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# Pandemic Influenza What, When and Then What?

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# Objectives:

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- Describe the history of Influenza Pandemics
- Define Avian Influenza and differentiate from pandemic influenza
- Identify the potential impact of pandemic influenza on local communities
- Describe pandemic emergency response planning and preparedness in Portage County

# Twentieth Century Influenza Pandemics

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**1918:** "Spanish flu"  
H1N1

The most devastating flu pandemic in recent history, killing more than 500,000 people in the United States, and 20 million to 50 million people worldwide.

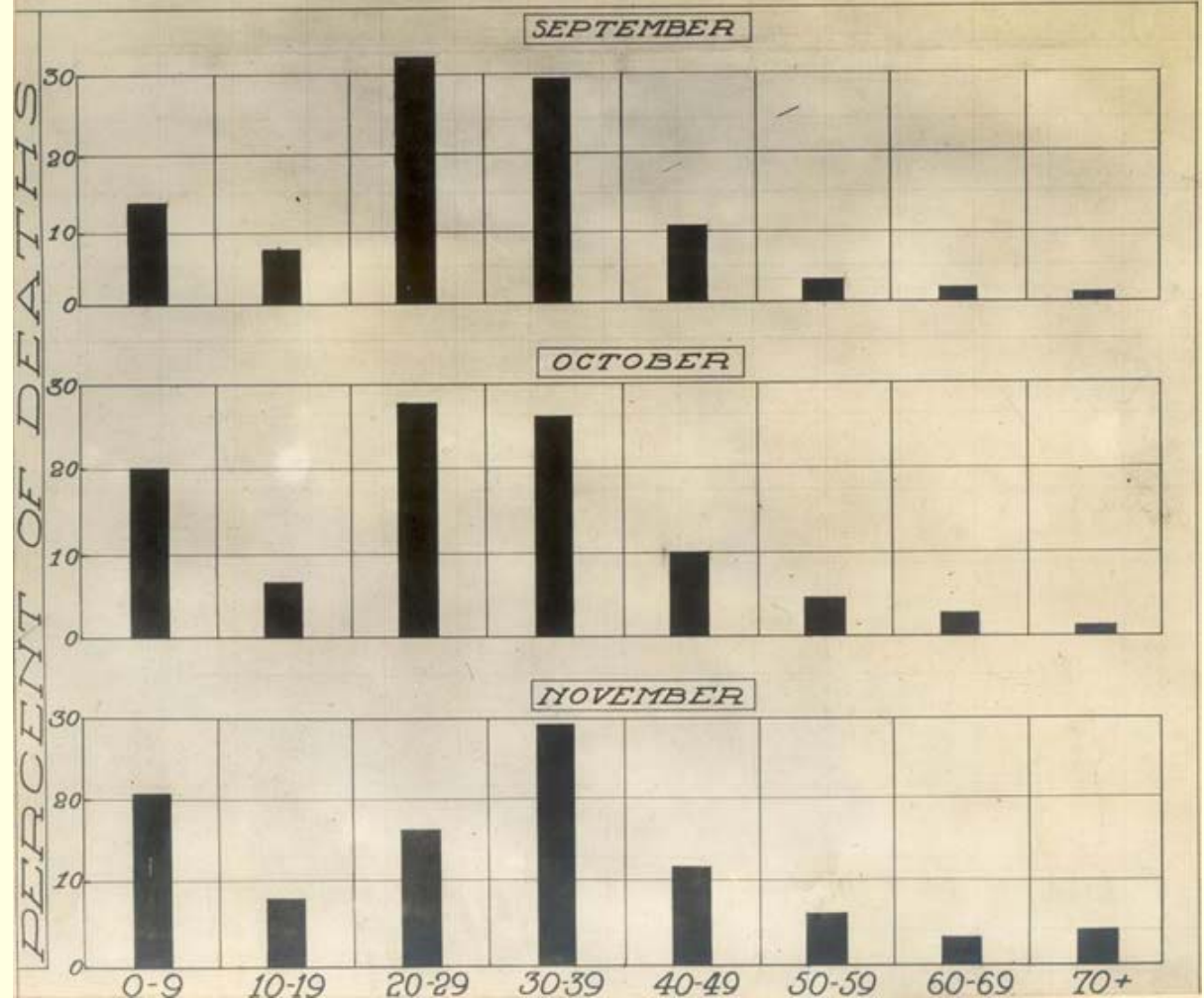
**1957-1958:** "Asian flu"  
H2N2

First identified in China, this virus caused roughly 70,000 deaths in the United States. This strain has not circulated in humans since 1968; no one under 30 years old has immunity to this strain.

**1968-1969:** Hong Kong  
flu" H3N2

First detected in Hong Kong, this virus caused roughly 34,000 deaths in the United States during the 1968-69 season. H3N2 viruses still circulate today.

# AGE DISTRIBUTION OF INFLUENZA AND PNEUMONIA DEATHS AT BOSTON DURING SEPT.-OCT.-NOV. 1918.





# Preparing to Bury City's Influenza Victims



DISINFECTING TRENCH GRABVES FOR EPIDEMIC VICTIMS





# FORMULA FOR A PANDEMIC?

Although avian influenza is moving across Asia, humans can contract it only from birds, which is why so few people have died so far. But if the virus swaps genetic material with the common flu, a deadly, highly contagious hybrid could be created

Sources: Centers for Disease Control and Prevention; World Health Organization

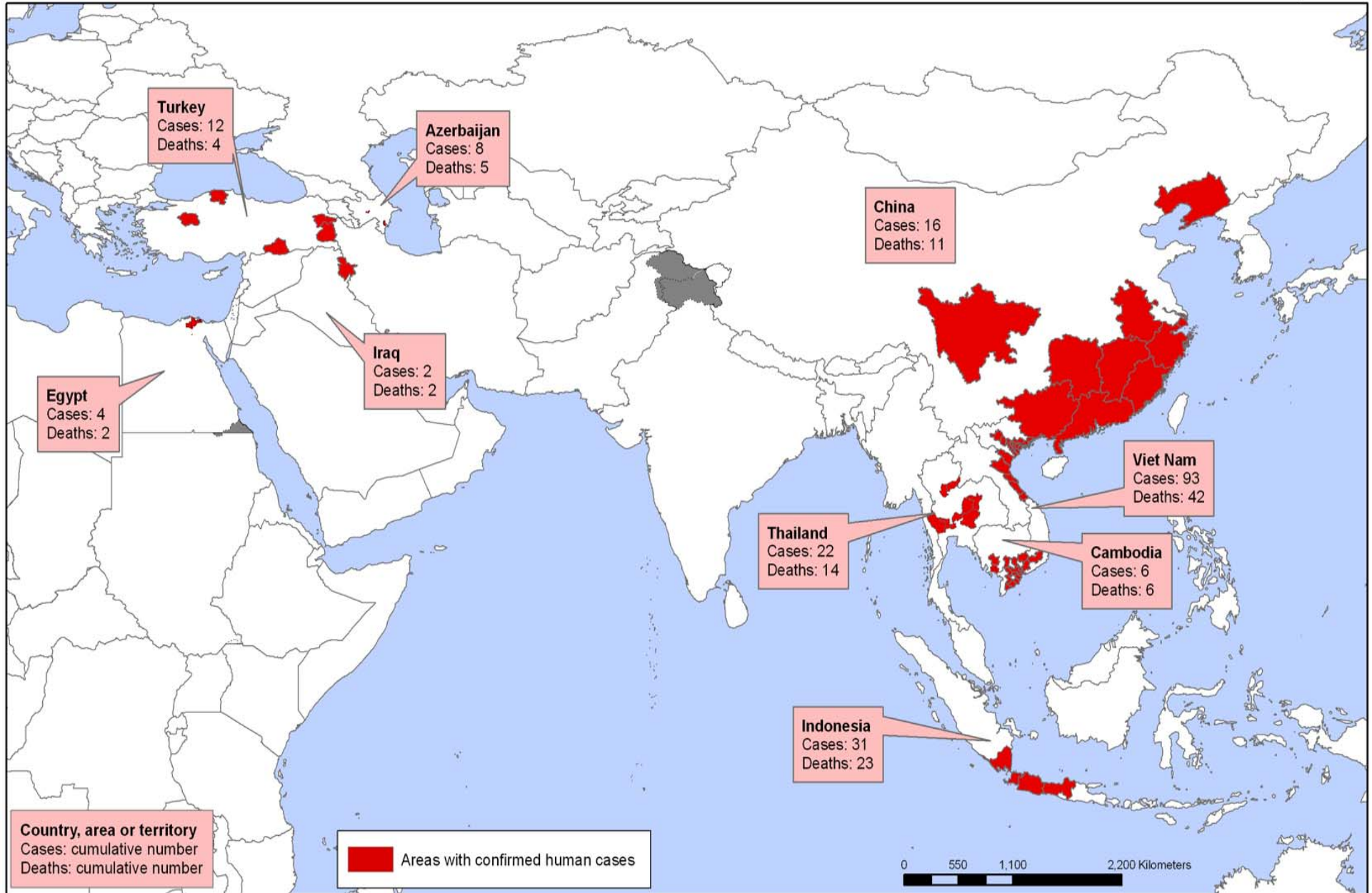
TIME Graphic by Ed Gabel; text by Kristina Dell

Birds and humans contract the disease by touching or breathing in dust from contaminated bird droppings or by making contact with saliva. Since heat kills the virus, people can't get sick from eating properly cooked poultry



Affected areas with confirmed human cases of H5N1 avian influenza since 2003

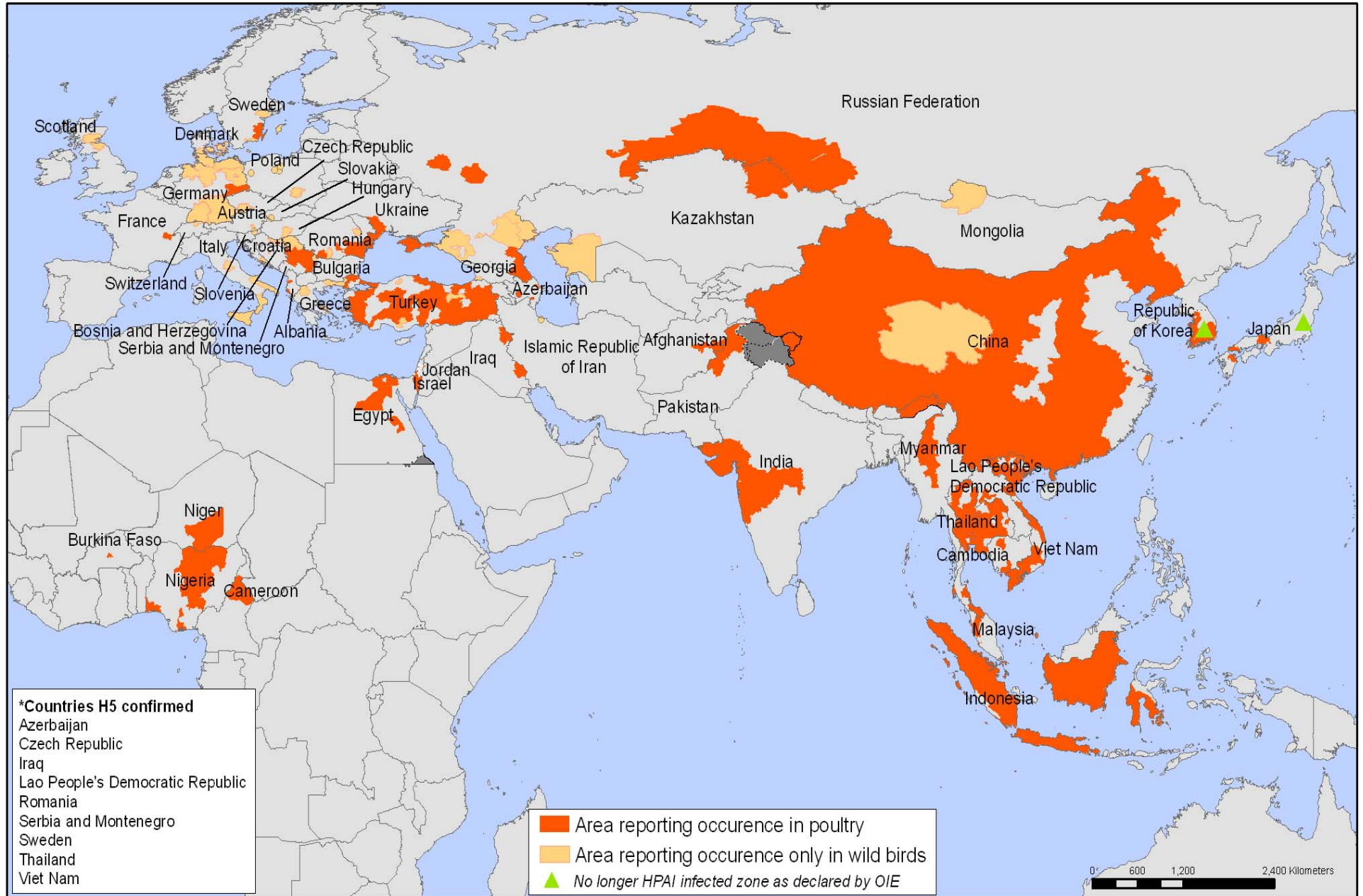
Status as of 12 April 2006



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: WHO / Map Production: Public Health Mapping and GIS  
Communicable Diseases (CDS) World Health Organization

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# HPAI in Avians

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- Infect respiratory and GI tracts of birds
  - Usually do not cause disease in wild waterfowl
  - Genetic re-assortment occurs frequently
  - Can cause morbidity and mortality in domestic poultry
- Avian flu A viruses are shed in the respiratory tract and in feces
  - Can survive at low temperatures and low humidity for days to weeks
  - Can survive in water
  - Can survive on surfaces
  - Disinfection of the environment is needed

# How Flu Changes: Drift vs. Shift

## Drift

- Minor changes within subtypes
- Point mutations
- Occurs in both flu A and B
- May cause epidemics
- Example:
  - A/H3N2/Fujian emerged in 2003-04 instead of A/H3N2/Panama

**Frequent**

## Shift

- Major change, new subtype
- Exchange of gene segments
- Happens only in flu A
- May cause pandemic if...
- Example:
  - H1N1 in 1918
  - H2N2 replaced H1N1 in 1957
  - H3N2 replaced H2N2 in 1968

**2-3 Times per Century**

# Critical Assumptions

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- Morbidity and mortality can be minimized by having a comprehensive plan in place.
- A pandemic will occur; the unknowns are time, extent, and amount of warning.
- In our mobile society, multiple geographic areas may be affected simultaneously.
- Shortages of essential resources will occur.
- An influenza vaccine may not be available.
- If and when vaccine is available, it is expected that individuals will need two doses to be protected.

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**The pandemic  
influenza clock is  
ticking - we just  
don't know what  
time it is.**



**An influenza pandemic is unlike any other public health emergency or community disaster. Unlike the typical disaster, essential community servants themselves (e.g., healthcare workers, police, firefighters, EMS workers and other first responders) will likely be at even higher risk of exposure, illness and death than the general population.**

# What will be the impact to Portage County?

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- Predicting what will happen for a future pandemic is based on data from past pandemics.
- History is our best predictor.....
- Modern medicine is better?
- Better disease surveillance?
- Better treatment and vaccines?

# Portage County Flu Surge Estimates

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- Portage County Health Dept, using predictive software from CDC
- Used demographic data for Portage County from the 2000 census-152,061
- Hospital resources: RMH
  - Total staffed beds 148
  - Staffed ICU beds 16
  - Total Ventilators 10

# CDC FluSurge Predictive Software

## 12 Week Outbreak with 35% Attack Rate

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### Total Hospital Admissions

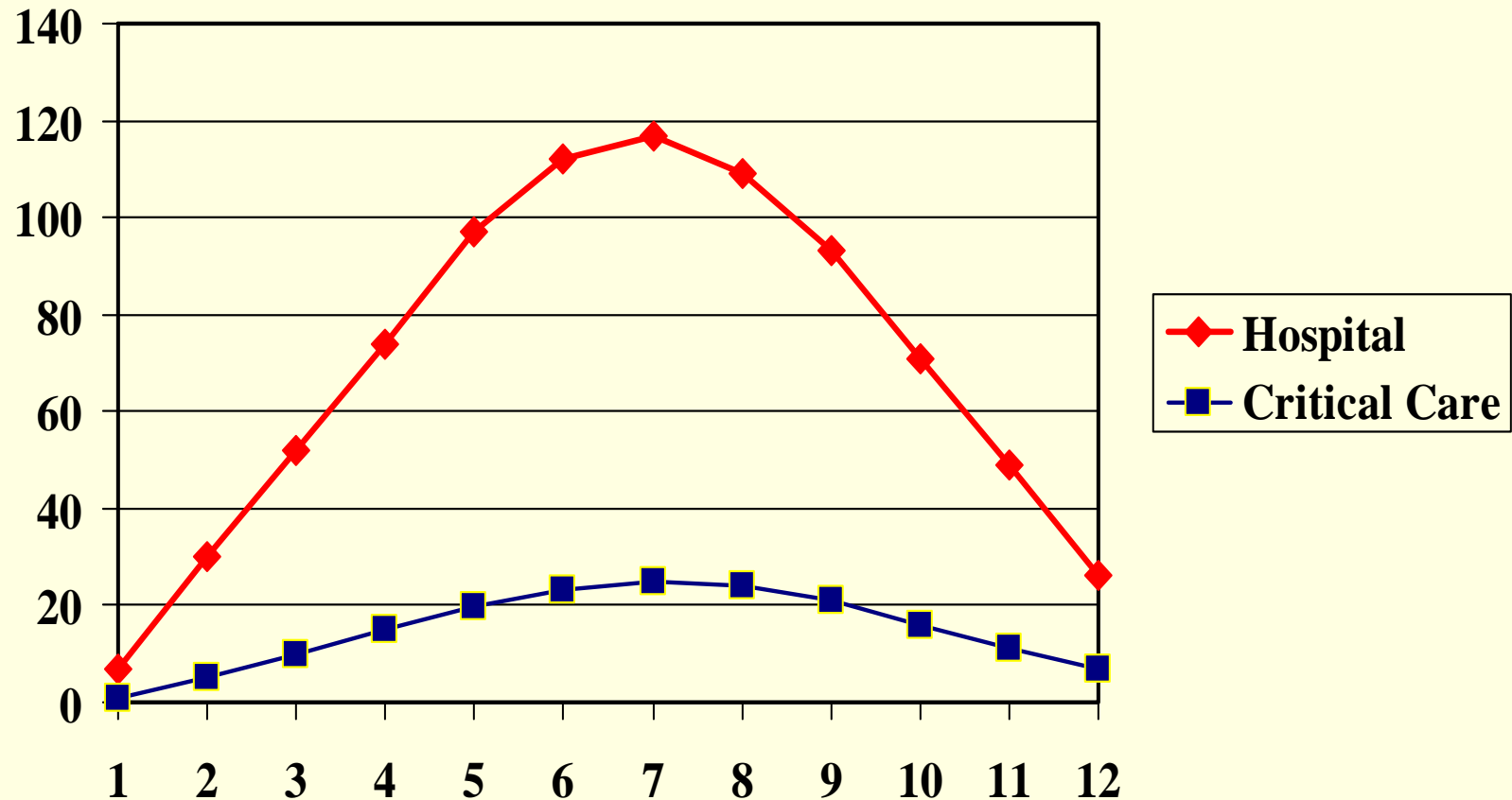
Most likely scenario	744
Minimum scenario	267
Maximum scenario	961

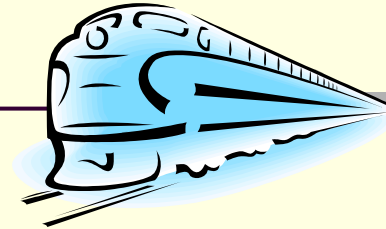
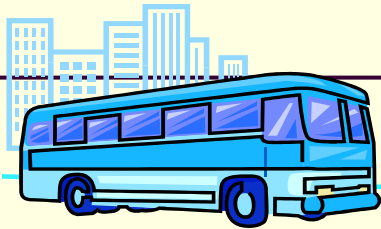
### Total Deaths

Most likely scenario	142
Minimum scenario	74
Maximum scenario	239

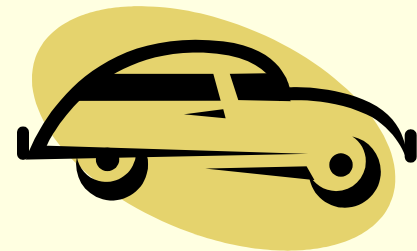
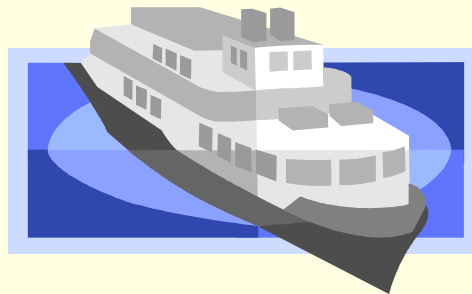
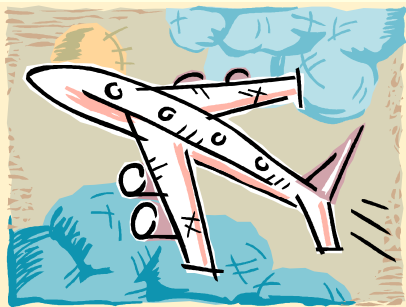
# Influenza Patients

12 week outbreak with 35% attack rate





**All Countries, States and  
Counties may be affected pretty  
much at the same time**



# What does that mean to response?

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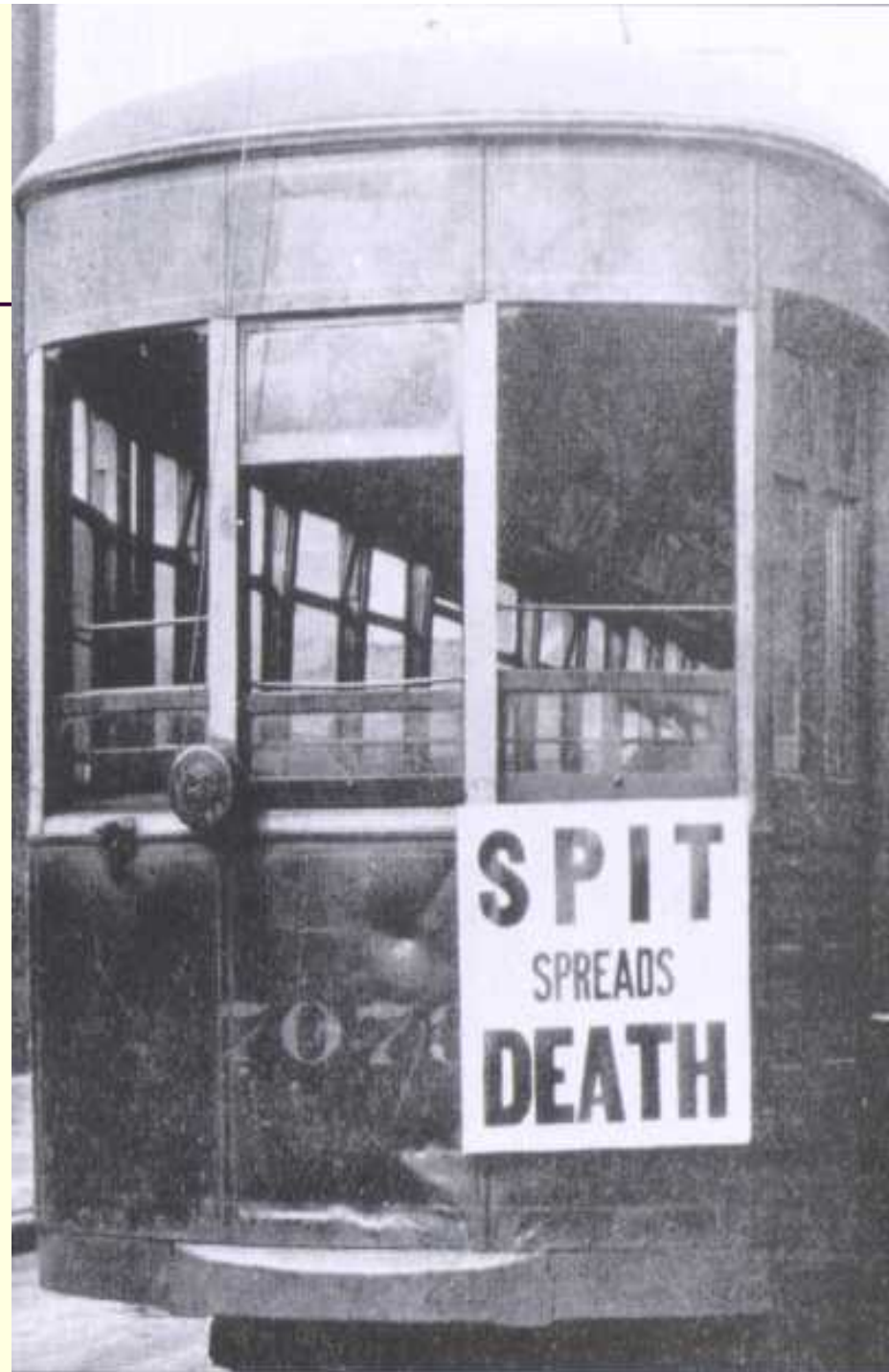
- Unlike any other emergency where resources can be pulled from other unaffected areas; a pandemic will require local response
  - Other counties, cities will be affected simultaneously.
  - Will not have outside resources to pull from or send to.
- How will this affect Portage County?
  - Pandemic planning is unique.....have to think outside the box





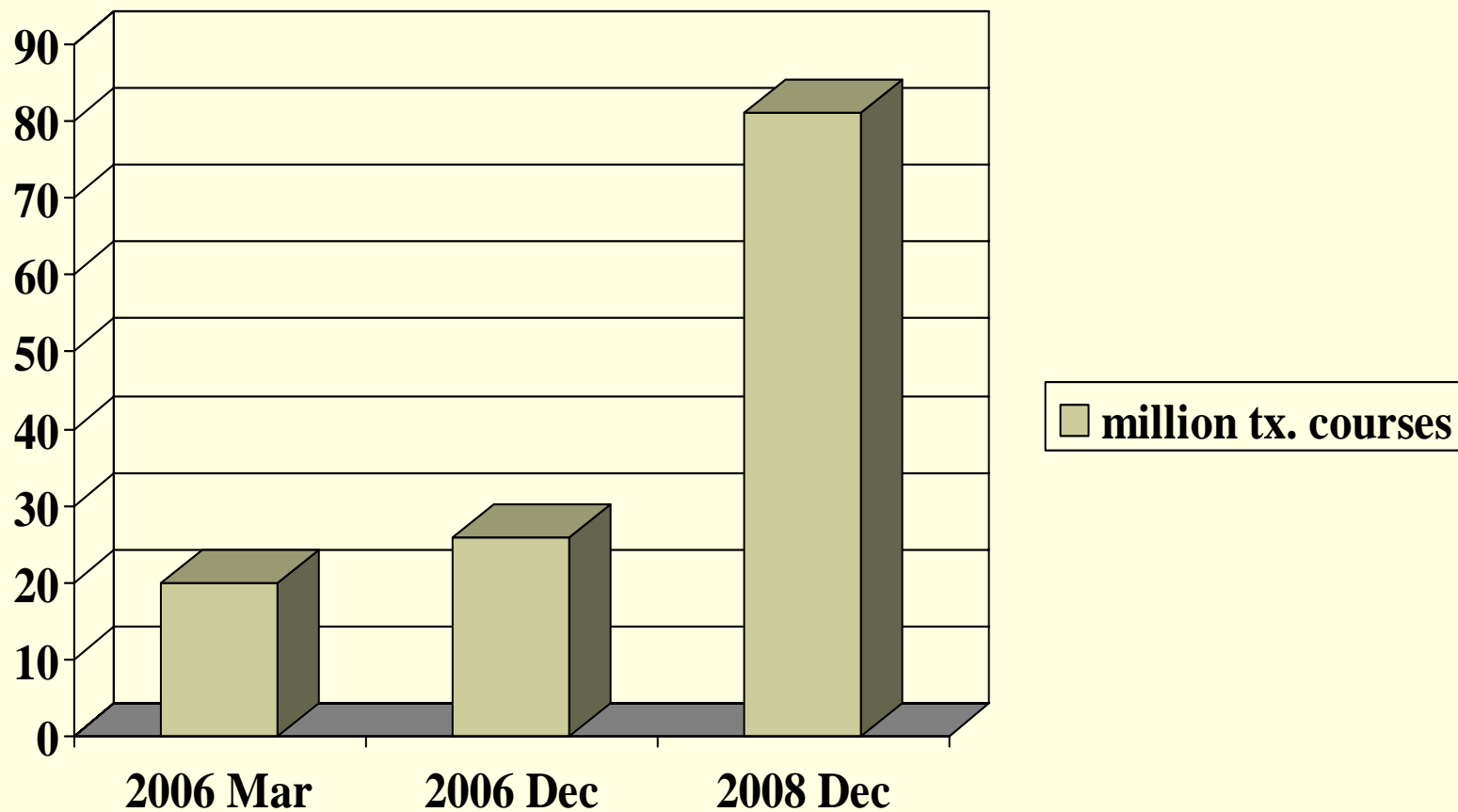


Vincent Yu / AP





# U.S. Antiviral Stockpile





[www.StrangeCosmos.com](http://www.StrangeCosmos.com)



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# Influenza control: quarantine

- Challenges

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- short incubation period for influenza
- a large proportion of infections are asymptomatic
- clinical illness from influenza infection is non specific
- Not used during annual epidemics
- Could potentially slow onset of a pandemic before sustained person-to-person transmission has been established

# Medical care during an influenza pandemic

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- Surge capacity of the hospital system is limited.
- Challenges:
  - Magnitude and duration
  - Staff shortages
  - Limited ability to call in external resources

# Pandemic Vaccine

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- Annual vaccine is trivalent (3 strains), pandemic vaccine will be monovalent.
- Production using current technologies would likely take 4-5 months → may not be available before 1<sup>st</sup> pandemic wave
- There will be vaccine shortages initially
- 2 doses may be necessary to ensure immunity

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# Functions and Associated Responsibilities

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- Surveillance (including laboratory issues)
- Strategies to Limit Transmission
- Pharmaceutical Delivery
- Emergency Medical and Other Responses
- Communications

# Are We Ready?

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- Can we ever say we are 100% prepared?
- But working together collaboratively we are confident that we can respond effectively to any emergency in Portage County
- We have the support of one another

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**WASH YOUR HANDS  
&  
COVER YOUR COUGH  
&  
DON'T GO TO WORK SICK**

# What can you do?

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- To protect yourself and your family?
  - Have a plan
  - Infection control
  - Stockpile food and supplies
  - See Family Flu planning checklist

# What can the private sector do?

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- Establish an ethic of infection control in the workplace now
- Contingency plans to maintain services
- Mechanisms for employees to work from home
- Partner with other businesses to provide mutual support to maintain essential services during pandemic

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# What is Public Health's role?

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- Surveillance: Tracking the disease
- Education
- Testing
- Epidemiological investigations
- Isolation and Quarantine
- Containment measures
- Mass Vaccination

# How are we Preparing in Portage County?

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- Preparedness and Communication
  - Pre-pandemic education
- Surveillance and Detection
  - Detect early so early notification
- Response and Containment
  - Limit the spread
  - Mitigate the health, social and economic effects of the pandemic

# Pandemic Flu Planning



**Get informed. Be prepared. Work together.**

# For More Information

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- Portage County Health Department  
330-296-9919
- [www.co.portage.oh.us/dept/health](http://www.co.portage.oh.us/dept/health)
- [www.cdc.gov](http://www.cdc.gov) Centers for Disease Control
  - [www.pandemicflu.gov](http://www.pandemicflu.gov)
- [www.who.int/en](http://www.who.int/en) World Health Organization

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**“All predictions are difficult especially when they involve the future.”**

**Dan Quayle**