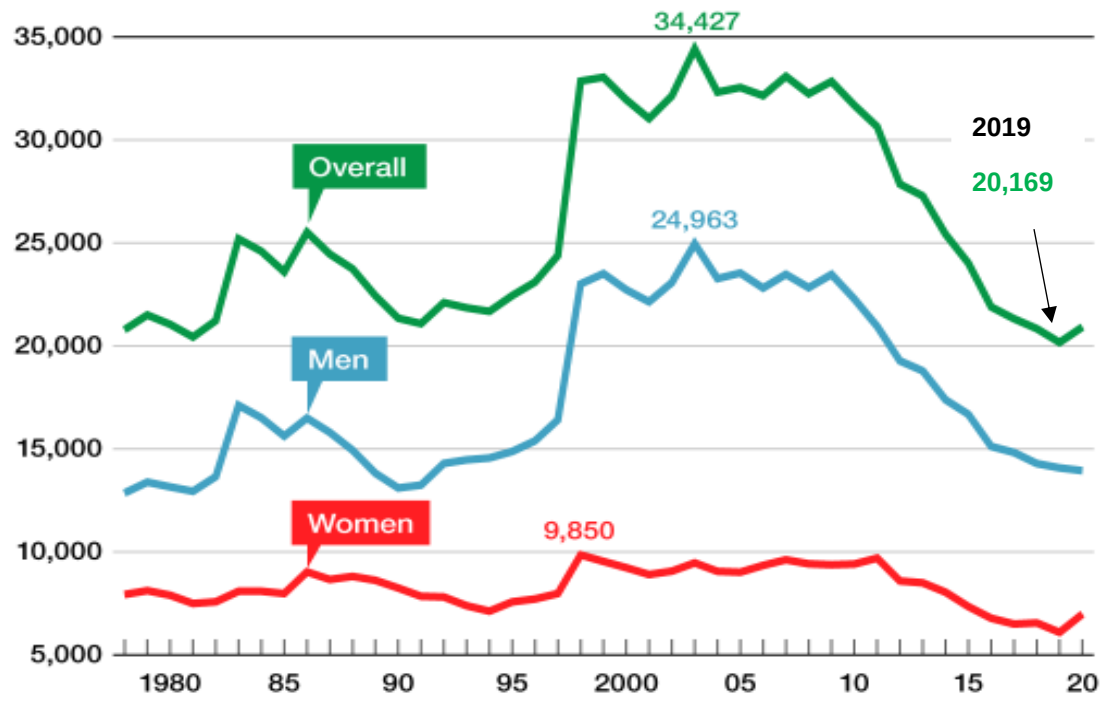
Suicides and Covid-19

The data

Japan's National Police Agency releases monthly data on suicides on a timely basis. Other countries are more reticent. The latest US data, for example, is 2018. Japanese suicides rose 3.7% in 2020, up by 750 people to 20,919. This was the first increase in 11 years, Fig.1. Suicides per 100,000 population also increased for the first time in 11 years to 16.6.

Fig.1 Japanese Suicides, 1978-2020



Note: Please note the following periods since 1990. 1990-92: Overall suicides around 22,000 annually. 1996-98: A surge higher in overall annual suicides. 1999-2009: A high plateau of overall suicides averaging around 33,000 annually. 2010-19: A trend decline in overall annual suicides

Source: Nippon.com based on National Police Agency data, Conceptasia, February 2021

Overall suicides continued to decline through June 2020, before inflecting from July onwards.

By gender, in 2020, the number of suicides by men fell by 135 to 13,943. The first year over year increase occurred in August 2020. In contrast, the number of suicides by women increased by 885 to 6,976. The first year over year increase occurred in July 2020.

How to interpret the data?

The anecdotal insights from previous pandemics support an increase in suicides.

As noted in *The impact of the COVID-19 pandemic on self-harm and suicidal behaviour: a living systematic review* [(1)] time-series modelling indicates that the 1918-20 Spanish Flu pandemic, which caused well over 20 million deaths worldwide, led to a modest rise in the national suicide rate in the USA. [(2)]

There is also evidence that suicide rates increased briefly amongst people aged over 65 years in Hong Kong during the 2003 SARS epidemic, predominantly amongst those with more severe physical illness and physical dependency. (3)

The Covid-19 pandemic and the associated government policy responses are an easy explanation. The pandemic/policy responses have caused:

1) An increase in unemployment, financial insecurity
2) A deterioration in mental wellness resiliency due to social isolation, fear of infection, potential stigma, and victimization
3) Stay-at-home lockdowns, confinement, heightened risks of domestic violence, child neglect/abuse
4) Mental health services' access problems
5) Increased bereavement, intensified by separation issues

The above is in addition to 6) the exacerbation of already present mental illness, such as depression, post-traumatic stress disorder, etc.

However, the above just changes the question to:

What is the relative importance of the factors?

Has the pick-up in suicides been more, or less, than experts in the field expected?

To address these questions a model is needed.

The impact of the COVID-19 pandemic on self-harm and suicidal behaviour: a living systematic review (1) presents five models, Fig.2 and Fig.3. The first four models are based on the well-characterized impact on suicide rates from a rise in the unemployment rate. The fifth study models the effects of physical distancing measures on suicide rates, by using suicide rates in prisoners in group or single cells as a model for lock-down in a group or in isolation.

Fig.2 Summary of studies using modelling approaches to estimate the possible impact of the pandemic on suicide rates.

Model Geography & Authors	Data used to inform estimate	Model prediction	Comment / Limitations
USA Bhatia, 2020 (4)	Previous research modelling the association of unemployment with suicide in the USA indicating a 1% rise in unemployment was associated with a 1% rise in suicide. Assumes unemployment in the USA has risen from 3.8% to over 20%.	7444 additional suicides in the following 2 months. There were approximately 48,000 suicides in USA in 2018, so this equates to a predicted 15% rise in suicides in the USA.	No account for potential impacts of pandemic other than via unemployment rises Duration of unemployment rises uncertain Pre-print, not peer reviewed.
Worldwide Kawohl & Nordt 2020 (5)	Previous research modelling the association of unemployment with suicide in 63 countries (2000–2011). International Labor Organizations (ILO) Predicted job losses (March 2020) of between 5.3 to 24.7 million	Between 2135 and 9570 extra suicides per year worldwide. i.e., a 0.3% to .2% rise	No account for potential impacts of pandemic other than via unemployment rises. Duration of unemployment rises uncertain Research letter, probably not peer reviewed.

Notes: numbers in brackets refer to the references at the end of this note

Source: *The impact of the COVID-19 pandemic on self-harm and suicidal behaviour: a living systematic review* (1) Conceptasia, February 2021

Fig.3 Summary of studies using modelling approaches to estimate the possible impact of the pandemic on suicide rates.

Model Geography & Authors	Data used to inform estimate	Model prediction	Comment / Limitations
USA McIntyre & Lee, 2020 [6]	The authors analyzed the association of unemployment with suicide in the USA (1999–2018) and reported a 1% rise in unemployment was associated with a 1% rise in suicide. Three scenarios for changes in level of unemployment a) unchanged at 3.6% (2020), 3.7% (2021); b) rise to 5.8% (2020) and 9.3% (2021); c) rise to 24% (2020) and 18% (2021).	Scenario b) associated with a 3.3% rise in suicide in 2020–21 Scenario c) associated with an 8.4% rise in suicide in 2020–21.	Usefully models the potential impact of two different unemployment rate rises. No account for potential impacts of pandemic other than via unemployment rises. Duration of unemployment rises uncertain
Canada McIntyre & Lee, 2020 [7]	The authors analyzed the association of unemployment with suicide in Canada (2000–2018) and reported a 1% rise in unemployment was associated with a 1% rise in suicide. Three scenarios for changes in level of unemployment a) minimal change at 5.9%(2020), 6.0% (2021); b) rise to 8.3% (2020) and 8.1% (2021); c) rise to 16.6% (2020) and 14.9% (2021).	Scenario b) associated with a 5.5% rise in suicide in 2020–21 Scenario c) associated with a 27.7% rise in suicide in 2020–21.	Usefully models the potential impact of two different unemployment rate rises. No account for potential impacts of pandemic other than via unemployment rises Duration of unemployment rises uncertain
Switzerland Moser *et al.*, 2020 [8]	Used published data on increased risk of suicide amongst a) prisoners in shared cells (3-fold increased risk) and b) prisoners in solitary confinement (27-fold increased risk) as indicators of risk of lock down on a) multi-person households and; b) single person households. Data on the annual number of suicides in Switzerland and the proportion of Swiss people living alone (16%) and in shared households (84%).	Estimate 1523 additional suicides. Based on an estimate the 1043 recorded suicides in Switzerland in 2017 this equates to a more than doubling in suicides deaths	The team modelled the impact of COVID-19 pandemic on multiple outcomes as well as suicide. Prison confinement is probably not a good proxy for effects of lockdown. High suicide rates in prisoners are due to multiple factors e.g., age and gender profile; high levels of psychiatric morbidity rather than impacts of confinement. Other potential factors e.g., rises in unemployment not included in models. Pre-print, not peer reviewed.

Notes: numbers in brackets refer to the references at the end of this note

Source: *The impact of the COVID-19 pandemic on self-harm and suicidal behaviour: a living systematic review* [1] Conceptasia, February 2021

Japan's unemployment rate

There does appear to be a close similarity in the movement for Japanese unemployment and suicides, Fig.1 and Fig.4.

After a period of full employment and a comparatively low number of suicides, 1990-92, both moved modestly higher in the following few years, before both surged higher 1996-98. There then followed a plateau in both series 1999-2009, before both underwent a trend decline 2010-19.

During the surge, suicides amongst middle-aged men were especially heavy.

Referring to 1998, Yasuyuki Shimizu of NGO Lifelink noted, [10]

That was the biggest economic collapse ever experienced by modern Japan. Many local businesses also failed, and the unemployment rate increased significantly. Many middle-aged men who were the breadwinners for their families lost their jobs. They were deprived not only of their source of income but also their identity and pride as hard-working Japanese businessmen. In Japan, there is a close correlation between the suicide rate and the unemployment rate.

Fig.4 Japan's unemployment rate 1990-2020

Year	Unemployment rate (%)	Comments
1990	2.0	Full Employment: 1990-2 average unemployment rate 2.1% and average annual suicides 22,000, Fig.1
1991	2.1	
1992	2.2	
1993	2.5	
1994	2.9	
1995	3.2	
1996	3.4	
1997	3.4	
1998	4.1	
1999	4.7	The high plateau of suicides, around 33,000 annually, Fig.1, with an average unemployment rate of 4.6%
2000	4.7	
2001	5.0	
2002	5.4	
2003	5.3	
2004	4.7	
2005	4.4	
2006	4.1	
2007	3.9	
2008	4.0	
2009	5.1	
2010	5.1	
2011	4.5	
2012	4.3	
2013	4.0	
2014	3.6	
2015	3.4	
2016	3.1	
2017	2.8	
2018	2.4	The return to full-employment; the return of suicides to the low 20,000's annually, Fig.1
2019	2.3	
2020	2.8	

Source: Statistics Bureau of Japan, Conceptasia, February 2021

The unemployment rate and annual suicides: A simple sensitivity

On the above numbers, a move higher in the unemployment rate by 2.5% (from 2.1% to 4.6%) occurred while the annual number of suicides rose by 50% (from 22,000 to 33,000). This is equivalent to a 1% increase in the unemployment rate being associated with a 20% increase in annual suicides. Subsequently, similar declines occurred together, with the unemployment rate declining back to 2.3-2.4% and annual suicides falling back to the low 20,000s.

1%/20% is an extremely high rate of sensitivity when compared to the 1%/1% sensitivity noted in Fig.2 and Fig.3 for the USA and Canada. Employment structures and unemployment definitions do vary by country necessitating caution on cross-border comparisons. Next, we look at possible additional material factors.

Possible additional material factors

1) The Basic Act for Suicide Prevention, June 2006

Traditionally, suicide has been a social taboo in Japan, rarely publicly discussed. Yasuyuki Shimizu began working to change this attitude whilst a producer at NHK and then subsequently at his NGO, Lifelink. He is a leading advocate that suicides are a social responsibility, not a private one. This culminated with the passage in June 2006 of The Basic Act for Suicide Prevention. The first two of the Act's 21 articles are as follows:

Article 1: "The purpose of this law is to prevent suicide and enhance support for the relatives, etc., of suicide victims by comprehensively promoting suicide prevention measures, and thereby contribute to the creation of a society in which everyone can live healthy, meaningful lives."

Article 2: "Suicide countermeasures must be implemented not just from the perspective of mental health, but also in a way that is in line with the realities of suicide – based on the fact that suicide has various complex causes and contexts."

In Japan, suicide is now a social, society, national issue reflecting the risk that social pressure leads to depression and suicide.

This is a radical break with the previous belief that suicide was a private issue.

Yasuyuki Shimizu, in his *How Japan Reduced Suicides: A Law That Changed Society – The Japanese Model* [(10)] presents the findings of a survey into the conditions leading up to a suicide attempt, conducted with 523 survivors of suicide. We have rearranged the factors into 3 tiers, Fig.5.

Fig.5 Suicide Risk Factors	
Tier 1	Depression Mental Disorders; Money Problems, Family Issues
Tier 2	Domestic violence/sexual violence; Physical disorders, unemployment; Debt; Non-regular employment; High-school drop-out; Relationships at work; Workplace changes; Overwork; Business doing poorly; Abuse
Tier 3	Family death; Disease; Hikikomori; Taking care of elderly; worry about future; Child-raising problems; Work issues; Bullying; Heartbreak; Alcohol problems; Domestic Violence; Victim of crime
Source: *How Japan Reduced Suicides: A Law That Changed Society – The Japanese Model,* [(10)] *Conceptasia, February 2021*	

A key conclusion of the article was that suicide is caused by 4 interrelated factors on average. This complexity is reflected in The Basic Act for Suicide Prevention, Article 2.

With the above having led to a series of programs aimed at preventing suicides, the above is a strong candidate for contributing to the trend decline in annual suicides since 2009.

2) Cultural trends/the internet

Two papers, [(11, 12)] have looked for non-economic factors as an explanation for the 1996-98 surge in suicides. Demographic trends are not supportive as an explanation:

Over the past 20 years the percentage of Japan's population between the ages of 40–65 has been remarkably stable (34.2 % in 1990; 34.4 % in 2000; and 34.0 % in 2010). Because this high-risk group has not increased in relative size between 1990 and 2010, the strong age effects associated with this group are not responsible for overall increases in Japan's suicide rate [(11)]

Trends in Suicide Mortality by Method from 1979 to 2016 in Japan, [12] examined the techniques used in Japanese suicides over time, e.g., hanging, gas, drowning, poisoning. The study discovered that the 1998 jump in suicides was primarily undertaken by hangings. The authors noted that the sudden increase in the proportion of hangings suggests a social contagion or some other cultural effect, and made the following comments about the possible drivers of this:

As an example, suicide-related internet use such as suicide bulletin board systems in Japan first began to occur in the mid-1990s, with people gathering on suicide-related bulletin board systems at this time. [13] *The use of these bulletin board systems is known to have an adverse effect on the mental health of young and middle-aged people.* [14,15] *The growth of these bulletin board systems and other media depictions of suicide at this time may have had some causative effect on suicide rates, indicating a cultural change or cultural contagion rather than a socioeconomic cause. In addition to the growth of suicide-related bulletin board systems, the publication of bestselling guides to suicide that ranked certain methods* [16] *indicate a cultural phenomenon of increased attention to suicide during this period, and this change in the popular awareness of suicide—and of particular methods—may have some association with the large increase in hanging that was observed at this time.*

Another notable factor in Japan is death from overwork. The Japanese government has introduced a series of policies to reduce this risk; most recently relating to Workations and the introduction of more flexibility in the workplace.

It is unlikely if the above would be more important than pure economic factors, which predominate in suicide modelling worldwide. This is why the scenario table, Fig.6, has a scenario of possible additional material factors being as important (but not more than) the unemployment rate.

Fig.6 Projections of Japanese suicides based on different sensitivity scenarios

Scenario	Consequences
1) The unemployment rate rises from 2.3% in 2019 to 2.8% in 2020. Here, we use a sensitivity of 1%/20% unemployment rate/suicides	A 0.5% increase in the unemployment rate could be associated with a 10% increase in annual suicides (equivalent to an increase of 2,017 suicides in 2020). Actual increase: 3.7% (750 suicides in 2020)
2) Additional material factors (social contagion 1996-98 & The Basic Act for Suicide Prevention for the trend decline period) explain half of the move up and half the subsequent decline, respectively, in annual suicides. Here we use a sensitivity of 1%/10% unemployment rate/suicides	A 0.5% increase in the unemployment rate could be associated with a 5% increase in annual suicides (equivalent to an increase of 1,008 suicides in 2020). Actual increase: 3.7% (750 suicides in 2020)

Source: Conceptasia, February 2021

The concentration in women suicides in 2020

This too appears to have both economic and cultural explanations. Redundancies have been heaviest amongst part-time workers in the hotel, food service and retail industries. Women are highly represented in these positions.

In addition, when schools are closed, in Japan the burden of child-care falls predominately on the mother, whether she is working or not.

In a global study of more than 10,000 people, conducted by non-profit international aid organization CARE, 27% of women reported increased challenges with mental health during the pandemic, compared to 10% of men. [17,18]

Death comparators

1) In 2020, there were 20,919 suicides in Japan, up 750 from 2019
2) In our *J-Wellness & Covid-19: Why Japan has had relatively low deaths*, we detailed why Japan had had 1,594 Covid-19 related deaths (data to 5 October 2020) rather than the 30,303 deaths it would have had, had Japanese deaths been in line with the G20-adjusted average
3) Crime: Overall, crime cases fell 18% in 2020 year-over-year to 614,303. Street crime declined 27%. **Heinous crime, including murder, fell 10% to 8,934, a decline of 993 cases**. Domestic violence consultations rose 0.5% to 82,641, of which 8,701 were investigated. The number of police reports to child support centers, related to suspected child abuse, was 106,960, an increase of 9%. The police investigated 2,131 child abuse cases, up 8% year-over-year.

Conclusion

Reflecting how employment, one's company, remains at the core of identity in Japan, suicides are relatively sensitive to economic factors (proxied by the unemployment rate) even when modified for additional material factors (scenario 2 in Fig.6).

Based on this scenario 2, the increase in the number of suicides in 2020 could have been over 1,000, rather than the 750 recorded, Fig.6.

Japanese unemployment peaked at 3.1% in October 2020 and had fallen to 2.9% in December.

To expect suicides in Japan to fall year-over-year in 2021, we must hope for the 2021 annual unemployment rate to be below the 2.8% rate of 2020.

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18) https://www.care.org/news-and-stories/press-releases/financial-insecurity-hunger-mental-health-are-top-concerns-for-women-worldwide/