

## Comparison: Spanish Flu and COVID-19

### Additional information taken from:

- **ECDC (European Centre for Disease Prevention and Control)**  
@ <https://www.ecdc.europa.eu/en/covid-19-pandemic>
- **RKI (Robert Koch Institute)**  
@ [https://www.rki.de/DE/Content/InfAZ/N/Neuartiges\\_Coronavirus/nCoV.html](https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/nCoV.html)
- **WHO (World Health Organization)**  
@ <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>  
@ <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answershub/q-a-detail/q-a-coronaviruses#:~:text=symptoms>
- **CDC (Centers for Disease Control and Prevention)**  
@ <https://www.cdc.gov/flu/pandemic-resources/reconstruction-1918-virus.html#discovering>  
@ <https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html>
- **nature.com**  
@ <https://www.nature.com/articles/s41591-020-0820-9>
- **NCBI (National Center for Biotechnology Information)**  
@ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC340389/>
- **National Geographic**  
@ <https://www.nationalgeographic.com/news/2014/1/140123-spanish-flu-1918-china-origins-pandemic-science-health/>
- **history.com**  
@ <https://www.history.com/topics/world-war-i/1918-flu-pandemic>
- **USA Today**  
@ <https://eu.usatoday.com/story/news/factcheck/2020/04/25/fact-check-total-deaths-each-spanish-flu-wave-unknown/3024648001/>
- **worldometer**  
@ [https://www.worldometers.info/coronavirus/?utm\\_campaign=homeAdUOA?Si](https://www.worldometers.info/coronavirus/?utm_campaign=homeAdUOA?Si)
- **Vox**  
@ <https://www.vox.com/2020/3/9/21164957/covid-19-spanish-flu-mortality-rate-death-rate>

If the pandemics “Spanish Flu” and “COVID-19/nCov19” are to be compared, a conscientious analysis is required.

*Note: I dug deeper as I found this topic highly interesting; still, I of course cannot guarantee that all the scientific information is (entirely) correct. Understanding virus strains and their proteins seems quite complicated...*

The Spanish flu	COVID-19/nCov19/Coronavirus
<p><b>origin/scientific thesis</b></p> <p><u>1<sup>st</sup> occurrence:</u></p> <ul style="list-style-type: none"> <li>• March 1918</li> <li>• Haskell County, Kansas; and most likely <b>not</b> Camp Funston, Fort Riley, KS, US, because there are cases reported earlier from the former place (see the NCBI-source on this)</li> </ul> <p><u>suspected origin:</u></p> <ul style="list-style-type: none"> <li>• caused by H1N1 virus</li> <li>• genes of avian origin</li> <li>• shipment of Chinese labourers (who may have carried the virus after a previous minor outbreak of influenza in China) across Canada to have them work behind the western front in WWI is today a theory considered likely (see the Nat. Geo. source)</li> <li>• thesis: direct and non-zoonotic transmission, for the genes of the H1N1-virus are partly of avian origin, but evolved virus causing the influenza may have evolved in humans and has possibly been spread human-to-human only</li> </ul>	<p><u>1<sup>st</sup> occurrence:</u></p> <ul style="list-style-type: none"> <li>• December 2019: 101 years and 9 months after the Spanish flu occurred for the first time</li> <li>• wholesale food market, Wuhan, Hubei, China</li> </ul> <p><u>suspected origin:</u></p> <ul style="list-style-type: none"> <li>• caused by SARS-CoV-2, the 7<sup>th</sup> coronavirus known to infect humans apart from the two other severe coronaviruses SARS-CoV and MERS-CoV (other coronaviruses HKU1, NL63, OC43 and 229E not dangerous/possibly lethal for humans)</li> <li>• genes of suspected avian/bat origin</li> <li>• virus possesses genes making it very likely to infect humans by zoonotic transfer (animal → human) (<i>note: indirect transfer, for humans would eat meat of animals that were previously carrying the virus</i>)</li> <li>• high <b>SARS-CoV-2</b> infectivity is the result of natural selection of the virus in humans; its <b>proteins are optimized for binding to human receptors; virus is specialized to infect humans!</b></li> <li>• RaTG13 bat virus is 96% identical to strain of SARS-CoV-2, but proven not to be the cause</li> <li>• virus is proven to have derived from viruses of animals that may have been illegally imported to China</li> <li>• <b>wild theories of a man-made, bio-lab-constructed virus are not to be believed, there is scientific proof refuting them almost completely!</b> (see the nature.com-source)</li> </ul>
<p><b>known symptoms</b></p> <p><u>1<sup>st</sup>-wave-symptoms spring 1918:</u></p> <ul style="list-style-type: none"> <li>• chills, fever, fatigue, further typical flu symptoms</li> </ul> <p><u>2<sup>nd</sup> and 3<sup>rd</sup>-wave-symptoms 1918/1919:</u></p> <ul style="list-style-type: none"> <li>• same as the above, but additionally victims would perish within hours or days</li> <li>• skin turning blue</li> <li>• lungs filling with fluid, causing asphyxiation</li> <li>• haemorrhaging in the lungs</li> <li>• highly lethal</li> </ul>	<ul style="list-style-type: none"> <li>• fever, dry cough, tiredness, aches, pains, nasal congestion, headache, conjunctivitis, sore throat, diarrhoea, loss of taste or smell, rash on skin, discoloration of fingers or toes</li> <li>• mild symptoms in the beginning, gradual progression</li> <li>• non-lethal/very high chance of recovery if patient has no underlying severe diseases such as a heart condition or cancer</li> </ul>
<p><b>infection/transmission</b></p> <ul style="list-style-type: none"> <li>• transmission by expelling of droplets when an infected person coughs, sneezes or even speaks</li> <li>• infection when droplets would be breathed in or when eyes, nose or mouth would be touched after having touched an infected surface</li> </ul>	<ul style="list-style-type: none"> <li>• transmission by expelling of droplets when an infected person coughs, sneezes or even speaks</li> <li>• infection when droplets would be breathed in or when eyes, nose or mouth would be touched after having touched an infected surface</li> </ul>

<ul style="list-style-type: none"> <li>self-protection by wearing a mask covering mouth and nose and guarding distance of at least 1.5 m/1.64 yd + hygiene measures</li> </ul>	<ul style="list-style-type: none"> <li>self-protection by wearing a mask covering mouth and nose and guarding distance of at least 1.5 m/1.64 yd + hygiene measures</li> </ul>
<p><b>state of medical development/scientific progress</b></p> <ul style="list-style-type: none"> <li>it wasn't yet known it was a virus</li> <li>antibiotics 10 years from discovery</li> <li>antiviral drugs decades from development</li> <li>no WHO, rudimentary efforts to track/surveil virus</li> <li>public health infrastructure only at the beginning</li> </ul>	<ul style="list-style-type: none"> <li>technologies helpful against COVID-19</li> <li>scientific identification/studying of the virus</li> <li>capability to check people for virus</li> <li>medical interventions such as ventilators and antibiotics</li> <li>well-funded research, development of a vaccine</li> <li>health systems mostly well prepared, stable</li> <li>accurate information provided</li> </ul>
<p><b>public/governmental response</b></p> <ul style="list-style-type: none"> <li>mostly no unitary response (at least in the US)</li> <li>isolation of infected at home or in hospital</li> <li>closure of public places</li> <li>prohibition of gatherings</li> <li>duty to wear masks</li> <li>education programs + publicity</li> <li>staggered opening and closing of stores to avoid overcrowding in public transports</li> <li>rudimentary recording of cases</li> <li>attempts to measures of hygiene</li> <li>slowly beginning research to find the cause of the virus</li> </ul>	<ul style="list-style-type: none"> <li>fast quarantining of infected</li> <li>isolation of infected at home or in hospital</li> <li>closure of public places</li> <li>closure of restaurants, hotels, clubs etc.</li> <li>closure of borders</li> <li>introduction of excessive home-office for people</li> <li>prohibition of gatherings</li> <li>prohibition to meet people not coming from one's household</li> <li>duty to wear masks</li> <li>further measures of social distancing and hygiene</li> <li>publicity</li> <li>exact recording of cases, accessible on the Internet</li> <li>search for a cure with incredibly high funds of several big industrial nations</li> </ul>
<p><b>figures</b></p> <ul style="list-style-type: none"> <li>theory of multiple waves is correct, but number of waves still being debated</li> <li>possible 4<sup>th</sup> wave in 1920</li> <li>death count unknown as it was mostly unclear whether cause of death was pneumonia or pneumonia from influenza: <b>worldwide range from 17.4 to 100 million deaths</b></li> <li><b>about 500 million infected worldwide</b></li> <li><b>experts say global CFR (case fatality rate) was at 10-20%</b></li> <li>CDC says about 675.000 died in the US, <b>estimated global death count: 50 million</b></li> <li>majority of US deaths in fall 1918</li> <li>2<sup>nd</sup> wave: approx. 195.000 dead in October 1918</li> </ul>	<p>(as of May 21, 2020, at 11:42 am CEST)</p> <ul style="list-style-type: none"> <li><b>globally reported cases: 5.105.897</b></li> <li><b>deaths: 330.003</b></li> <li><b>recovered: 2.035.432</b></li> <li><b>active cases: 2.740.462 infected, of those:</b>  <ul style="list-style-type: none"> <li><b>2.694.709 (98%) in mild condition</b></li> <li><b>45.753 (2%) in serious/critical condition</b></li> </ul> </li> <li><b>213 countries/territories affected</b></li> <li><b>highest counts:</b> <ol style="list-style-type: none"> <li><b>USA: total 1.593.039; dead 94.941; recovered 370.812</b></li> <li><b>Russia: total 317.554; dead 3.099; recovered 92.681</b></li> <li><b>Brazil: total 293.357; dead 18.894; recovered 116.683</b></li> </ol> </li> <li><b>current global CFR: 6.64%</b></li> <li><b>Germany: total 178.531; dead 8.270; recovered 158.000</b></li> </ul>

**Conclusion:** The pandemics are to be compared under consideration of the (historical) factors such as differing medical/scientific progress and virologic knowledge. Aspects that were non-existent at the time of the Spanish flu, for instance the faster spread of the virus by global traveling or the stable healthcare system/infrastructure, should as well be considered.

Due to the above, equating the two pandemics is not entirely possible.