

## Influenza pandemics

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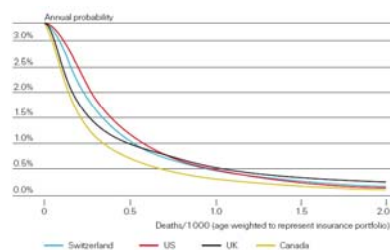
## Historical context 20<sup>th</sup> Century pandemics

Years	Viral type	US excess mortality per 1 000	Adjusted to current conditions*
1918 - 1919	H1N1	5.3‰	1.8‰
1957 - 1958	N2N2	0.41‰	
1968 - 1969	H3N2	0.17‰	

\*i.e. availability of antibiotics, antivirals and reflecting modern day age distribution

## Swiss Re model

Insured-age excess mortality due to pandemic influenza, selected developed countries



## Swiss Re model

### Sensitivities



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## Current outbreak

### Key points:

- Novel influenza virus with segments from four different viruses: North American swine, North American avian, human influenza and Eurasian swine
- Infections initially began in Mexico (deaths first reported on 13 April)
- Mostly mild symptoms experienced by cases outside of Mexico (only one confirmed deaths outside of Mexico)
- Virus is susceptible to treatment with Tamiflu
- The bulk of infections are occurring in young adults; men and women appear equally prone to the virus

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## Current status

- The virus is spreading across the world despite best efforts of authorities to contain it
- As of 06:00 GMT, 6 May 2009:
  - 22 countries have reported 1516 laboratory confirmed cases of infection, including - Mexico (822), the US (403), Canada (165), Spain (57) and the UK (27)
  - Confirmed deaths have been reported in Mexico (29) and the US (1). A further death has been reported in the US, but this hasn't yet been confirmed by the WHO

Source: WHO, Influenza A (H1N1) – update 17

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## Outlook

- Pandemic from Influenza A (H1N1 strain) seems imminent
- Two main scenarios:
  - Spread rate declines in Northern hemisphere summer, but virus persists at a low level. Spreads in Southern hemisphere. Wider spread in Northern hemisphere winter, and may have mutated by then
  - Summer does not affect spread – peaks around July in UK/USA with 25-40% of population ultimately infected. If lethality is higher, could instead have two or more waves over a longer period
- We are only a few days into a major international mobilisation for an outbreak that could continue for months into the future
- Ability and motivation for effective social distancing will be an important driver of the speed of spread

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## Governments are well prepared in markets key to (re)insurance

- Governments are well prepared for a global pandemic and have detailed contingency plans and sizeable stockpiles of antiviral drugs
  - The US government has sufficient antivirals in its Strategic National Stockpile to treat 25% of the population
  - The UK government has sufficient antivirals in its national stockpile to treat more than 50% of its population
- Vaccine could be available for both the new strain of H1N1 virus and the seasonal flu by autumn (in the northern hemisphere). Decision on focus for vaccine production is currently awaiting WHO direction

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## Modelling pandemic mortality

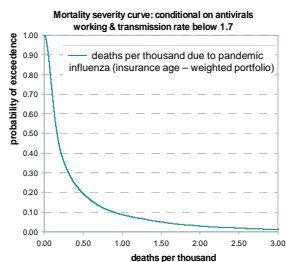
If there were a pandemic, what is range of outcomes?

If we use all of our pandemic simulations that meet the following criteria:

- that the antivirals will continue to work
- that the rate of transmission is no greater than 1.7

then the following are the outcomes in terms of excess mortality:

- Mean: 0.385 deaths/1000
- Median: 0.165 deaths/1000
- 95<sup>th</sup> percentile: 1.5 deaths/1000
- But this is not a prediction of the outcome of the current flu outbreak



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## Financial markets (1)

### Supply side effects on economy:

- 30% sickness
- off work (sick / fear / care for others):
  - 3 weeks in severe pandemic
  - 4 days in mild pandemic
- Farm workers/rural communities 10% sick, off work 1 week
- Resulting supply side impact on US GDP is estimated to be:
  - -2.25% in severe pandemic
  - -0.5% in mild pandemic

### Demand side effects on economy:

#### Initial

- sharp decline in demand as people avoid discretionary shopping, restaurants, events
- sharp decline in (international) travel
- response disproportionate to severity of risks because of uncertainty

#### However,

- people can cope with and adapt to very difficult circumstances, eg natural catastrophes, prolonged terrorism (Ireland), wars
- some people can work from home
- use of internet for shopping

Source: Congressional Budget Office, July 2006 update

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## Financial markets (2)

### SARS experience

- shows that impact was very concentrated by sector
- retail sales declined dramatically, with very little subsequent "catch up"
- Hong Kong suffered no impact on international trade or manufacturing

### Assumptions on demand side economic impact:

- Impact varies greatly by industry
- Lasts 3 months
- Finance, education, and government: 0%
- Agriculture, construction, manufacturing, and retail: up to 10% decline
- Transport: 67% decline
- Entertainment, hotels, and restaurants: up to 80% decline
- Resulting demand side impact on GDP is estimated to be reduction of 0.5% for a mild pandemic or 2% for a severe pandemic
- Resulting overall economic impact of a pandemic is estimated by CBO to be a reduction of US GDP of between 1% and 4.25%, depending on severity

Source: Congressional Budget Office, July 2006 update

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## Financial markets (3)

- Economic impact depends critically on people's reaction to the pandemic, which is thought to be related to the number of deaths. At what level do people absent themselves from work and social interaction?
- Most likely outcome is a 1% to 2% reduction in global GDP.
- Normally this would trigger a reduction in interest rates, a fall in equity values, and a widening of credit spreads.
- However, given the current recession, there is a wide range of opinion about the financial market impact of a further reduction in GDP.

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