

The Impacts of Aging on Economic Growth and Sustainable Development (Case Study of G20 Countries)

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Abstract: One of the most important issues in recent years has been the issue of population aging and its effects on the economy. It is clear that aging leads to increased healthcare costs, decreased productivity, saving, investment, risk taking and etc. finally, the economic growth will slow. On the other hand, it is necessary to address the issues of sustainable development, namely inequality, life expectancy, green life and etc. The main goal of this article is survey the impacts of aging on sustainable development and G20 economies and their plans for reducing and controlling the negative consequences. The main contribution of this article is that we have integrated the issue of sustainable development and aging problem in G20 countries in terms of economic and finance. The results show that the rate of fertility is decreasing and the rate of aging is increasing. So, G20 programs need to be considered and acted upon. We can conclude that by investing and effective measures and identifying potential threats, the effects of reduced economic growth and productivity can be reduced.

Keywords: Aging, Healthcare costs, Sustainable development, Economic growth, G20 countries, Silver economy.

JEL Codes Classification: E2, I1, I2, I3, J1, J2, J3, J4, J5, J6

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Introduction

Today, one of the most important global phenomenon is aging. It is estimated that the aging rate will double by 2050 from 841 million people to more than 2 billion [Shlisky, J. et al, 2017]. After World War II, the birth rate increased. Gradually, this rate dramatically decreased and globally, the population of older age increased more than before at a faster rate [He, W. et al. 2016]. However, this rate is different between countries. Aging have some consequences for societies such as low fertility and high education, capital accumulation with favorable implications for labor productivity, generational inequality, unsustainable public finances and etc. [Lee, R., & Mason, A. et al. 2010]. Aging causes new challenges for meeting sustainable development [World Health Organization. 2016]. We can consider three measures about aging:

1. Structural reforms that promote economic growth and sustainable development.
2. Social protection systems such as wealth accumulation, social security and etc.
3. Development of data system and tracking aging and demographic changes around the world such as G20 and emerging economies.

Low fertility causes serious economic problems such as less savings, less investment, less risk taking, less productivity and finally less economic growth [Zhang, J., & Zhang, J. 2005]. Some actions and programs could help older workers keep their productivity such as active learning, vocational training and etc. [Kanfer, R., & Ackerman, P. L. 2005].

Some public pension acts should be address such as raising the retirement age, increasing contribution rates, adjusting compulsory government subsidies, fairness pension system. G20 governments have considered a systemic view of pension systems due to socioeconomic aspects such as education, migration, labor force participation [Stewart, M. 2020]. Some consideration in tax system could be beneficial.

One of the considerable actions is to increase the retirement age. So, governments should take actions in main parts such as health equality, providing flexible benefit options, complementing

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pension reforms with other welfare programs, boosting the demand for older workers, and improving work environment safety [Casey, B. et al. 2003].

With increasing age, the cost of people such as health, treatment, social security, etc. will increase. So, governments should address sustainable and effective social security system.

Responding to the challenges posed by the accelerating ageing of our societies and making the most of the opportunities of the silver economy are increasingly relevant to the G20 agenda of achieving strong, sustainable and balanced growth [Gordon, C. 2017].

There are some principles about silver economy and active aging which will address later.

The rest of the paper is as follows: first, we addressed economic indicators such as population aging, healthy aging and etc. in second part, we discussed G20 actions in the direction of sustainable development goals (SDGs). In third part, we have tried to mention some facts and principles about aging. In part four, we have surveyed the pros and cons of aging population in G20 countries. Finally, the last part is conclusion and remarks.

Aging in G20 societies

Population aging

The rapid growth of aging with more than one in eight people now aged 65 years or older

The rate of aged population in the G20 countries has increased 27% than the preceding 15 years and this rate will increase to 39% until 2030 [Dieleman, J. L. et al. 2019].

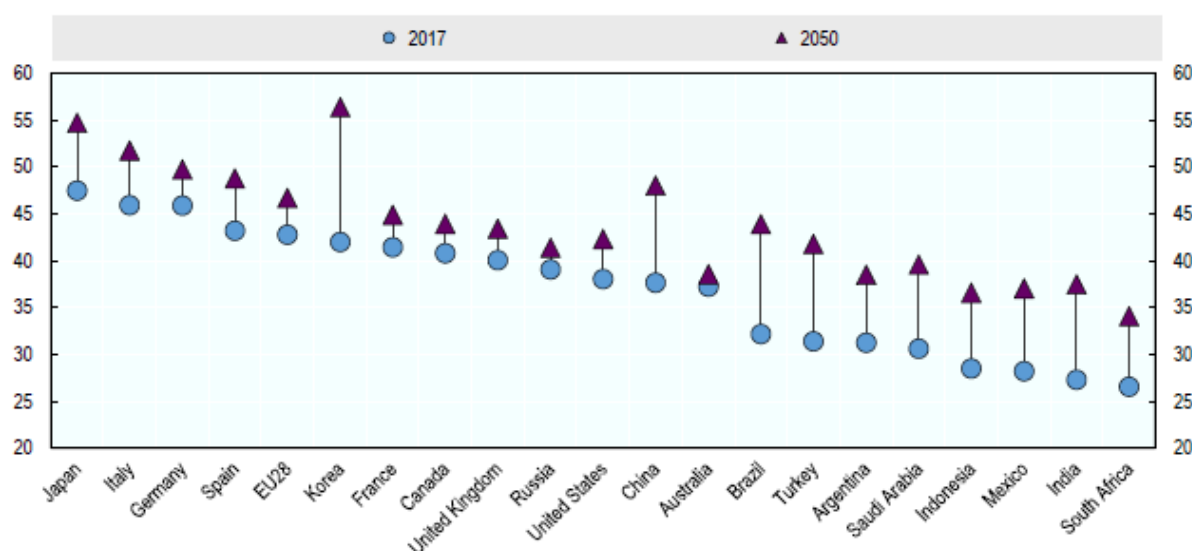


Fig. 1. Median age of the population (years), G20 countries

Source: EU28: Eurostat estimates and projections; Australia, Brazil, Canada, France, Germany, Italy, Japan, Korea, Mexico, Spain, the United Kingdom and the United States: national estimates and projections; and, for the other countries: United Nations (2017), World Population Prospects: The 2017 Revision.

Working age populations will decline

There are two reasons for population aging in G20 countries: 1. decreasing the fertility rate 2. Longer life expectancies at older ages [Bloom, D. E. et al. 2015]. Between 1995 and 2015 we can observe decreasing 15% in fertility rates. While, the rate of life expectancy at age 60 has risen almost two years.

Spending on health will continue to grow

In 2016, G20 countries spent on average 2904 USD per capita for health which it's different between countries. For example; the lowest and the highest one are belong to India and USA about 269 USD and 9892 USD respectively. The gap between emerging and developed countries in G20 is high. Emerging economies in the G20 also spend less on health as a proportion of their GDP [Jakovljevic, M. et al. 2020].

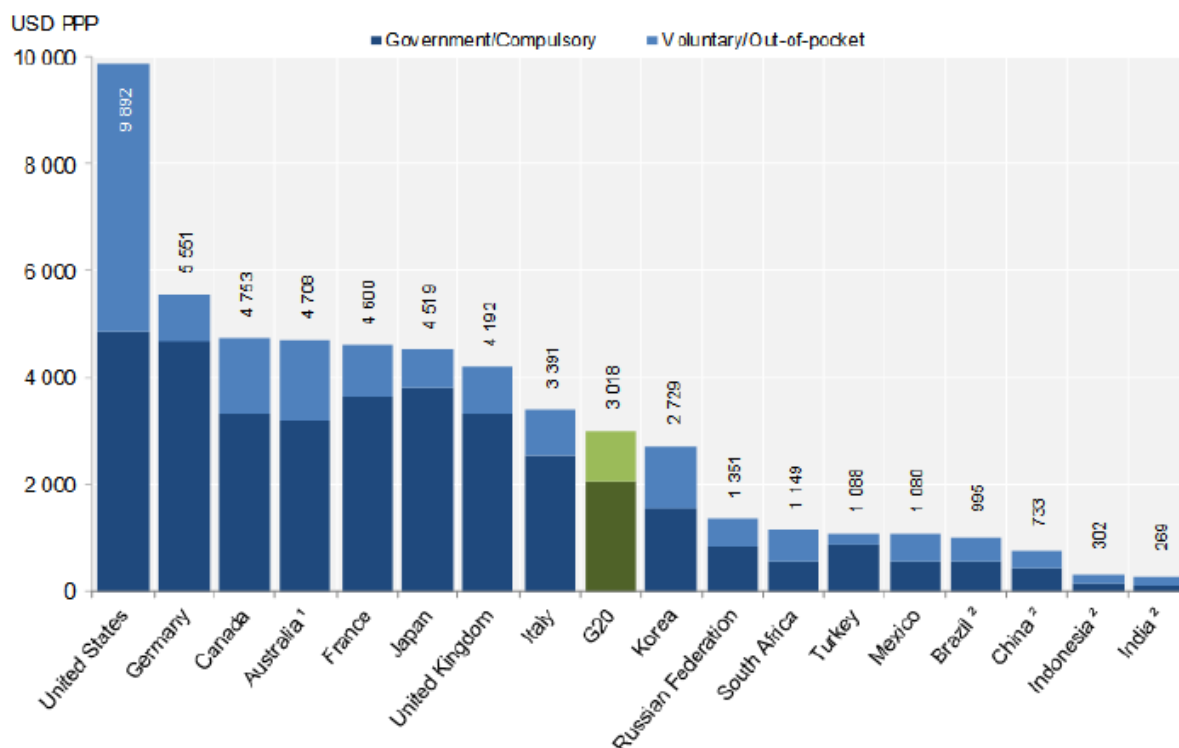


Fig. 2. Health expenditure per capita, 2016 (or nearest year)

Note: Expenditure excludes investments, unless otherwise stated.

1. Australian expenditure estimates exclude all expenditure for residential aged care facilities in welfare (social) services. 2. Includes investments. G20 average excludes Argentina and Saudi Arabia.

Source: OECD analysis using data from OECD (2017). Health at a Glance 2017.

Expenditure on health will increase in G20 countries from 8.7% in 2015 to 10.3% in 2030. Although, this increase depends on many factors such as technological advancement, productivity gains, economic growth, and demographic change [Lafortune, G. et al. 2018].

Population aging has not always occurred in good health

In 23 OECD countries, there is a gap between highly-educated and low-educated populations respect to life expectancy which is almost 3.5 years and 2.4 years for men and women respectively [Murtin, F. et al. 2017]. There are different parameters which can affect their health and quality of life including financial insecurity, loneliness, social isolation and mental distress. The poverty rate is different between men and women too and the risk of poverty in women is more than men in old age. The likelihood of poverty and poor health is twice less than in high-educated people.

By creating gap between old and young generation, we will observe inequality in labor market. it is estimated that nearly one-third of adults 65 and older in many G20 countries to live alone.

The experiments show that people who live alone are than 30% more likely to report symptoms of mental distress than those living with family or friends [Shankar, A. et al. 2011]. Nearly half of people who live alone have experienced depression. The rate of living alone in high-educated is 40% less than lower-educated people in old age [Monden, C. W. et al. 2003].

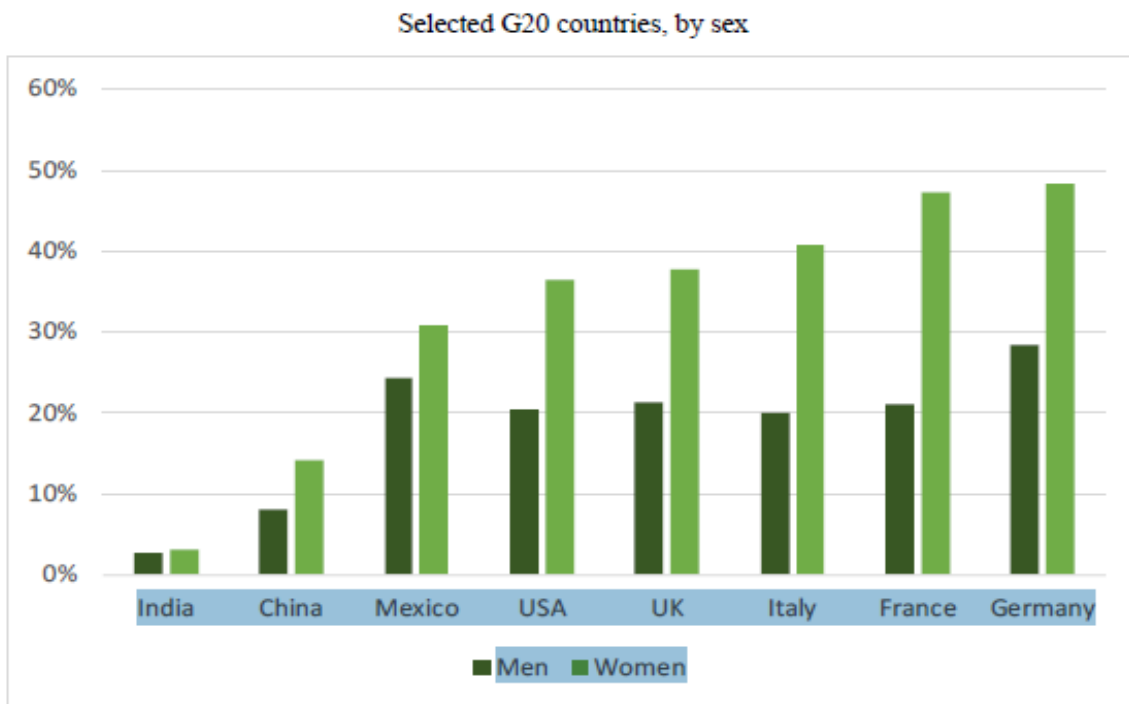


Fig. 3. Figure 1.6. Proportion of adults 65+ living alone

Source: OECD analysis (2019) using microdata from SHARE, HRS, ELSA, MHAS, LASI, CHARLS health and retirement surveys.

2.1.5. Older populations face cognitive and physical impairment

Almost 20% of old age people have difficulties in doing daily activities across eight G20 countries. This increases their need for support. There is an estimation which is that 300 million older persons will require care until 2030 that is 50% more than 2015 [Mathers, C. D., & Loncar, D. 2006]. So, we should overcome some limitations such as inequality and low education.

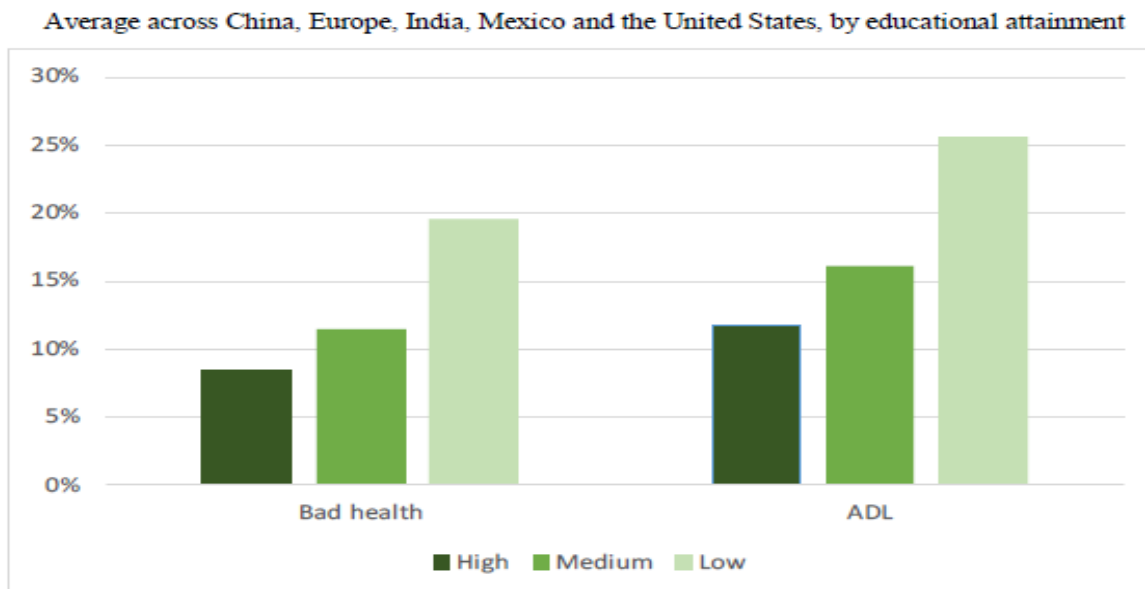


Fig. 4. Self-reported poor health and disability rates for individuals 65+

Note: Poor health and disability are measured using self-reported indices: i) participants responded “poor” when asked whether their health was excellent, very good, good, fair, or poor; ii) participants reported at least one limitation in activities of daily living (ADL).

Source: OECD analysis (unpublished) using microdata from SHARE, HRS, MHAS, LASI, CHARLS health and retirement surveys.

The rate of some disease such as dementia is increasing in G20 countries. Without any attention and actions, this rate will increase from 40 million in 2020 to 100 million in 2050. There are much costs globally for decreasing dementia which was estimated 1 trillion USD threshold in 2018.

Healthy aging

Investing in health includes economic and social benefits. We can prevent people from living in poor health. On the other hand, we can reduce healthcare costs. This can mitigate inequality.

There are significant economic consequences to population ageing

The results show that health expenditure will increase about 3.9% between 2015 and 2030 which contains about more than 10 % of GDP across 15 G20 countries by 2030 [McBride, B. et al. 2019]. There are some key drivers of health spending growth such as rising incomes, productivity constraints, and technological progress and demographic factors.

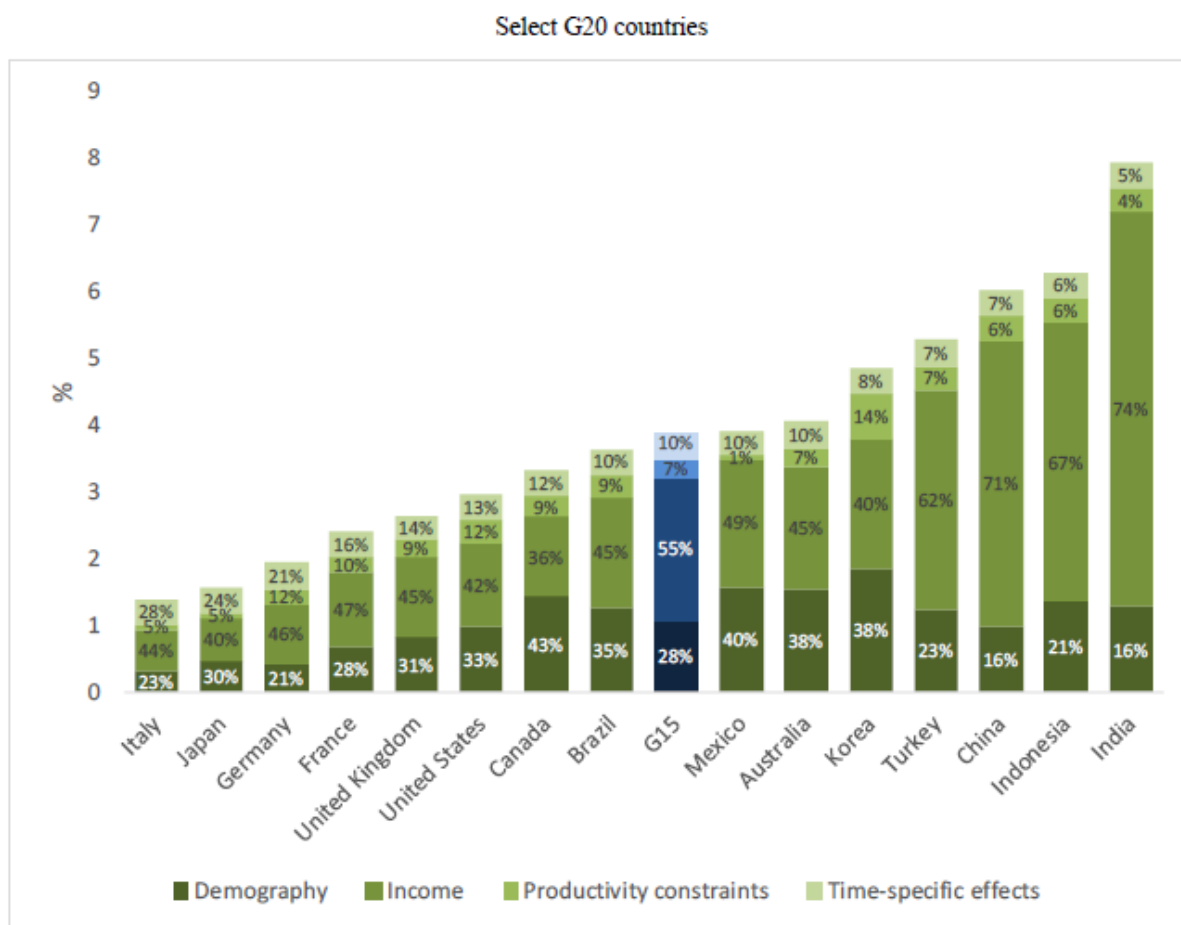


Fig. 5. Contribution of key drivers to average annual health spending growth to 2030 by scenario
 Source: OECD analysis based on methodology developed for Lorenzoni, et al, 2019.

Healthy aging policies can decrease the future health expenditure such as encourage healthy aging.

Poor health has lifelong impacts on working lives

Poor health can lead to a reduction in the workforce population and length of time they spend in employment [Anderson, G. F., & Hussey, P. S. 2000]. Rich health can help people increasing the length of time and decreasing some risk factors including obesity, smoking, heavy alcohol use and chronic disease which are all associated with lower rates of employment.

Ageing is affecting economic growth

When the growth rate of working age population decreases, the future growth of GDP per capita will decrease and the old age dependency ratio (the total number of people too young or old to work, divided by those of working age (15–64 years old)) will increase [Sinnathurai, V. 2013]. By improving the living standards, it could be possible slow the pace of declining working age population. It is predicted that the decline in working age population will reduce the growth rate of GDP per capita 11 G20 countries between 2018 and 2030 and by 2030, only two G20 countries – India and South Africa – will still enjoy gains to GDP from the demographic dividend.

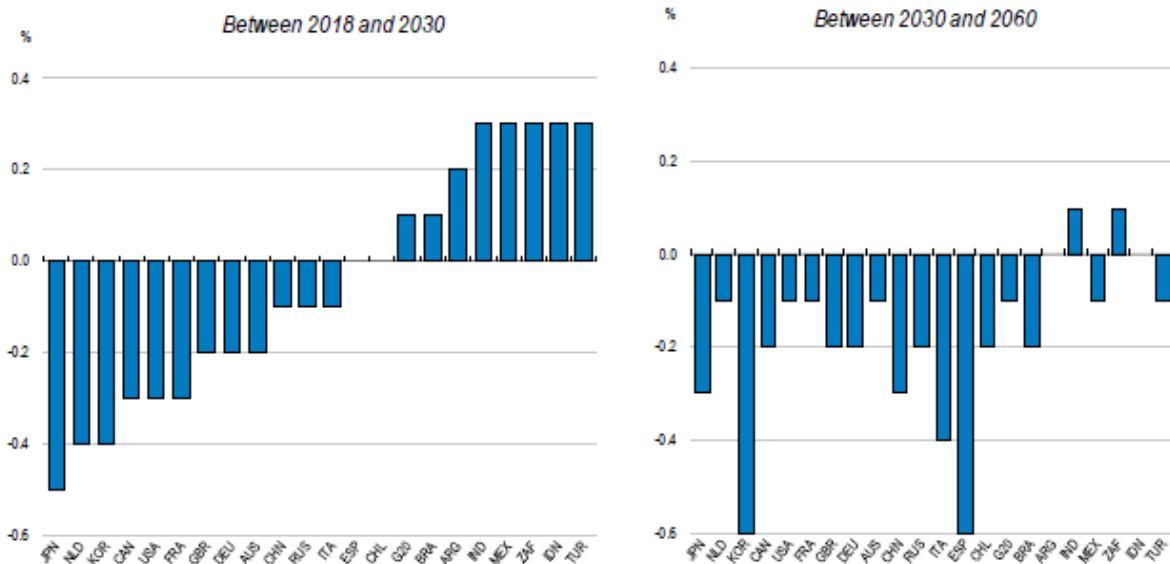


Fig. 6. Working-age population contribution to GDP per capita growth

Source: OECD (2018), The Long View: Scenarios for the world economy to 2060.

Healthy ageing helps to extend the working lives of older people

In recent years, the employment rates have increased for older workers in G20 countries, especially women, rising from 47.8% in 2000 to 64.4% in 2017.

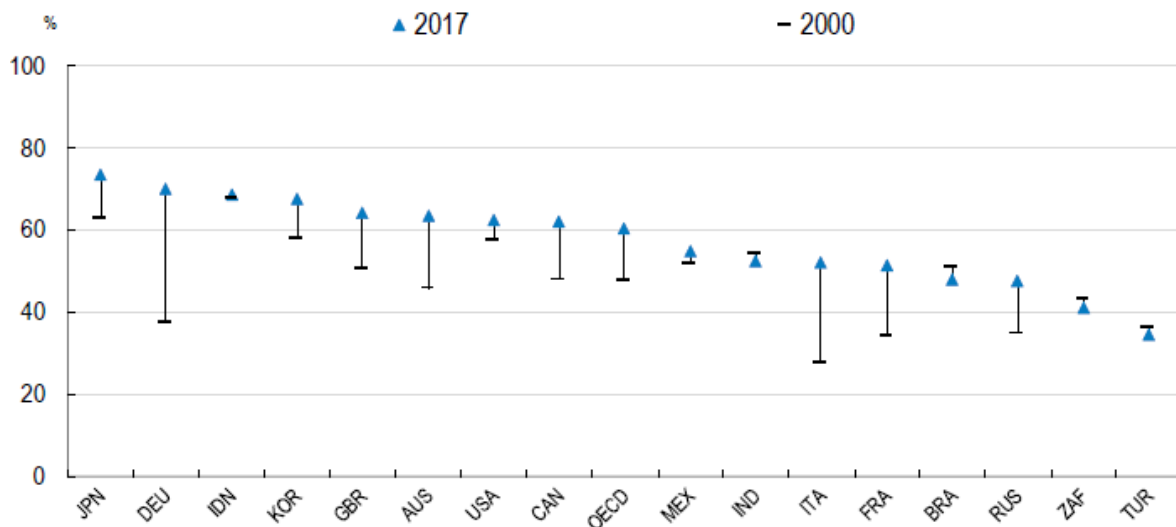


Fig. 7. Employment rates, age 55-64

Source: OECD Labor Force Statistics database.

Healthy ageing helps reduce costs to health and social care systems

Health improvement helping to reduce health expenditure, and increasing engagement in the workforce for some older workers. SDGs can be effective on healthy lives to reduce preventable deaths. The WHO has some plans which called Global Action Plan for the Prevention and Control of Non-Communicable Diseases which countries follows until 2025 [World Health Organization. 2018].¹

G20 countries could prevent and reduce the premature mortality due to obesity among people 50-70 by 1.3% annually between 2020 and 2050 or 4.3 million premature deaths across G20 countries.

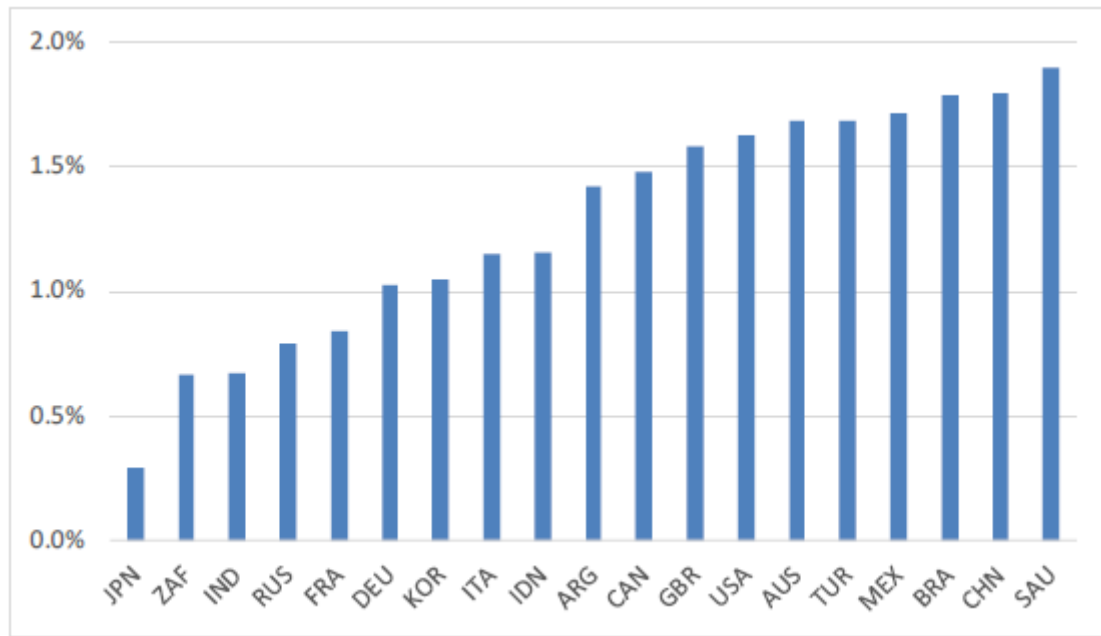


Fig. 8. Annual reduction in premature deaths among people 50-70 years' old

Source: OECD microsimulation analysis, 2019

Across G20 countries, by remaining the obesity rate stable, nearly one million cases of cancer, 2.2 million cases of dementia, 5 million cases of diabetes, and more than 27 million cases of cardiovascular disease would be avoided among people 50 and older between 2020 and 2050 [Dyakova, M. 2017].

After halting the obesity rate, per-capita health expenditures would be on average 0.5% lower per year across G20 countries, compared with the status quo. This would result in annual health expenditure savings in G20 countries of more than USD PPP 11 billion per year.

Sustainable and inclusive societies for all ages require a life course approach

Policies and measures need to be considered for both young and old to ensure poor health is prevented before it begins. Some policies that encourage people to participate in labor market. Policies which are socioeconomic.

Prevent unhealthy behaviors

Many diseases are caused by risk factors such as smoking, overweight-obesity and alcohol consumption [Scarborough, P. et al. 2011]. In recent years, overweight and obesity have increased across G20 countries about 60% and 50% aged over 65 and 80 years respectively. It is clear that there is a direct link between obesity and chronic disease including cardiovascular disease and diabetes. In 2015, the cause of death of 4 million people was obesity.

¹ For more information about these global action plan, see WHO Global NCD Action Plan (2013-2020).

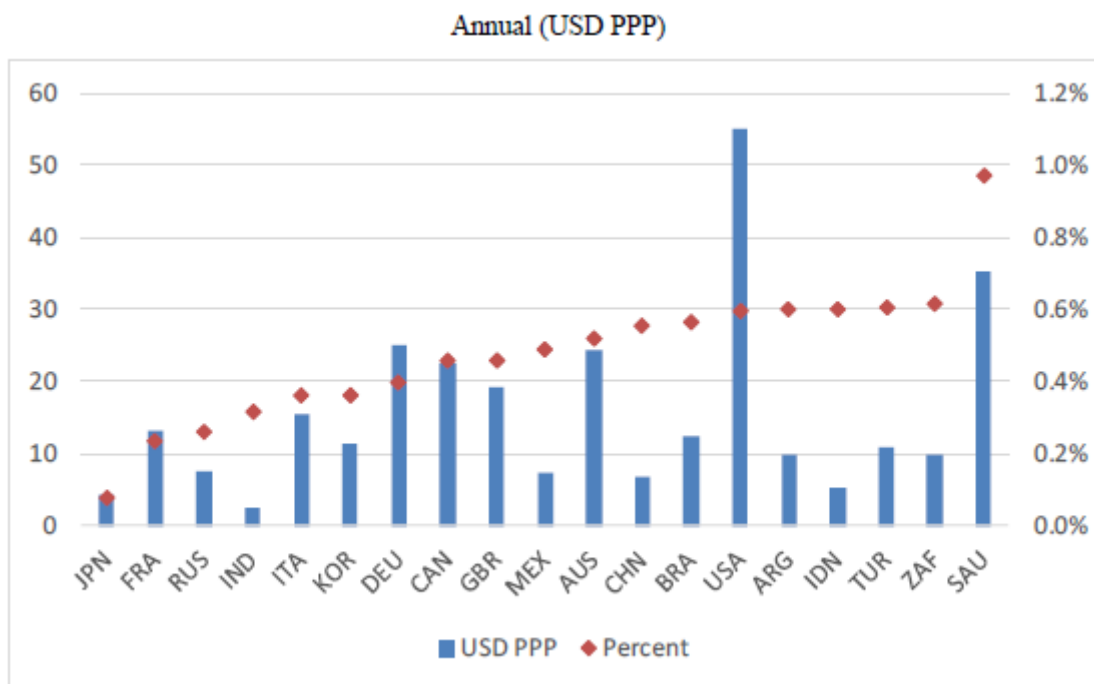


Fig. 9. Reduction in per-capita health expenditure after halting the rise in obesity rates

Source: OECD microsimulation analysis, 2019.

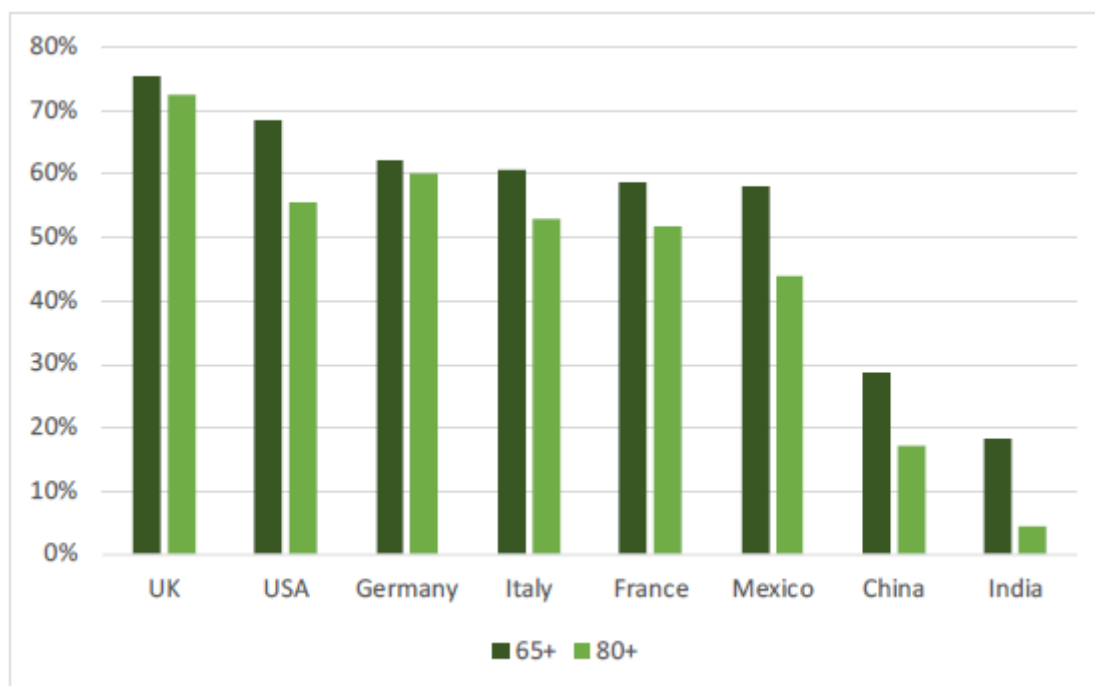


Fig. 10. Prevalence of overweight-obesity, select G20 countries

Note: Proportion of the population with BMI ≥ 25

Source: OECD analysis (unpublished) using microdata from ELSA, SHARE, HRS, MHAS, LASI, CHARLS health and retirement surveys.

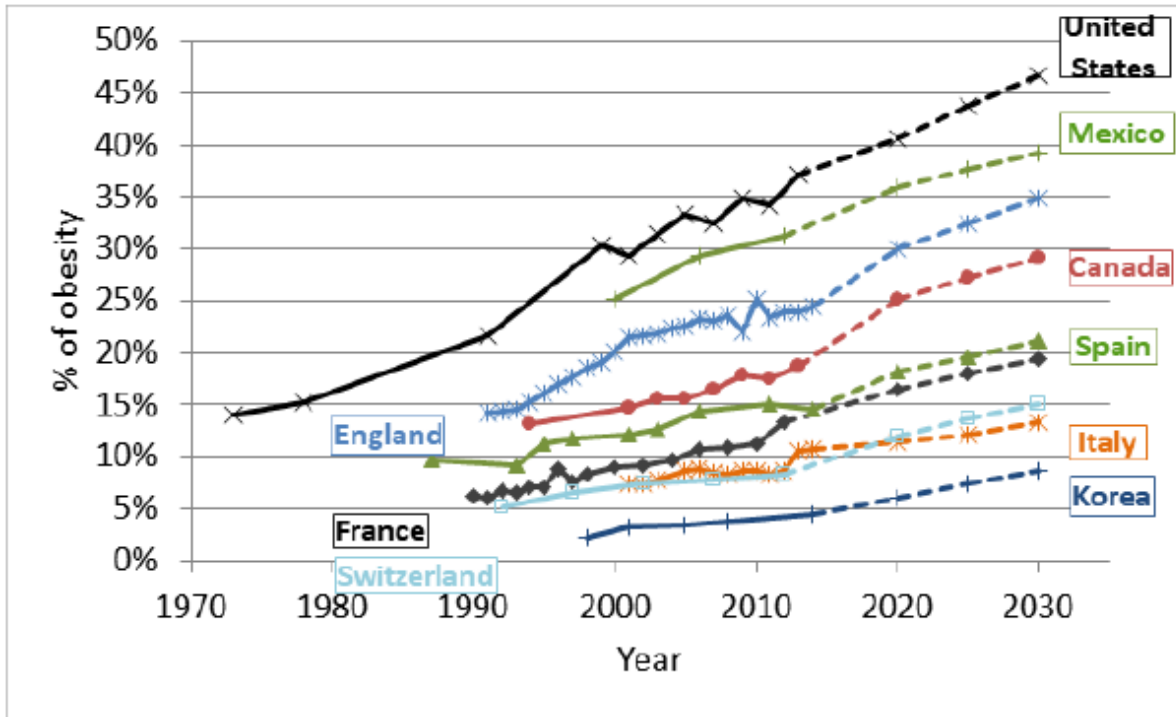


Fig. 11. Rising overweight (including obesity) rates in adults aged 15-74 years

Note: Overweight and obesity rates designate overweight and obesity prevalence rates. Age- and gender-adjusted rates of overweight (including obesity), using the 2005 OECD standard population. Measured height and weight in England, Hungary, Korea, Mexico and the United States; self-reported in other countries.

Source: OECD 2017.

As it is clear, tobacco consumption and smoking is a risk factor for health and has decreased in G20 countries except Indonesia.

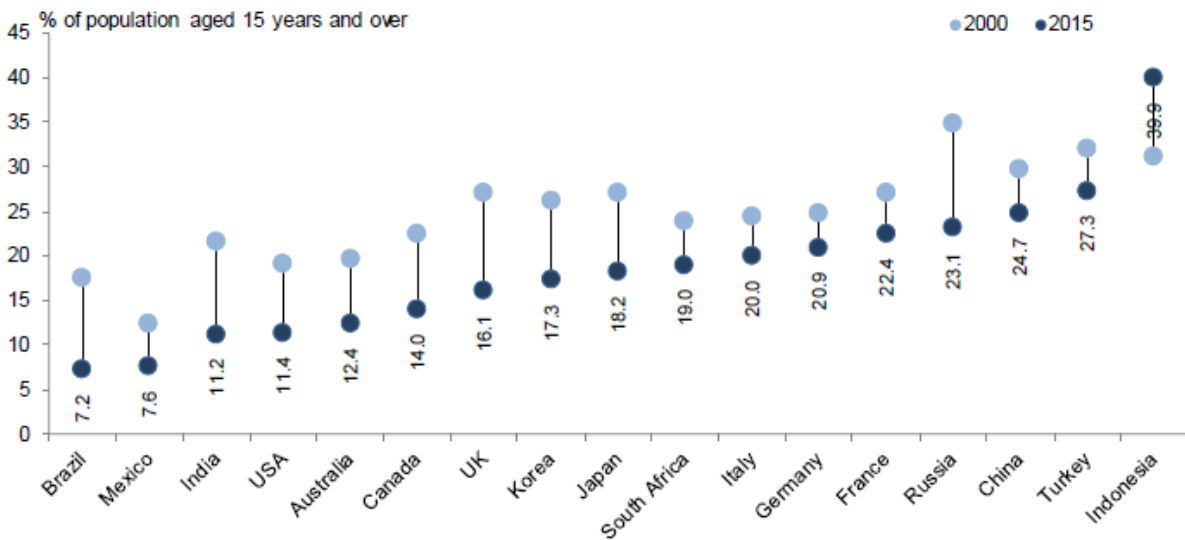


Fig. 12. Adult population smoking daily, 2000 and 2015 (or nearest year)

Source: OECD Health Statistics 2017.

Like tobacco, alcohol consumption is another risk factor for health which has declined in G20 countries from 7.41 in 2015 to 7.25 liters per capita. This amount is different between countries. For example, it has increased in some countries such as China and India and it has decreased in others such as Italy and Japan. It needs to mention that harmful drinking Has some risks such as violence and traffic accidents and are common between young people too.

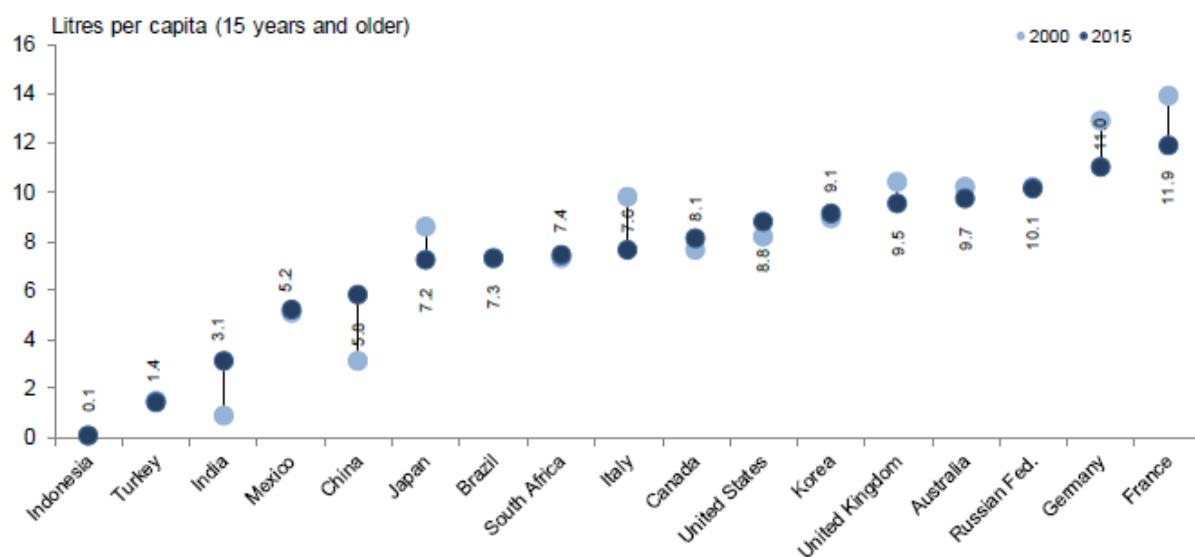


Fig. 13. Recorded alcohol consumption among adults, 2000 and 2015 (or nearest year)

Source: OECD Health Statistics 2017.

G20 countries have adopted some policies which are cost-effective for turning these harmful behaviors to healthy behaviors. A policy package such as mass media information campaign, increasing the price of unhealthy productions and heavy taxes [Cecchini, M. et al. 2010]. G20 countries tries to change the life style and expand the availability of healthy options.

Encourage physical activity

Developing physical activity guidelines can maintain good health and reducing many risk factors.

Address barriers to health literacy

Sufficient health literacy and ability to search in the internet for more information and participate in their own care is critical for healthy aging [Ishikawa, H., & Yano, E. 2008]. In G20 countries, the proportion of population with low health literacy exceeds 50%. Low health literacy means higher risk of mortality, underscoring the need to ensure that health information is communicated clearly and the population is equipped to understand it. Old age and adults between the ages of 25 and 54 use online search and seek health related information 9.7% and 47.3% respectively. It needs to promote digital literacy among older adults.

G20 sustainable development goals (SDGs)

SDGs are a collection of 17 global goals to achieve and sustainable future life for all of the people by 2030 [Kloke-Lesch, A. 2015]. G20 countries controlling and coordinating these goals and reporting the results for each country separately. The SDGs goals are directly related to old age people and the quality of their lives. So, it is necessary to mention them.

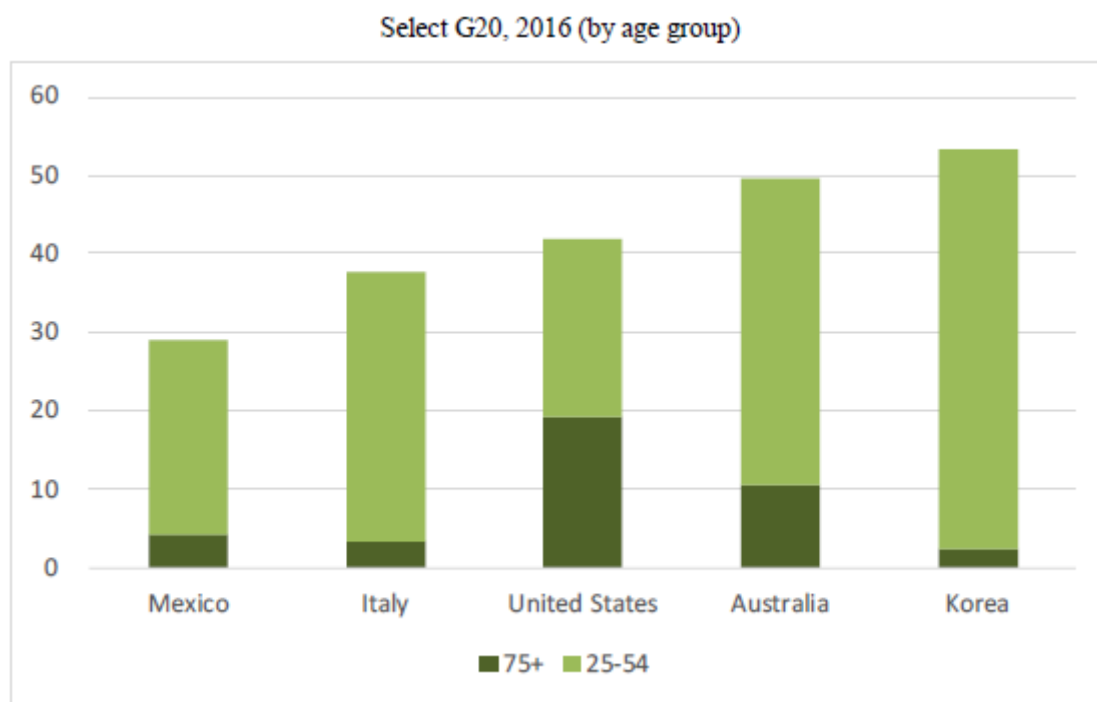


Fig14. Individuals using the internet to seek health information in the past 3 months (%)

Note: Data for the United States refers to 2015.

Source: OECD analysis using data from OECD Statistical Database, 2018. ICT Access and Usage by Households and Individuals Database.

Table 1. SDGs

No	SDGs	Descriptions
1	No poverty	Ensure that all of the people especially poor and vulnerable have equal rights to economic resources and ending poverty.
2	Zero hunger	safe, nutritious and sufficient food all year round and ending hunger.
3	Good health and well-being	Ensuring healthy lives and promoting well-being for all persons with disabilities.
4	Quality education	Ensuring inclusive and equitable quality education for all persons with disabilities.
5	Gender equality	Achieving gender equality and empowering all women and girls with disabilities. End all forms of discrimination against all women and girls everywhere.
6	Clean water and sustain	Ensuring the availability of water and sanitation for persons with disabilities. achieve universal and equitable access to safe and affordable drinking water for all.
7	Affordable and Clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all.
8	Decent Work and Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
9	Industry, Innovation and Infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
10	Reduced Inequality	Reduce inequality within and among countries.
11	Sustainable Cities and Communities	Make cities and human settlements inclusive, safe, resilient and sustainable.

12	Responsible Consumption and Production	Ensure sustainable consumption and production patterns.
13	Climate Action	Take urgent action to combat climate change and its impacts.
14	Life Below Water	Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
15	Life on Land	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
16	Peace and Justice Strong Institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
17	Partnerships to achieve the Goal.	Strengthen the means of implementation and revitalize the global partnership for sustainable development.

The results show that the G20 countries have not performed relatively well in performing and following SDGs. But all fall short on important dimensions, such as government accountability mechanisms, public management practices, and budgeting. Brazil and Mexico shows the high institutionalization while the USA and the Russian Federation perform worst.

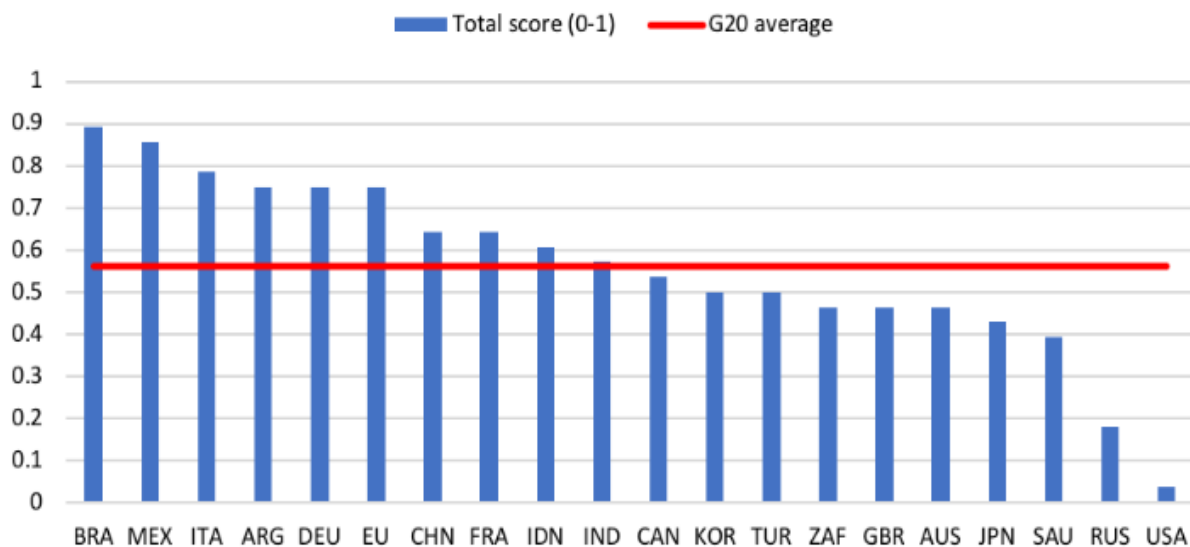


Fig. 15. national coordination and implementation mechanism for the SDGs in G20 countries, 2018.

The dashboard is for members of G20 and countries with more than 100 million populations. It is used set of 77 and 63 indicators for OECD and non-OECD countries to calculate dashboards. Green color implies that the country has achieved the goal, yellow means still there are some challenges remains and red indicates that there are major challenges that must be overcome. Grey shows that there is not any data.

About how each country works, see (SDG index and dashboard report 2018).



Fig. 16. G20 SDG trends dashboards

Source: Guido Schmidt-Traub et al, 2017

G20 Principles on Silver Economy and Active Ageing

It is estimated that the number of older people will increase from 841 million in 2013 to more than 2 billion in 2050. So, it is clear that the labor market and the economy will be affected by these changes. Responding to the challenges and due to changes in economic structure, both young and old citizens and their rights should be considered. Some G20 principles are as follows:

Table2. G20 principles on silver economy and active aging

No	Explanations
1	Involvement of the elderly in political occasions and the importance of their decisions along the way.
2	Better access to a healthy, safe and active life, Prevent poverty among the elderly and promoting healthy life style.
3	Improving working environment and encourage old age people to increase productivity, better access to employment opportunities for older people and preventing the early loss of skills.
4	Omitting discrimination between people in different ages especially in hiring and firing of workers.
5	Allowing older people to engage in social and cultural activities and benefit from their experiences.
6	Identify the benefits of the silver economy and turn threats into opportunities in the future.
7	Investment in infrastructure and innovative technology such as AI especially in the field of healthcare, home assistance, transportation, internet of things, domotics and robotics, to satisfy -among others- the needs of autonomy and high quality life for the elderly people.
8	Facilitate financial services for the elderly and identifying their new needs.
9	Increase skills and continuous learning to compete in the future.

10	Creating some buildings for gathering urban and rural seniors and connecting them by ICT.
11	Cooperation and participation of emerging and developed countries to improve areas such as medical treatments, healthcare and long-term care.
12	Transition of experience and knowledge in traditional professions from older to young people through specific programs.
13	Participation of all people from different groups such as public and private actors, civil society and charity organizations, community-based centers and representatives of senior citizens while developing policies on population ageing.
14	Coordination between experts in various fields, including economic, social, etc. when making policies for the elderly population.

Pros and cons of aging population in G20 countries

There are social and economic advantages and disadvantages of aging population. Some of them as the following:

Table3. Advantages and disadvantages of aging population

No	Pros	Cons
1	Higher accumulated savings per head than younger people	Less economic growth because of low replacement rate.
2	Lower interest rates and the economic benefit of lower inflation could be the results of aging population.	Health problem and high healthcare-cost.
3	Transition of culture and religious to the next generations.	Required to respond to needs of elderly.
4	Having enough time after retirement and participating in social and cultural activities.	Increase in pension costs.
5	A mass of volunteer workers	Fewer tax contributions due to less active workers.
6	Tend to have smaller carbon footprint (travel less)	Migration of industry in cheaper workplace.
7	More jobs creation by the level of retirements	Decreased birth rate
8	More grey spending such as holidays.	Child caring grandparents.
9	Bigger pool of part-time workers.	Fewer working people.
10	Lower crime rate	

The elderly is a crucial part of the community and they contribute both knowledge and experience beyond their years. An aged population puts endless economic stress on the nation, as health care funding and superannuation requires exponential funding, as general living cost continue to rise. With such a large proportion of the population as classified as elderly, it is hard to overlook the long list of disadvantages.

Conclusions

As the population ages, economic and political conditions will change, and policies need to be considered. These policies are used to keep the elderly healthy and increase their working time and life expectancy. Governments set goals for some reasons including prevent poor health, that actively

include older people in their communities, and that offer strong health and social support when people eventually do require help. G20 countries should attention and monitor demographic transition before it arrives. Benefiting from the experiences of older people can increase their life expectancy and increase the productivity of young people. by some arrangements, it could be possible to remain the aging population in the market labor but it needs some policies such as Reducing incentives that encourage early retirement, fighting age discrimination and promoting lifelong learning. There is an important point and it is that our aging will come too.

Declarations

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Conflict of interest / Competing interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Ethics approval: Not applicable

Consent to participate: Not applicable

Consent for publication: Not applicable

Availability of data and material: All the sources used in this article are listed in the references section.

Code availability: No code was used in this article.

Author's contribution: The main contribution of this article is that we have integrated the issue of sustainable development and aging problem in G20 countries in terms of economic and finance.

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