

Influenza in Greenland 1914 - 1921

Untold Stories and Diverging Patterns

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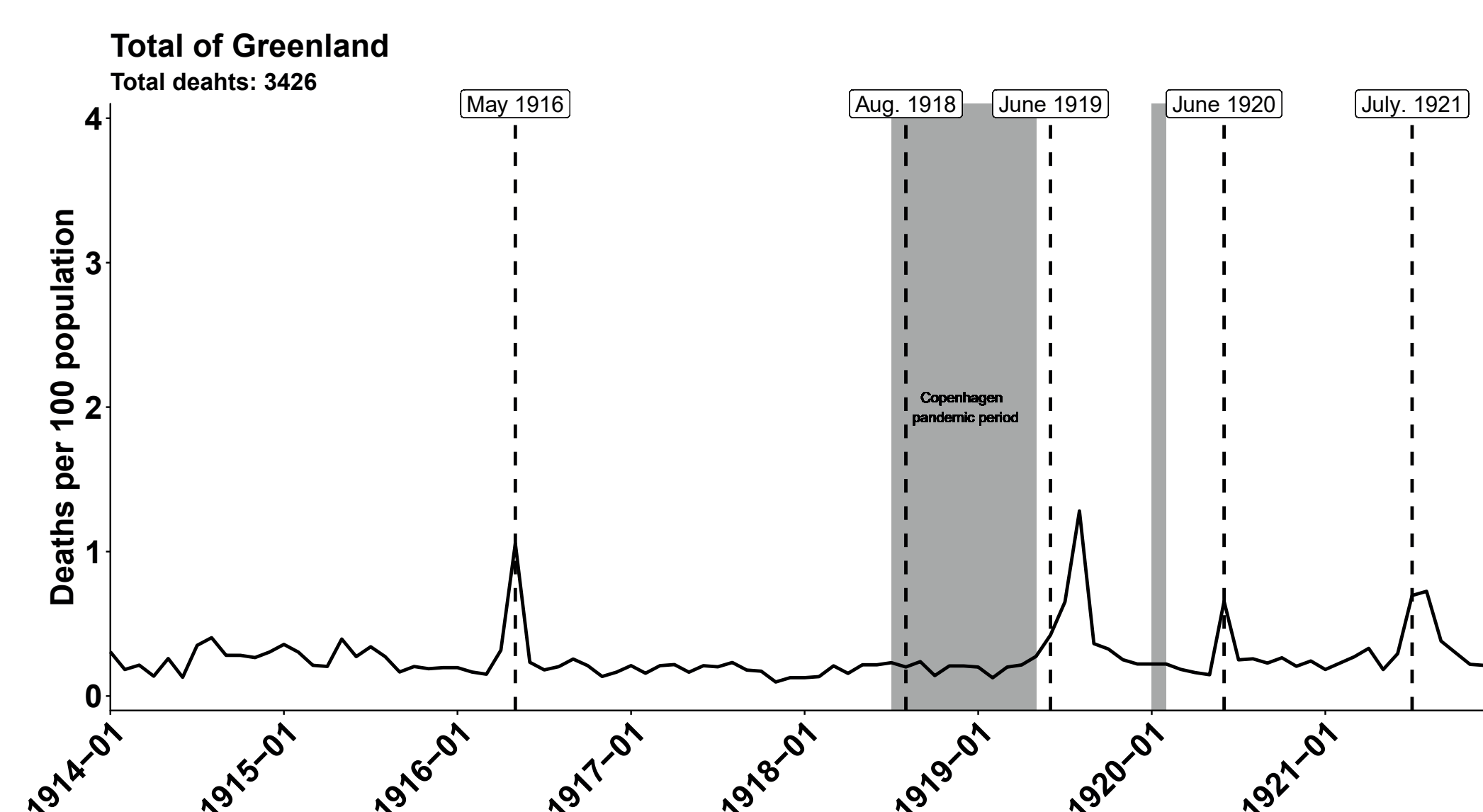
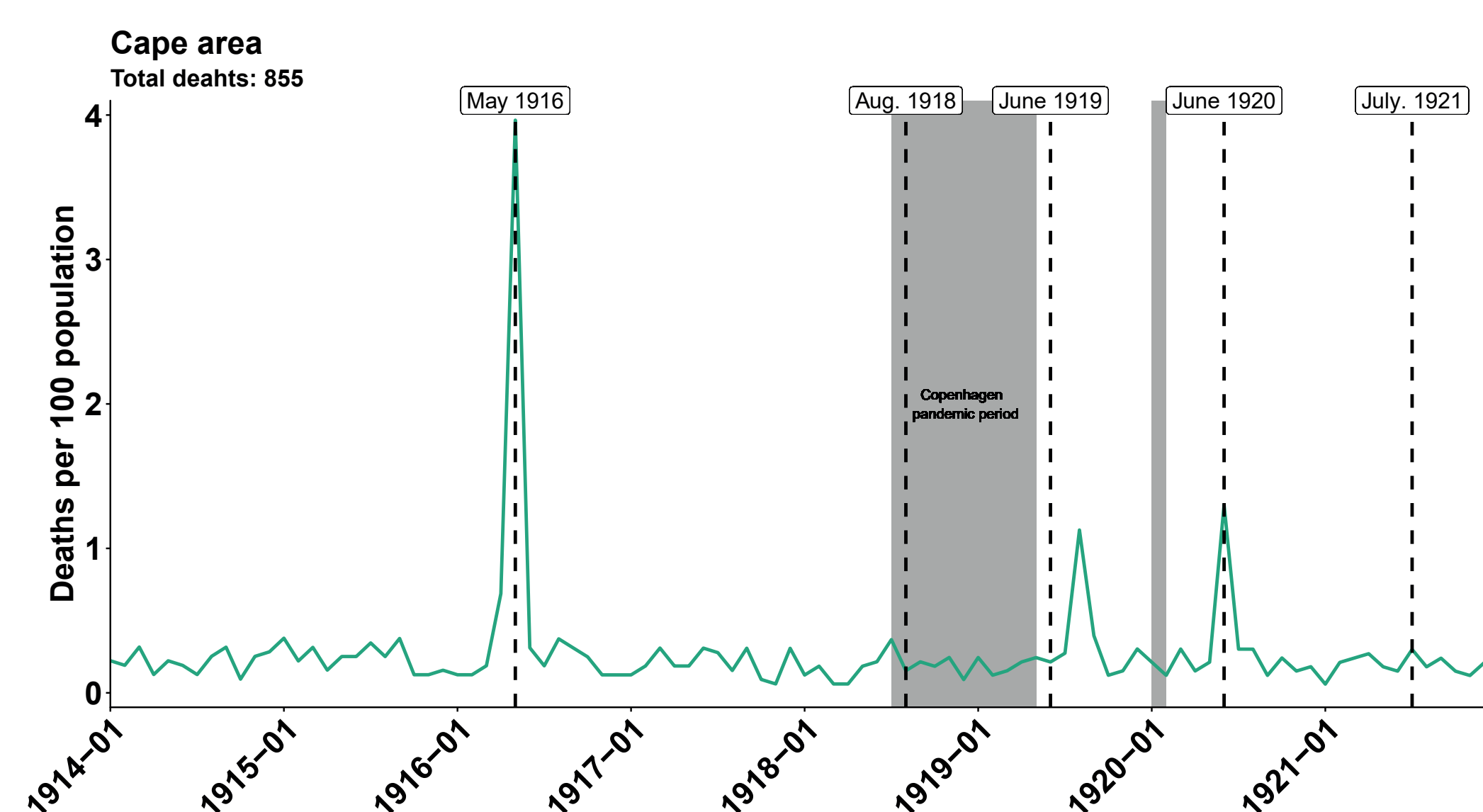
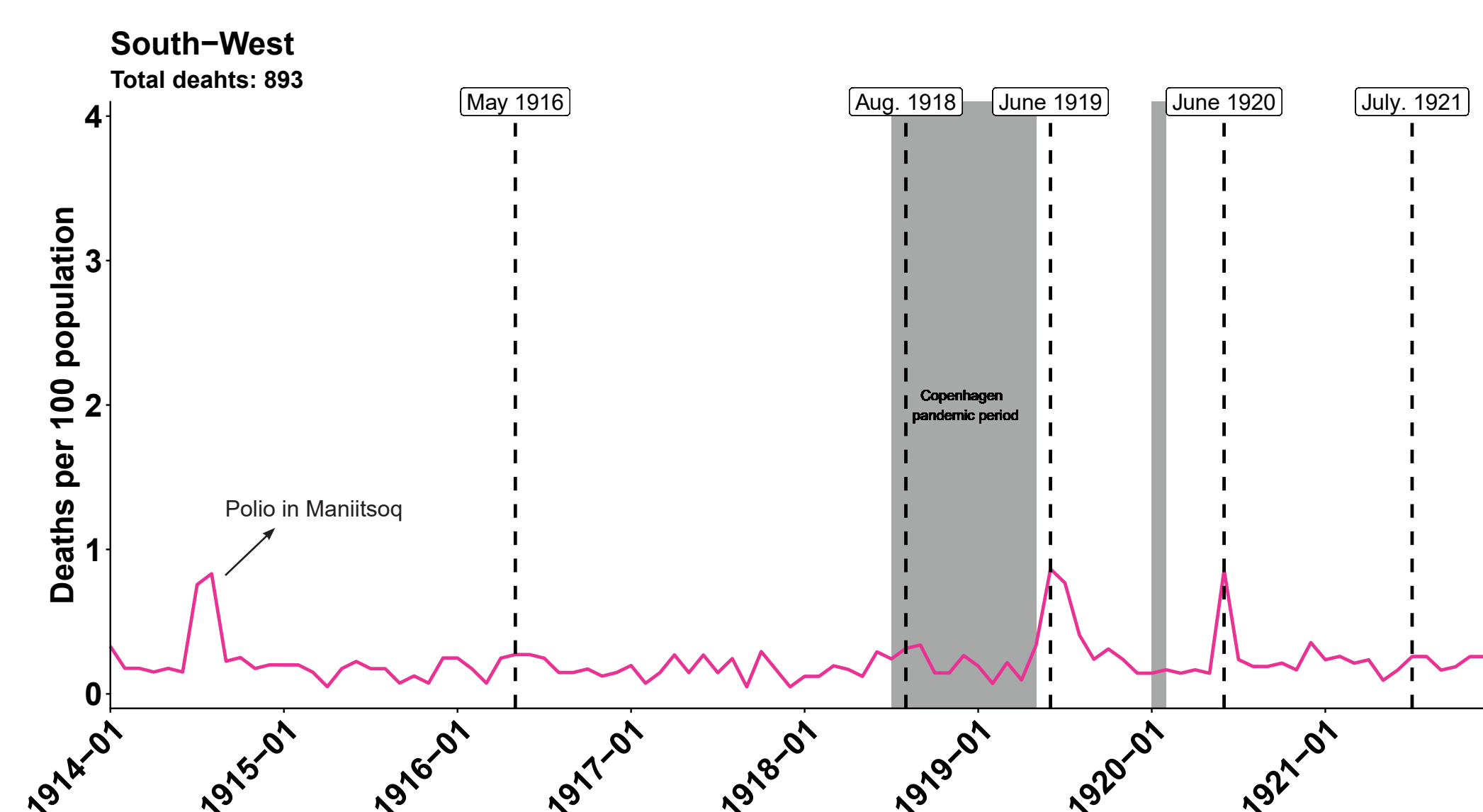
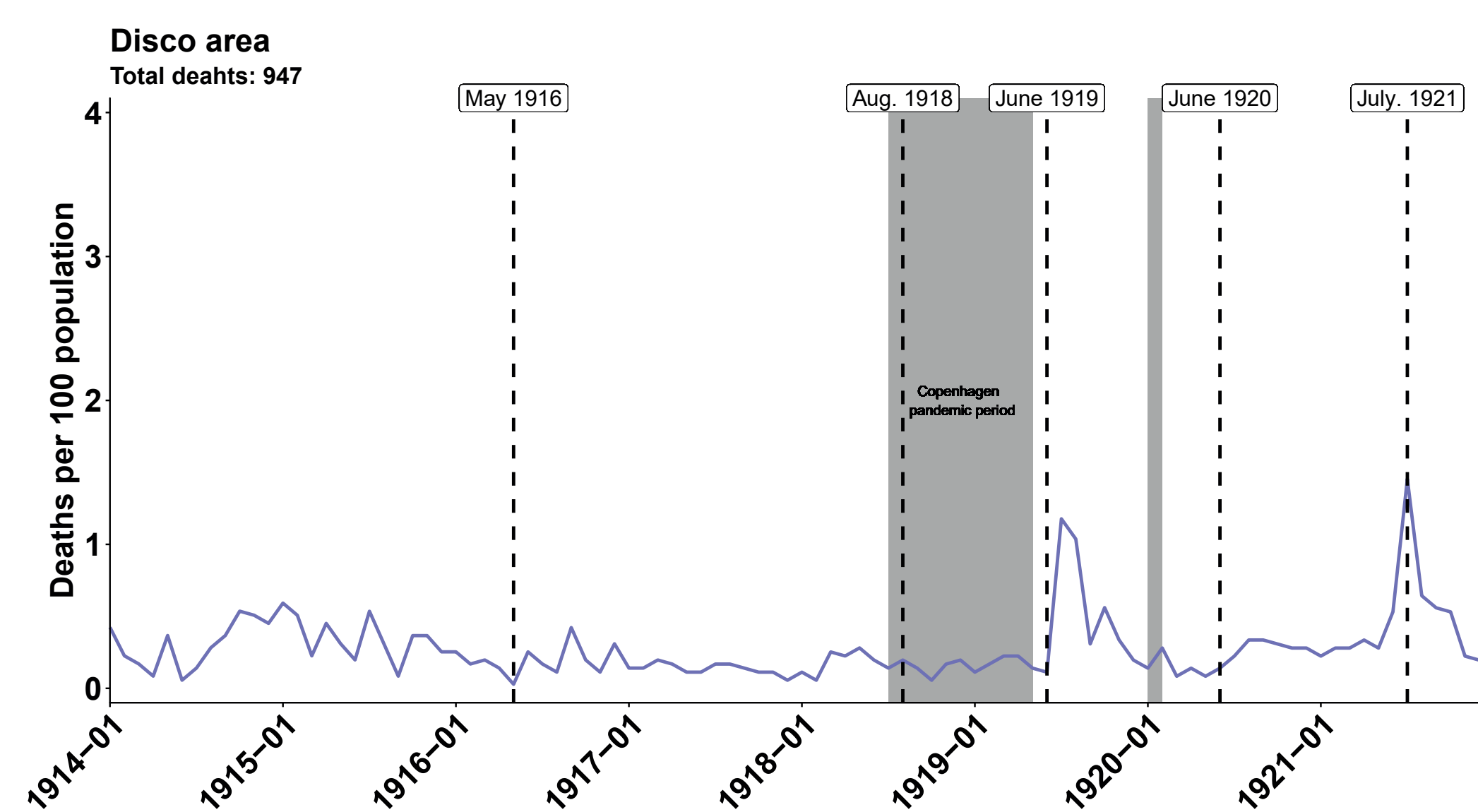
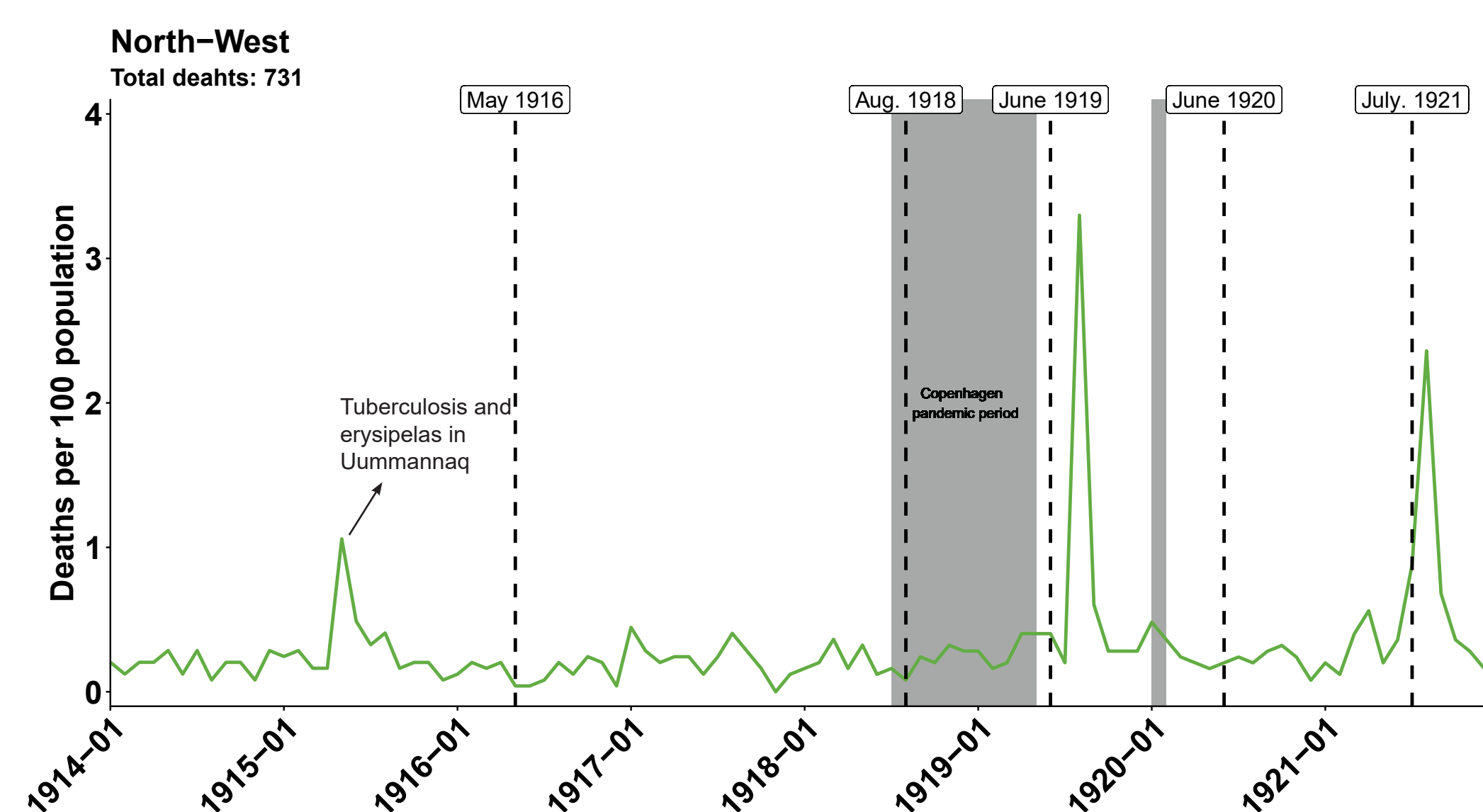
Untold Stories and Diverging Patterns

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The 1918 - 1921 influenza pandemic was particularly devastating in Arctic and other remote populations. In most other places in the world the pandemic came in 2-4 waves during 1918 to 1921. We studied spatial and temporal patterns of influenza-related deaths in Greenland for 1914-1921.

We obtained and digitalized 3426 deaths from 14 parish registers representing 4 geographical regions. We retained date and cause of death, age, gender, and settlement. We defined influenza related deaths as: influenza, cold, cold-fever, pneumonia, bronchitis, and "sting". Population sizes were interpolated from censuses in 1911 and 1921.

All-cause mortality rates per 100 population from 1914 - 1921. The grey area represents the four pandemic waves in Copenhagen. Dashed lines are included for ease of comparison across regions.



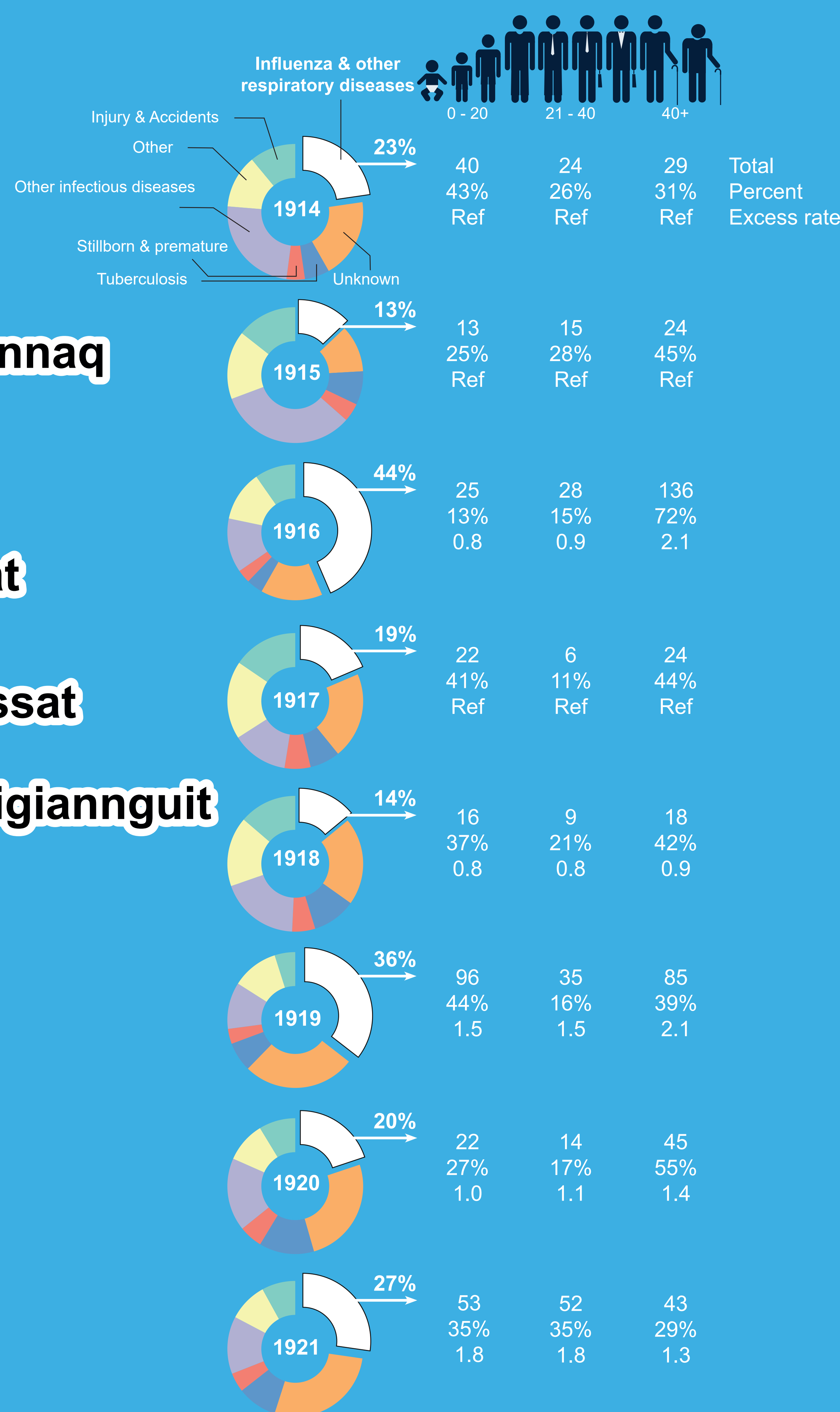
Key messages

- Outbreaks of influenza-like illness occurred in 1916, 1919, 1920 and 1921.
- All outbreaks occurred in May-August, when the ports were free of ice and shipping was at its peak.
- Mortality patterns differed dramatically from parish to parish.
- The outbreak in 1916 was local to the Cape region and overall deadlier than the 1919 pandemic.
- Pandemic influenza was delayed by ~one year and started in June 1919, when the ice cracked and ships arrived in Greenland again.
- In total 1.6% of the population died of influenza related deaths in 1919, similar to 1916 (1.4%).
- Documented arrival of influenza by ship confirms that it was influenza.
- Contrary to well-known pandemic signature patterns, all age-groups were equally affected.

July 9th 1919:
A ship from Denmark arrives in Qeqertarsuaq. From there, influenza is spread by motorboat to Aasiaat where it arrives on the 11th. It reaches Uummannaq on the 23th and the Cape region on the 24th.

April 1916:
A ship from Denmark arrives in Ivigtut. Among the passengers are miners for the local cryolite mines, some of whom are infected with influenza. The virus is transported by post sled to Qaqotoq. On April 16th a postman is admitted to Julianehåb hospital. From there influenza spread to the rest of the area.

Annual cause-specific deaths and the age distribution for influenza related deaths. Depicted are the distribution of deaths by cause, and the total deaths by age-group for influenza-related deaths, as well as the percentage. Excess all-cause mortality ratios were calculated compared to reference average of 1914, 1915, and 1917.



Outstanding questions

- Why does the pandemic in Greenland not stand out relative to seasonal flu?
- Why do mortality patterns differ between regions? Can this be due to shipping routes?
- Why are those aged 21-40 not at elevated risk?
- Why does Greenland seem less affected than other arctic regions?
- Can shipping records help understand these diverging patterns?

