

"Modeling and Managing Pandemic Risk"

Providing Insight to Pandemic Planning



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Agenda

- ◆ Pandemic Background
- ◆ Business Continuity Considerations
- ◆ U.S. Financial Services Industry Pandemic Exercise





Pandemic Background





Pandemic Influenza - What is it?

- ◆ An influenza epidemic occurring over a very wide area (several countries or continents) and usually affecting a large proportion of the population
- ◆ Over the past several years, the threat of a pandemic influenza has increased due to the prevalence of the Avian Influenza (H5N1) virus
- ◆ Health experts predict that a pandemic influenza will occur at some point but the timing is undetermined





Flu Terms Defined

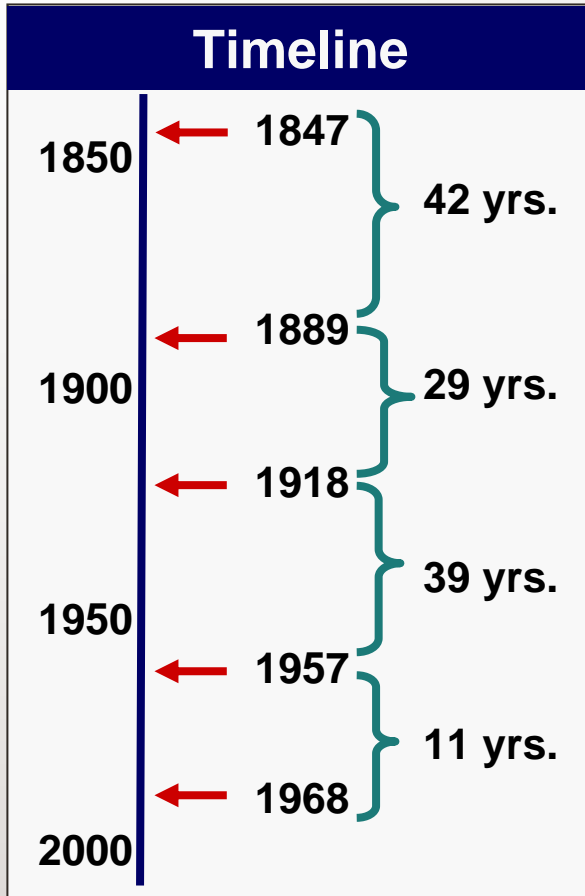
- ◆ Seasonal (or common) flu is a respiratory illness that can be transmitted person to person. Most people have some immunity, and a vaccine is available.
- ◆ Avian (or bird) flu (AI) is caused by influenza viruses that occur naturally among wild birds. Low pathogenic AI is common in birds and causes few problems. H5N1 is highly pathogenic, deadly to domestic fowl, and can be transmitted from birds to humans. There is no human immunity and no vaccine is available.
- ◆ Pandemic flu is virulent human flu that causes a global outbreak, or pandemic, of serious illness. Because there is little natural immunity, the disease can spread easily from person to person. Currently, there is no pandemic flu (lacking efficient human-to-human transmission).

Source: www.pandemicflu.gov





Influenza Pandemics Will Likely Continue



- ◆ Over the Past 300 Years of Recorded History, 10 Pandemics Have Been Recorded (avg. every 30 years), 3 in the Last Century...
- ◆ **1918/19: H1N1 – “Spanish Flu”**
 - Overall infection rate of 25%
 - Nearly 40 million deaths in less than a year (548,000 U.S.)
 - High mortality in younger age groups
- ◆ **1957/58: H2N2 – “Asian Flu”**
 - 25-30% infection rate, ~2 million deaths (70,000 U.S.)
- ◆ **1968/69: H3N2 – “Hong Kong Flu”**
 - 20-25% infection rate, ~1 million deaths (34,000 U.S.)
- ◆ **No Pandemic for 39 Years... not if but when will the next occur?**

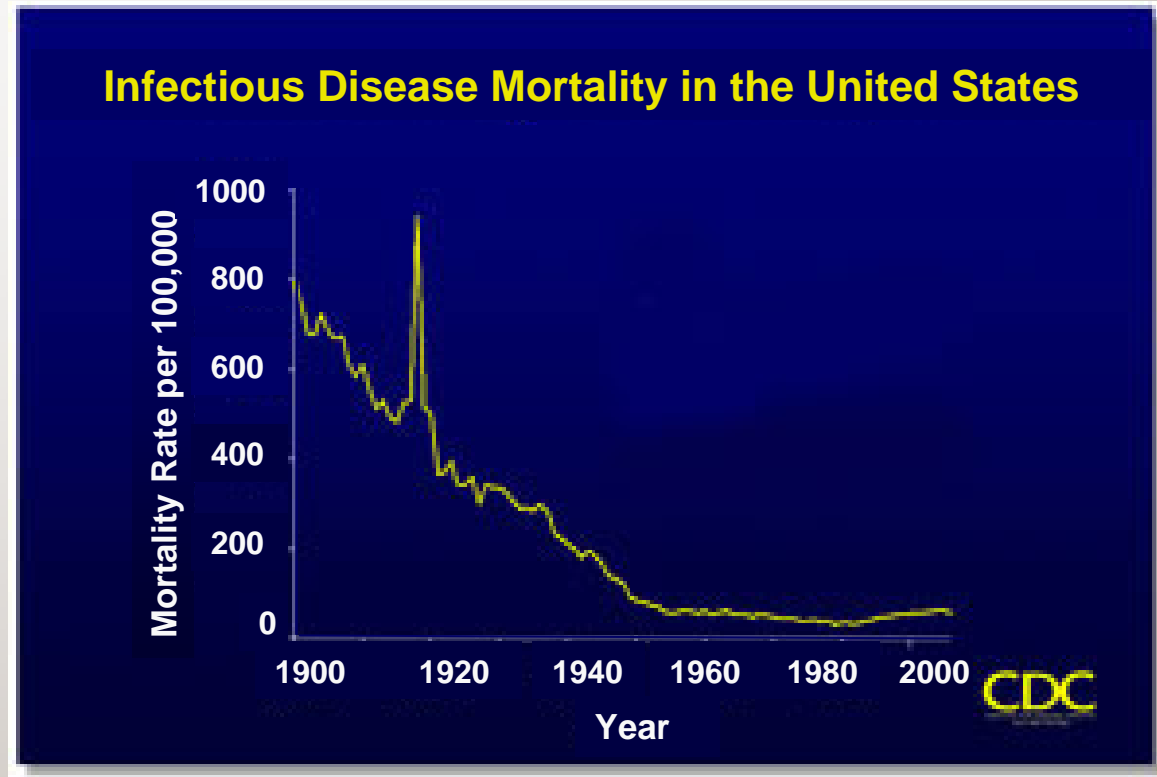
Note: Current deaths / year: auto accidents 45,000; HIV (AIDS) 14,000; Flu 1,000

Source : World Health Organization (WHO), 2005; and Pandemic Influenza Preparedness, Huiming Yang MD, Deputy Chief Medical Health Officer, Saskatchewan Health





The 1918 Spanish Flu Was the Most Devastating Infectious Disease Ever Recorded

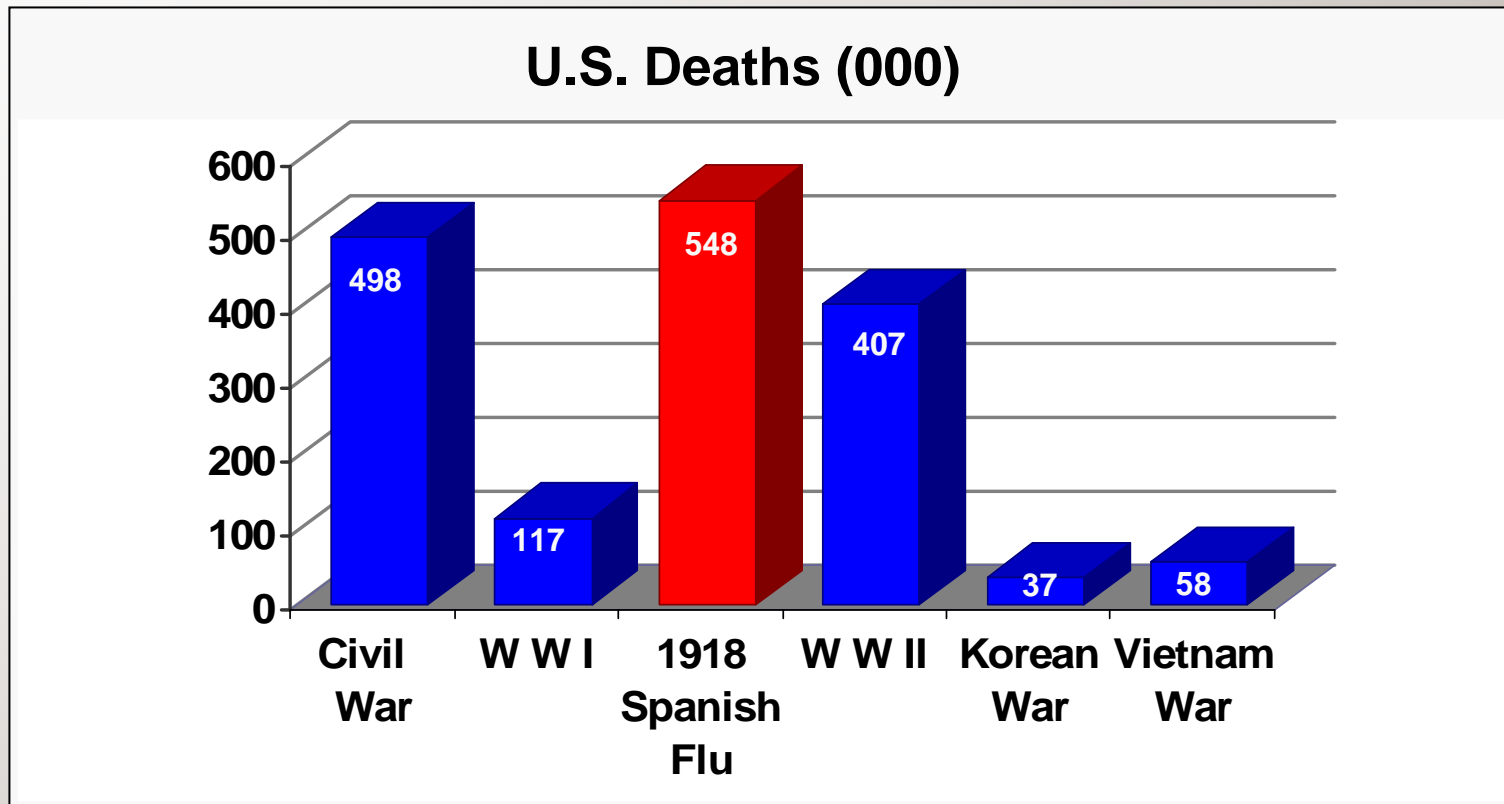


Source: Center for Disease Control (CDC)





The 1918 Flu Caused More U.S. Deaths Than Any War...

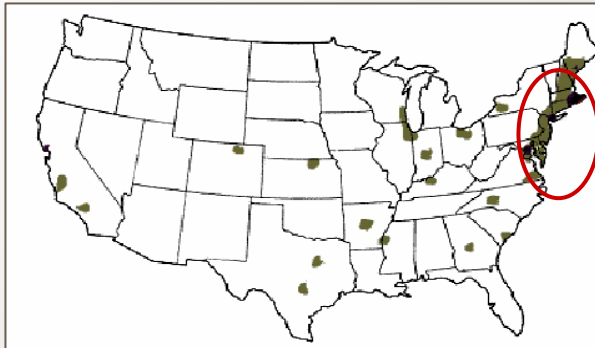


Source: World Almanac

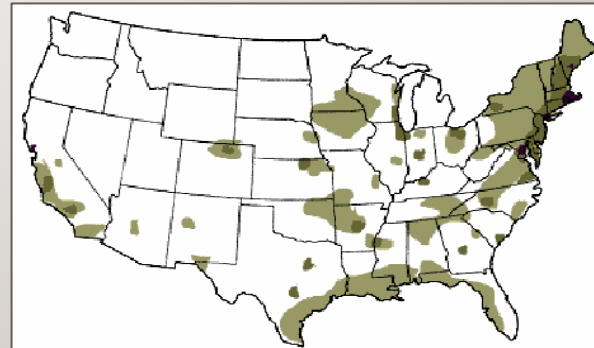




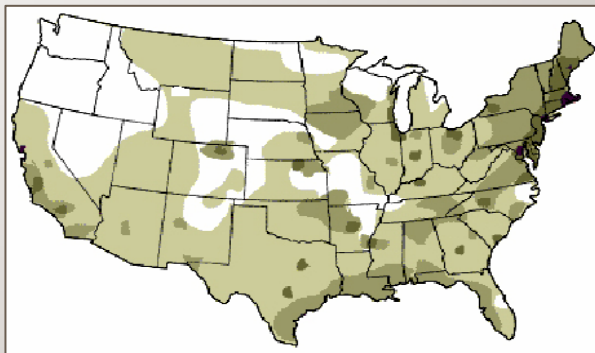
The 1918 Flu Pandemic Spread Rapidly (nearly all deaths in Q3 & Q4)



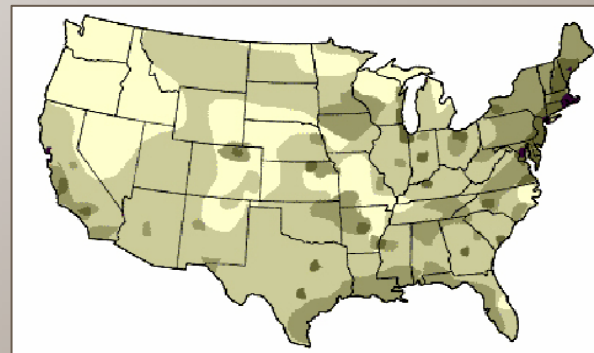
Through Sept. 21



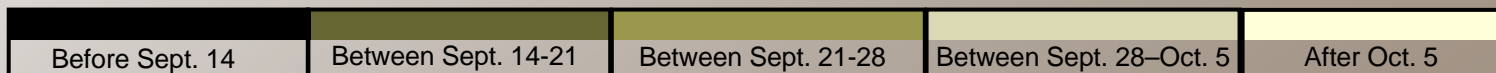
Between Sept. 21-28



Between Sept. 28–Oct. 5



After Oct. 5

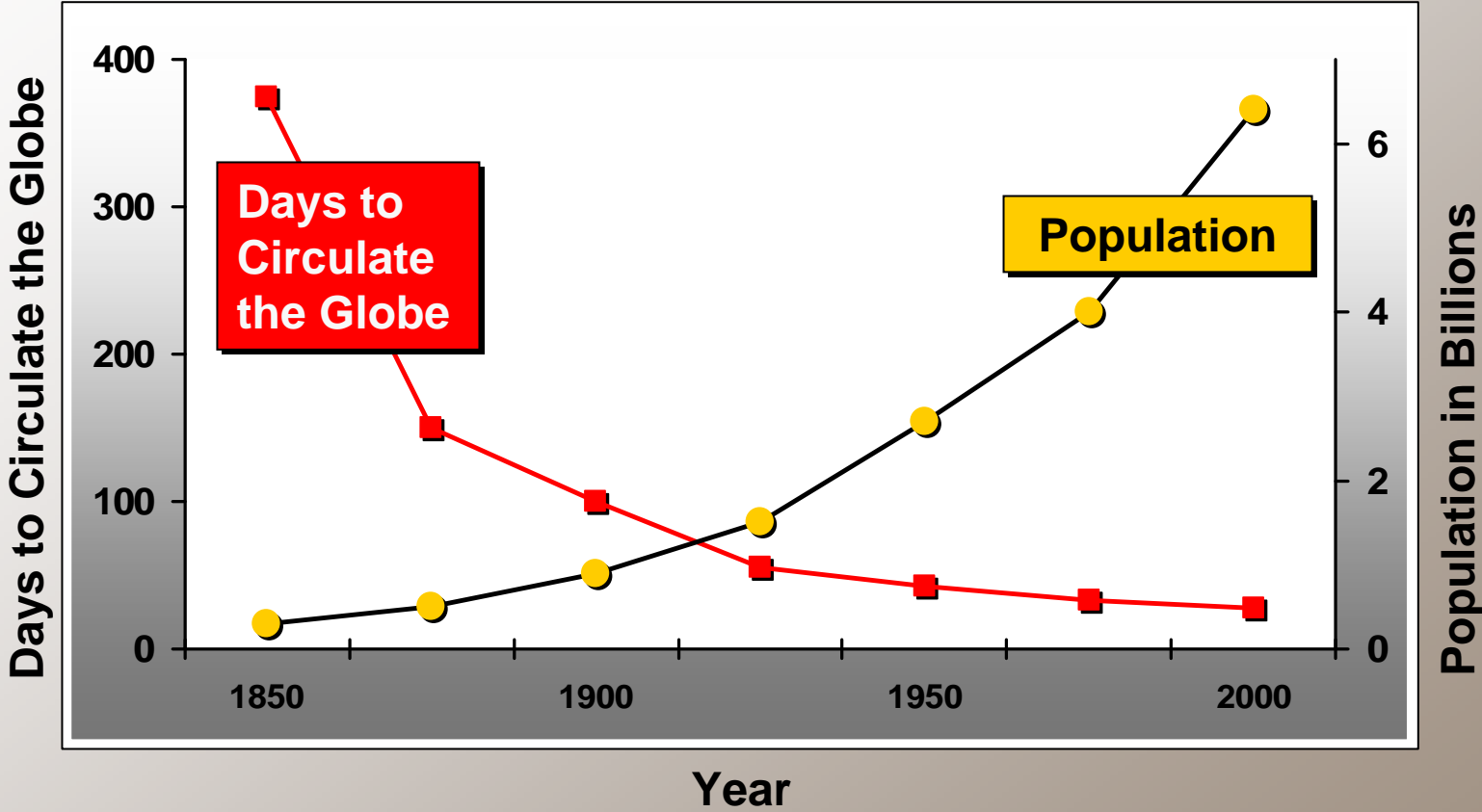


Source: America's Forgotten Pandemic – The Influenza of 1918-1919





The Amount of Time for Pandemics to Cross the Globe has Shortened Dramatically



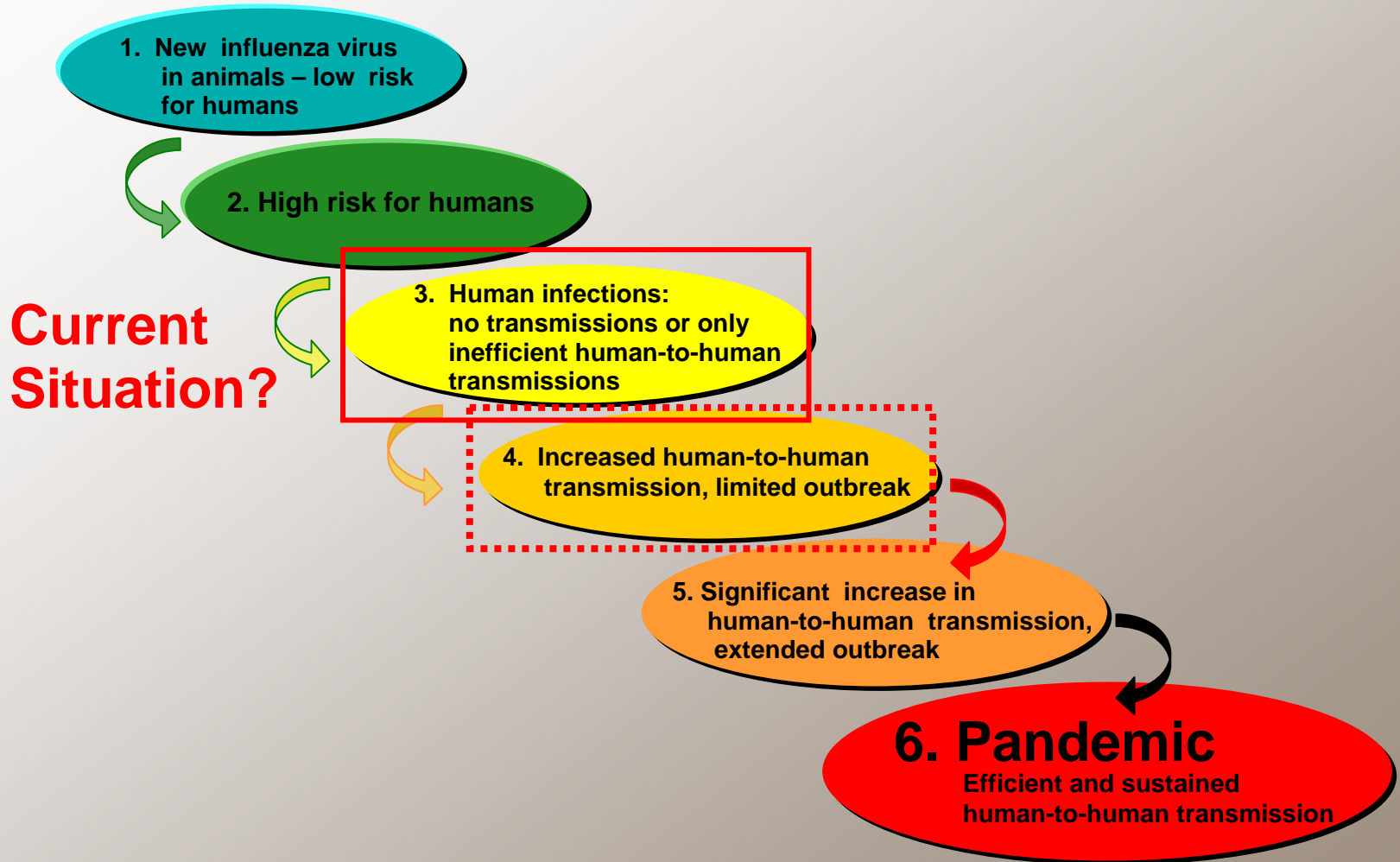
Source: Center for Infectious Disease & Research Policy





We Are at a Critical Juncture...

The Potential Development of an Influenza Pandemic



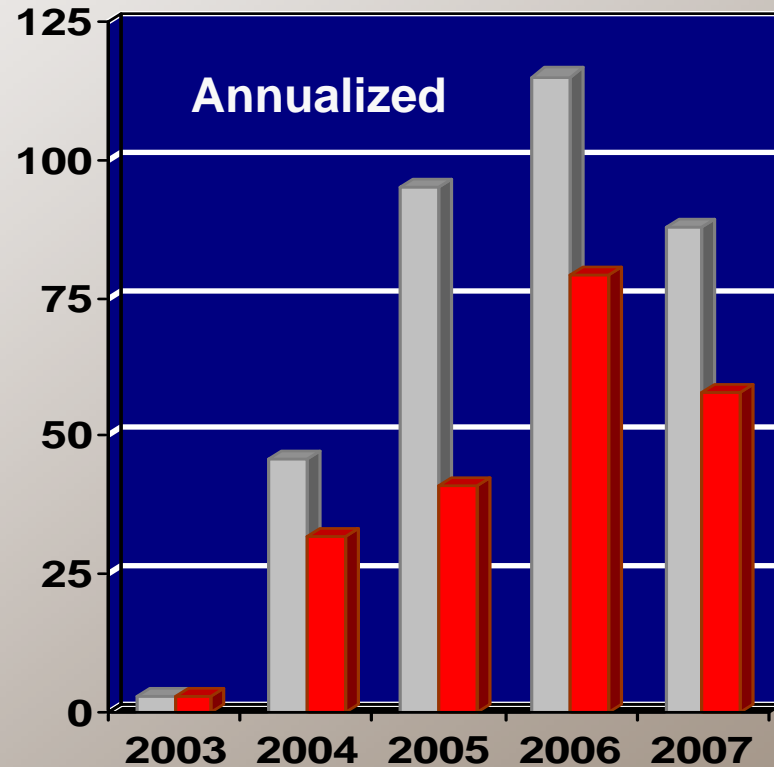
Source: World Health Organization (WHO), 2005





Relatively Large Number of Deaths From the Small Number of "Laboratory Confirmed" Cases* of the Current Avian Flu (H5N1)

SNAPSHOT 1/1/03 - 5/28/08		
Country	Cases	Deaths
Azerbaijan	8	5
Bangladesh	1	0
Cambodia	7	7
China	30	20
Djibouti	1	0
Egypt	50	22
Indonesia	133	108
Iraq	3	2
Lao People's Democratic Republic	2	2
Myanmar	1	0
Nigeria	1	1
Pakistan	3	1
Thailand	25	17



Source: World Health Organization (WHO)

■ Cases ■ Deaths

* Note: Number of actual cases is likely to be understated to the WHO





Business Continuity Considerations





Planning Considerations for Pandemic Differ from Other “Typical” Disaster Events

- ◆ Not an isolated or regional event
 - Impacts will be felt by most, if not all, areas of the country simultaneously
- ◆ Impacts people, not infrastructure
- ◆ Disaster in “slow motion”...building to full impact over weeks, not seconds
 - But only weeks, so critical to plan proactively
- ◆ Consider changes to business priorities during a pandemic
 - Customer impacts/expectations
 - Product offerings
 - Supply chain impacts
- ◆ Strategies for infection control, absenteeism, and subsequent waves





Expected Pandemic Impacts

- ◆ The U.S. healthcare system will be overwhelmed almost immediately
- ◆ Basic services interrupted - transportation, telecommunications, utilities, etc.
- ◆ Decreased capacity for governance and law enforcement
- ◆ Wide-spread public uncertainty, illness, and community disruption
- ◆ Higher than average employee absenteeism
- ◆ Supply-side and demand-side impacts in the market place





Pandemic Planning Assumptions

Important to review the leading opinions and estimates for the effects of pandemic influenza on people, business, and society.

- ◆ No one will have immunity. ^[1]
- ◆ The virus will be highly contagious from person to person. ^[2]
- ◆ The virus would spread widely in a very short time. ^[3]
- ◆ Recovery from the virus will take 10-14 days on average. ^[4]
- ◆ An effective vaccine will take at least six (6) months to be developed and there will be limited supplies of antiviral medication. ^[5]
- ◆ There is no expectation of federal intervention/assistance at the local level. ^[6]
- ◆ There will be multiple waves (2-3); each wave about eight (8) weeks in duration. ^[7]
- ◆ Illness rate of 30% in the general population for a major wave. ^[8]
- ◆ Estimated workplace absenteeism of 35%-40% during the two-week peak of the major wave. ^[9]
 - This includes the ill, suspected ill, recovering, 'worried well,' and those attending to family members.
- ◆ In the US, 90 million people will become ill; about 2 million deaths are expected. ^[10]
- ◆ The influenza virus is spread by contact or droplet—it is NOT an airborne virus ^[11]
- ◆ Quarantine of the general public (aimed at employees) is unlikely to be used by public health authorities. ^[12]
- ◆ Strive to employ effective, science-based strategies for infection control and response to pandemic influenza. ^[13]





Establishing a Framework for Pandemic planning, preparedness, and response helps link the choice of strategies to enterprise goals and objectives

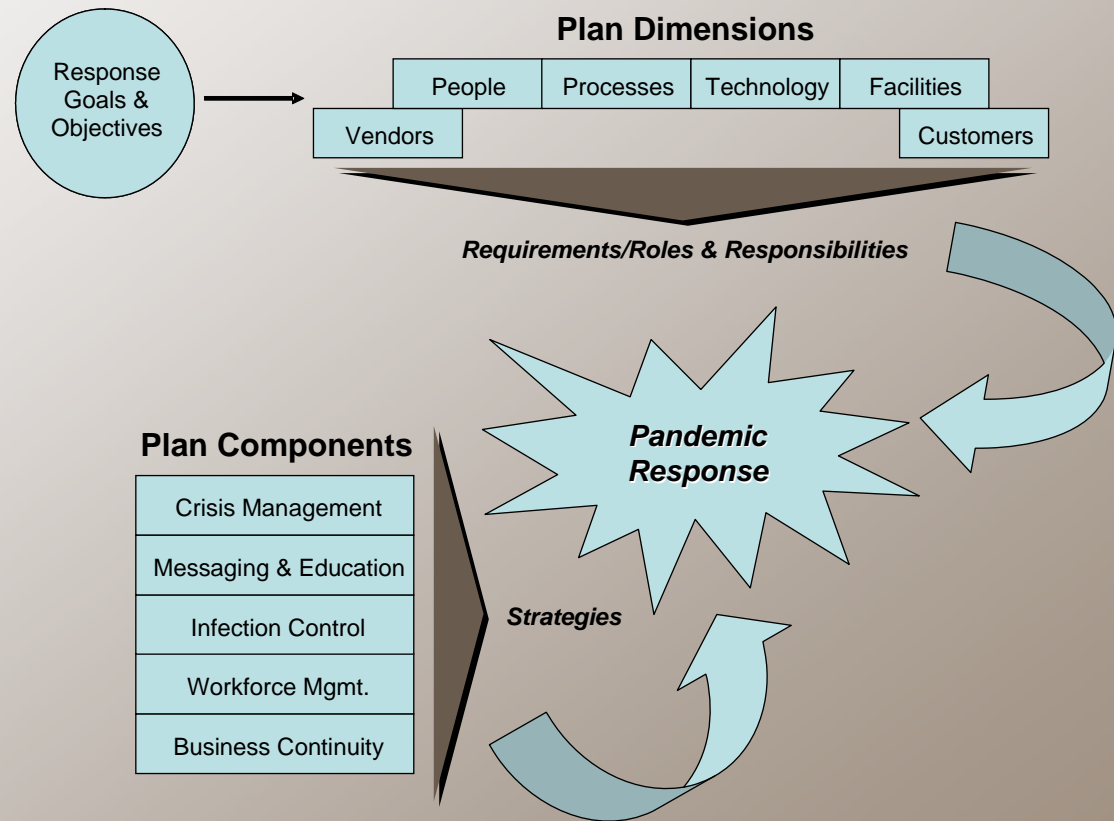
The Framework: consists of two key concepts – **Plan Components** and **Plan Dimensions**. These help examine requirements, strategies, roles, and responsibilities to address the challenges of pandemic influenza response

Plan Components:

- > Crisis Management
- > Employee Messaging and Education
- > Infection Control
- > Workforce Management
- > Business Continuity

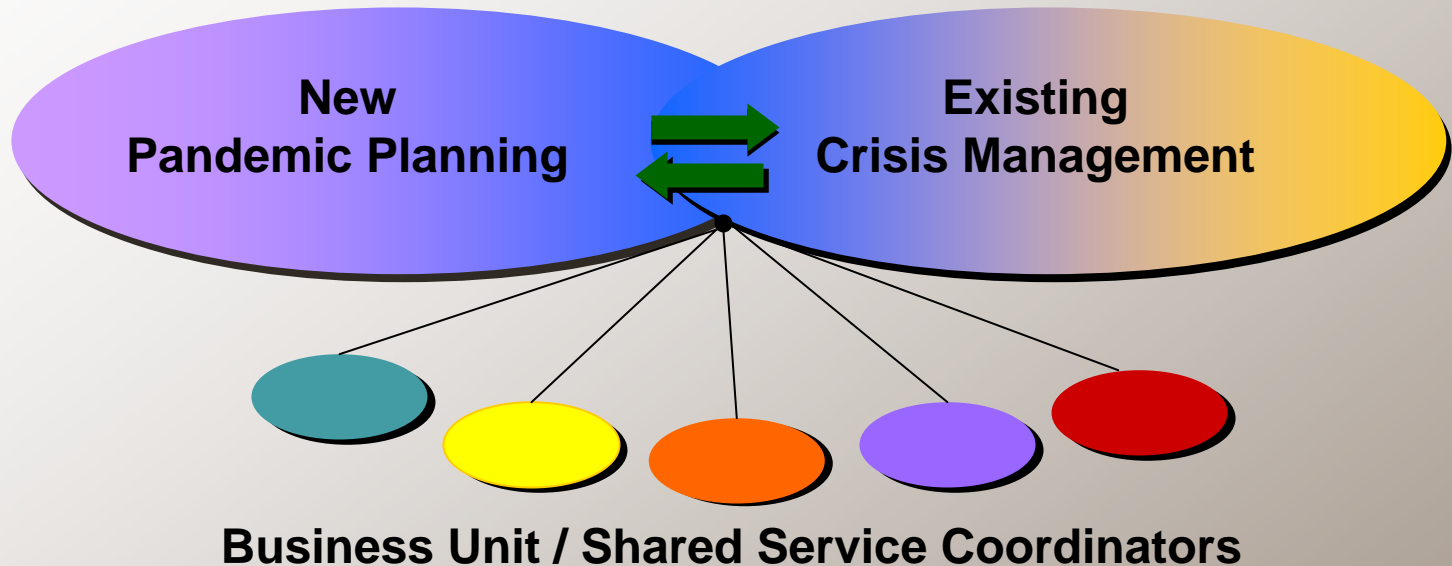
Plan Dimensions:

- > People
- > Processes
- > Technology
- > Facilities
- > Customers
- > Vendors





Pandemic Planning can Capitalize on Existing Crisis Management Processes



Critical Elements Include:

- Define and Focus on Mission Critical Processes
- Process Owners / Team Members / Back Ups
- Proactive Enrollment and Employee Education
- Ongoing Stress Testing





Overall Objectives Guide Development of the Supporting Response Strategies, for example...

GOALS & GUIDING PRINCIPLES

- ◆ Ensure the continued operation of critical business processes
- ◆ Protect and prepare our employees, agents, customers, vendors, and business operations
- ◆ Pandemic preparedness plan is aligned with leading fact-based opinion and plans of interrelated public and private sector entities



(continuum of potential response strategies)



OPEN FOR BUSINESS RESPONSE STRATEGY

Offices remain open with normal working hours for healthy employees. Consider...

- ◆ Provide a healthy workplace
- ◆ Employees responsible for infection control (education)
- ◆ Absences due to caring for others, school closings, transportation
- ◆ Fear of exposure to infection
- ◆ Process for ill to vacate workplace
- ◆ Process to track employee status
- ◆ Office closing could be mandated by public sector

WORK REMOTELY RESPONSE STRATEGY

Employees sent home; offices may be closed. Consider...

- ◆ Maintain critical processes remotely
- ◆ Manage increased demand for remote connectivity
- ◆ Outside restrictions on internet use
- ◆ Cannot manage employees' exposure in other public places
- ◆ Process to measure paid time off, disability, etc.
- ◆ Process to track employee status





U.S. Financial Services Industry Pandemic Exercise





Explanation of Exercise

During the three-week period of September 24 through October 12, 2007, over 2,700 companies participated in a “paper” Pandemic Exercise* sponsored by:

- ◆ the Financial Banking Information Infrastructure Committee (FBIIC);
- ◆ the Financial Services Sector Coordinating Council (FSSCC); and
- ◆ the U.S. Treasury Department.

** For more information on the Exercise, visit the web site at www.fspanfluexercise.com*





Purpose and Objectives

Purpose

- ◆ To help the financial services sector (and its related industries) to respond in the best possible way to a Pandemic. This will ensure that these sectors can meet such a challenge with minimal impact, which is critical to the sectors and the United States.

Objectives

- ◆ Enhance understanding of universal risks to companies and the financial services sectors during a Pandemic outbreak in the US.
- ◆ Enhance companies' preparedness by allowing them to "test" Pandemic Plans during the exercise.
- ◆ Examine how the effect of a Pandemic outbreak will impact other sectors which will then have an impact on financial services (identification of interdependencies).





Exercise Conditions

- ◆ Three-week duration; September 24 through October 12, 2007
- ◆ Participation was via email, through a secure website
 - Each participant was sent the same group of 60 to 90 multiple-choice questions each Monday for 3 weeks
 - Participants responded to questions via email each Wednesday
- ◆ Participants consolidated responses at the entity level
- ◆ Pandemic's level of severity increased over a 3-week period, with rising absenteeism rates as indicated:

Note: This scenario is slightly more severe than the 1918 Spanish Flu Pandemic.

Week of Exercise	Pandemic Weeks*	Absenteeism Level
1	1 - 2 of Pandemic	25%
2	3 - 6 of Pandemic	49%
3	7-10 of Pandemic	35%

** This represented the actual "paper" duration of the Pandemic in number of Weeks. For example, Week 2 of the Exercise corresponded to Weeks 3-6 of the simulated Pandemic.*





U.S. Financial Services Industry Pandemic Exercise

Scenario Highlights

Week 1 – September 24, 2007

◆ Pandemic Situation

- US Federal Government declares a Stage 5 Alert (See Slide 34, Human-to-human transmission spread throughout the US) as the H5N1 Virus is identified in 12 US cities, including Chicago
- Represented a 2-week timeline (September 24-October 7) of Pandemic

◆ Company/Business/School Environment

- 25% average absenteeism rate in US
- Residential Internet Service—throughput reduced to 50% of normal due to congestion; non real-time services (email, web browsing) experience timeouts; many servers unavailable
- 80% to 90% of K-12 schools, universities, colleges and daycare facilities in US are closed. Most urban schools continue basic education via Internet and television for children at home

◆ Impact on Insurance Industry

- 10% increase in Health Insurance Claims
- 3% decrease in Property/Casualty Insurance call volume
- Insurance companies receive larger volume of calls regarding whether Civil Disobedience Acts are covered under their Business Disruption Insurance policies
- Customers are experiencing degraded Call Center Service as Claim Center employees work from home

More detail can be found by accessing the Exercise website at www.fspanfluerexercise.com





U.S. Financial Services Industry Pandemic Exercise

Scenario Highlights

Week 2 – October 1, 2007

◆ Pandemic Situation

- US Federal Government maintains the Stage 5 Alert (See Slide 34, Human-to-human transmission spread throughout the US) as the H5N1 Virus is found in all major Metropolitan cities throughout the US with peak infection levels
- Represented a 4-Week Timeline (Oct 8-Nov 4) of Pandemic

◆ Company/Business/School Environment

- Increasing number of companies not paying employees who exhausted sick leave, vacation and other time off
- High absences in Call Centers; major delays; wait times doubled
- 49% average absenteeism rate in US
- All K-12 schools, universities, colleges and daycare systems are closed. Most universities and half of urban public schools are teaching via electronic media

◆ Impact on Insurance Industry

- 10% Increase in Property/Casualty Insurance call volume due to increase in crime
- 20% Decrease in Auto Insurance Claims; less road traffic
- Life Insurance claim volumes increase; deaths increase 1.3 per thousand

More detail can be found by accessing the Exercise website at www.fspanfluexercise.com





U.S. Financial Services Industry Pandemic Exercise Scenario Highlights

Week 3 – October 8, 2007

◆ **Pandemic Situation**

- US Federal Government declares a Stage 6 Alert (See Slide 34, Recovery and Preparation for Subsequent Waves) as Pandemic appears to be declining
- Represented a 4-week timeline (November 5-December 3) of Pandemic

◆ **Company/Business/School Environment**

- 35% average absenteeism rate in US
- Many firms stopped paying their employees who exhausted annual or sick leave
- Internet Service—throughput remains at 50% of normal
- K-12 schools, universities, colleges and daycare facilities consider reopening as absenteeism declines. However, most anticipate they will be delayed for another two to three weeks

◆ **Impact on Insurance Industry**

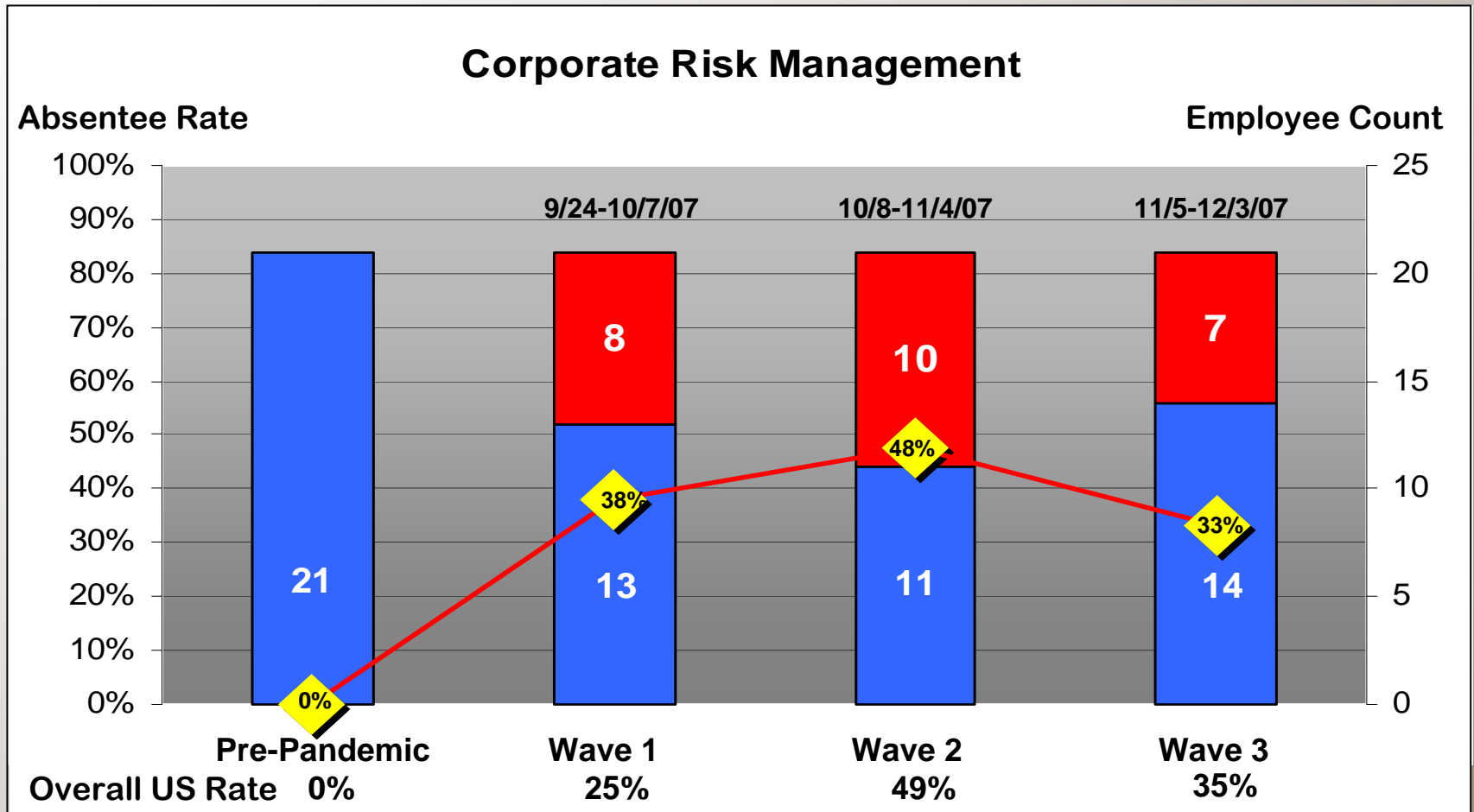
- Some small Life/Health Insurance Companies are experiencing liquidity problems as volumes of Deaths/Disability Claims increase
- Life insurers experience higher claim volumes as mortality rates continue to rise (7 deaths/thousand population; 0.7%)

More detail can be found by accessing the Exercise website at www.fspanfluexercise.com





U.S. Financial Services Industry Pandemic Exercise Absenteeism by Wave



LEGEND

- Working
- Absent

- Reasons for absence may include:
- ◆ Infected
 - ◆ Caring for others
 - ◆ Fear of infection at work
 - ◆ No access to transportation





Participation and Plan Information from Exercise Sponsors

2,775 organizations participated...

- ◆ 62% Banks/Credit Unions
- ◆ 25% Securities Firms, Regulators and Industry Associations
- ◆ 11% Insurance Companies
- ◆ 2% Other Utilities (i.e., power, gas, Internet providers)

- ◆ 2% Companies have 25,000 to 50,000 employees
- ◆ 69% Companies have less than 250 employees
- ◆ 28% Companies have 250 to 25,000 employees
- ◆ 1% Companies have 50,000 to 100,000 or more employees

- ◆ 64% Organizations have Pandemic Plans
- ◆ 55% Organizations will rely significantly on Work-at-Home capabilities during Pandemic Peak (Week 2 scenario with 49% absenteeism)
- ◆ 42% Organizations have Pandemic-Related Human Resources Plans

- ◆ 99% Organizations indicated:
 - Exercise met its stated objectives
 - Exercise was useful to their organization for assessing their Pandemic planning needs

More detail can be found by accessing the Sponsors' After Action Report at www.fspanfluexercise.com





Key Learnings and Conclusions – General Preparedness

- ◆ While there will be significant impacts, the financial services sector will continue to operate and cope with these impacts
 - The larger firms have planned extensively for a pandemic, with “little” impact on some operations for short periods at 25-35% absenteeism
 - Only ~10% of life insurers expected a significant solvency impact from increased claims levels

- ◆ Self-assessments of existing pandemic plans indicated
 - 56% judged moderately effective
 - 28% judged minimally effective
 - Remainder either very (12%) or not at all (4%) effective

- ◆ Financial organizations of different sizes will have different responses, e.g.,
 - More telecommuting planned in large organizations, more social distancing strategies in small-medium organizations
 - Insufficient cross-training more of an issue in large companies
 - Smaller departments are more susceptible to volatility in employee absences (could be positive or negative)

More detail can be found by accessing the Sponsors' After Action Report at www.fspanfluerexercise.com





Key Learnings and Conclusions – Plan Enhancement Opportunities

- ◆ Testing of computer systems for telecommuting to perform critical functions remains an issue
 - Testing generally done for less than half (large) or less than 5% (small) of staff
- ◆ Better understanding of the interdependencies with other sectors, but warrants further attention
 - Plans for telecommunications, utilities/power, IT service interruptions minimally-moderately effective
- ◆ More than 80% indicated communication plans were in place for employees, customers, and suppliers, but...
 - Communication plans are generally only minimally effective
 - Existing HR policies also judged to be minimally effective in meeting workforce needs during a pandemic
- ◆ Issues to address in ability to maintain some critical minimum processes often include...
 - Maintaining necessary call center customer service levels
 - Life insurance new business issuance and underwriting
 - Online customer service and telecommunications traffic
 - Sub-teams need to be prepared for staffing fluctuations likely to occur during a pandemic cycle

More detail can be found by accessing the Sponsors' After Action Report at www.fspanfluexercise.com





Future Considerations

- ◆ Review and assess pandemic plans of vendors that support operations
- ◆ Evaluate the potential effectiveness of telecommuting plans
 - Review the availability and prioritization of network traffic with authorities and telecommunications service providers
- ◆ Consider impacts of a pandemic on the financial markets
- ◆ Consider ability of reinsurers to perform on additional claims and quantify increase in mortality the company could withstand and still remain solvent

TAKE ACTION!

- **Participating companies – address plan shortcomings now**
- **Others – can use the exercise information to test pandemic plans**

More detail can be found by accessing the Sponsors' After Action Report at www.fspanfluexercise.com

