



Response and Analysis of UK House of Lords' Science and Technology Committee's 'Ageing: Science, Technology and Healthy Living' Report

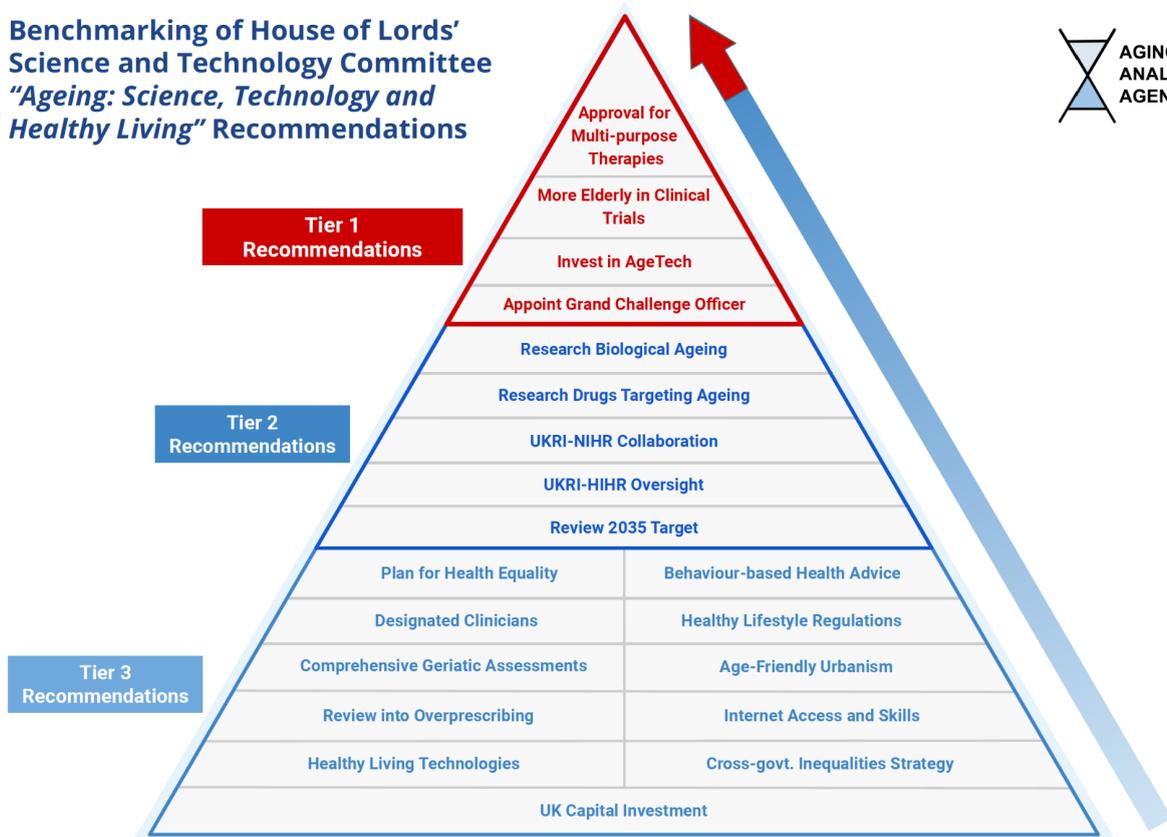
Official Response, Analysis of Report & Benchmarking of Recommendations

Scored Concerns and Recommendations of the House of Lords Science and Technology Select Committee's 'Ageing: Science, Technology and Healthy Living' Report

In this section is listed all the specific, explicit recommendations made by the House of Lords Science and Technology Select Committee throughout *Ageing: Science, Technology and Healthy Living*.

First, they are listed here categorised by "tier", which is a rank determined by the scoring framework we devised in the previous section Framework Description. **Second**, the same recommendations are listed again in full, with each recommendation's scores (as derived by the recommendation benchmarking framework described in the preceding section), with explanatory commentary by Aging Analytics Agency analysts beneath. The recommendations made by the report itself are represented by bold italicized text, preceded by key concerns (which do not qualify as direct recommendations), marked in italicized text, which provide additional context and background for each recommendation. Finally, key commentary by Aging Analytics Agency analysts is represented below each recommendation in unitalized text.

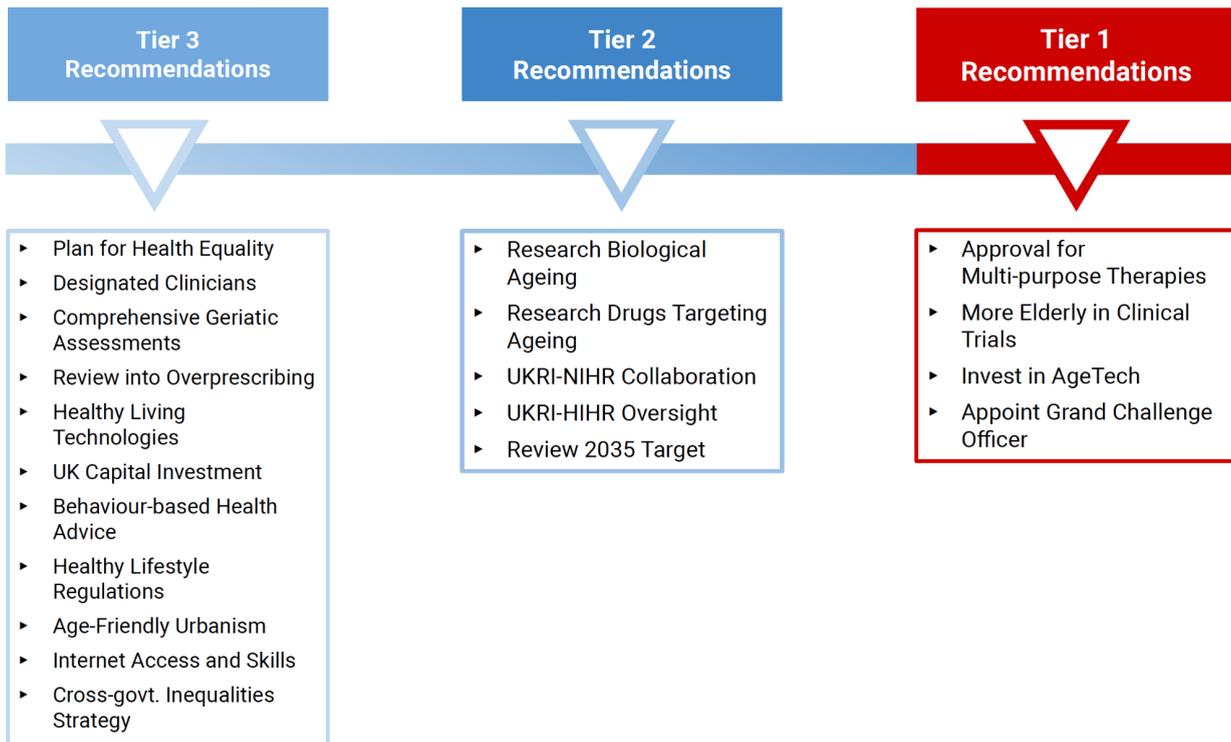
Benchmarking of House of Lords' Science and Technology Committee "Ageing: Science, Technology and Healthy Living" Recommendations





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Benchmarking of House of Lords' Science and Technology Committee "Ageing: Science, Technology and Healthy Living" Recommendations



Tier 1 Recommendations

Approval for Multi-purpose Therapies

"We recommend that the Medicines and Healthcare products Regulatory Agency (MHRA) show greater willingness to approve trials which target multiple conditions. It should also explore the use of novel trial endpoints, such as using biomarkers of ageing as measures of success in treatments targeting the ageing process." (Paragraph 156)

More Elderly in Clinical Trials

"We recommend that the Medicines and Healthcare products Regulatory Agency (MHRA) ensures that older people are included more frequently in clinical trials, particularly where the drug will be used primarily in that population. When developing novel trial designs for drugs targeting the ageing process, as recommended above, these should also allow for inclusion of people with multimorbidity." (Paragraph 166)

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Invest in AgeTech

"We recommend that the Government makes targeted and strategic investments in research for the design, evaluation and uptake of data-driven services, assistive robot technologies and AI for older people, in order to develop national expertise and critical mass in this important area." (Paragraph 305)

Appoint Grand Challenge Officer

"We recommend that the Secretary of State for Health and Social Care appoints a senior responsible officer for achieving the mission of the Ageing Society Grand Challenge, as this does not appear to be covered by the senior responsible officer for the challenge." (Paragraph 376)

Tier 2 Recommendations

Research biological aging

"We recommend that UK Research and Innovation commit to funding further research into the biological processes underlying ageing as a priority, in particular to address gaps in understanding the relevance of ageing hallmarks to humans. Research to identify accurate biomarkers of ageing in humans should also be prioritised, to support studies to improve health span." (Paragraph 178)

Research drugs targeting aging

"We recommend that UK Research and Innovation and the National Institute for Health Research support further research into drugs that target the ageing process— including proof of concept trials using repurposed drugs (such as in the TAME trial)." (Paragraph 17)

UKRI-NIHR collaboration

"We recommend that UK Research and Innovation and the National Institute for Health Research commit to working more closely to ensure rapid translation of ageing research into clinical benefit." (Paragraph 180)

UKRI-HIHR oversight

"We recommend that the Chief Medical Officer is given responsibility for overseeing the coordination of ageing research between UK Research and innovation and the National Institute for Health Research." (Paragraph 181)

Review 2035 Target

"We recommend that the Government review the feasibility of the target to increase healthy life expectancy by five years by 2035, and revise or re-commit to it. The Secretary of State for Health and Social Care should commit to reporting annually to Parliament on progress towards the

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target. The Government should also revise or re-commit to the target to reduce inequalities and outline measurable targets for the reduction in inequalities it hopes to achieve by 2035.” (Paragraph 36)

Tier 3 Recommendations

Plan for Health Equality

“We recommend that the Government, along with NHS England, Public Health England, and other agencies, prioritise reducing health inequalities. In its response to this report we request that the Government sets out a plan for reducing health inequalities over the next Parliament.” (Paragraph 31)

Designated Clinicians

“We recommend that, as was proposed in 2013, the NHS ensures that all older patients have a designated clinician. This clinician would have oversight of the patient’s care as a whole, and should coordinate activity across multidisciplinary teams, which should include members from across the health and social care sectors. The clinician could be from either primary or secondary care, depending on the patient’s needs.” (Paragraph 67)

Comprehensive Geriatric Assessments

“We recommend that designated clinicians for older people ensure that Comprehensive Geriatric Assessments are used regularly for older patients, particularly for those with multimorbidity. The Government should ensure that training in how to conduct Comprehensive Geriatric Assessments is a core part of medical training, and that training is provided on an ongoing basis, in particular to GPs.” (Paragraph 68)

Review into Overprescribing

“We recommend that the review into overprescribing—which is due to report to the Secretary of State for Health and Social Care in late 2020—should be published as soon as possible.” (Paragraph 81)

Healthy Living Technologies

“When allocating funding through the Ageing Society Grand Challenge, we recommend that the Government supports the deployment of technologies that contribute to healthier and independent living—both those available now and those that may become available in future. This should prioritise disadvantaged groups in order to bring the greatest health benefits, whilst also realising economic benefits of innovations that are developed in the UK.” (Paragraph 349)

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UK Capital Investment

"We recommend that the Government ensure the UK remains a global leader in drug research and development. It should work towards making the UK a more attractive environment for growth capital investment, to stop UK innovations moving abroad after the discovery stage of research." (Paragraph 192)

Behaviour-based Health Advice

"We recommend that organisations with responsibility for healthy ageing advice incorporate findings about the benefits of healthy behaviours that may have a larger impact upon people's behaviour than existing messaging. The benefits of building up good levels of physical fitness and cognitive reserve should be promoted, particularly to people in disadvantaged groups that suffer the worst health." (Paragraph 248)

Healthy Lifestyle Regulations

"We recommend that the Government implement a concerted and coordinated set of national policies to support healthy ageing, including: regulatory and fiscal measures, actively to encourage people to adopt lifestyles that support healthy ageing; increasing the reach of the NHS Health Check to those in disadvantaged groups who will benefit the most; and working with local authorities on the funding of local services, housing and infrastructure to encourage and facilitate healthier living across the life-course, including the necessary services to maintain health and independence in old age." (Paragraph 284)

Age-Friendly Urbanism

"We recommend that the Government use planning rules to ensure that homes and communities are accessible for people with limited mobility and adaptable as their needs change with age. The Government should ensure that sufficient funds are available—for example through the Disabled Facilities Grant—to facilitate improvements to existing homes. The priority should be areas with poor housing and infrastructure, in order to reduce health inequalities." (Paragraph 292)

Internet Access and Skills

"We recommend that the UK Government ensures internet access for all homes so that older people can access services to help them live independently and in better health. The Government should promote and support lifelong digital skills training so that people enter old age with the ability to use beneficial technologies. Greater support should be provided to the large proportion of the current older generation which lacks these skills, so that they do not miss out on the benefits of available technologies." (Paragraph 338)

Cross-govt. Inequalities Strategy

"We recommend that the cross-government strategy explicitly addresses the issue of reducing inequalities in healthy ageing, without 'passing the buck' to wider Government goals or statutory

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obligations. In producing the strategy, the Government should seek wide input from stakeholders; most importantly, from older people.” (Paragraph 380)

These specific recommendations put forward in the Committee’s report which are listed in full below with their preambles included. Each is then scored according to Aging Analytics Agency’s framework and a justification provided beneath.

Tier 1 Recommendation Scores

Approval for Multi-purpose Therapies

“Understanding of the underlying biological processes of ageing has advanced significantly in animal models, but translation to human ageing is incomplete. The lack of accurate biomarkers for human ageing is an impediment to assessing an individual’s biological age. (Paragraph 126)

Promising advances have been made in the development of drugs that target the underlying processes of ageing. These could delay the onset of age related diseases and reduce polypharmacy. Research into repurposing drugs is particularly welcome, as such drugs have already been tested for safety, dosage and tolerability. (Paragraph 144)

The fact that clinical trials are usually approved only if they target a single indication poses a challenge to research into drugs that target underlying ageing processes. The novel design of the TAME trial in the US hopes to provide proof of concept for trials targeting the ageing process itself. (Paragraph 155)

We recommend that the Medicines and Healthcare products Regulatory Agency (MHRA) show greater willingness to approve trials which target multiple conditions. It should also explore the use of novel trial endpoints, such as using biomarkers of ageing as measures of success in treatments targeting the ageing process. (Paragraph 156)”

Score

A1 (Feasibility increased by continuance of pandemic): 0

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): +1

C1 (Market readiness applicability): +1

C2 (Project readiness): +1

C3 (Move to market readiness): +1

D1 (Actionability): +1

D2 (Degree of measurability): +1

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- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): 0
- D5 (Resourcefulness): +1
- D6 (Reorganisation): 0
- E (Disruptiveness): +2
- F (Dividends - does the recommendation aid in social activity and inclusivity?): -1

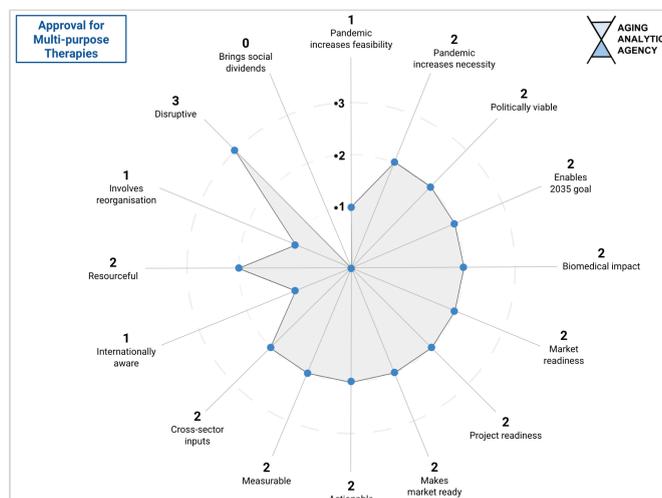
TOTAL SCORE: 12

This recommendation scores high in the Political Timing Score (A). Aging Analytics Agency strongly supports this as an eminently feasible and necessary step to achieving the current 2035 goal or anything similar. Furthermore the present circumstances provide a useful political climate in which to garner public support to fast-track biomedical efforts.

Having seen vast portions of the national budget directed toward shielding the nation's economy and health from the pandemic, and having adapted their lifestyles and expectations accordingly, the public would likely be extremely welcoming of such regulatory conditions as the recommendation describes.

During and shortly after the second world war, the nation made a coordinated effort to cope with an inundation of wounded veterans. When the war was over, they refused to allow the health system to re-fragment and slump back into an "old normal" of health inequality, resulting in today's National Health Service.

The remaining political capital which presently exists for coping with the current crisis, should likewise be repurposed and redirected toward developing preventive innovations for averting a "new normal" of repeated pandemics for which the UK remains perpetually unprepared, a long-term fear at the back of the minds of many.



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More Elderly In Clinical Trials

"Historically, clinical trials excluded older people and people with multimorbidity, and some continue to do so. This is a particular issue for drugs targeting the ageing process, as older people and those with multimorbidity will be the main recipients of such drugs. (Paragraph 165)

We recommend that the Medicines and Healthcare products Regulatory Agency (MHRA) ensures that older people are included more frequently in clinical trials, particularly where the drug will be used primarily in that population. When developing novel trial designs for drugs targeting the ageing process, as recommended above, these should also allow for inclusion of people with multimorbidity. (Paragraph 166)"

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability):-1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): +1

C1 (Market readiness applicability): +1

C2 (Project readiness): +1

C3 (Move to market readiness): +1

D1 (Actionability): +1

D2 (Degree of measurability): +1

D3 (Degree of leveraging cross-sector inputs): +1

D4 (Awareness of international context): 0

D5 (Resourcefulness): +1

D6 (Reorganisation): 0

E (Disruptiveness): +2

F (Dividends - does the recommendation aid in social activity and inclusivity?): -1

TOTAL SCORE: 11

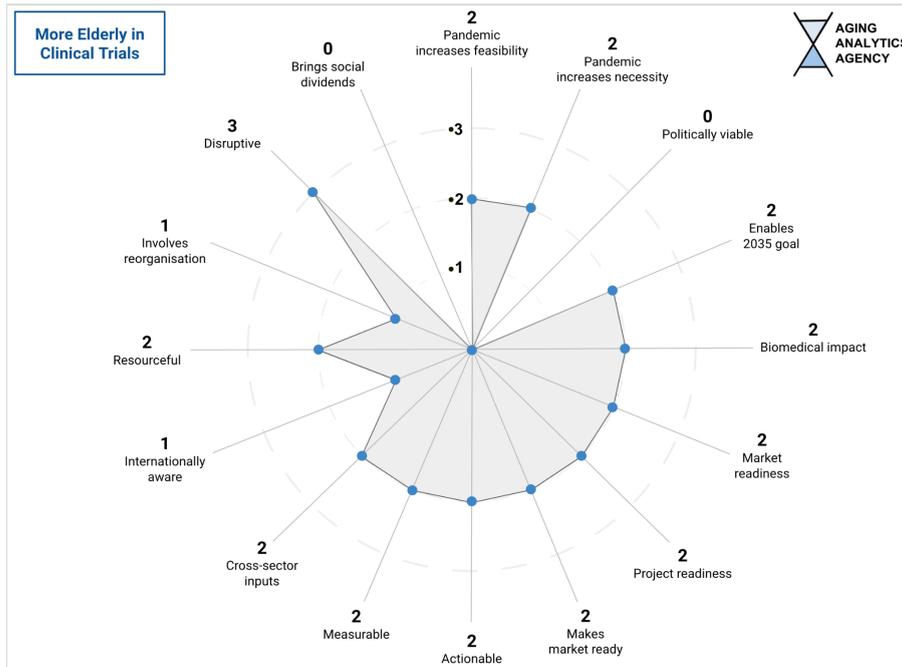
This recommendation earns a +2 for disruptiveness as it realistically anticipates the future restorative potential of aging biomedicine. Equal participation across all age groups in clinical trials is long overdue and necessary to uncover how aging unfolds over decades.

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However, we would like to point out that many of the risks inherent in clinical trials, both in terms of patient safety and investment risk, can be eliminated with the judicious use of biomarkers.



Invest in AgeTech

“More widespread use of telecare services—particularly modern digital systems with monitoring capabilities—may enable more people to live independently in their homes for longer in old age. The upcoming digital telephone switchover provides impetus for this change and is an opportunity for local authorities to introduce more comprehensive services to facilitate safe and independent living. (Paragraph 298)

Data-driven services and emerging robotics and AI systems could provide significant support to older people, to enable them to live independently for longer. The results of ongoing projects in the UK and abroad will help to determine what role robotics can play. (Paragraph 304)

We recommend that the Government makes targeted and strategic investments in research for the design, evaluation and uptake of data-driven services, assistive robot technologies and AI for older people, in order to develop national expertise and critical mass in this important area. (Paragraph 305)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

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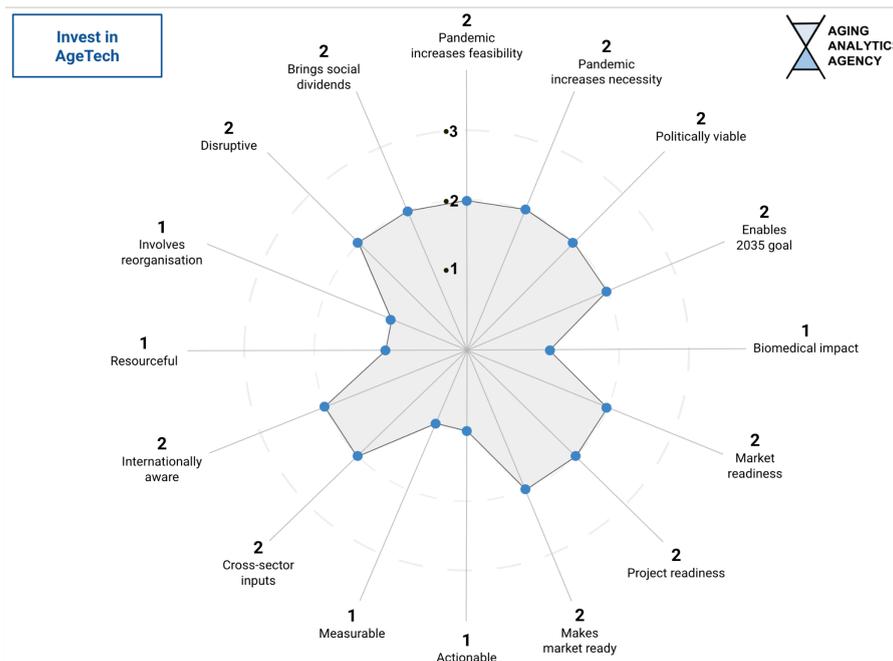


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- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness): +1
- C3 (Move to market readiness): +1
- D1 (Actionability): 0
- D2 (Degree of measurability): 0
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): 0
- D6 (Reorganisation): 0
- E (Disruptiveness): +1
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 11

This garners a strong score on “leveraging of cross-sector inputs” (D3). Aging Analytics Agency views AI and digital technologies as crucial from drug discovery for digital technologies for the elderly (AgeTech). Also shows good awareness of international context (D4) and readiness (C), as countries such as Japan already have advanced in market-ready digital products for the elderly, including for example elderly care robots.



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Appoint Grand Challenge Officer

"It is not clear who in Government is responsible for overseeing the Ageing Society Grand Challenge mission, aside from broad ministerial oversight from the Secretary of State for Health and Social Care. We are concerned that this policy has no clear ownership. (Paragraph 374)

The position taken by the Government that the challenge and the mission are overlapping but distinct is confusing, and we are concerned that achieving the mission does not appear to be at the core of the Grand Challenge. (Paragraph 375)

We recommend that the Secretary of State for Health and Social Care appoints a senior responsible officer for achieving the mission of the Ageing Society Grand Challenge, as this does not appear to be covered by the senior responsible officer for the challenge. (Paragraph 376)"

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): 0

C1 (Market readiness applicability): 0

C2 (Project readiness): 0

C3 (Move to market readiness): 0

D1 (Actionability): +1

D2 (Degree of measurability): +1

D3 (Degree of leveraging cross-sector inputs): +1

D4 (Awareness of international context): 0

D5 (Resourcefulness): +1

D6 (Reorganisation): +1

E (Disruptiveness): +1

F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

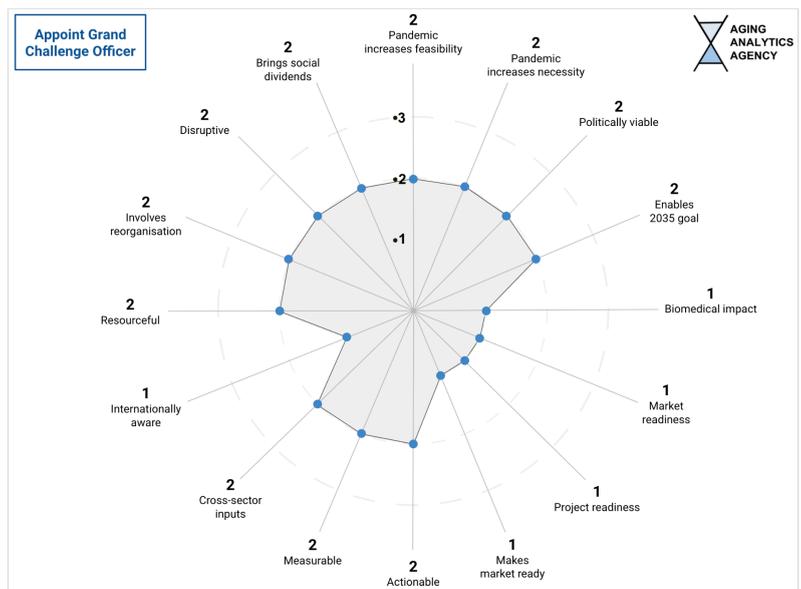
TOTAL SCORE: 11

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This largely addresses the need for accountability and helps to make coordination possible. However, the government should think twice about whether all industrial-scale, innovative, and biotechnological solutions for the Age Society Grand Challenge will continue to fit within the purview of the Minister for Health and Social Care in the longer term.



Tier 2 Recommendation Scores

Research drugs targeting aging

“We recommend that UK Research and Innovation and the National Institute for Health Research support further research into drugs that target the ageing process — including proof of concept trials using repurposed drugs (such as in the TAME trial). (Paragraph 179)”

Score

A1 (Feasibility increased by continuance of pandemic): +2

A2 (Necessity increased by covid pandemic): 0

A3 (Political viability): +1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): 0

B2 (Relevance to general goal of biomedical healthy life extension): +1

C1 (Market readiness applicability): +1

C2 (Project readiness): +1

C3 (Move to market readiness): +1

D1 (Actionability): 0

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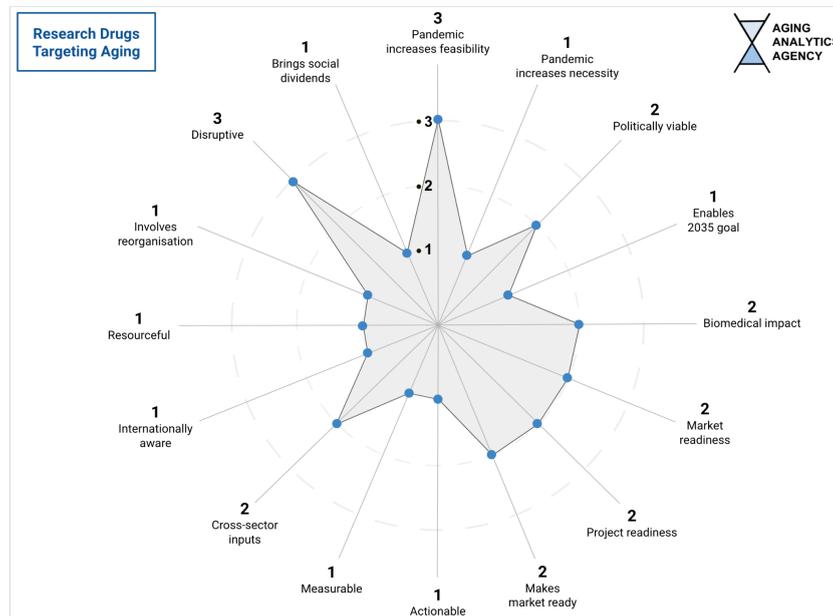


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- D2 (Degree of measurability): 0
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): 0
- D5 (Resourcefulness): 0
- D6 (Reorganisation): 0
- E (Disruptiveness): +2
- F (Dividends - does the recommendation aid in social activity and inclusivity?): 0

TOTAL SCORE: 10

This proposal earns a strong +1 for both resourcefulness (D5) and market readiness (C3). The weakness of many industrial strategies globally is that a lack of cross-sector input (a value also earning this recommendation a +1) often leads strategists unaware of when and when not to innovate. The repurposing of existing drugs is a long term strategy favoured by Aging Analytics Agency and earn.



UKRI-NIHR collaboration

"We recommend that UK Research and Innovation and the National Institute for Health Research commit to working more closely to ensure rapid translation of ageing research into clinical benefit. (Paragraph 180)"

Score

- A1 (Feasibility increased by continuance of pandemic): +1

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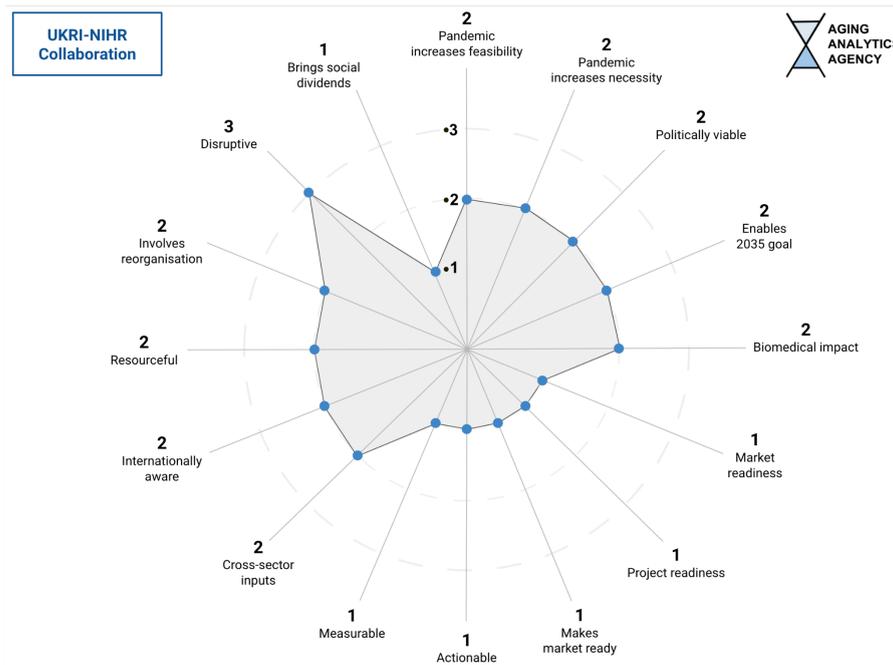


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- A2 (Necessity increased by covid pandemic): +1
- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): +1
- C1 (Market readiness applicability): 0
- C2 (Project readiness): 0
- C3 (Move to market readiness): 0
- D1 (Actionability): 0
- D2 (Degree of measurability): 0
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): +1
- E (Disruptiveness): +2
- F (Dividends - does the recommendation aid in social activity and inclusivity?): 0

TOTAL SCORE: 10

This scores strongly on and cross-sector coordination (D3) and very strongly on disruption (E). Accelerated clinical translation of biomedicine has the potential to profoundly alter the entire nature of the challenge. However, rapid translation will require the judicious use of biomarkers if it is to meet the needs of the 2035 goal (B1).





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UKRI-HIHR oversight

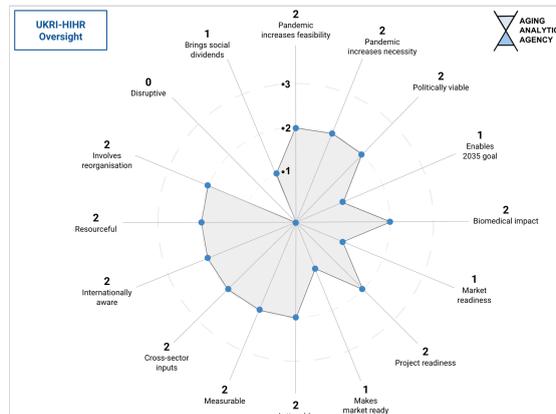
"We recommend that the Chief Medical Officer is given responsibility for overseeing the coordination of ageing research between UK Research and innovation and the National Institute for Health Research. (Paragraph 181)"

Score

- A1 (Feasibility increased by continuance of pandemic): +1
- A2 (Necessity increased by covid pandemic): +1
- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): 0
- B2 (Relevance to general goal of biomedical healthy life extension): +1
- C1 (Market readiness applicability): 0
- C2 (Project readiness): +1
- C3 (Move to market readiness): 0
- D1 (Actionability): +1
- D2 (Degree of measurability): +1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): +1
- E (Disruptiveness): -1
- F (Dividends - does the recommendation aid in social activity and inclusivity?): 0

TOTAL SCORE: 10

This recommendation scores very strongly in leveraging cross-sector inputs (D3). Aging Analytics Agency supports this expansion of the remit of the Chief Medical Officer to encompass the coordination of research with UKRI, given the amount of cross-sector innovation which we view as strictly necessary to meet the 2035 goal.



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UKRI-NIHR to Research Lifestyle Factors

“There is a need to better understand the scientific basis of the mechanisms by which lifestyle factors affect ageing. There is also a need to understand how requirements change in old age in order to develop advice covering, for example: the nutritional needs of older people; the benefits of physical activity for cognitive health; and the impacts of sedentary time. (Paragraph 249)

We recommend that UK Research and Innovation and the National Institute for Health Research ensure that they support interventional studies to establish the mechanisms by which lifestyle and environmental factors affect health in old age, in order to improve advice for healthy ageing. (Paragraph 250)”

Score

- A1 (Feasibility increased by continuance of pandemic): +1
- A2 (Necessity increased by covid pandemic): +1
- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): 0
- C2 (Project readiness): +1
- C3 (Move to market readiness): 0
- D1 (Actionability): +1
- D2 (Degree of measurability): +1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): 0
- D6 (Reorganisation): 0
- E (Disruptiveness): 0
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 10

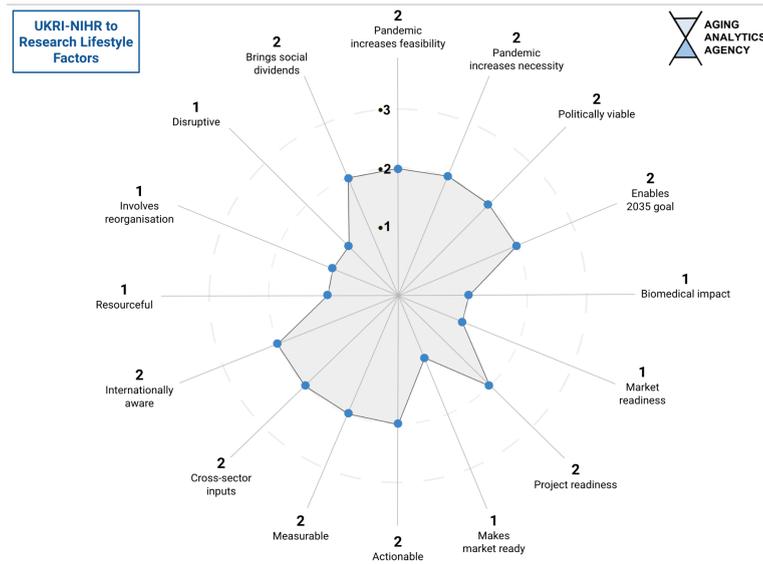
Aging Analytics Agency supports this proposal but it scores a +1 for cross-industry coordination on the condition that it not overlook the latent utility of wearable devices and other digital technologies in obtaining lifestyle data. Furthermore, the use of wearables should not be restricted to researching lifestyle factors. The increase in use and popularity of connected digital devices and health-related mobile apps has produced a novel set of large, diverse, and complex data sets known as “digital biomarkers.”

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These are defined as objective, quantifiable, physiological, and behavioural measures that are collected by sensors embedded in portable, wearable, implantable, or digestible devices.



Define Roles and Responsibilities for all Govt. Bodies.

“Public Health England’s advocacy for a life-course approach to healthy ageing is to be commended. Early uptake and adherence to a healthy lifestyle may continue into mid- and later life, but it is never too late to benefit from an improved lifestyle. Interventions tend to be more successful if they are designed with an understanding of what motivates people at different ages and the transition points at which they are more likely to act on public health advice. (Paragraph 260)

A balanced approach to public health advice can help to achieve healthy ageing, with general messages provided to the whole population and tailored advice for groups with specific needs—in particular, disadvantaged groups who suffer from the worst health. (Paragraph 270)

We recommend that the Government clearly defines the roles and responsibilities for healthy ageing among national and local government and their agencies. The creation of the National Institute for Health Protection should be used as an opportunity to revitalise work to promote healthy ageing across the life-course, including by improving coordination across the sector and drawing on the best information for developing public health advice. (Paragraph 275)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

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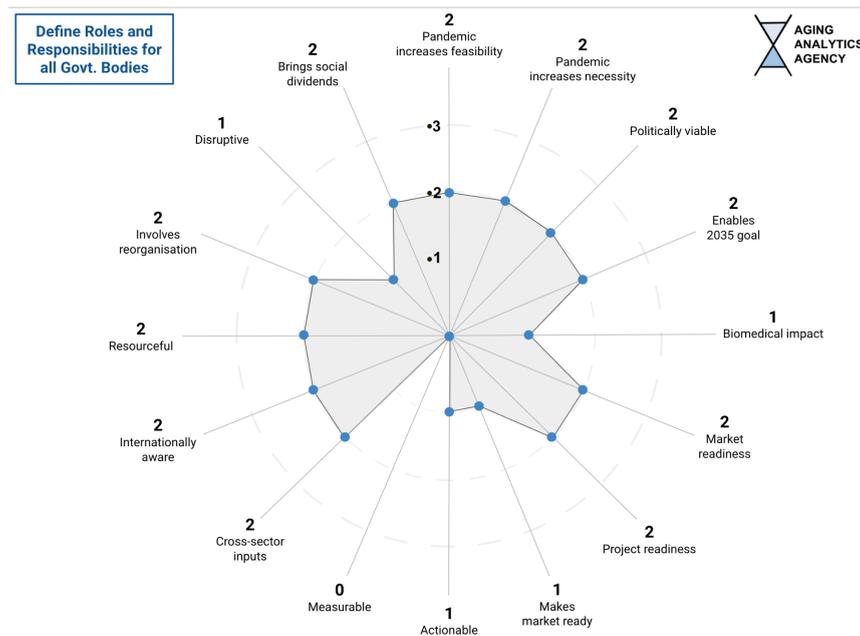


Official Response, Analysis of Report & Benchmarking of Recommendations

- A2 (Necessity increased by covid pandemic): +1
- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness): +1
- C3 (Move to market readiness): 0
- D1 (Actionability): 0
- D2 (Degree of measurability): -1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): +1
- E (Disruptiveness): 0
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 10

Two recent developments make this recommendation politically timely (A): 1) The public have adopted a positive attitude to lifestyle adjustments during the pandemic; and 2) Coordinated delivery of health advice, not to mention accountability in this area, are now supreme political virtues, rendering many national elections in the past year effectively referenda on these issues.



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Review 2035 Target

"The Government is not on track to achieve the Ageing Society Grand Challenge mission to ensure five years of extra healthy life by 2035 while reducing inequalities, and does not appear to be monitoring progress towards the mission. It is hard to see how the target could be met without significant changes to the way it is managed. (Paragraph 362)

We recommend that the Government review the feasibility of the target to increase healthy life expectancy by five years by 2035, and revise or re-commit to it. The Secretary of State for Health and Social Care should commit to reporting annually to Parliament on progress towards the target. The Government should also revise or re-commit to the target to reduce inequalities and outline measurable targets for the reduction in inequalities it hopes to achieve by 2035. (Paragraph 363)"

Score

A1 (Feasibility increased by continuance of pandemic): 0

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): +1

C1 (Market readiness applicability): 0

C2 (Project readiness): 0

C3 (Move to market readiness): +1

D1 (Actionability): +1

D2 (Degree of measurability): +1

D3 (Degree of leveraging cross-sector inputs): +1

D4 (Awareness of international context): -1

D5 (Resourcefulness): +1

D6 (Reorganisation): +1

E (Disruptiveness): +1

F (Dividends - does the recommendation aid in social activity and inclusivity?): 0

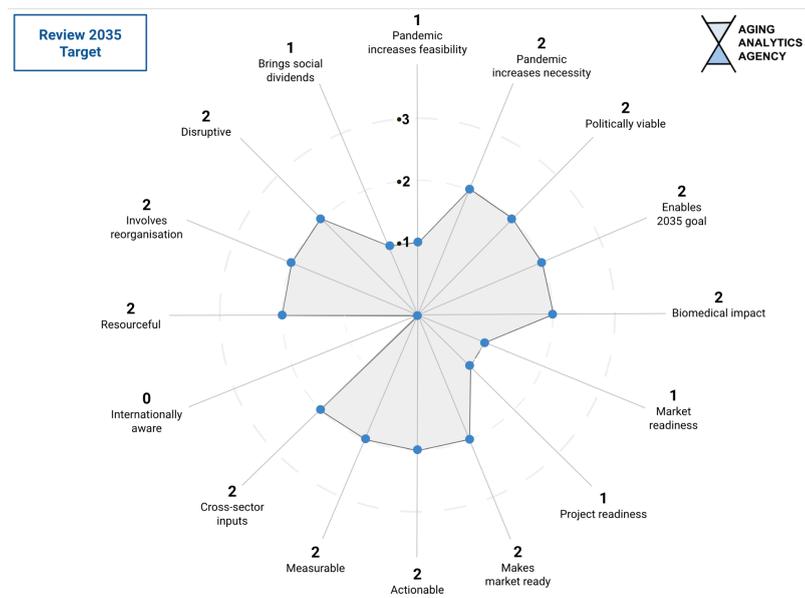
TOTAL SCORE: 10

Response and Analysis of UK House of Lords' Science and Technology Committee's 'Ageing: Science, Technology and Healthy Living' Report



Official Response, Analysis of Report & Benchmarking of Recommendations

This scores -1 on D4 (awareness of international context): a profound lack of confidence in the ultimate feasibility of this goal, even granted sufficient political will, suggests a failure to consider international examples extensively documented by Aging Analytics Agency which demonstrate that the challenge can be met using the UK's existing assets resources.



Research Biological Aging

“How to target ‘anti-ageing’ drugs to provide the greatest benefit to the individual, the NHS and society will be an important issue in future but requires further research and evidence from clinical trials. A health economics analysis of such treatments will be needed to determine the optimal time and populations for intervention. (Paragraph 170)

There has been a lack of effort since our report in 2005 to ensure research into ageing—as opposed to research into specific age-related disease—is properly funded, co-ordinated and included within the remit of particular research councils. This may have contributed to the poor translation of basic research into clinical trials or new medicines. (Paragraph 177)

We recommend that UK Research and Innovation commit to funding further research into the biological processes underlying ageing as a priority, in particular to address gaps in understanding the relevance of ageing hallmarks to humans. Research to identify accurate biomarkers of ageing in humans should also be prioritised, to support studies to improve health span. (Paragraph 178)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

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- A2 (Necessity increased by covid pandemic): +1
- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): 0
- B2 (Relevance to general goal of biomedical healthy life extension): +1
- C1 (Market readiness applicability): 0
- C2 (Project readiness): +1
- C3 (Move to market readiness): +1
- D1 (Actionability): 0
- D2 (Degree of measurability): +1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): 0
- D5 (Resourcefulness): 0
- D6 (Reorganisation): 0
- E (Disruptiveness): +2
- F (Dividends - does the recommendation aid in social activity and inclusivity?): 0

TOTAL SCORE: 10

This recommendation scores high in Readiness (C) and Resourcefulness (D5: Resourcefulness).

The judicious use of biomarkers represents “a move to market readiness” (C3). (D5: Resourcefulness), however is contingent on an accurate appraisal of existing assets. We recommend the formation of several leading AI Centres for Longevity, which will apply the latest advances in AI, Precision Health, Preventive Medicine and Biomarkers of Aging to accelerate the development of technologies, methods and services to increase the UK's National Healthy Longevity.

The recommendation also scores high in Disruption (E) as research into biomarkers and hallmarks of aging is of critical importance not only to short term preventive solutions such as would be more than sufficient to meet the 2035 goal, but also to every facet of the emerging Longevity Industry as documented extensively by Aging Analytics Agency.

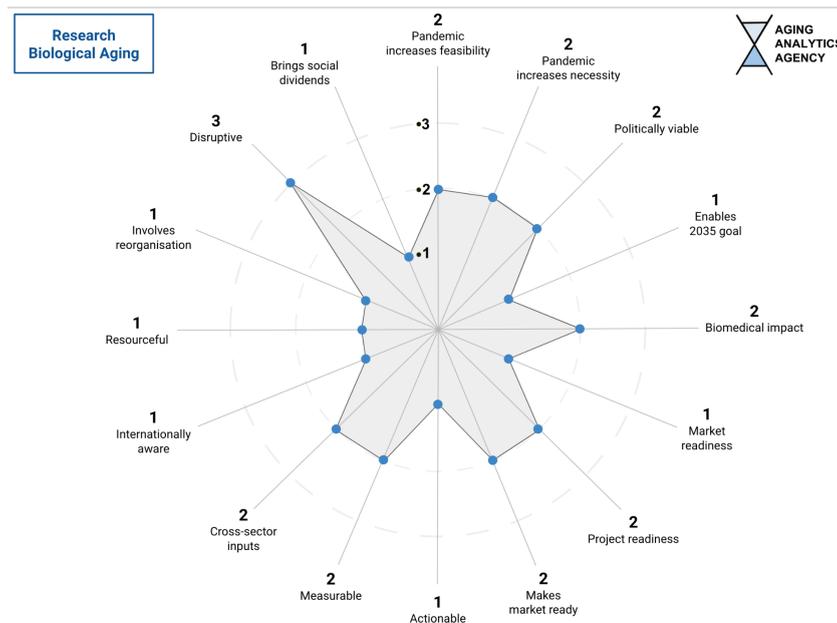
However, regarding (D3: Leveraging of cross-regional inputs): The role of artificial intelligence in biomarker development is frequently hinted at, e.g. in references to the use of AI in drug discovery, but never explicitly acknowledged.

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This recommendation only scores a +1 for D3 on the assumption that the critical role of AI in biomarker discovery is understood by the Committee.



Health Minister & New Officer Produce Cross-Govt. Strategy

“We are concerned that there is not a cross-government strategy for achieving the mission. Without one, the Ageing Society Grand Challenge is unlikely to achieve the mission of increasing healthy life expectancy by five years while reducing inequalities. (Paragraph 377)

The Government’s statement that the part of the mission pertaining to inequalities is not the sole responsibility of the Ageing Society Grand Challenge is confusing. Other aspects of policy will contribute to this goal, but that does not mean that reducing inequalities should not be at the core of the cross-government strategy for healthy ageing. (Paragraph 378)

We recommend that the Secretary of State for Health and Social Care—along with the senior responsible officer—produces a cross-government strategy which clearly states how the Government plans to achieve the Ageing Society Grand Challenge mission by 2035. The strategy should include a roadmap for how the Government intends to achieve the mission, and should specify the departments responsible for working towards the target. (Paragraph 379)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1



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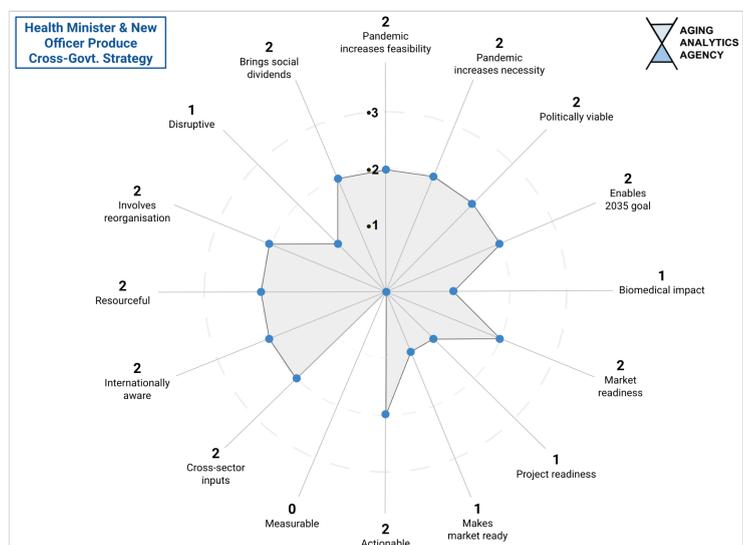
Official Response, Analysis of Report & Benchmarking of Recommendations

- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness): 0
- C3 (Move to market readiness): 0
- D1 (Actionability): +1
- D2 (Degree of measurability): -1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): +1
- E (Disruptiveness): 0
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 10

Assets under the Minister's control may be enough to meet the 2035 challenge, which, as we have said, is largely about optimising existing resources. However, if we look to the current model of Singapore, as we advise, we see that even their current precision medicine program is coordinated by the Research, Innovation and Enterprise Council (RIEC), which is chaired by the Prime Minister of Singapore.

The distinction between assigning the challenge to an officer of the health ministry, or something on the order of ministry in itself, symbolises the distinction between Longevity as a facet of industrial strategy, and what Aging Analytics Agency would refer to as a Nation Longevity Development Plan, propositional concept, the precursors to which exist in industrial strategies across the world, which we have documented extensively.



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Tier 3 Recommendation Scores

Plan for Health Equality

“Life expectancy in the UK continues to rise, but since 2011 it has risen at a slower rate. Healthy life expectancy is not keeping pace with increases in life expectancy, resulting in a growing period of poor health towards the end of life. Inequalities in healthy life expectancy are stark, with people in the least deprived groups living more than 18 years longer in good health than those in the most deprived groups. (Paragraph 30)

We recommend that the Government, along with NHS England, Public Health England, and other agencies, prioritise reducing health inequalities. In its response to this report we request that the Government sets out a plan for reducing health inequalities over the next Parliament. (Paragraph 31)”

Score

A1 (Feasibility increased by continuance of pandemic): 0

A2 (Necessity increased by covid pandemic): -1

A3 (Political viability): 0

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): 0

B2 (Relevance to general goal of biomedical healthy life extension): 0

C1 (Market readiness applicability): +1

C2 (Project readiness): 0

C3 (Move to market readiness): -1

D1 (Actionability): 0

D2 (Degree of measurability): +1

D3 (Degree of leveraging cross-sector inputs): +1

D4 (Awareness of international context): +1

D5 (Resourcefulness): +1

D6 (Reorganisation): +1

E (Disruptiveness): -1

F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

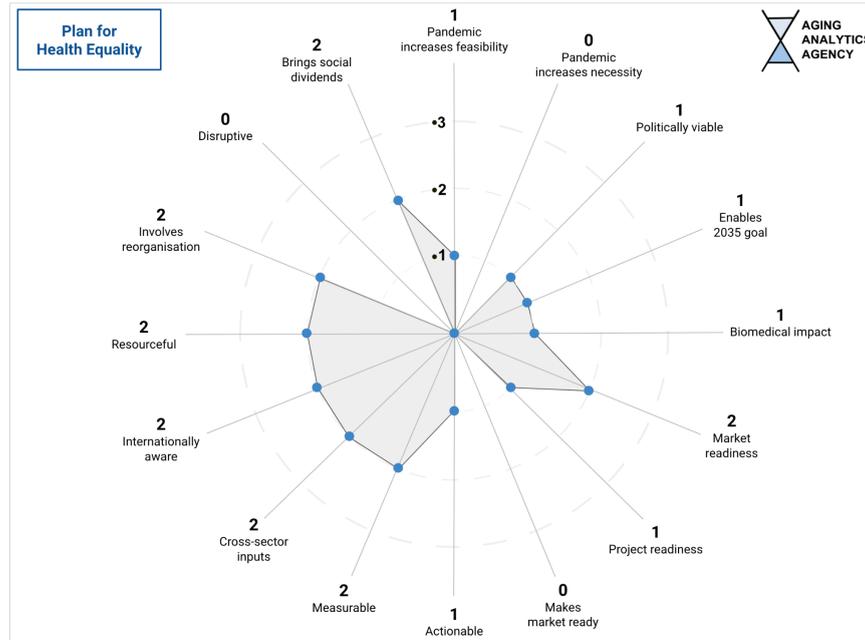
TOTAL SCORE: 4

Response and Analysis of UK House of Lords' Science and Technology Committee's 'Ageing: Science, Technology and Healthy Living' Report



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Aging Analytics Agency agrees that the task remaining must be to exemplify the immediate state of public health and that the first step must be for a concrete short term plan to be published.



Designated Clinicians

“Multimorbidity—the state of having two or more long-term conditions—is more common in old age. There is evidence that the rate of multimorbidity is increasing, so it will become an increasing issue for the NHS. The environmental and biological factors driving the development of multimorbidity are not fully understood. (Paragraph 47)

Care pathways are not well coordinated or integrated for older people, particularly those with multimorbidity. Patients often have to see multiple doctors, with multiple specialisms, with little coordination between specialists to reduce the burden on patients. (Paragraph 66)

We recommend that, as was proposed in 2013, the NHS ensures that all older patients have a designated clinician. This clinician would have oversight of the patient’s care as a whole, and should coordinate activity across multidisciplinary teams, which should include members from across the health and social care sectors. The clinician could be from either primary or secondary care, depending on the patient’s needs. (Paragraph 67)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): -1

A3 (Political viability): 0



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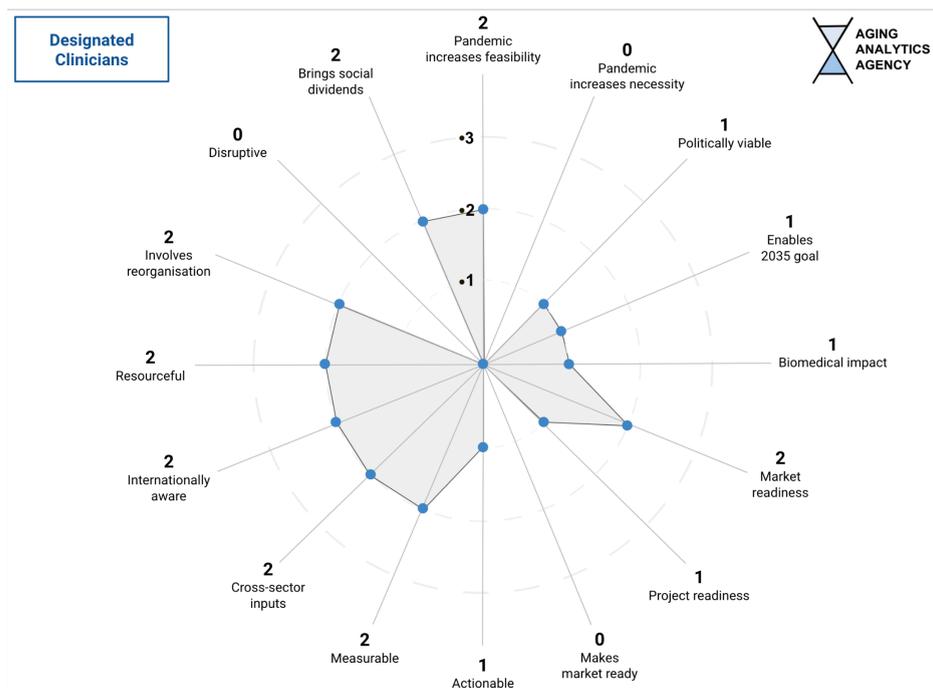
Official Response, Analysis of Report & Benchmarking of Recommendations

- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): 0
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness): 0
- C3 (Move to market readiness): -1
- D1 (Actionability): 0
- D2 (Degree of measurability): +1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- E (Disruptiveness): -1
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 4

Aging Analytics Agency is emphatic about the need for coordination and this recommendation scores strong on Dividends (F).

Productive participation by the elderly in society will be vital for maintaining the political and financial conditions necessary for the nation to proceed with the longer term generation-long struggle for greater National Healthy Longevity.



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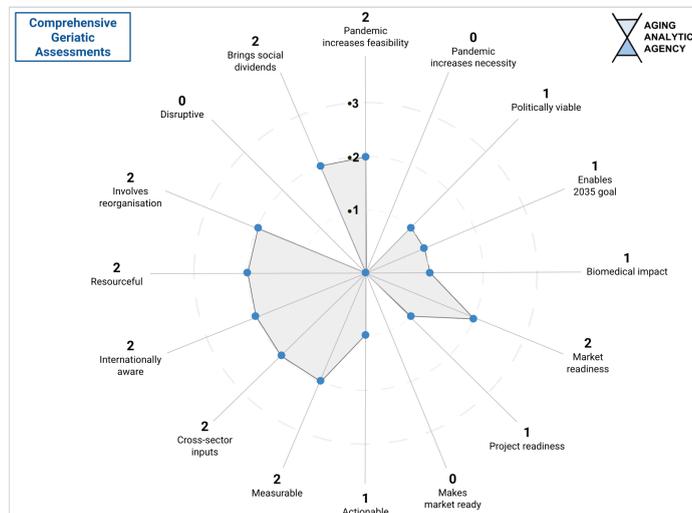
Comprehensive Geriatric Assessments

“We recommend that designated clinicians for older people ensure that Comprehensive Geriatric Assessments are used regularly for older patients, particularly for those with multimorbidity. The Government should ensure that training in how to conduct Comprehensive Geriatric Assessments is a core part of medical training, and that training is provided on an ongoing basis, in particular to GPs. (Paragraph 68)”

Score

- A1 (Feasibility increased by continuance of pandemic): +1
- A2 (Necessity increased by covid pandemic): -1
- A3 (Political viability): 0
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): 0
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness): 0
- C3 (Move to market readiness): -1
- D1 (Actionability): 0
- D2 (Degree of measurability): +1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): +1
- E (Disruptiveness): -1
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 4



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Review into Overprescribing

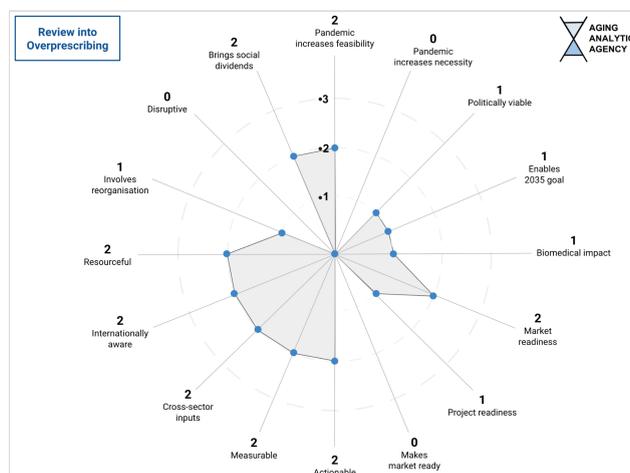
“Medicine reviews are a core component of Comprehensive Geriatric Assessments, and if these are used more widely, with the involvement of multidisciplinary teams, the incidence of polypharmacy and the risk of adverse drug reactions should reduce. (Paragraph 80)

We recommend that the review into overprescribing—which is due to report to the Secretary of State for Health and Social Care in late 2020—should be published as soon as possible. (Paragraph 81)”

Score

- A1 (Feasibility increased by continuance of pandemic): +1
- A2 (Necessity increased by covid pandemic): -1
- A3 (Political viability): 0
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): 0
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness): 0
- C3 (Move to market readiness): -1
- D1 (Actionability): +1
- D2 (Degree of measurability): +1
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): 0
- E (Disruptiveness): -1
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 4



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UK Capital Investment

"The UK has historically been a major player in drug research and development, and has the potential to be a key player in the development of treatments targeting the processes of ageing. However, companies in the UK struggle to commercialise such innovations and often have to move abroad to access finance. (Paragraph 191)

We recommend that the Government ensure the UK remains a global leader in drug research and development. It should work towards making the UK a more attractive environment for growth capital investment, to stop UK innovations moving abroad after the discovery stage of research. (Paragraph 192)"

Score

A1 (Feasibility increased by continuance of pandemic): 0

A2 (Necessity increased by covid pandemic): 0

A3 (Political viability): 0

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): +1

C1 (Market readiness applicability): -1

C2 (Project readiness): 0

C3 (Move to market readiness): 0

D1 (Actionability): 0

D2 (Degree of measurability): +1

D3 (Degree of leveraging cross-sector inputs): +1

D4 (Awareness of international context): +1

D5 (Resourcefulness): +1

D6 (Reorganisation): +1

E (Disruptiveness): +2

F (Dividends - does the recommendation aid in social activity and inclusivity?): 0

TOTAL SCORE: 8

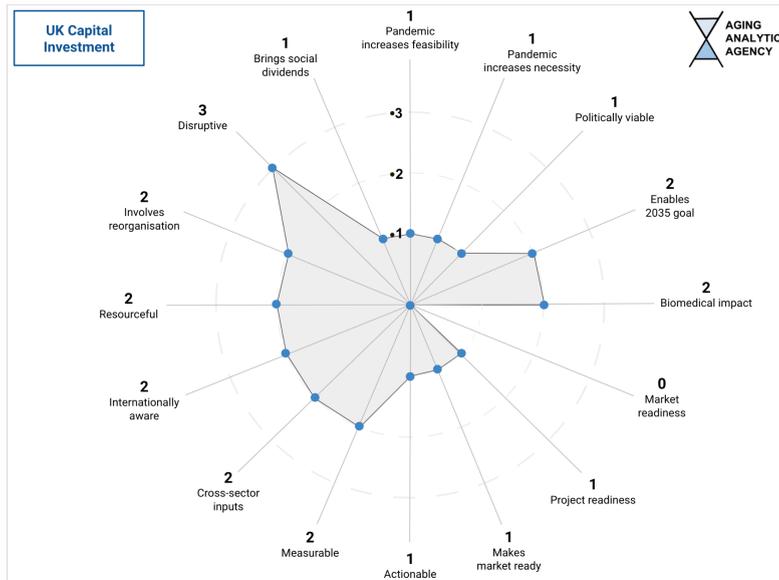
This recommendation scores strongly on (D4), assuming the UK government does not overlook lessons from abroad, such as the biomedical research incentives provided by countries such as

Response and Analysis of UK House of Lords' Science and Technology Committee's 'Ageing: Science, Technology and Healthy Living' Report



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Australia, which are described in Aging Analytics Agency's response to the Committee's recommendations.



Behaviour-based Health Advice

“There was scepticism from the research community that the target of five extra years of healthy life can be achieved by 2035, and a view that the focus of the Industry Strategy Challenge fund on technological solutions and data analysis is unlikely to help deliver the target. (Paragraph 202) Lifestyle and environmental influences on healthy ageing

The UK has the opportunity to be a leader in understanding the impacts of lifestyle on health, using its well-established cohort studies in conjunction with its expertise in emerging areas of biomedical research. To achieve this, it is important that longitudinal cohort studies are provided with longer-term funding that gives greater security to these studies. It is also important that cohort studies recruit sufficient numbers of people from different ethnicities and socioeconomic groups to better understand health inequalities in older adults and how these may be resolved in the longer term. (Paragraph 220)

The impacts of smoking and excessive alcohol consumption upon ageing—and the potential for ill health and disability in old age—may be an important issue for some people when considering their behaviours and so could be an effective part of public health messaging. (Paragraph 224)

Eating a balanced diet and maintaining a healthy body weight into old age are key to healthy ageing. Dietary advice has to reflect the nutritional needs of older people and the diversity of those needs. (Paragraph 230)

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The benefits of physical activity are a cornerstone of public health advice, but a more detailed understanding of its positive effects—and the negative effects of sedentary time—could allow the development of advice that is more targeted. This is important throughout the life-course, including for older adults who have lower levels of physical activity. (Paragraph 239)

Cognitive ability and psychological stresses are key aspects of health throughout the life-course, but they also influence general health and might affect the underlying processes of ageing. Cognitive activities—including education, training and good-quality employment—and reduced stress are means of improving health in later life. (Paragraph 245) Ageing: Science, Technology and Healthy Living 111

The factors that contribute to healthy life expectancy are well known, and form the basis of healthy ageing advice, namely: not smoking, avoiding excessive alcohol consumption, eating a balanced and nutritious diet, maintaining a healthy body weight, and being physically active. There is also evidence of the role of cognitive activity and reduced stress in healthy ageing. (Paragraph 246)

Despite the evidence linking behaviours throughout the life-course to health in old age, the potential gains from healthy behaviours are not being fully achieved. Different aspects of the evidence could potentially have an impact upon people's behaviours, for example: the fact that healthy lifestyles can reduce the time spent with disability in old age; and the discovery that behaviours can modify underlying processes of ageing. (Paragraph 247)

We recommend that organisations with responsibility for healthy ageing advice incorporate findings about the benefits of healthy behaviours that may have a larger impact upon people's behaviour than existing messaging. The benefits of building up good levels of physical fitness and cognitive reserve should be promoted, particularly to people in disadvantaged groups that suffer the worst health. (Paragraph 248)''

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): 0

C1 (Market readiness applicability): +1

C2 (Project readiness): +1

C3 (Move to market readiness): +1

D1 (Actionability): 0

D2 (Degree of measurability): -1

D3 (Degree of leveraging cross-sector inputs): 0

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D4 (Awareness of international context): +1

D5 (Resourcefulness): +1

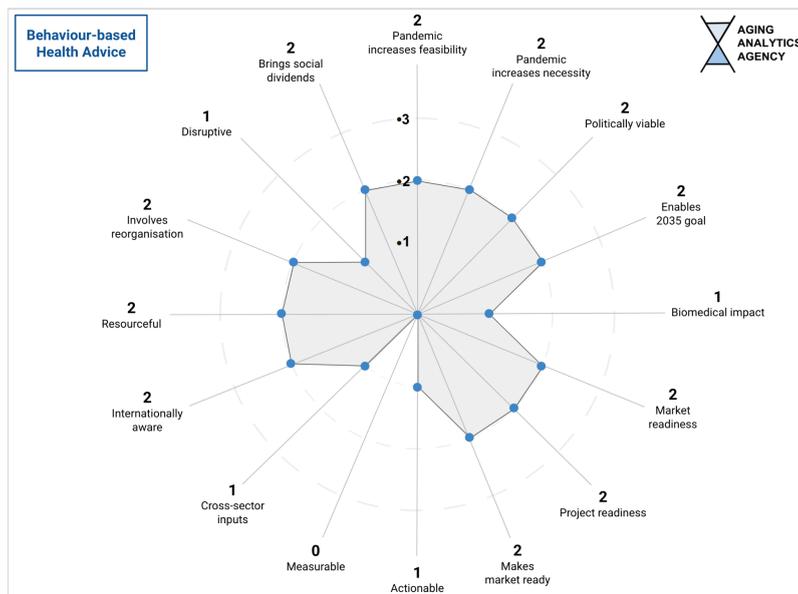
D6 (Reorganisation): +1

E (Disruptiveness): 0

F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 9

Aging Analytics Agency has documented these factors extensively across many jurisdictions and environments across the globe.



Healthy Lifestyle Regulations

“We recommend that the Government implement a concerted and coordinated set of national policies to support healthy ageing, including: regulatory and fiscal measures, actively to encourage people to adopt lifestyles that support healthy ageing; increasing the reach of the NHS Health Check to those in disadvantaged groups who will benefit the most; and working with local authorities on the funding of local services, housing and infrastructure to encourage and facilitate healthier living across the life-course, including the necessary services to maintain health and independence in old age. (Paragraph 284)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1

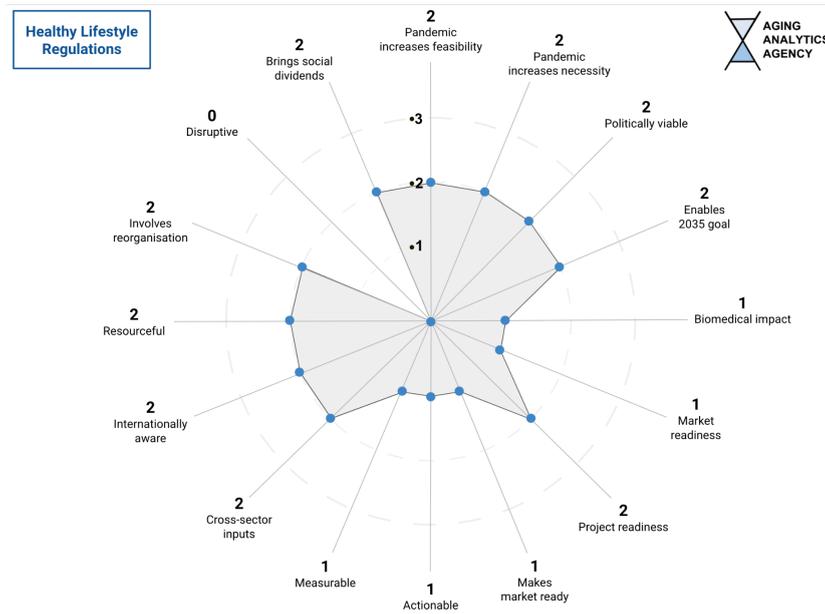
Response and Analysis of UK House of Lords' Science and Technology Committee's 'Ageing: Science, Technology and Healthy Living' Report



Official Response, Analysis of Report & Benchmarking of Recommendations

- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): 0
- C2 (Project readiness): +1
- C3 (Move to market readiness): 0
- D1 (Actionability): 0
- D2 (Degree of measurability): 0
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): +1
- E (Disruptiveness): -1
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 9



Age-Friendly Urbanism

“We recommend that the Government use planning rules to ensure that homes and communities are accessible for people with limited mobility and adaptable as their needs change with age. The Government should ensure that sufficient funds are available—for example through the Disabled Facilities Grant—to facilitate improvements to existing homes. The priority should be areas with poor housing and infrastructure, in order to reduce health inequalities. (Paragraph 292)”

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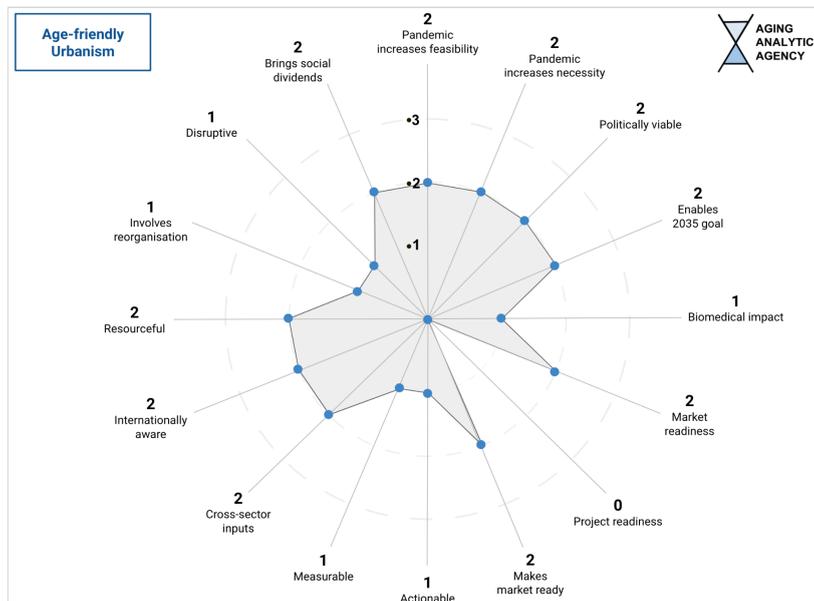
Official Response, Analysis of Report & Benchmarking of Recommendations

Score

- A1 (Feasibility increased by continuance of pandemic): +1
- A2 (Necessity increased by covid pandemic): +1
- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness):-1
- C3 (Move to market readiness): +1
- D1 (Actionability): 0
- D2 (Degree of measurability): 0
- D3 (Degree of leveraging cross-sector inputs): +1
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): 0
- E (Disruptiveness): 0
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 9

This has a strong score in awareness of international context (D4), as it appears to follow the examples and aspirations of many nations such as those laid out by the WHO Global Network for Age-Friendly Cities.



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Official Response, Analysis of Report & Benchmarking of Recommendations

Internet Access and Skills

"The use of wearable and implantable technologies for monitoring health conditions and administering treatments is likely to become increasingly common. Such technologies have potential to provide more precise and timely treatment, and could contribute to better health and greater independence in old age. (Paragraph 309)

Non-medical devices can be a source of useful information for individuals seeking to live more healthily. It will be necessary for the Government to continue to monitor developments in the sector to ensure an appropriate approach to standards. (Paragraph 313)

The Government is to be commended for developing its loneliness strategy. Older people need strong social contacts, with the priority being face-to-face interactions. There is also the need for people to develop digital skills to use technologies that can reduce social isolation and loneliness. (Paragraph 318)

With much healthcare data now held electronically, alongside data generated by non-medical devices, there is a valuable opportunity to develop more sophisticated methods of monitoring and predicting how well people age. There is a need to further reduce technical barriers to data integration across different platforms and administrative barriers to providing anonymised patient data for clinical trials. (Paragraph 325)

In order to improve uptake and usefulness of technologies and services that can contribute to healthier and independent living in old age, it is important to base the process of development and deployment around older people's needs, preferences and abilities. It is beneficial for older people to be involved in the design of these products and services. (Paragraph 329)

Public trust in data security is key if data-driven services and new technologies are to be deployed widely and used to their potential. Ongoing public engagement will be necessary to reassure the public on matters of trust and privacy regarding healthcare data, so that people are more willing to share data that can contribute to their own healthcare and to the development of wider advice for healthy ageing. (Paragraph 333)

We recommend that the Government ensures internet access for all homes so that older people can access services to help them live independently and in better health. The Government should promote and support lifelong digital skills training so that people enter old age with the ability to use beneficial technologies. Greater support should be provided to the large proportion of the current older generation which lacks these skills, so that they do not miss out on the benefits of available technologies. (Paragraph 338)"

Score

A1 (Feasibility increased by continuance of pandemic): +1

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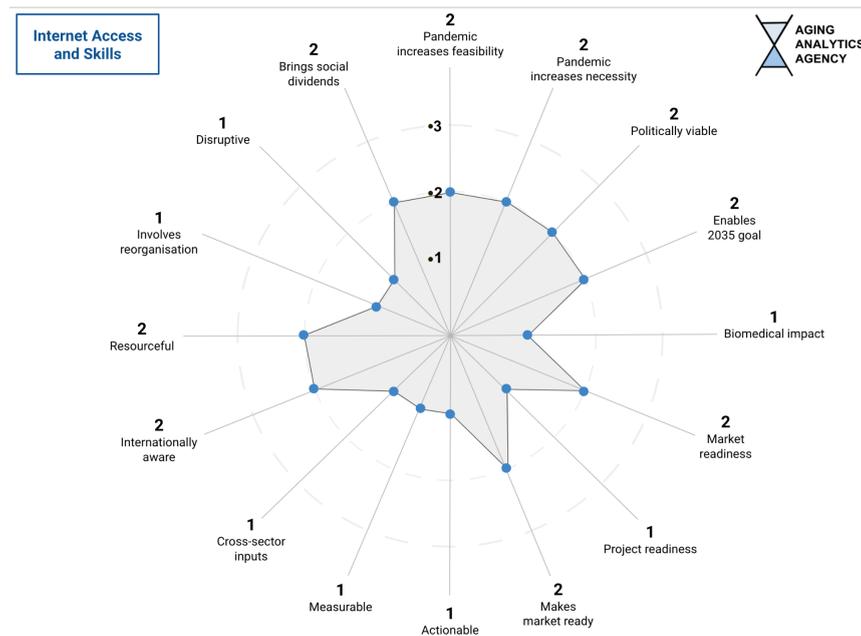


Official Response, Analysis of Report & Benchmarking of Recommendations

- A2 (Necessity increased by covid pandemic): +1
- A3 (Political viability): +1
- B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1
- B2 (Relevance to general goal of biomedical healthy life extension): 0
- C1 (Market readiness applicability): +1
- C2 (Project readiness): 0
- C3 (Move to market readiness): +1
- D1 (Actionability): 0
- D2 (Degree of measurability): 0
- D3 (Degree of leveraging cross-sector inputs): 0
- D4 (Awareness of international context): +1
- D5 (Resourcefulness): +1
- D6 (Reorganisation): 0
- E (Disruptiveness): 0
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 9

This also scores +1 on Market Readiness Applicability, as an industry of age-friendly digital technologies is already beginning to take root internationally, and +1 on “awareness of international context” as it appears to follow international examples of nations such as Japan which have embraced this industry.



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Official Response, Analysis of Report & Benchmarking of Recommendations

Healthy Living Technologies

“The funding for new innovation in products and services seems to be aimed more at larger companies, presumably in the hope of achieving commercialisation more quickly and with less risk. However, small and medium-sized enterprises contribute significantly to innovation, and there would be merit in these organisations having easier access to funding to support innovation. (Paragraph 343)

There is significant potential for development of new technologies and services to support healthier and independent living in old age, including medical devices and robotics. There is scope for further deployment of existing technologies such as telecare and ‘activities of daily living’ systems. (Paragraph 344)

Technology and services can contribute to independence and social connectedness in old age, and to health to a lesser extent, but it seems unlikely that they can add five years of healthy and independent living by 2035. Moreover, there is a risk of technology and services widening health inequalities in old age, due to barriers to uptake that are more prevalent in disadvantaged groups. The Government will have to intervene decisively and for the long-term in order to make these tools ubiquitous and beneficial for the whole population in old age. (Paragraph 348)

When allocating funding through the Ageing Society Grand Challenge, we recommend that the Government supports the deployment of technologies that contribute to healthier and independent living—both those available now and those that may become available in future. This should prioritise disadvantaged groups in order to bring the greatest health benefits, whilst also realising economic benefits of innovations that are developed in the UK. (Paragraph 349)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): 0

C1 (Market readiness applicability): +1

C2 (Project readiness): 0

C3 (Move to market readiness): +1

D1 (Actionability): 0

D2 (Degree of measurability): -1

D3 (Degree of leveraging cross-sector inputs): +1

D4 (Awareness of international context): 0

D5 (Resourcefulness): +1

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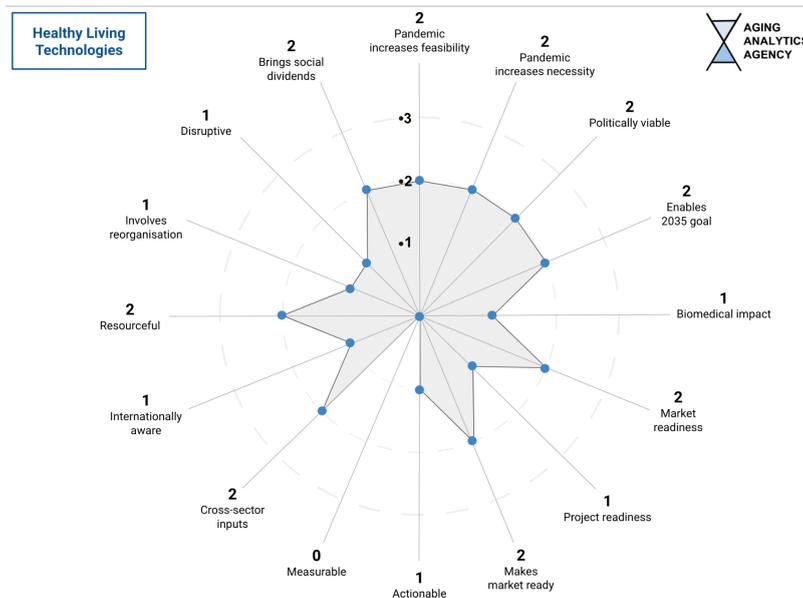
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D6 (Reorganisation): 0

E (Disruptiveness): 0

F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 8



Cross-govt. inequalities strategy

“We recommend that the cross-government strategy explicitly addresses the issue of reducing inequalities in healthy ageing, without ‘passing the buck’ to wider Government goals or statutory obligations. In producing the strategy, the Government should seek wide input from stakeholders; most importantly, from older people. (Paragraph 380)”

Score

A1 (Feasibility increased by continuance of pandemic): +1

A2 (Necessity increased by covid pandemic): +1

A3 (Political viability): +1

B1 (Relevance to the specific goal of increasing HALE by 5 years by 2035): +1

B2 (Relevance to general goal of biomedical healthy life extension): 0

C1 (Market readiness applicability): 0

C2 (Project readiness): 0

C3 (Move to market readiness): 0

D1 (Actionability): 0

D2 (Degree of measurability): 0

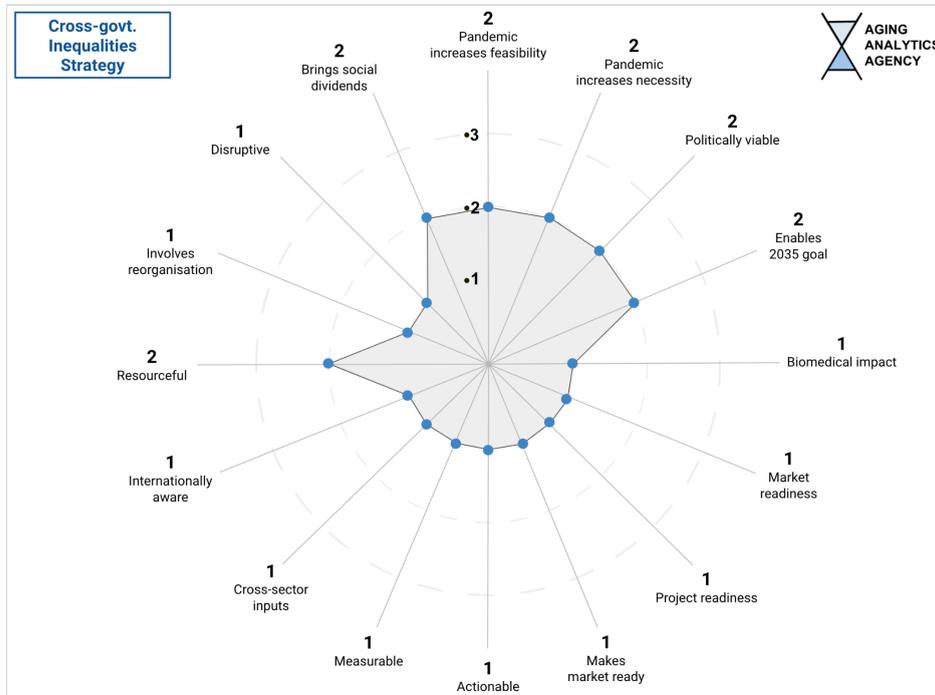
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- D3 (Degree of leveraging cross-sector inputs): 0
- D4 (Awareness of international context): 0
- D5 (Resourcefulness): +1
- D6 (Reorganisation): 0
- E (Disruptiveness): 0
- F (Dividends - does the recommendation aid in social activity and inclusivity?): +1

TOTAL SCORE: 6



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Summary and Key Take-Aways

We would recommend a greater awareness of international context (D4) to help settle this question. We would reiterate that while this may suffice for the short term, the Aging Society Grand Challenge to the future shape of the economy may prove so politically central that the aforementioned stopping of the buck may ultimately be optimally placed at the top tier of government, in order to allow for what may prove to be the necessary degree of cross sector coordination as the industrialisation of Longevity progresses.

- Consider the move to AgeTech for example. This is the recurring theme in our advice: the optimisation of existing assets.
- Recommendations that make up Tier 1 (national Longevity development plan) should not, by having surpassed Tier 2 (2035 goal), be regarded as ipso facto necessary next steps for meeting the 2035 goal. Rather, they represent the necessary measures for the eventual industrialisation of Longevity. For example, the Committee was extremely prescient in identifying the need to invest in research into the mechanisms underlying aging, however the high scores recommendations received for this should not be mistaken for advice to the effect that disruptive biotechnological innovation such as would result from this research is a necessary first step to achieving the 2035 goal.
- **The Committee was correct to identify the need for minimally invasive, easily obtainable biomarkers, but little mention was made of digital biomarkers.** Many of the high scores provided are contingent on the Committee not losing sight of the notion implicit throughout the document: that AI must have a central role in biomarker development, which in turn must have a central role in drug discovery. This is strongly implied but never mentioned explicitly in one place.
- The majority of the recommendations which score high in project readiness belong to Tier 3.
- Tier 2 consists mainly of small steps which could be taken in order to achieve disruptive benefits / progress quick enough to meet the 2035 deadline, e.g. regulatory reform, repurposing of drugs etc.
- Therefore, while Tier 3 recommendations should be regarded as constituting the easy logical next steps, and Tier 1 recommendations should be regarded as necessary investments for the long term, maximum care, attention, and deliberation should be given to implementing Tier 2 recommendations.
- In a nutshell, this entails a short term agenda of **using UKRI-NIHR collaboration to harness AI and other market-ready digital technologies to develop a minimum viable panel of biomarkers, using an comprehensive appraisal of existing assets to toe the line of market readiness and project readiness.**

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It is our hope that this open-source framework can be used to refine and optimise future analyses and official governmental recommendation documents to maximise their actionability and relevance to the contextual realities of the UK national situation, to provide the UK government and associated advisory bodies with the full arsenal tools to optimise, monitor, track and effectively execute their strategic vision to transform challenge of aging into opportunity of Longevity.