Comparison of 1918-19 & 2009 H1N1 Influenza Pandemics: Epidemiology and Lessons Learnt
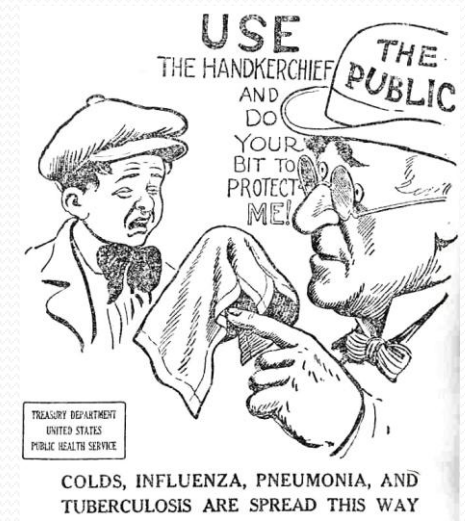
Jennifer Summers

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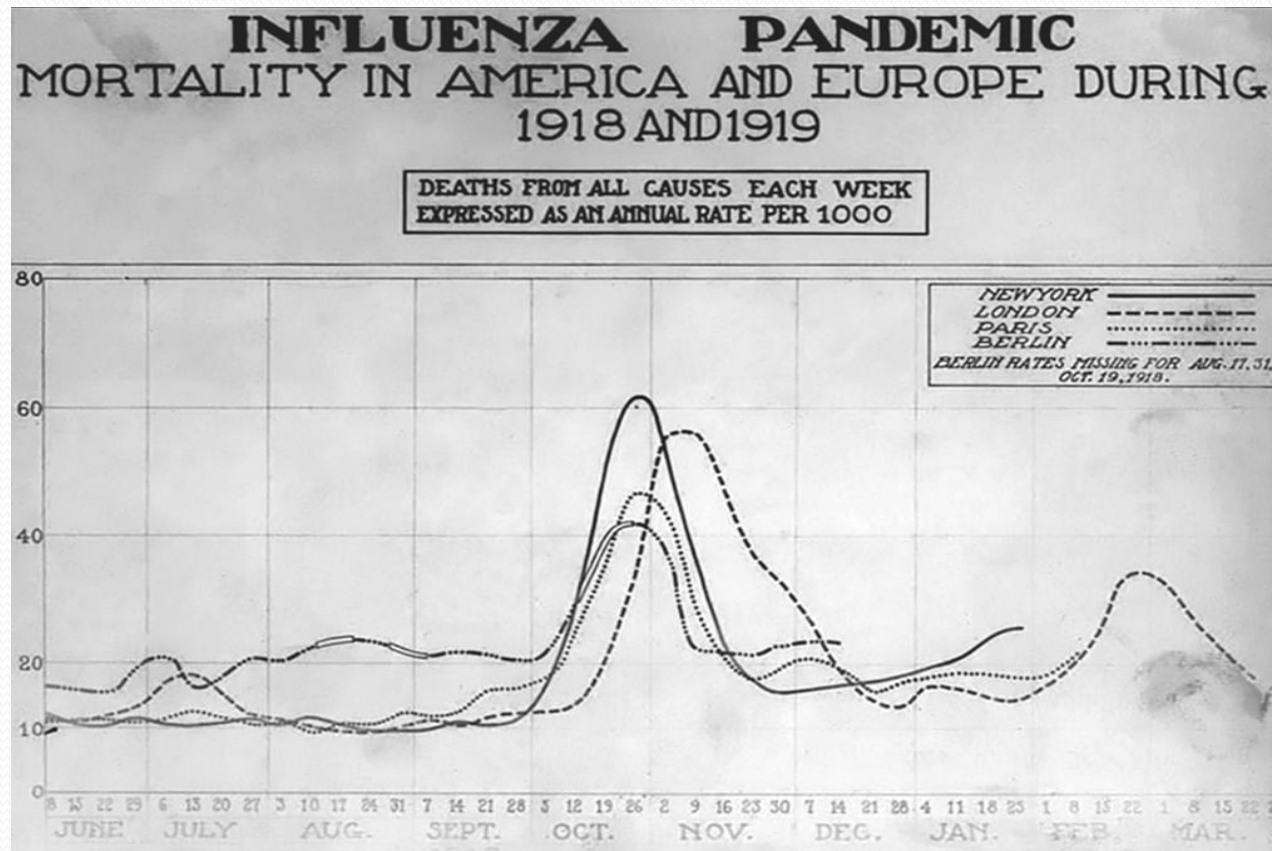Jenn.summers@gmail.com

- Epidemiology

- Global spread

- Control measures

- Lessons learnt
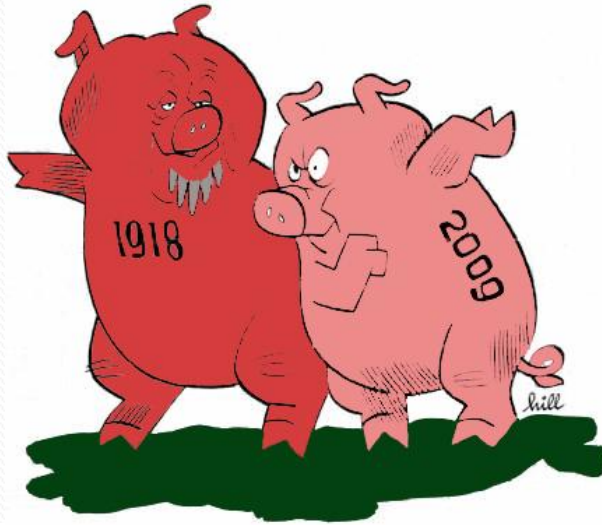
| Influenza Strain	Estimated Mortality
1889 'Russian flu' from Europe	H3N2	~1 million
1918-19 'Spanish flu' from USA?	H1N1	50-100 million
1957 from Asia	H2H2	~2 million
1968 from Asia	H3N2	~1 million
2009 'Swine flu' from Mexico?	H1N1	~19,000

1918-19 waves

The Spanish Influenza. Chart showing mortality from the 1918 influenza pandemic in the US and Europe (Nicholls 2006).

2009 waves

H1N1 2009 cases in New Zealand (Southern Hemisphere)

H1N1 2009 cases in England (Northern Hemisphere)
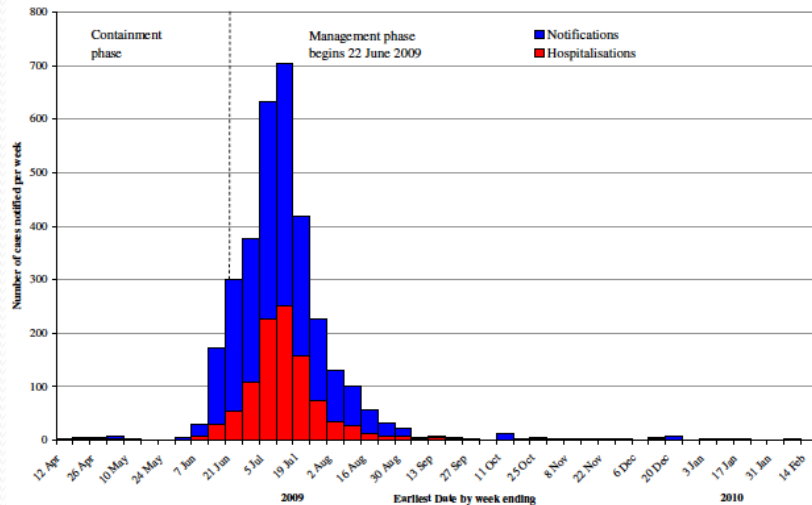
From Lopez & Huang (2009): **Influenza in New Zealand** in **2009**
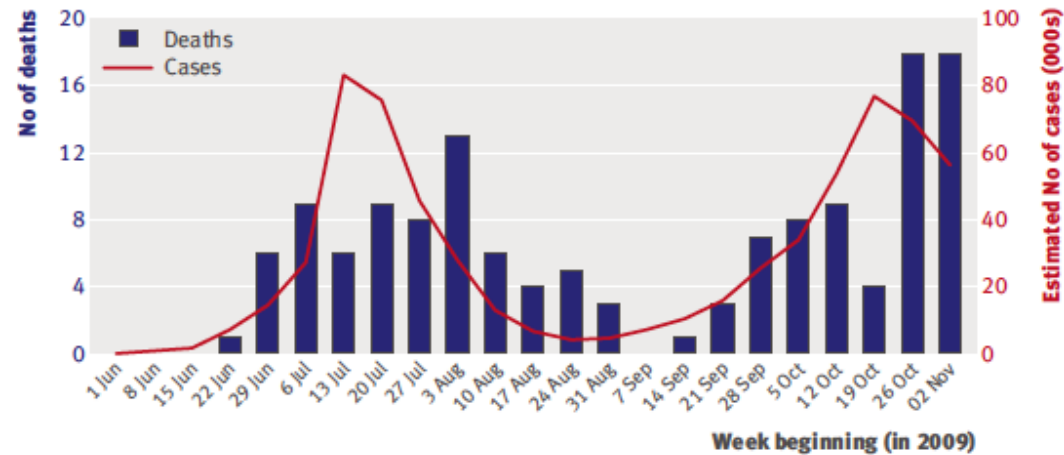
From Donaldson et al (2009): **Mortality from pandemic A/H1N1 2009 influenza in England: public health surveillance study**

Global spread in 1918

Worldwide
Diffusion of
Influenza

"Second Wave":
Autumn, 1918

1 = August
2 = September
3 = October
4 = November
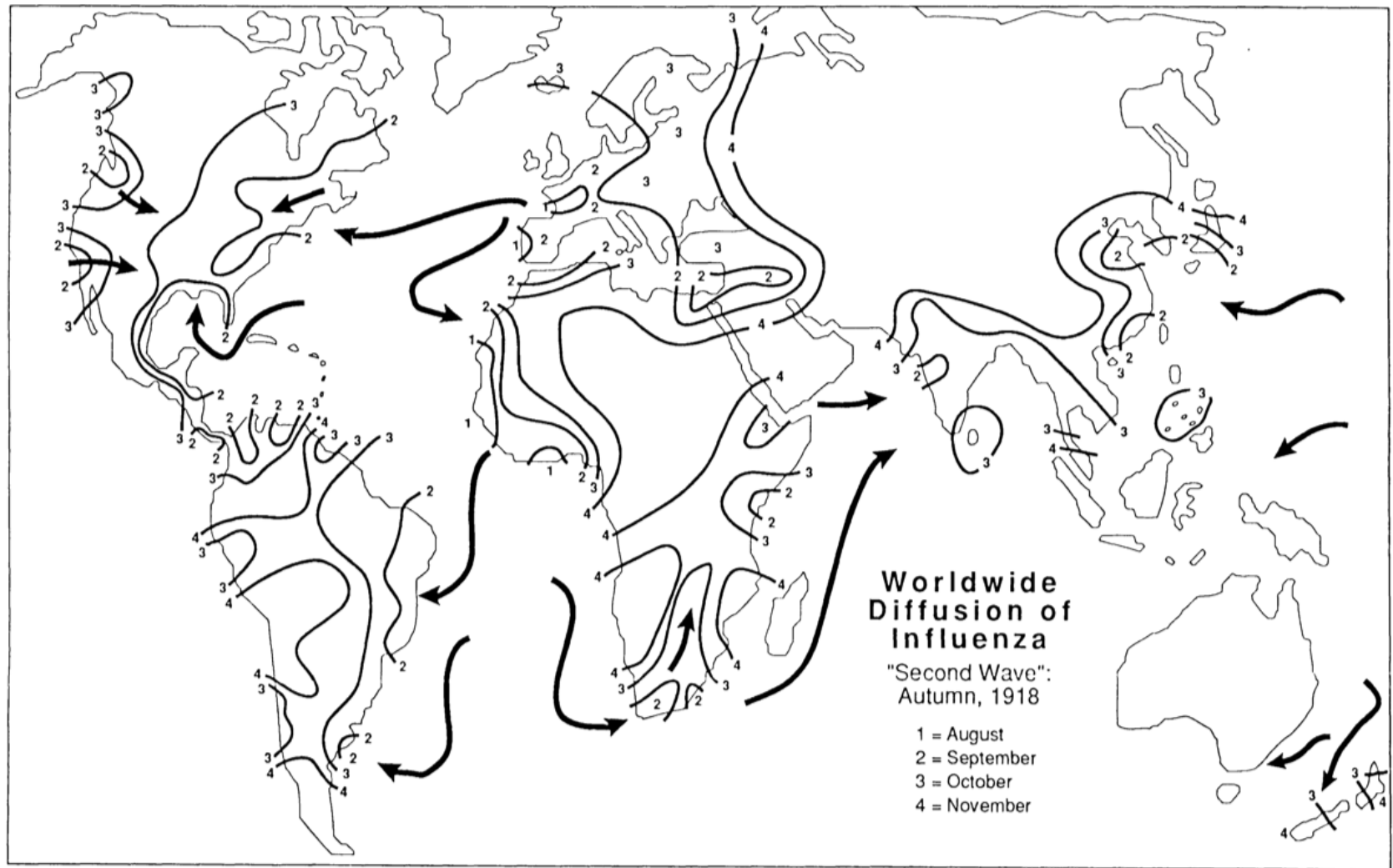
Rapid spread in 2009

Geographic spread of influenza activity

(Geographic spread reflects the number and distribution of regions within a country reporting influenza activity.)

Status as of Week 30
20 Jul - 26 Jul 2009

Geographic spread
- No activity
- Localized
- Regional
- Widespread
- No information available
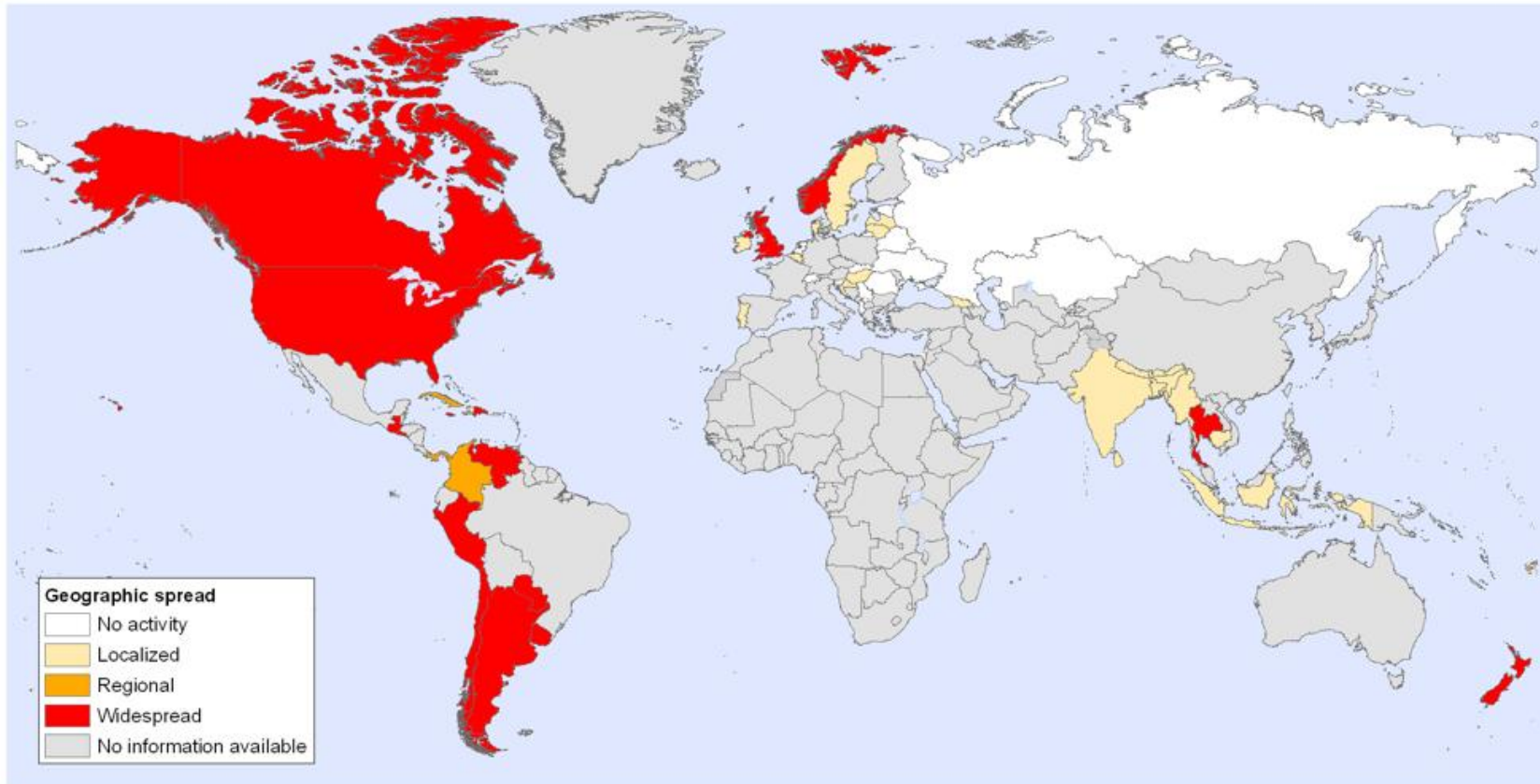
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization

World Health Organization

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Influenza & Pneumonia mortality in US, 1911-1918
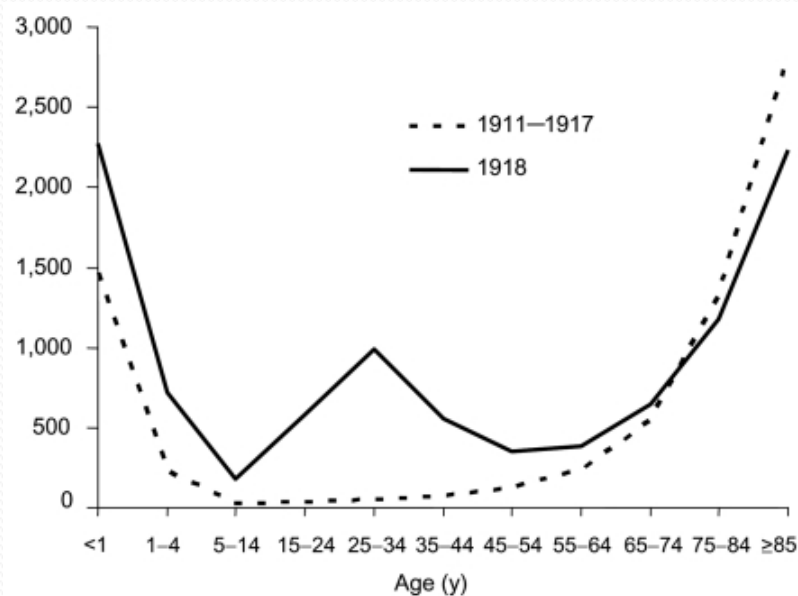
From Taubenberger & Morens (2006): **1918 Influenza: the Mother of All Pandemics**

H1N1 2009 mortality in US
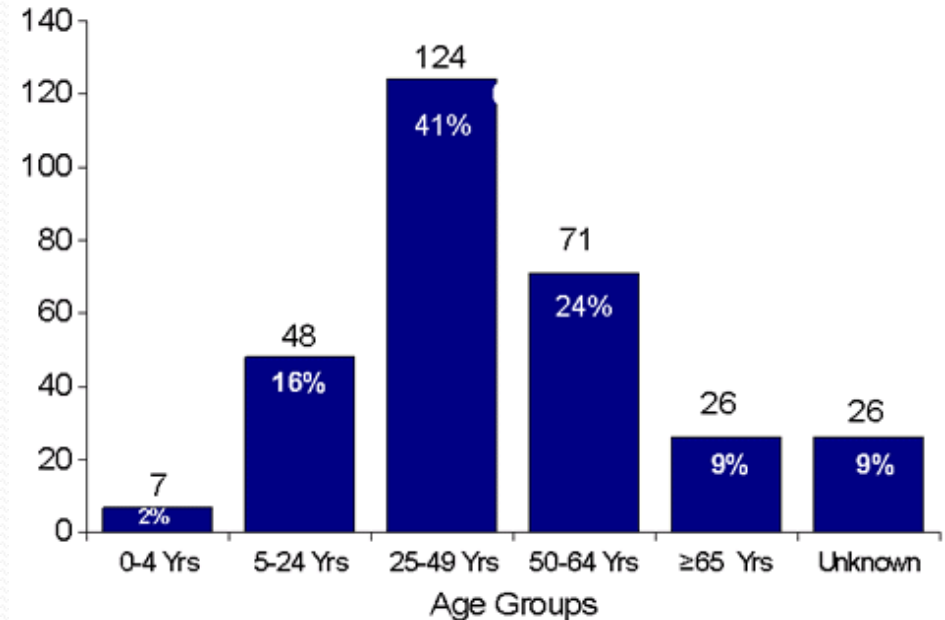
From Centre for Disease Control (2009): **2009 H1N1 Early Outbreak and Disease Characteristics**

Other risk factors

- Socio Economic Status
- Ethnicity
- Preexisting conditions
- BMI
- Pregnancy

PREVENT DISEASE

CARELESS
SPITTING, COUGHING, SNEEZING,
SPREAD INFLUENZA
and TUBERCULOSIS

RENSSELAER COUNTY TUBERCULOSIS ASSOCIATION, TROY, N.Y.

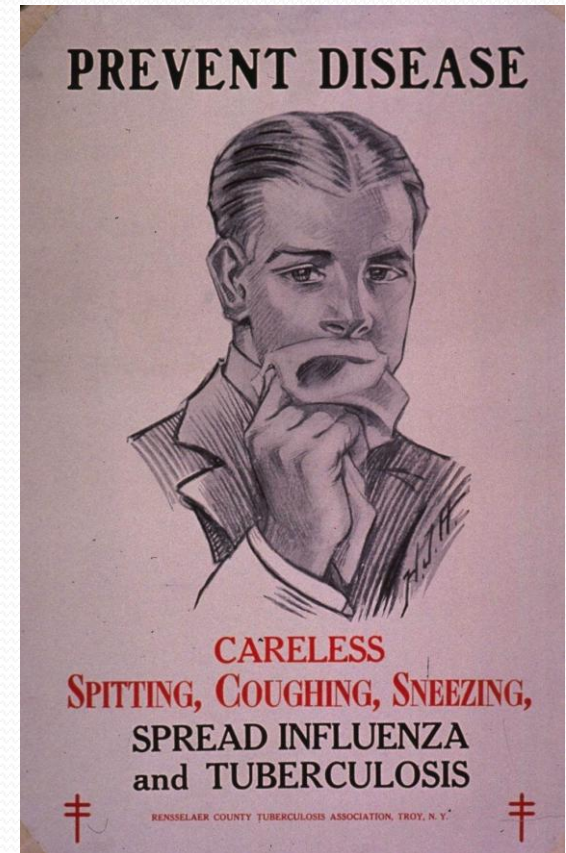# 1918-19 Control Measures

Country/Region	Public Health Measures	Outcome
Australia	Early introduction of strict martime quarantining and reporting.	Delay of first cases of pandemic and less virulence of pandemic strain.
Pacific Island Jurisdictions	Varying degrees of maritime quarantine were used throughout the South Pacific.	Some success in delaying and/or excluding the pandemic.
Iceland	Partial road closures and naturally glacial ice barrier provided quarantine effect.	Reduced mortality/morbidity in the isolated areas.. However, 1921 outbreak resulted in high mortality.
US	Various US cities introduced containment measures such as mask-wearing and social distancing measures.	Early intorduction of measures resulted in lower rates of morbidity and mortality from the pandemic.

2009 Control Measures

Country	Anti-viral prophylaxis & treatment	Community Mitigation Measures
Australia	Oseltamivir was used for persons with moderate to severe illness, and high-risk populations.	Some school closures. Initial border screening at international airports.
Chile	Oseltamivir was given to persons with ILI.	No school closures Travel restriction recommendations. Health questionnaires and information dissemination at borders.
New Zealand	Oseltamivir was given to persons with ILI and their contacts.	Some schools closed for brief periods. Public health messages encouraged ILI cases to stay at home.
US	Oseltamivir was given to persons with ILI and high-risk populations.	Some school closures. Dissemination of guidance on personal hygiene, use of antivirals, facemasks, and respirators. No travel restrictions or border screening measures implemented

ILI = Influenza-like illness
Adapted from **Assessment of the 2009 Influenza A (H1N1) Outbreak on Selected Countries in the Southern Hemisphere**
http://www.flu.gov/pandemic/global/southhemisphere.html

EPIDEMIC INFLUENZA (SPANISH)

This Disease Is Highly Communicable.
It May Develop Into a Severe Pneumonia.

There is no medicine which will prevent it.

Keep away from public meetings, theatres and other places where crowds are assembled.

Keep the mouth and nose covered while coughing or sneezing.

When a member of the household becomes ill, place him in a room by himself. The room should be warm, but well ventilated.

The attendant should put on a mask before entering the room of those ill of the disease.

TO MAKE A MASK

ISSUED BY THE PROVINCIAL BOARD OF HEALTH

Weather: Sunny and warm, 84/64   SPORTS ★ FINAL   Monday, April 27, 2009

DAILY NEWS

50¢   2.5 MILLION READERS EVERY DAY   NYDailyNews.com

CITIZENSHIP **NOW!**
OUR HELP PHONE LINES ARE OPEN TODAY
SEE PAGE 10

BEANTOWN BEATDOWN
LOST WEEKEND AT FENWAY AS SOX SWEEP YANKS
SEE SPORTS

SWINE FLU SPREADS!

■ Feds fear virus could turn deadly in U.S.
■ Mayor says don't panic as cases confirmed

EVERYTHING YOU NEED TO KNOW — SEE PAGES 4–6

Lessons learnt

- Some common features for both pandemics: eg pattern of spread, risk factors for serious illness & mortality

- Enormous variation in impact (mortality)

- 1918 - greater use of quarantine and social distancing measures

- 2009 – more reliance on anti-virals and vaccines and limited use of public health measures

San Francisco 1918   Mexico City 2009