Lessons from the 1918 influenza pandemic

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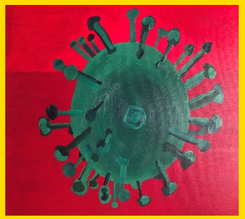

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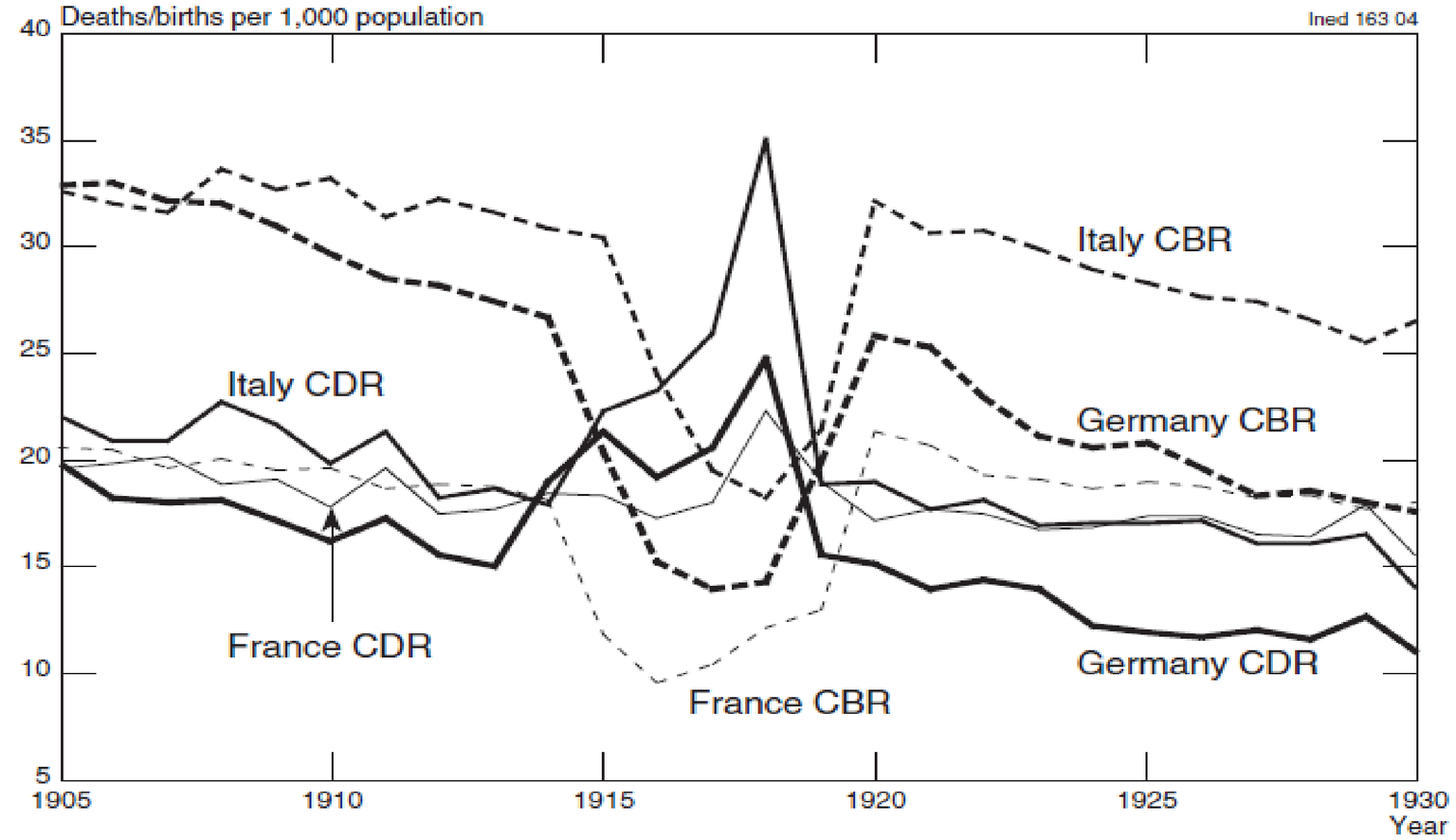
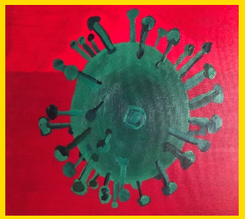


Figure 1.– Crude death rates (CDR) and crude birth rates (CBR) for three belligerent countries, Italy, Germany, and France, 1905-1930 (per 1,000)

Source: Chesnais, 1992.



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Mamelund, S-E (2004): Can the Spanish Influenza Pandemic of 1918 Explain the Baby-Boom of 1920 in Neutral Norway? Population 2(59): 229-260

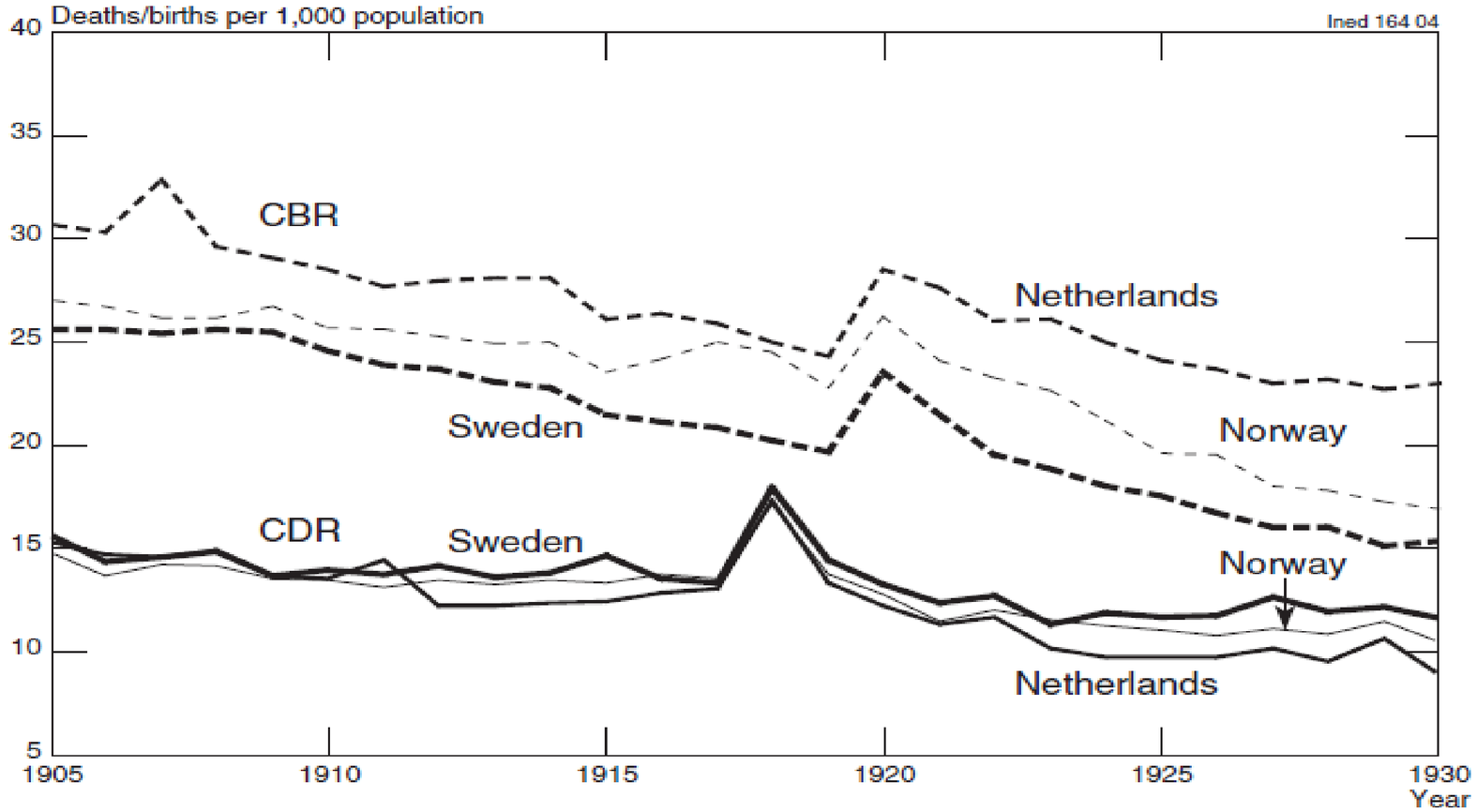


Figure 2.– Crude death rates (CDR) and crude birth rates (CBR) for three neutral countries, Norway, Sweden, and the Netherlands, 1905-1930 (per 1,000)

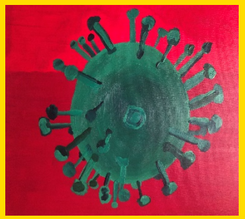
Source: Chesnais, 1992.

Mamelund, S-E (2004): Can the Spanish Influenza Pandemic of 1918 Explain the Baby-Boom of 1920 in Neutral Norway? Population 2(59): 229-260

Höijer (1959)* was one of the first to suggest that the 1918 flu caused the dip and the boom in European fertility studying neutral Sweden

Other studies suggesting 1918 influenza as the main driver:

-New Zealand (Pool, 1973; Rice, 1983)
-Guam (Underwood, 1983)
-India (Mills, 1986)
-UK (Johnson, 2002).



*HÖIJER E., 1959, Sveriges befolkningsutveckling genom tiderna, Stockholm.

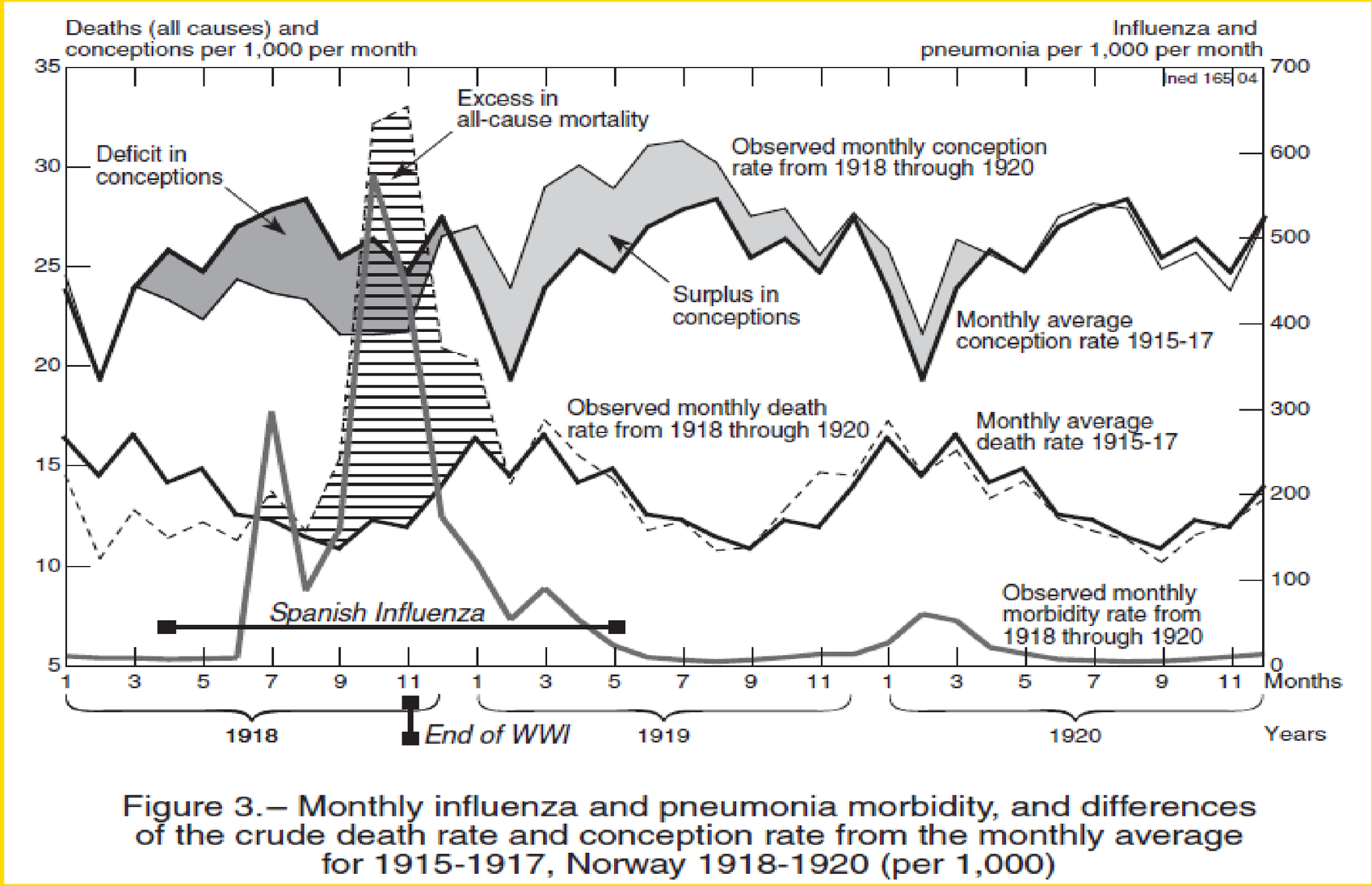


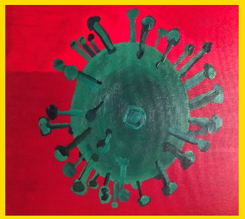
Figure 3.– Monthly influenza and pneumonia morbidity, and differences of the crude death rate and conception rate from the monthly average for 1915-1917, Norway 1918-1920 (per 1,000)

Mamelund, S-E (2004): Can the Spanish Influenza Pandemic of 1918 Explain the Baby-Boom of 1920 in Neutral Norway? Population 2(59): 229-260

Bloom-Feshback. et al (2011) found a time-lag of 6-7 mo. btw excess mortality & a birth deficit in 1919 in Scandinavia & USA, and suggested that miscarriages in 2nd & 3rd mo. of pregnancy was the primary mechanism*

Debate about the time-lag, mechanisms & role of WW1 in 2012:

1) Time lag of 9 mo. suggests sociological & behavioral changes**
2) Time lag of 6-7 mo. suggest biological mechanisms & embryotic loss***



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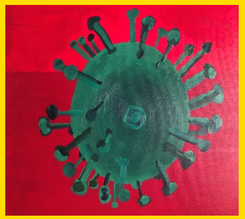
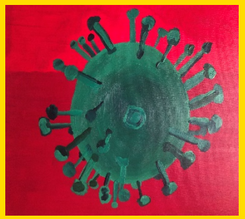
*Bloom-Feshbach et al. Natality decline and miscarriages associated with the 1918 influenza pandemic: the Scandinavian and United States experiences. J Infect Dis 2011; 204:1157–64
**Mamelund, S-E. Fertility Fluctuations in Times of War and Pandemic Influenza, J Infect. Dis 2012, 206, 140-1.
*** Bloom-Feshbach et al. Reply to Mamelund, J Infect. Dis 2012, 206, 141-3

The time lag btw peaks in excess mortality/stillbirths in 1918/1920 & future births was 9 months in other studies, suggesting A) reduced conceptions and B) embryonic losses during first month of pregnancy as important mechanisms

1) Chandra & Yan-Liang, 2015, The 1918 influenza pandemic and subsequent birth deficit in Japan, *Demographic Research* 33, 313-326
2) Chandra & Yan-Liang, 2015, Fertility Decline and the 1918 Influenza Pandemic in Taiwan, *Biodemography and Social Biology, 61:3, 266-272*
3) Chandra, Christensen, Mamelund, Paneth, 2018, Short-Term Birth Sequelae of the 1918–1920 Influenza Pandemic in the United States: State-Level Analysis USA, *AJE*, 187(12):2585-2595
4) Dahal, Mizumoto, Bolin, Viboud, Chowell, 2018, Natality Decline and Spatial Variation in Excess Death Rates During the 1918–1920 Influenza Pandemic in Arizona, United States, *AJE*, 187(12): 2577-2584



Baby-bust	Baby-boom
Biological	
Infertility	
Stillbirths (ass/with maternal deaths)	Replacement
Loss of libido among the symptomatically ill	
Social & Behavioral	
Pandemic of fear	
Abstain from sex to hinder infection	Catching up on births
Drop in social integration	
Bereavement	(Re)marriages



Learning points for COVID

-Biological mechanisms less important as young fertile people and pregnant women are not at risk for severe disease as in 1918

-Lockdowns do not produce baby-booms as suggested by international press in 2020, but rather baby-busts

-Insecurity, pandemic disease burden, lockdown, unemployment & COVID-19 regulations should rather lead to postponed conceptions (& marriages)

-Symptomatically sick have less sex, less sex also among couples out of fear of infecting each other?

-Can expect that the faster decline in fertility (November 2020 to March 2021 in e.g. Sobotka, 2021 & Cohen, 2021) will continue in 2021

-Less need for replacement, but this does not mean that we cannot have a baby-boom after COVIOD-19 (catching up on marriages & births)

-Development will depend on time to get control of the pandemic (vaccination tempo, vaccination uptake, mutations)