CORONAVIRUS PANDEMIC SWITZERLAND
IS THE CORONAVIRUS ONLY AN INFLUENZA?

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THE ACADEMIC QUESTIONS

Our first academic question is if the Coronavirus pandemic is only an influenza and the second if the mortality of the Coronavirus is the same, higher or less than that from the Influenza. The project was limited to the investigation in Switzerland

INFLUENZA STATISTIC SEASON 2018/2019

The Public Health Office Switzerland has a voluntary Influenza report system who is called "Sentinella" where known Influenza and suspected cases are registered by doctors and hospitals. Supplementary are in the mandatory reporting system Laboratory-confirmed influenza infections recorded. By this surveillance does not include sick people who have no seek medical attention. Throughout the flu season, from week 40/2018 to week 16/2019, i.e. from September 30, 2018 up to April 20, 2019) which was 29 weeks long, extrapolated 209'200 people - around 2.5% of the population visited a family doctor. Primilary there circulated Influenza type A in Switzerland, with the subtypes A(H1N1)pdm09 and A(H3N2). An graphical display of the infections can be shown in illustration 1. (Public Health Office Switzerland, 2019)

Abbildung 5:
Inzidenz der grippebedingten Konsultationen, pro Influenzasubtyp bzw. -linie und Sentinella-Woche
Anzahl Konsultationen aufgrund grippeähnlicher Erkrankungen pro 100 000 Einwohner nach Anteil der nachgewiesenen Influenzasubtypen bzw. Linien (Hochrechnung der Daten des Sentinella-Meldesystems und des Referenzzentrums für Influenza)
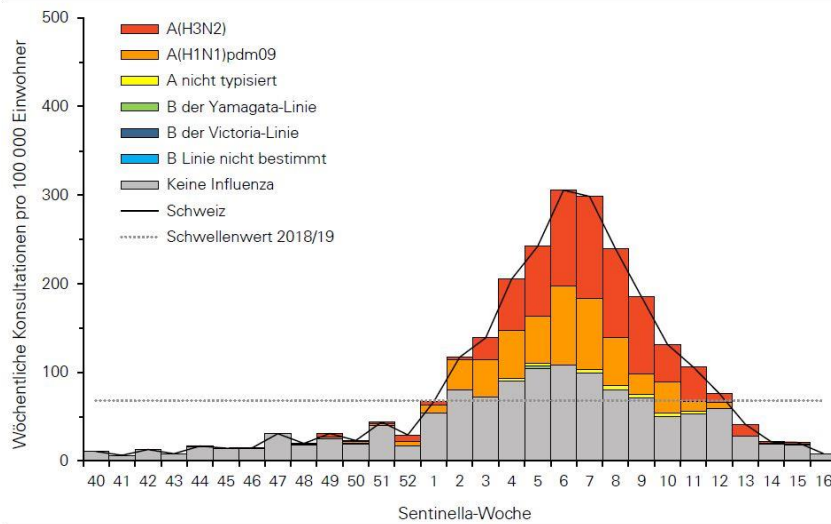
Illustration 1 Influenza cases Switzerland per 100'000 residents a week 2018/2019
(Swiss Public Health Office, 2019)

The highest overall incidence was at 4993 flu-related Consultations per 100,000 population for 0 to 4 year olds recorded, the lowest in the age group of over 64-year-olds with 1426 consultations per 100,000. Depending on Age group, the maximum weekly incidence varied between 197 consultations per 100,000 population among the over 64-year-olds and 696 consultations per 100,000 population the 0- to 4-year-olds. The peak occurred somewhat with the youngest later than the other age groups, which can be shown in the illustration 2. (Public Health Office Switzerland, 2019)

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Abbildung 2:
Inzidenzen der grippebedingten Konsultationen in der Schweiz, pro Altersklasse und Sentinella-Woche
Wöchentliche Zahl der Konsultationen aufgrund grippeähnlicher Erkrankungen pro 100 000 Einwohner nach
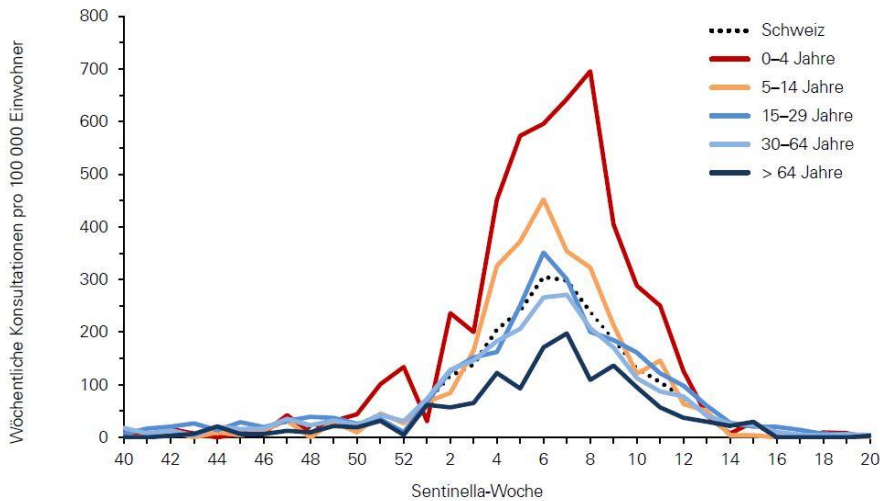Altersklasse (Hochrechnung der Daten des Sentinella-Meldesystems)

Illustration 2 Influenza cases Switzerland sorted by ages 2018/2019
(Swiss Public Health Office, 2019)

The influenza mortality sorted by men is shown in illustration 3 and by women in

illustration 4. As we can see in both illustrations the mortality since 1991 is decreased

continuously for both, men and women. But since 2010 the influence mortality is

growing up slowly and continuously to about 1.8% by men and 1.4% by women in

2017. More data are not available online yet from the Swiss Federal Office for
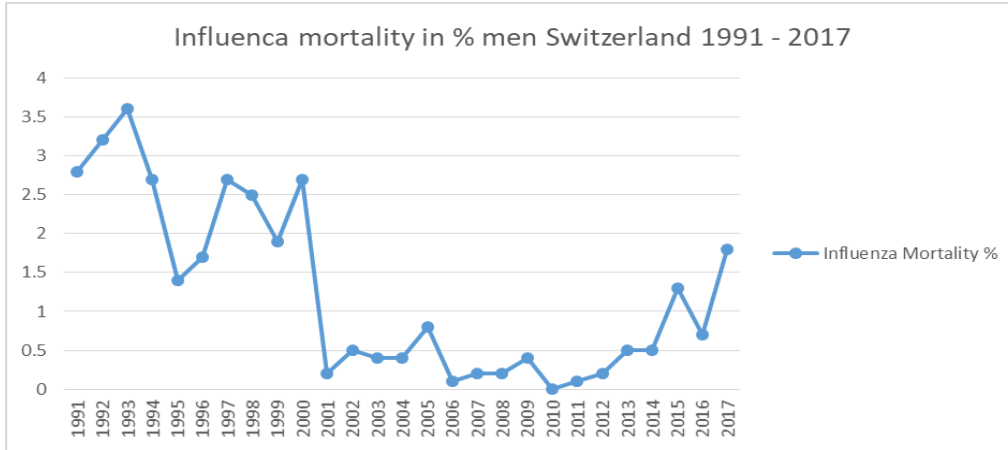
Statistic.

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Illustration 3 Influenza mortality in % men Switzerland 1991 - 2017
(Swiss Federal office for statistic, 2019)

Illustration 4 Influenza mortality in % women Switzerland 1991 - 2017
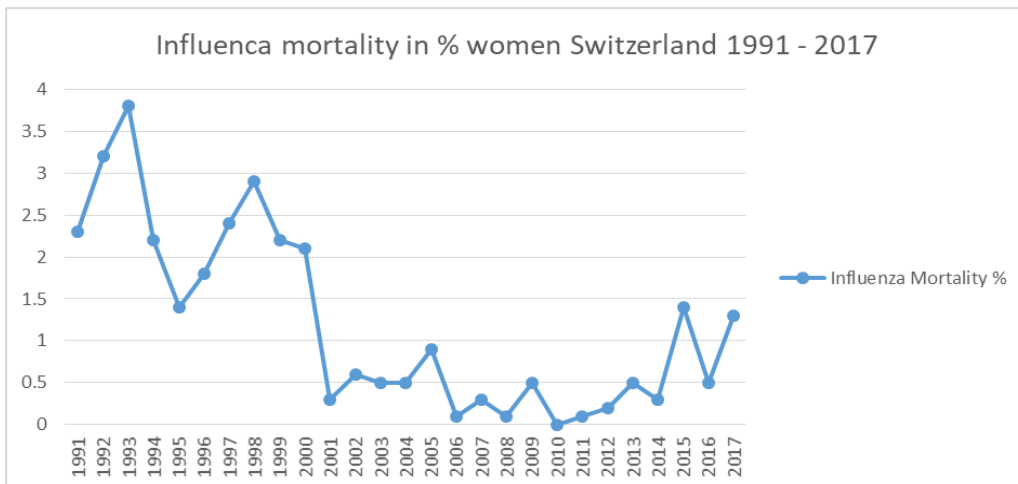(Swiss Federal office for statistic, 2019)

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COMPARING INFLUENZA WITH CORONAVIRUS MORTALITY

When we comparing the mortality of the Influenza with that from Coronavirus in Illustration 5 from 07 May 2020, it shows that the Coronavirus mortality of actually 6%, compared by Influenza mortality of about 1.8% by men in 2017 is 3.33 times higher. When we comparing the same Coronavirus mortality by women of about 1.4% in 2017, then Coronavirus mortality is 4.28 times higher. So from this it shown like the Coronavirus mortality is much higher than that from Influenza.
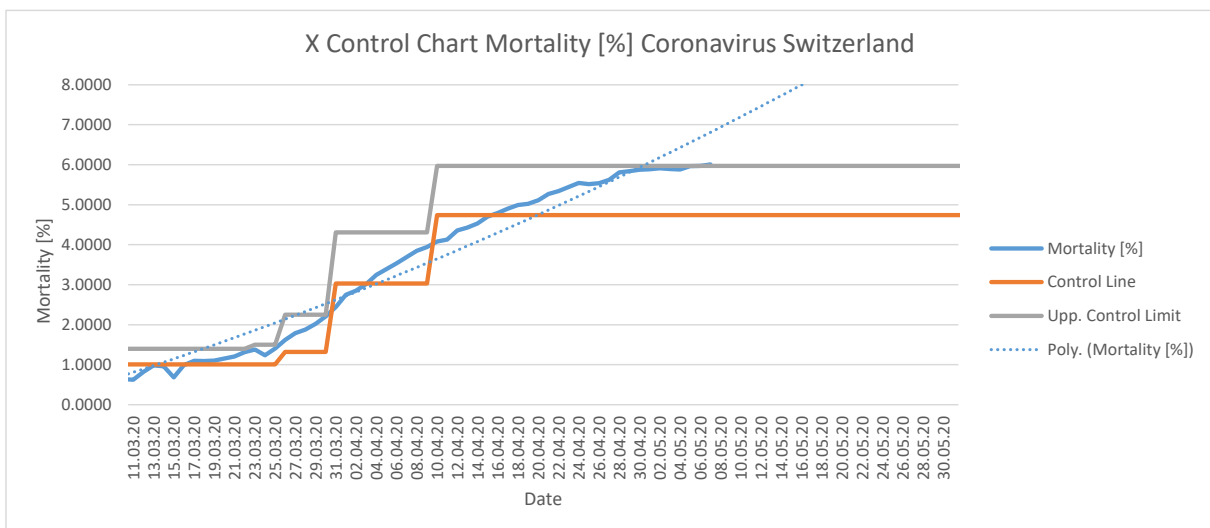

Illustration 5 Coronavirus mortality totally in % Switzerland 2020
(Nautilus Data Science, 2020)

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HYPOTHESIS TEST

But is that really the right conclusion or do we compare chance variables? We can make a hypothesis test with a H0 and H1 hypothesis to make a clear consideration and with the following dataset from the original sources.

Dataset men influenza mortality: 3.2, 3.6, 2.7, 1.4, 1.7, 2.7, 2.5, 1.9, 2.7, 0.2, 0.5, 0.4, 0.4, 0.8, 0.1, 0.2, 0.2, 0.4, 0, 0.1, 0.2, 0.5, 0.5, 1.3, 0.7, 1.8 (Swiss Federal office for statistic, 2019)

Dataset women influenza mortality: 2.3, 3.2, 3.8, 2.2, 1.4, 1.8, 2.4, 2.9, 2.2, 2.2, 0.3, 0.6, 2.5, 0.5, 0.9, 0.1, 0.3, 0.1, 0.5, 0, 0.1, 0.2, 0.5, 0.3, 1.4, 0.5 (Swiss Federal office for statistic, 2019)

Dataset Coronavirus mortality: 4.35, 4.43, 4.53, 4.70, 4.79, 4.90, 4.99, 5.02, 5.11, 5.27, 5.34, 5.44, 5.54, 5.51, 5.54, 5.62, 5.81, 5.84, 5.87, 5.89, 5.91, 5.89, 5.88, 5.96, 5.97, 6.01[1] (Nautilus Data Science, 2020)

As first we compare if the influenca mortality rates from men and women are coming from the same dataset with the following hypothesis.

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[1] Here the last 26 values were taken until and with 07.May 2020

H0: The dataset from men and women comes from the same population

H1: The dataset from men and women not comes from the same population

p: 0.05

We applying a T Test where we comparing two independent datasets with a p value (significance level) of 0.05. If the calculated p value in the test is higher tan 0.05 we can't reject the H0 hypothesis, so the H0 will be valid. If the calculated p value is <0.05 we must reject the H0 hypothesis in favour of H1 hypothesis, so H1 is valid.

We take the test with the following online callculator:

https://www.socscistatistics.com/tests/studentttest/default2.aspx

The calculated p value is 0.480227 so we can't reject the H0 hypothesis because this value is >0.05. This means H0 is valid "The dataset from men and women comes from the same population". So here we not have only chance variables between men and women influenza mortality. It shows that both coming from the same population.

As next we compare the dataset men influenza mortality with the dataset Coronavirus mortality and the following hyptheses:

H0: The Coronavirus Mortality show us that it is only an Inlfuenza

H1: The Coronavirus Mortality show us that it is not an Influenza

p value: 0.05

calculated p value: <0.00001

So while the calculated p value is <0.00001 we must reject the H0 hypothesis in favour of H1 hypothesis with the conclusion " The Coronavirus Mortality show us that it is not an Influenza".

If we do the same with the dataset women influenza mortality we became a calculated p value of <0.00001 too with the same conclusion.

RESULT AND CONCLUSIONS

We can conclude from statistics and hypothesis tests that the Coronavirus is not an Influenza and also that the mortality in Switzerland is about 3.3 times higher than that from Influenza.

Importat to mention here is that the Inlfuenza cases are counted as flu, flu-like and pneumonia conditional deaths, which is written in the original report from Swiss Pubic Health Office called "Report on the flu season 2018/19" in German. So in some duscussion on social media and newspapers relatetd to the Coronavirus pandemic is

oftenly says that the Coronavirus statistic isn't since and accurate, because all death

patients are counted with coronavirus also when another health condition like

pneumonia, or cardiovascular disease could be the reason. This isn't important,

because the influenza is measured under the same conditions, also patients with

other pre-existing illness will be counted as death trough influenza, if they died from

influenza. So the influenza and the Coronavirus statistics are absolutely comparable,

because their measured and counted under the same conditions.

ILLUSTRATIONS

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kheiten%2Fausbrueche-epidemien-pandemien%2Faktuelle-ausbrueche-epide
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