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Are we appropriately covered?

“June the 4th, 1973, was much like any other summer’s day in Peterborough, and Ralph Mellish, a file clerk at an insurance company, was on his way to work as usual when — (da dum!) Nothing happened! (dum dum dum) Scarcely able to believe his eyes, Ralph Mellish looked down. But one glance confirmed his suspicions. Behind a bush, on the side of the road, there was no severed arm. No dismembered trunk of a man in his late fifties. No head in a bag. Nothing. Not a sausage.” – Monty Python

Poor Ralph Mellish’s story turns out to be dull and only worth pursuing because of the absurdly highlighted lack of drama. But why does bad news sell? Why would many people rather complain than be positive? There is no such thing as an “Everything is fine” movie genre but there are many disaster movies – what is up with that? In my opinion this is because the human animal is programmed to scan for disaster. It is an evolutionary advantage to be risk aware (not risk averse). Our ancestors who were not risk aware, are not actually our ancestors, they are the dead end of an evolutionary line that died from snake bites, poison mushrooms or quicksand¹.

With this in mind, I was reflecting on the increasing severity of disasters, the breakdown of trust and the general erosion of morals facing us on a daily basis and was questioning “how much of this is hype?” How bad are things and how much worse can they get? As risk professionals, asking this sort of question is part of our responsibility. So, let us look at the following:

- As pandemics go, where would you put COVID-19: 8 out of 10? 9 out of 10? Think about this before you read on.
- All these hurricanes and storms are worse than before, right?
- Crime is at an all-time high! Murder rates are worse than ever!

Pandemically speaking

The earliest recorded pandemic was in 430 B.C. in Athens during the Peloponnesian War. This plague, suspected to be typhoid fever, went on to kill two thirds of that famous city². The population of the city at the time was approximately 300,000 and so a death toll of 200,000 makes it small in numbers, but proportionately horrendous. Before it reached Athens the pandemic had already ravaged Libya, Ethiopia and Egypt.

We have scientific proof that as early as 450 B.C. people were dying from malaria³. I am not saying that people did not die from malaria before 450 B.C. Rather we have substantive proof of death by malaria from the mortal remains of a victim from that period. J. Whitfield, in his *Portrait of a Serial Killer*, suggests that throughout history as many as 50-60 billion people have been killed by malaria. That is about half the humans that have ever lived!

Like malaria, diseases like tuberculosis and hepatitis B and C are not normally included in the “pandemic” bucket as they have generally been systemic for significant periods and are not well tracked for individual outbreaks. This is not to say they are not killers, rather we have normalised to them somehow.

The HIV/AIDS pandemic in contrast was tracked closely. It has killed approximately 40.4 million people⁴. In 2005 the disease killed approximately 2 million people, which as a percentage of the population was 0.03% per annum. That was the peak period after which the annual mortality rate steadily declined.

¹ As an aside: our news sources are also completely biased. There is a direct correlation between money and news coverage. A rich man’s disaster is a poor man’s daily existence.

² <https://www.history.com/topics/middle-ages/pandemics-timeline>

³ Whitfield, J. Portrait of a serial killer. Nature (2002). <https://doi.org/10.1038/news021001-6>

⁴ <https://www.unaids.org/en/resources/fact-sheet>

Two of the biggest pandemics in history ran amok during the medieval period. The Plague of Justinian (bubonic plague, between 541-549) killed at least 15 million people, which was approximately 7% of the world’s population. The Black Death (also bubonic but between 1346 and 1353) killed at least 75 million people, which accounts for around 17% of the global population. Both killed approximately 30% of the European population at the time⁵.

Much more significant for the impacted populations was the impact of the Columbian Exchange. The Columbian Exchange can be defined as “the transfer of plants, animals, and diseases between the Old World of Europe and Africa and the New World of the Americas.”⁶ Of particular interest in this context is the spread of various diseases that Europeans had developed immunity to, but which were unknown in the Americas. The decimation of various population groups across the Americas due to diseases, in the century after the arrival of the colonists, varied between 50-95% of these populations⁷.

In comparison, at the date of drafting this article, the official COVID-19 death count was 6.9 million⁸. We know that excess mortality experience is significantly higher than the official mortality statistics. A range of excess death statistics have been prepared but two key sources (the Economist and the World Health Organisation) put these numbers around 24.8 million⁹. This is approximately 0.3% of the population.

Obviously, these numbers are not directly comparable. The time over which these events occurred, the estimation uncertainty - all of it adds up to a statistical mumbo-jumbo ... but I think on the scale of 1 to 10 of how-bad-the-pandemic-could-have-gotten – it clearly could have been a lot worse.

⁵ https://en.wikipedia.org/wiki/List_of_epidemics_and_pandemics

⁶ https://www.worldhistory.org/Columbian_Exchange/

⁷ <https://www.britannica.com/topic/European-exploration/Exploration-of-the-Atlantic-coastlines>

⁸ <https://www.worldometers.info/coronavirus/>

⁹ <https://ourworldindata.org/excess-mortality-covid>

A once in a lifetime event, that might happen a couple of times in your life

Many insurers are now debating whether such pandemics are more frequent than we have previously assumed. Whilst I am not a statistician, I think it is fairly safe to say that COVID-19 was not a 1-in-200 year event. If we merely consider the last two hundred years, the ever-trusty Wikipedia suggests that¹⁰:

Epidemic/Pandemic	Disease	Death Toll	Years
1846–1860 cholera pandemic	Cholera	1 million+	1846–1860
Third plague pandemic	Bubonic plague	12–15 million	1855–1960
1889–1890 flu pandemic	Influenza (disputed)	1 million	1889-1890
Spanish flu	Influenza A/H1N1	17–100 million	1918–1920
1918–1922 Russia typhus	Typhus	2–3 million	1918–1922
1957–1958 influenza pandemic	Influenza A/H2N2	1–4 million	1957–1958
Hong Kong flu	Influenza A/H3N2	1–4 million	1968–1969
HIV/AIDS epidemic	HIV/AIDS	40.4 million	1981–present
COVID-19 pandemic	COVID-19	24.8 million	2019–present

Reuters, in a fascinating piece called “Bats and the Origins of Outbreaks”, explains why it is probable that more diseases will make the leap from one species to another. Unfortunately, this tends to be one way traffic from animals to people. Reuters do a much better job of explaining this risk (with pictures and graphs) so I am not going to rehash their article, but the essence is that “scientists have long suspected that the rate of new infectious diseases could accelerate, especially in developing countries where human and animal interaction is increasing.”¹¹

We are therefore forced to face the reality that COVID-19 might not be a once off experience. Response plans (and insurance pricing) need to consider the real possibility of COVID-19 2.0; if they are not already.

¹⁰ https://en.wikipedia.org/wiki/List_of_epidemics_and_pandemics - adjusted in the grey cells for more recent information

¹¹ <https://www.reuters.com/graphics/HEALTH-CORONAVIRUS/BATS/qzjpaglbpz/>

The internet is a warren of Reality Tunnels¹²

In my article last year, I talked about how hurricanes are getting worse and how the number of severe hurricanes making landfall has increased in the last century. The statistics support that this is true for Africa as well as the Americas. As with so much on the internet, I have subsequently come across a community of professionals who take up the contrary position. It is fascinating how anyone who says anything along the line of, "storms are not getting worse," is immediately labelled a climate denier (or something worse). That said, these "climate deniers" make an interesting point, which is that the cost of hurricane damage and the economics of hurricanes in general needs to be distinguished from the meteorological facts about hurricanes¹³. That is, whilst the cost of storm damage might increase in real terms each year, the underlying economic growth makes this inevitable and not indicative of more severe storms.

On that aspect they are not alone, many sources conclude something like "it's clear that skyrocketing population growth along the coast means storms today are more costly and destructive than 100 years ago, and sea level rise means more dangerous flooding from storm surge."¹⁴ Again, the words destructive and dangerous talk to the impact on people but not necessarily something inherently different to the storms themselves. The increased cost is not surprising as humanity owns more stuff every year and therefore has more to lose. Still the costs are staggering¹⁵:

Hurricane	Year	Cost
Katrina	2005	\$192.5bn
Harvey	2017	\$152.5bn
Ian	2022	\$114.0bn
Maria	2017	\$109.8bn
Sandy	2012	\$84.6bn

The current projections are that as oceans warm, hurricanes will develop more quickly into severe storms¹⁶. This is the actual cause of concern, more severe storms making landfall is a problem. This was also the case in the medieval period, when "many of these hurricanes were likely more intense than any that have hit the area (Cape Cod, Massachusetts) in recorded history."¹⁷ A period known as the Medieval Warm Period had significantly higher incidence of severe hurricanes which have subsequently

lulled but appear to be on the increase again¹⁸. Couple this with the increased flooding risk caused by urbanisation (or concretisation) and the picture is not rosy.

For insurers, if you were hoping climate deniers might be right, or that this might just be a phase, the unfortunate thing is that this phase might have been the quiet one. It seems we do not need man-made global warming for hurricanes and storms to get worse (in particular regions, at least). In historically ancient periods (the Pliocene), global warming caused by natural fluctuations resulted in periods of "permanent El Niño conditions and high tropical cyclone activity¹⁹." For those who do not remember, El Niño is a cyclical weather system which has impacts directly on South Africa. According to the South African Weather Service, "the rainfall forecast indicates above-normal rainfall for most of the country during winter (Jul-Aug-Sep) through to early-spring (Aug-Sep-Oct)..." and "minimum and maximum temperatures are expected to be mostly above-normal countrywide for the forecast period." El Niño results in extreme weather changes in South Africa, ranging from severe drought to unseasonal weather. Just a few headlines about El Niño in South Africa make it obvious that this is not a good thing. "In Southern Africa, El Niño-related droughts had led to massive crop failure. South Africa had a 25% drop in maize and a 23% drop in grain production."²⁰ El Niño could pose a threat to South Africa's food security²¹.

Bottom line, the weather is not going to become kinder to humans in the foreseeable future and consequently good risk management and insurance have an important role to play in tracking and managing these risks for policyholders.

¹² Reality tunnel is a theory that, with a subconscious set of mental filters formed from beliefs and experiences, every individual interprets the same world differently, hence "Truth is in the eye of the beholder". - https://en.wikipedia.org/wiki/Reality_tunnel

¹³ <https://www.forbes.com/sites/rogerpielke/2019/11/15/no-hurricanes-are-not-bigger-stronger-and-more-dangerous/?sh=7601d8ce4d9e>

¹⁴ <https://www.statesman.com/story/news/politics/elections/2020/10/14/fact-check-are-there-as-many-hurricanes-today-compared-to-100-years-ago/42752943/>

¹⁵ Source of data for this graphic: Philbrick, Ian Pasad; Wu, Ashley, (2 December 2022). "Population Growth Is Making Hurricanes More Expensive". The New York Times. Newspaper states data source: NOAA.

¹⁶ <https://www.pnnl.gov/news-media/powerful-hurricanes-strengthen-faster-now-30-years-ago>

¹⁷ https://en.wikipedia.org/wiki/Pre-1600_Atlantic_hurricane_seasons

¹⁸ https://en.wikipedia.org/wiki/Pre-1600_Atlantic_hurricane_seasons

¹⁹ <https://news.mit.edu/2010/hurricane-pliocene-0226>

²⁰ <https://borgenproject.org/the-lasting-effects-of-el-nino/>

²¹ <https://ewn.co.za/2023/02/20/el-nino-could-pose-threat-to-sa-s-food-security-agricultural-business-chamber>

**“Show me the man, and I’ll show you the crime.”
“He that is without sin among you, let him cast
the first stone.”²³**

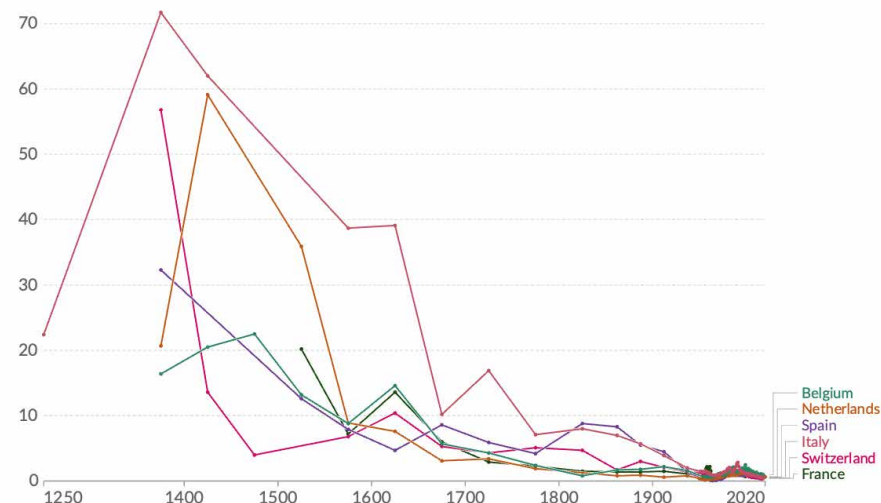
It seems that both Jesus and the head of the USSR secret police could have agreed on one thing, humanity has a dark side. Murder is one of the most reported and statistically reliable crime statistics. Unlike many other crimes which might not be reported, misreported or simply be unreliable, murders are more likely to be reported, recorded and tracked by states^{24 25}. It is no surprise that the story of Cain and Abel is a common thread in many faiths²⁶.

Murder rates are therefore often considered a good barometer of general levels of crime (both violent and non-violent crime). However, it seems that the assumed correlation between murder rates and other crime rates is not necessarily supported. A recent analysis of 31 previous research publications into the link between murder and other crimes suggests that “homicide can function as an indicator of violent crime in general²⁷”, i.e. whilst there is a level of correlation between murder and other violent and non-violent crimes, there is a higher and more direct level of correlation between murder and other violent crimes. The overall relationship between murder and non-violent crime is nuanced and complex. Specifically for South Africa, the Daily Maverick performed an analysis on our own statistics which showed a strong correlation between murder rates and other non-violent crimes in South Africa²⁸.

Long-term (as in centuries) data on homicide rates is difficult to come by. Our World in Data provides some interesting statistics on murder rates in Western Europe from as early as the 13th century²⁹.

Long-term homicide rates across Western Europe

Number of homicides¹ per 100,000 people



Source: Eisner (2014): WHO Mortality Database (2022) OurWorldInData/homicides • CC BY

1. Homicide: The killing of a person by another with intent to cause death or injury

²² Attributed to Lavrentiy Beria the head of Stalin’s secret police and a decidedly nasty person.

²³ Gospel of John, 8:7

²⁴ van Breen, J.A., Devarakonda, S.K. & Liem, M. Can Homicide Serve as an Indicator of Non-lethal Crime? A Systematic Literature Review. *Int Criminol* 3, 99–115 (2023). <https://doi.org/10.1007/s43576-023-00086-1>

²⁵ That said, the definitions do vary and – like all statistics – these need to be read with a healthy level of scepticism.

²⁶ The first recorded murder? Genesis 4:8 – “And Cain talked with Abel his brother: and it came to pass, when they were in the field, that Cain rose up against Abel his brother, and slew him.”

²⁷ van Breen, J.A., Devarakonda, S.K. & Liem, M. Can Homicide Serve as an Indicator of Non-lethal Crime? A Systematic Literature Review. *Int Criminol* 3, 99–115 (2023). <https://doi.org/10.1007/s43576-023-00086-1>

²⁸ <https://www.dailymaverick.co.za/article/2015-10-02-south-africas-mysterious-murder-rate/>

²⁹ Bastian Herre, Fiona Spooner and Max Roser (2013) - "Homicides". Published online at OurWorldInData.org. Retrieved from: <https://ourworldindata.org/homicides> [Online Resource]

Whilst pre-1600 data seems volatile and potentially unreliable, there is a gentle downward trend over the years. Whilst this is optimistic for the species, individual jurisdictions (such as our own) are not necessarily following the same trend.

There appears to be consensus that the mid-20th century showed a period of extremely low homicide rates for the world *in general*, which worsened into the latter part of the century. The US graph below is reflective of many first world country's experience.

Homicide rate across sources, United States

Annual number of deaths from homicide¹ per 100,000 people



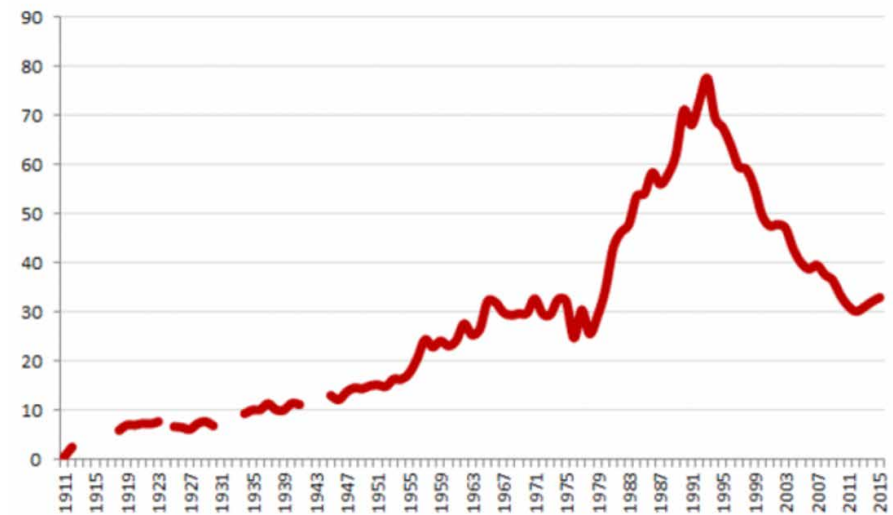
Source: History of Homicide Database, Eisner (2014); IHME (2019); WHO GHE (2020); WHO MD (2022); UNODC (2023)

Note: The number of available sources differs by country or region. OurWorldInData.org/homicides • CC BY

1. Homicide: The killing of a person by another with intent to cause death or injury

These rates are still comparatively low when compared to South Africa. South Africa has had a homicide rate higher than the world average for as far back as we have statistics. Although these statistics from the earlier years are questionable, due to the political structure of policing in the country at the time.

South Africa's recorded murder rate per 100 000, 1911-2015



For clarity, the South African murder rates since 2015 have generally continued to increase from hitting 36.71 (per 100,000) in 2019, dropping drastically in 2020 to 33.96 and the spiking in 2021 to 41.87³⁰.

What should insurers be taking from these statistics? On the face of it the only reasonable conclusion is that murder rates are as volatile as equity markets, but less exciting. Apart from that, and assuming the correlation between homicide and other crimes, we note that crime rates can vary significantly over a short period of time. Murder rates in the US increased by 100% in the span of ten years. Similarly, South African homicide rates increased by 100% in the ten years from 1980-1990 and decreased by a similarly large margin in the late 90s and early 2000s. Trends in behaviour can vary drastically in very short duration. From a technology perspective we have become used to this, smart phones and the transition to remote working being drastic short-term social changes, but when it comes to the fundamentals of property laws and justice it appears such changes can be equally drastic.

³⁰ <https://www.macrotrends.net/countries/ZAF/south-africa/murder-homicide-rate>

For entities that price for the long-term this is potentially concerning. The risk landscape relating to crime can be fundamentally different in the next decade and should be treated as such. This is not necessarily always on the downside, theft and crime could equally drastically decrease and the insurer that feeds this into pricing quickly will have a competitive pricing advantage.

How bad are things, and how bad can they get?

The answer is unfortunately a question of perspective. There is good evidence that weather systems, diseases and crime are worse than they were at certain points in the past. Similarly, there is evidence that these same risks are less severe than they could and have been. For insurers this means remaining vigilant and planning, as well as taking policyholders on the journey. There is a good chance we will experience significant variations in storms, droughts, floods, diseases and crime – are we appropriately covered?



