J-Wellness & Covid-19: Why Japan has had relatively low deaths

Covid-19 related deaths per 100,000 people: the data

There have been very marked differences between countries in Covid-19 related deaths (measured per 100,000 people to normalise for countries' different population sizes). The *Deaths per 100,000 people* (highlighted column below) for the countries included in Fig.1 is 24.0. Japan's *Deaths per 100,000 people* is 1.3. The *Deaths per 100,000 people* for the USA is 63.3, a rate 49 times higher than Japan's. We believe that Japan's relatively low Covid-19 related death rate importantly reflects the good life-style behaviours of J-Wellness. Let us see if the data agrees.

Fig.1 Covid-19 related Deaths per 100,000 people for the G20 countries (5 October 2020)

	Population (millions)	Deaths	Deaths per 100,000 people	Confirmed Cases	Confirmed Cases per 100,000 people	Deaths as a % of Confirmed Cases
Brazil	212.6	145,987	68.7	4,906,833	2,308.0	3.0
Spain (*)	46.8	32,086	68.6	789,932	1,687.9	4.1
USA	331.0	209,384	63.3	7,382,341	2,230.3	2.8
UK	67.9	42,407	62.5	482,654	710.8	8.8
Mexico	128.9	78,880	61.2	757,953	588.0	10.4
Italy	60.5	35,968	59.5	322,751	533.5	11.1
France	65.3	32,171	49.3	629,509	964.0	5.1
Argentina	45.2	20,795	46.0	790,818	1,749.6	2.6
South Africa	59.3	16,938	28.6	679,716	1,146.2	2.5
Canada	37.7	9,488	25.2	166,360	441.3	5.7
Russia	145.9	21,153	14.5	1,198,633	821.5	1.8
Saudi Arabia	34.8	4,850	13.9	335,997	965.5	1.4
Germany	83.8	9,531	11.4	300,027	358.0	3.2
Turkey	84.3	8,384	9.9	323,014	383.2	2.6
India	1380	101,782	7.4	6,549,373	474.6	1.6
Indonesia	273.5	11,055	4.0	299,506	109.5	3.7
Australia	25.5	894	3.5	27,135	106.4	3.3
Japan	126.5	1,594	1.3	85,345	67.5	1.9
South Korea	51.3	421	0.8	24,091	47.0	1.7
Total or Average	3,260.8	783,768	24.0	26,051,988	798.9	3.0

Note: (*) Spain is a G20 permanent guest, not a member. China is not included above due to perceived data issues

Source: G20 (for population data), John Hopkins Coronavirus Resource Center, Conceptasia, October 2020

Data issues

We believe Covid-19 related death statistics have few data quality issues, enabling comparisons across countries to be made with relatively high confidence. This is because deaths are at the end of a long healthcare institutional monitoring process of: a) possible symptoms, b) confirmed cases, c) hospitalization, d) deaths.

This is not the case for other Covid-19 related data. For example, national policies on testing vary with implications for the *Confirmed Cases* data shown in Fig.1. Differences in Covid-19 testing across the G7 are shown in Fig.2. In Japan, testing has been largely limited to those already exhibiting possible symptoms (e.g. a persistently high temperature) and those involved in preventative track & trace programs. Other countries, such as the U.K., have pursued widespread testing of essential workers, e.g. workers in the healthcare and distribution industries. More widespread testing is likely to identify infected people with mild symptoms, as well as increasing the number of false positive test results. Of course, less confirmed cases also mean less preventative track & trace testing.

Fig.2 Covid-19 Tests per 1,000 of Population for the G7 (7 October 2020)

	USA	Japan	Germany	France	Italy	U.K.	Canada
Tests/1000	342	17	203	179	197	384	203

Source: virusncov.com/Worldometers.info, Conceptasia, October 2020

Looking a little deeper into any statistic helps build confidence, or not, in the quality of the data.

Japan's Covid-19 related deaths data by Prefecture is shown in Fig.3 and Fig.4. Deaths per 100,000 people are generally highest in those prefectures with the largest populations, suggesting urban density and a higher likelihood of contagion. Prefectures with over 5 million people are highlighted in grey in Fig.3 (Hokkaido, Saitama, Chiba, Tokyo, Kanagawa, Aichi, Osaka, Hyogo, Fukuoka).

Fig.3 Covid-19 Deaths by Japanese Prefectures (6 October 2020)

Prefecture	Population (thousands)	Deaths	Deaths per 100,000 people	Confirmed Cases	Confirmed cases per 100,000 people	Deaths as a % of Confirmed Cases
Hokkaido	5,384	107	2.0	2,217	41.2	4.8
Aomori	1,309	1	0.1	37	2.8	2.7
Iwate	1,280	0	0.0	24	1.9	0.0
Miyagi	2,334	2	0.1	433	18.6	0.5
Akita	1,023	0	0.0	58	5.7	0.0
Yamagata	1,123	1	0.1	78	6.9	1.3
Fukushima	1,914	2	0.1	269	14.1	0.7
Ibaraki	2,918	17	0.6	677	23.2	2.5
Tochigi	1,975	1	0.1	438	22.2	0.2
Gunma	1,973	19	1.0	728	36.9	2.6
Saitama	7,261	102	1.4	4,820	66.4	2.1
Chiba	6,224	72	1.2	4,069	65.4	1.8
Tokyo	13,514	413	3.1	26,550	196.5	1.6
Kanagawa	9,127	143	1.6	7,147	78.3	2.0
Niigata	2,305	0	0.0	170	7.4	0.0
Toyama	1,067	25	2.3	422	39.6	5.9
Ishikawa	1,154	47	4.1	778	67.4	6.0
Fukui	787	11	1.4	244	31.0	4.5
Yamanashi	835	6	0.7	195	23.4	3.1
Nagano	2,100	1	0.0	313	14.9	0.3
Gifu	2,033	10	0.5	630	31.0	1.6
Shizuoka	3,701	2	0.1	558	15.1	0.4
Aichi	7,484	86	1.1	5,461	73.0	1.6
Mie	1,816	5	0.3	530	29.2	0.9
Shiga	1,413	8	0.6	506	35.8	1.6
Kyoto	2,610	26	1.0	1,791	68.6	1.5
Osaka	8,839	219	2.5	10,840	122.6	2.0
Hyogo	5,537	59	1.1	2,804	50.6	2.1
Nara	1,365	9	0.7	566	41.5	1.6
Wakayama	964	4	0.4	242	25.1	1.7
Tottori	574	0	0.0	36	6.3	0.0
Shimane	694	0	0.0	140	20.2	0.0
Okayama	1,922	1	0.1	161	8.4	0.6
Hiroshima	2,845	3	0.1	604	21.2	0.5
Yamaguchi	1,405	2	0.1	201	14.3	1.0
Tokushima	756	9	1.2	149	19.7	6.0
Kagawa	977	2	0.2	94	9.6	2.1
Ehime	1,386	6	0.4	115	8.3	5.2
Kochi	728	4	0.5	138	19.0	2.9
Fukuoka	5,103	99	1.9	5,057	99.1	2.0
Saga	833	0	0.0	246	29.5	0.0
Nagasaki	1,378	3	0.2	238	17.3	1.3
Kumamoto	1,787	8	0.4	626	35.0	1.3
Oita	1,167	2	0.2	158	13.5	1.3
Miyazaki	1,104	1	0.1	364	33.0	0.3
Kagoshima	1,649	12	0.7	435	26.4	2.8
Okinawa	1,434	47	3.3	2,607	181.8	1.8
Total	127,111	1597	1.3	84,964	66.8	1.9

Note: MHLW data as of 6/10/2020 had a total of 85,739 confirmed cases inclusive of 15 returnees from China on government charter flights, and 991 cases screened at airports. The data above comes from local governments
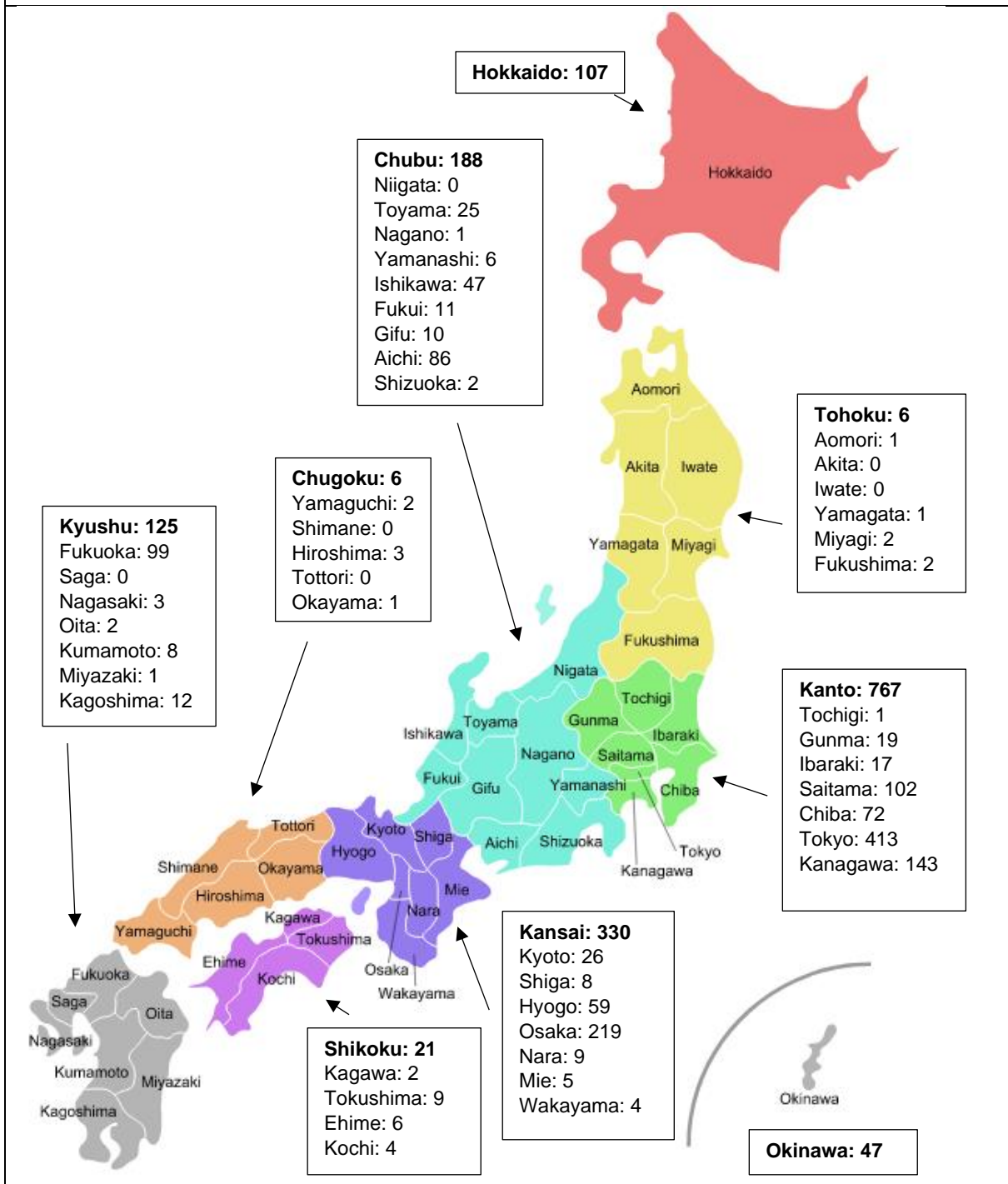
Source: Statistics Bureau of Japan (the population data), Nippon.com, Conceptasia, October 2020

The deaths per 100,000 people column shows the variability around Japan's 1.3 average. Tokyo and Osaka have relatively high rates by Japan standards at 3.0 and 2.5, respectively.

With both Tokyo and Osaka having around average deaths as a percent of confirmed cases (the far-right column in Fig.3), the explanation is relatively high confirmed cases per 100,000 people.

Both Tokyo and Osaka are dense, relatively anonymous urban sprawls.

Fig.4 Covid-19 Deaths by Japanese Prefectures (6 October 2020)

Hokkaido: 107

Chubu: 188
Niigata: 0
Toyama: 25
Nagano: 1
Yamanashi: 6
Ishikawa: 47
Fukui: 11
Gifu: 10
Aichi: 86
Shizuoka: 2

Tohoku: 6
Aomori: 1
Akita: 0
Iwate: 0
Yamagata: 1
Miyagi: 2
Fukushima: 2

Chugoku: 6
Yamaguchi: 2
Shimane: 0
Hiroshima: 3
Tottori: 0
Okayama: 1

Kyushu: 125
Fukuoka: 99
Saga: 0
Nagasaki: 3
Oita: 2
Kumamoto: 8
Miyazaki: 1
Kagoshima: 12

Kanto: 767
Tochigi: 1
Gunma: 19
Ibaraki: 17
Saitama: 102
Chiba: 72
Tokyo: 413
Kanagawa: 143

Kansai: 330
Kyoto: 26
Shiga: 8
Hyogo: 59
Osaka: 219
Nara: 9
Mie: 5
Wakayama: 4

Shikoku: 21
Kagawa: 2
Tokushima: 9
Ehime: 6
Kochi: 4

Okinawa: 47

Source: Nippon.com from local government data, Conceptasia, October 2020

Covid-19 Infections Versus the subsequent Mortality Rate

So why are Japan's Covid-19 related deaths so relatively low? The first step is to determine the relative importance of infections versus the subsequent mortality rate:

Infections (confirmed cases) times the Mortality Rate = Deaths

Conclusion: Reduced deaths from relatively low infections is the most important factor.

1) The Mortality Rate:

If Japan had experienced the 3.0 deaths as a percentage of confirmed cases of the G20 countries of Fig.1 (highlighted in Fig.5 below, extracted from Fig.1), then Japan's deaths would have been 2,517 rather than 1,594 (an increase of 923).

Fig.5 Covid-19 related Deaths per 100,000 *people* for the G20 countries (*)					
	Population (millions)	Deaths	Deaths per 100,000 people	Confirmed Cases	Confirmed Cases per 100,000 people	Deaths as a % of Confirmed Cases
G20 countries[*]	3,260.8	783,768	24.0	26,051,988	798.9	3.0
Japan	126.5	1,594	1.3	85,345	67.5	1.9
Sensitivity example	126.5	1,594	1.3	256,035	202.5	0.6
Note: (*) based on Fig.1						
Source: John Hopkins Coronavirus Resource Center (5 October 2020), G20 (for population data), Conceptasia, October 2020						

2) Infections:

If Japan had experienced the 798.9 confirmed cases per 100,000 people of the G20 countries of Fig.1, then Japan's confirmed cases would have been 1,010,105 rather than 85,345.

1,010,105 confirmed cases at the 3.0 deaths as a percentage of confirmed cases would result in 30,303 deaths, an increase of 28,709.

3) Relative importance:

Japan's reduced deaths resulting from a relatively low mortality rate: 923

Japan's reduced deaths resulting from relatively low infections: 27,786 (28,709 minus 923)

Expressed as proportions of the whole, relatively low infections contributes 97% and the low mortality rate 3%.

4) A reality check:

If deaths are an accurate number, as we believe, and therefore do not change as we, for example, triple the confirmed cases per 100,000 people (to a still well below average 202.5) to compensate for Japan's relatively light testing regime, then deaths as a % of confirmed cases would decline to 0.6. The latter would be lowest number by far compared to the other countries in Fig.1. Whilst we accept that Japan's confirmed cases are missing mild symptom cases, working backwards from the actual deaths number puts limits on how under-reported the confirmed cases can be.

The next step is to examine the relative importance of the factors driving Japan's relatively low Covid-19 mortality rate and Japan's relatively low Covid-19 infections (confirmed cases) rate.

The following are the factors discussed over coming pages

1) Japan's Relatively Low Covid-19 Mortality Rate

    a) Age profile
    b) Obesity
    c) Air quality
    d) Other factors

2) Japan's Relatively Low Covid-19 Infection (confirmed cases) Rate

    a) Policies introduced, and the degree of society's implementation
    b) Contact tracing structures
    c) Other factors

| **Fig.6 Age Distribution of Covid-19 Confirmed Cases & Deaths in Japan (30 September 2020)**			
	Confirmed Cases	Deaths	Deaths/confirmed Cases (%)
9 years and under	2,011	0	Zero
10-19	4,194	0	Zero
20-29	22,833	2	0.01
30-39	14,251	6	0.04
40-49	11,554	17	0.15
50-59	10,206	51	0.50
60-69	6,363	154	2.42
70-79	5,397	403	7.47
80 years and over	5,093	896	17.59
Age unknown	424	7	1.65
Source: Toyo Keizai, Conceptasia, October 2020			

1) Japan's Relatively Low Covid-19 Mortality Rate

a) Age Profile: as shown in Fig.7 and Fig.8 Japan is an aging society with the longest life expectancy in the G7 (and the world). As such, given the age profile of Covid-19 deaths, Fig.6, that increase with age, this factor is a headwind, negative contributor to Japan's relatively low Covid-19 mortality rate.

Fig.7 Elderly (65 and over; 80 and over) as a percentage of Japan's total population
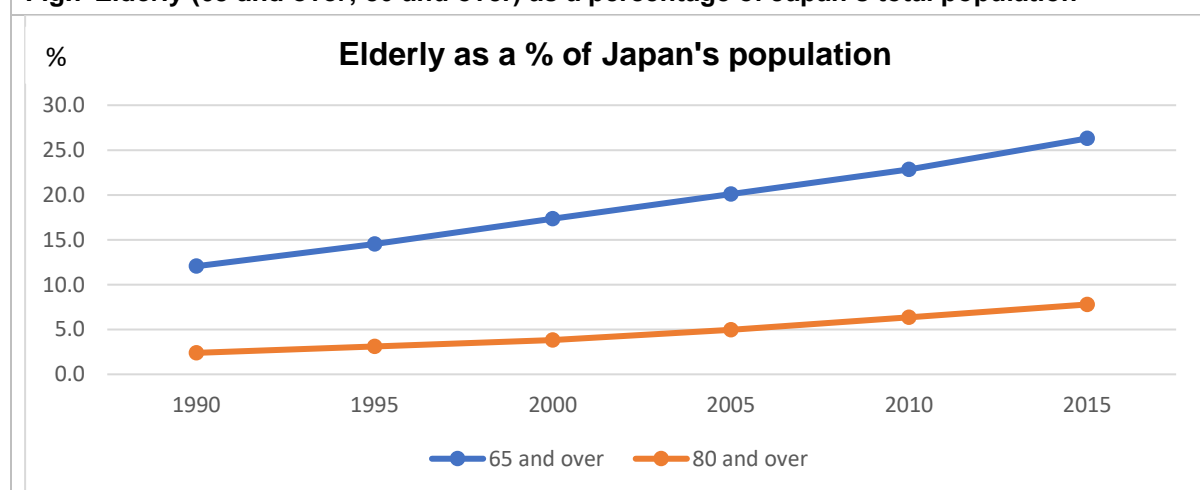
Source: Statistics Bureau of Japan, Conceptasia, October 2020

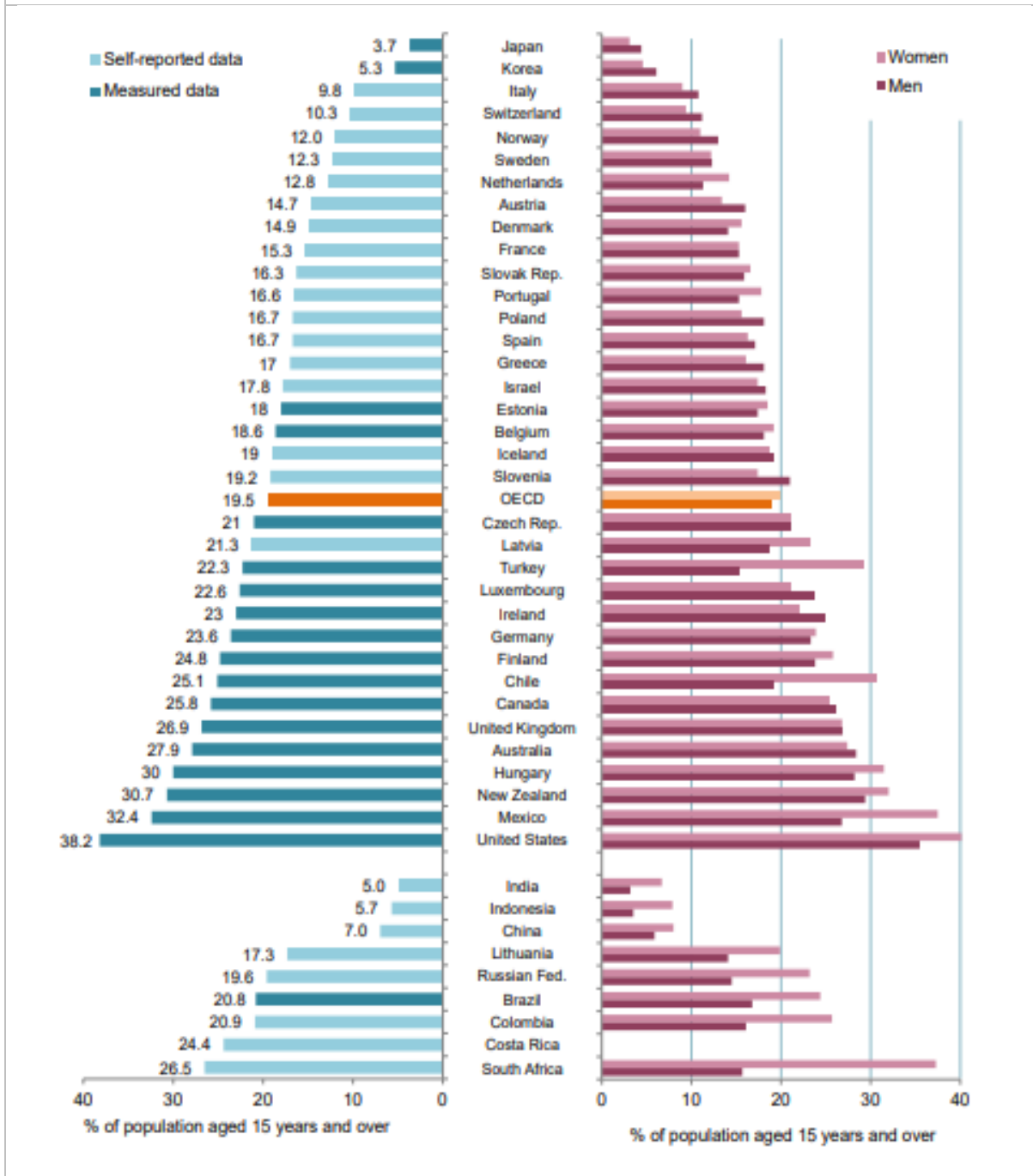| **Fig.8 Life expectancy at birth, and its improvement in major countries, 1970-2017, years**					
	USA	**Japan**	**Germany**	**France**	**U.K.**
1970	70.9	72.0	70.6	72.2	71.9
2017	78.6	84.2	81.1	82.6	81.3
Change	+7.7	+12.2	+10.5	+10.4	+9.4
Source: OECD, Conceptasia, October 2020					

b) Obesity: Covid-19 deaths are more prevalent when an individual has pre-existing medical conditions [1,2,3,4,5,6] such as obesity and related health issues such as type-2 diabetes, hypertension.

Japanese government programs have been striving to reduce lifestyle diseases associated with sedentary and stressful living for decades. This has involved specific health and wellness targets. For example, to reduce obesity, the Metabo Law, 2008, set maximum waist measurements at 33.5 inches for men and 35.4 inches for women, with education support given to those who exceeded these levels. In addition, local governments and companies are potentially liable to fines.

Japan's low obesity rates, Fig.9, as a proxy for the presence of certain pre-existing medical conditions, is the major positive factor contributing to Japan's relatively low Covid-19 mortality rate.

**Fig.9 Obesity among adults, 2015 or nearest year**

Country	% (left panel)
Japan	3.7
Korea	5.3
Italy	9.8
Switzerland	10.3
Norway	12.0
Sweden	12.3
Netherlands	12.8
Austria	14.7
Denmark	14.9
France	15.3
Slovak Rep.	16.3
Portugal	16.6
Poland	16.7
Spain	16.7
Greece	17
Israel	17.8
Estonia	18
Belgium	18.6
Iceland	19
Slovenia	19.2
OECD	19.5
Czech Rep.	21
Latvia	21.3
Turkey	22.3
Luxembourg	22.6
Ireland	23
Germany	23.6
Finland	24.8
Chile	25.1
Canada	25.8
United Kingdom	26.9
Australia	27.9
Hungary	30
New Zealand	30.7
Mexico	32.4
United States	38.2
India	5.0
Indonesia	5.7
China	7.0
Lithuania	17.3
Russian Fed.	19.6
Brazil	20.8
Colombia	20.9
Costa Rica	24.4
South Africa	26.5

Self-reported data / Measured data

% of population aged 15 years and over (left panel)

Women / Men

% of population aged 15 years and over (right panel)

Source: OECD Health Statistics 2017 (www.oecd.org/health/health-data.htm), Conceptasia October 2020

c) Air quality: Covid-19 deaths are more prevalent when an individual has pre-existing medical conditions such as respiratory problems. Air quality is used as a proxy for this. Air pollution causes respiratory diseases such as asthma and chronic bronchitis.

There are many measures used to measure air quality, e.g. PM 2.5 (airborne particulate matter with a diameter of 2.5 micrometres or less) and generally Japan when compared to other advanced nations, scores around average to somewhat below average. This is not a factor supporting Japan's relatively low Covid-19 mortality rate.

The G7 country with the worst air quality is Italy, as shown below. This is believed to have been a major factor in the high incidence of Covid-19 related deaths in Northern Italy. [7]

Fig.10 Deaths attributable to ambient particulate matter pollution in 2015 (dark blue lowest; dark red highest)
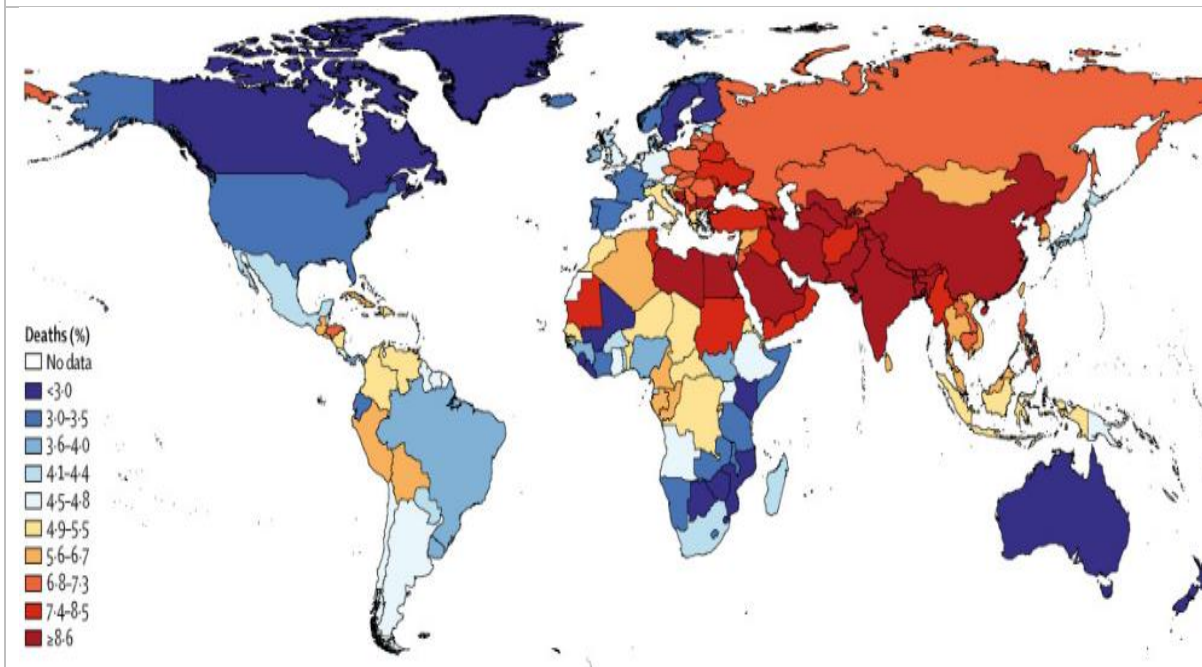
Note: From *Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: an analysis of data from the Global Burden of Diseases Study 2015* by Dr Aaron J Cohen, DSc, Prof Michael Brauer, ScD, Richard Burnett, PhD, Prof H Ross Anderson, MD, Joseph Frostad, MPH, Kara Estep, MPA, Prof Kalpana Balakrishnan, PhD, Prof Bert Brunekreef, PhD, Prof Lalit Dandona, MD, Rakhi Dandona, PhD, Prof Valery Feigin, PhD, Greg Freedman, MPH, Bryan Hubbell, PhD, Amelia Jobling, PhD, Prof Haidong Kan, MD, Luke Knibbs, PhD, Yang Liu, PhD, Prof Randall Martin, PhD, Lidia Morawska, PhD, Prof C Arden Pope, PhD, Hwashin Shin, PhD, Kurt Straif, PhD, Prof Gavin Shaddick, PhD, Matthew Thomas, PhD, Rita van Dingenen, PhD, Aaron van Donkelaar, PhD, Prof Theo Vos, PhD, Prof Christopher J L Murray, DPhil, Mohammad H Forouzanfar, PhD

Source: The Lancet May 2017 (the article noted above), Conceptasia, October 2020

d) Other factors: hospital capacity and quality undoubtedly influence the Covid-19 related mortality rate, but it is hard to argue that Japan's hospitals are materially better or worse than those in other G7 countries. Japan has a comprehensive public healthcare system like most G7 countries (the US being the exception). Issues relating to wealth and income inequalities are captured in the obesity proxy.

Conclusion: As noted earlier, Japan's reduced deaths resulting from a relatively low mortality rate are estimated at 923. By a process of elimination, the cause appears to be principally due to Japan's low obesity rates, as a proxy for the relative absence of certain pre-existing medical conditions such as type-2 diabetes and hypertension.

Next, we turn to Japan's reduced deaths resulting from relatively low infections. This was estimated to be 27,786, a much higher number.

2) Japan's Relatively Low Covid-19 Infection (confirmed cases) Rate

a) Policies introduced, and the degree of society's implementation: The good life-style behaviours of J-Wellness appear here; the challenge is finding data to capture their impact.

The Japanese government's policies included:

1) The progressive closing of the nation's borders
2) Appealing for an ongoing commitment to good hygiene: frequent 20-second hand washing, the wearing of masks outside the home, physical distancing, avoiding the three C's, Fig.11
3) PM Abe on February 27 called for all schools to close on March 2
4) Introducing a state of emergency from April 7 (Tokyo, Kanagawa, Saitama, Chiba, Osaka, Hyogo and Fukuoka; nationwide from April 16) to May 31 (originally May 6), with a request (i.e. not legally mandated) to reduce social contacts by 80% to reduce infections

Fig.11 The Avoid the "Three Cs" campaign: to prevent cluster infections, introduced in early March 2020

Source: Ministry of Health, Labour and Welfare, Conceptasia, October 2020

Many Japanese have regularly worn masks from the beginning of the flu season in December through the end of the cedar pollen season in May. Historically, this has meant heavy use by the elderly and cedar pollen sufferers, so perhaps around a third of the population. One consequence has been a lack of social stigma around their use. The government's request for all to wear masks was almost universally adopted. Not participating quickly became the social stigma. Wearing a mask signals that one cares for the community.

Japan's rapid mask adoption stands in contrast with the WHO which initially dismissed masks as being ineffective, and the slow adoption in most other countries.

Fig.12 Percentage of people wearing masks, survey-based data (2 May 2020)							
	USA	Japan	Germany	France	Italy	U.K.	Canada
% wearing masks	64	85	38	48	86	13	41
Source: YouGov UK, Conceptasia, October 2020							

There is not yet a scientific consensus on the benefits of wearing masks, though very material benefits are beginning to be quantified. [8]

The 6 October 2020 *Face masks: what the data says* in *Nature* opens as follows: "The science supports that face coverings are savings lives during the coronavirus pandemic, and yet the debate trundles on. How much evidence is enough?" The article reviews the evidence and is broadly supportive of wearing masks. To quote one passage:

The findings provide justification for the emerging consensus that mask use protects the wearer as well as other people. The work also points to another potentially game-changing idea: "Masking may not only protect you from infection but also from severe illness," says Monica Gandhi, an infectious-disease physician at the University of California, San Francisco. Gandhi co-authored a paper published in late July suggesting that masking reduces the dose of virus a wearer might receive, resulting in infections that are milder or even asymptomatic. A larger viral dose results in a more aggressive inflammatory response, she suggests.

In Japan, the government does not have the legal power to mandate that people stay at home and commercial facilities close. However, in Japan, with its strong community cohesion and layers of uncodified social norms, reasonable and understandable Government urging is sufficient.

b) Contact tracing structures: Along with other governments, **J**apan has experienced having to withdraw a government sponsored misfunctioning Track and Trace app.

However, Japan still has in place an old-school contact tracing structure of 469 local public health centres, with over 25,000 staff, that dates to the 1930's and the fight against tuberculosis. These centres have been active in health advice for the elderly, providing check-ups for babies, investigating food poisoning and child abuse and so on. This has enabled a community-based approach to tracking Covid-19 infections, alerting those that were in contact with a confirmed case for the need to quarantine, and then checking in again on those exposed to monitor developments. This is a time intensive, personal process which is still able to ensure privacy. The process has facilitated the early identification of "super-spreaders". Particular attention is paid to monitoring unlinked cases.

Summary: the two above factors rely heavily on shared values and social cohesion, underpinned in Japan by the good life-style behaviours of J-Wellness that were presented in our J-Wellness chapter in *the 2020 Wellness Trends, from Global Wellness Summit* report. Japan is not standing still, but rather executing exciting innovations on top of its cultural traditions of trust, exacting quality in matters, and a deep reverence for nature. For more, please see our book *J-Wellness 2020: The economics, career options, and investment opportunities*, available on Amazon here.

c) Other factors: The WHO provides a Myth Busters site [9] dismissing many other factors. One factor that continues to attract academic interest is the relationship between Covid-19 mortality and the BCG vaccination. [10,11] BCG is used widely as a vaccine for tuberculosis. Japan has a universal BCG vaccination policy for new-borns.

Conclusions

Japan's reduced deaths resulting from a relatively low mortality rate: 923

We believe that this was principally caused by Japan's low obesity rates as a proxy for the relative absence of certain pre-existing medical conditions such as type-2 diabetes and hypertension.

Japan's reduced deaths resulting from relatively low infections: 27,786

The number of reduced deaths here is so high that the good news should be spread widely: Policies introduced, the degree of society's implementation, Japan's old-school contact tracking structure.

Relative to other countries, the role of early and widespread adoption of mask wearing appears particularly important, along with the early identification of "super-spreaders" through the contact tracing structure of 469 local public health centres, with over 25,000 staff.

Fig.13 Daily Covid-19 Deaths in Japan (14 February 2020 to 7 October 2020)
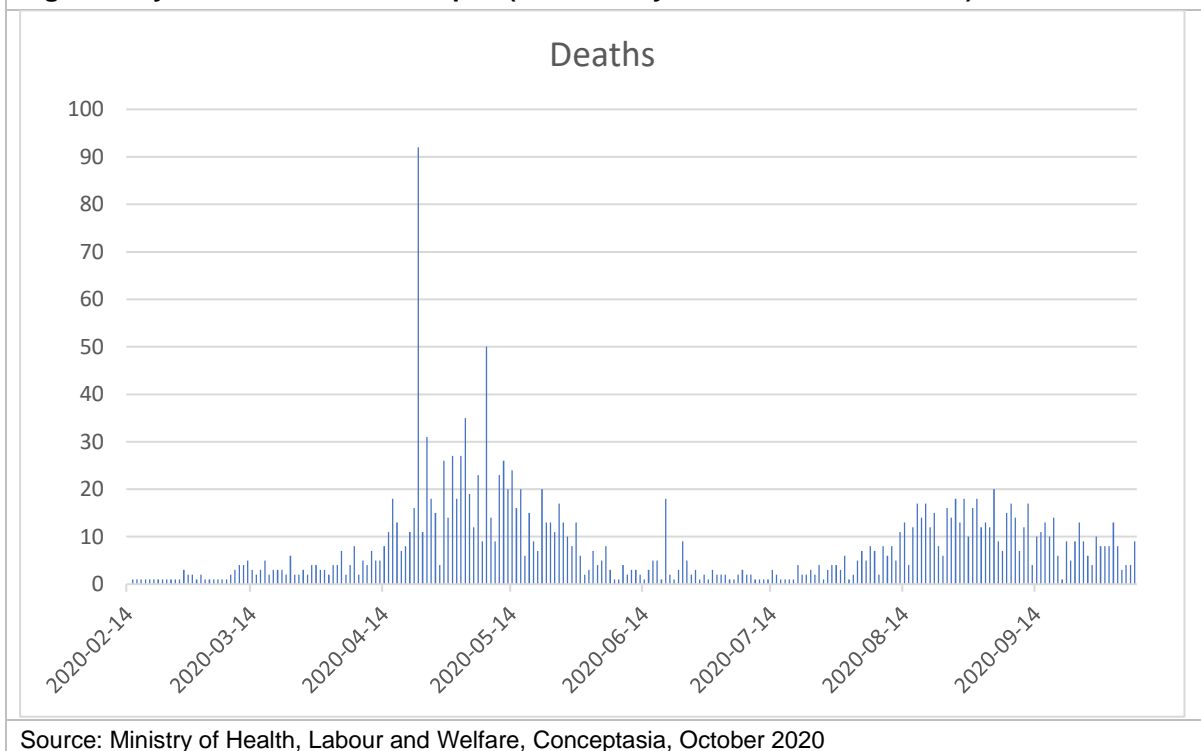
Source: Ministry of Health, Labour and Welfare, Conceptasia, October 2020

Footnote: Like other countries, Japan has experienced a second wave of Covid-19 infections. Daily infections peaked in late August at over twice the level of the first wave peak in April (around 1,600 versus around 700 infections). Nonetheless deaths remained relatively subdued.

2020 Deaths versus Deaths in a Regular Year: "Excess Mortality"

Known as "Excess Mortality" and advocated by the WHO, this has been used historically to measure flu-related deaths. The British medical journal *The Lancet* carried an article in April arguing the use of the "Excess Mortality" methodology to the Covid-19 pandemic. As quoted in *The Mainichi* newspaper, August 9, 2020, excess mortality in Europe between March and May was estimated at 172,400 cases. Japan's MHLW released its calculation for Japan's leading five prefectures, for the 2020 through April period, and estimated excess mortality at 138, which was less than the then Covid-19 deaths. This implies that other deaths, e.g. from the flu season, road accidents were significantly lower in 2020 than in a regular year. A research paper, *No Excess Mortality of COVID-19 in Japan until July, 2020* by Junko Kurita, Tamie Sugawara, Yoshiyuki Sugishita, and Yasushi Ohkusa found that the death "totals in April to July were lower than the baseline and therefore the threshold, no significant excess mortality was found in March–July, 2020, when the COVID-19 outbreak occurred in Japan."

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