adult-education-</u> level.htm#indicator-chart	2.7% Link: <u>https://data.oecd.org/</u> eduatt/adult-education- level.htm#indicator-chart	6.1% Link- <u>https://data.oecd.org/</u> eduatt/adult-education- level.htm#indicator-chart	3.8% Link- <u>https://data.oecd.org/</u> eduatt/adult-education- level.htm#indicator-chart	22.1% Link: <u>https://data.oecd.org/ eduatt/adult-education- level.htm#indicator-chart</u>	10.3% Link: <u>https://data.cecd.org/</u> <u>eduatt/adult-education.</u> <u>level.htm#indicator-chart</u>	18.9% Link: <u>https://data.seed.org/</u> eduatt/adult_education_ level.htm#indicator_chart
Beds in residential long-term care facilities per 1,000 people 65+ (51)	50.7 Link: <u>Stats.OECD.org</u>	54.1 Link: <u>Stats.OECD.org</u>	53.1 Link- <u>Stats.OECD.org</u>	18.5 Link: <u>Stats.OECD.org</u>	24.9 Link: <u>Stats.OECD.org</u>	<b>47.6</b> Link: <u>Stats.OECD.org</u>	35.4 Link- <u>Stats.OECD.org</u>
Formal long-term care workers per 1,000 of population (52)	7 Link: <u>Stats.OECD.org</u>	N/A	9.8 Link- <u>Stats.OECD.org</u>	<b>7.1</b> Link: <u>Stats.0ECD.org</u>	15.3 Link: <u>Stats.OECD.org</u>	N/A	17.1 Link: <u>Stats.OECD.org</u>
Long term care recipients at home - % of total aged 65 and over (53)	N/A	6.2 Link: <u>Stats OECD org</u>	8.9 Link- <u>Stats.OECD.org</u>	5-3 Link: <u>Stats.OECD.org</u>	9.8 Link: <u>Stats.OECD.org</u>	6.9 Link: <u>Stats.OECD.org</u>	2.7 Link- <u>Stats, OECD.org</u>
Long term care recipients in institutions % of total age 65 and over (54)	3.4 Link: <u>Stats.OECD.org</u>	4.3 Link: <u>Stats.OECD.org</u>	4.1 Link- <u>Stats.OECD.org</u>	N/A	2.7 Link: <u>Stats.OECD.org</u>	4.2 Link- <u>Stats OECD.org</u>	3.3 Link- <u>State,OECD.org</u>
Participation of Alzheimer's association in non-communicable disease alliance (55)	Yes Link: https://ncdalliance.org/ who-we-are/the-ncd-alliance. network/federation-member- associations/	No Link: <u>https://ncdalliance,</u> arg/who-we-are/the-ncd- alliance-network/federation- member-associations/	Yes Link: <u>https://ncdalliance,</u> org/who-we:are/he-nod- alliance-network/federation- member-associations/	Yes Link: https://ncdalliance.org/ who-we-are/the-incd-alliance- network/federation-member- associations/	Yes Link: https://ncdalliance, org/who-we-are/the-ncd_ alliance-network/federation_ member-associations/	Yes Link: https://ncdalliance, org/who-we-are/the-ncd- alliance-network/federation_ member-associations/	Yes Link: https://ncdalliance. org/who-we:are/the-ncd- alliance-network/federation- member-associations/
Urban population, % of total (56)	82 Link: <u>http://data.worldbank.org/</u> indicator/SP.URB.TOTL.IN.ZS	80 Link:http://data.worldbank. org/indicator/SP.URB. TOTL.IN.ZS	75 Link: <u>http://data.worldbank.</u> org/indicator/SP.URB. TOTL.IN.ZS	69 Link: <u>http://data.worldbank.</u> org/indicator/SP.URB. TOTL.IN.ZS	93 Link: <u>http://data.worldbank.</u> org/indicator/SP.URB. TOTLIN.ZS	83 Link: <u>http://data.worldbank.</u> org/indicator/SP.URB. TOTL.IN.ZS	82 Link- <u>http://data.worldbank,</u> org/indicator/ <u>SP-URB,</u> TOTL.IN.ZS
Rural population, % of total (57)	18 Link. <u>http://data.worldbank.</u> org/indicator/SP.URB. TOTL.IN.ZS	20 Link: <u>http://data.worldbank,</u> arg/indicator/SP.URB, TOTL.IN.ZS	25 Link: http://data.worldbank, org/indicator/SP.URB, TOTL.IN.25	31 Link: <u>http://data.worldbank,</u> org/indicator/SP.URB, TOTLINZS	7 Link: <u>http://data.worldbank.</u> org/indicator/SP.URB. TOTLINZS	17 Link: <u>http://data.worldbank,</u> org/indicator/SP.URB, TOTI_IN_ZS	18 Link: <u>http://data.worldbank.</u> org/indicator/SP.URB. TOTL.IN.ZS
Policy on driver's license	Some procedures exist to evaluate whether patient should still drive (58) Link: http://www.atheimer. ca/ent/ising-with-dementa/ Day-to-day-biong/Driving-and- transportation	N/A	N/A	N/A	N/A	N/A	N/A

Parenthetical citations in this table reference the source list. The source list and full citations can be found on page 50.

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ADI is the international federation of 85 Alzheimer associations around the world, in official relations with the World Health Organization. ADI's vision is prevention, care and inclusion today, and cure tomorrow. ADI believes that the key to winning the fight against dementia lies in a unique combination of global solutions and local knowledge. As such, it works locally, by empowering Alzheimer associations to promote and offer care and support for persons with dementia and their care partners, while working globally to focus attention on dementia and campaign for policy change from governments. For more information, please wisit www alz co uk



The Global Coalition on Aging aims to reshape how global leaders approach and prepare for the 21st century's profound shift in population aging. GCOA uniquely brings together global corporations across industry sectors with common strategic interests in aging populations, a comprehensive and systemic understanding of aging, and an optimistic view of its impact. Through research, public policy analysis, advocacy, and strategic communications, GCOA is advancing innovative solutions and working to ensure global aging is a path for fiscally sustainable economic growth, social value creation and wealth enhancement. For more information, visit www.globalcoalitiononaging.com.