Pandemic Influenza

Pandemic Context and Planning

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Alternating Heads of Beds and Masks, Supposed Preventives

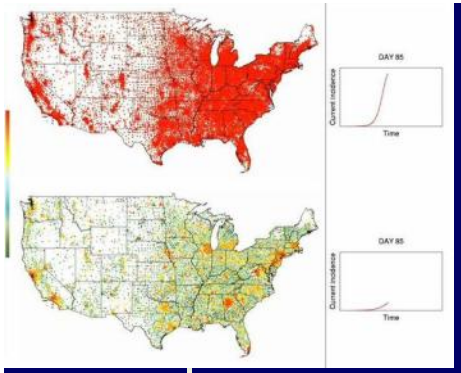
Influenza Pandemic Context

Influenza Pandemics during the 20th Century

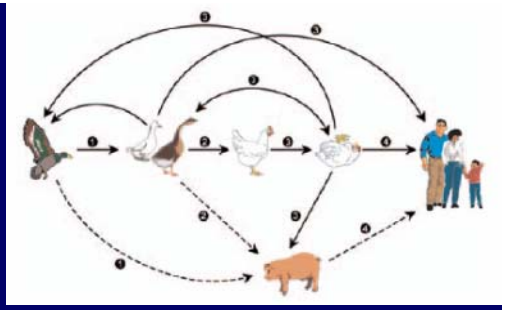
1918-19, "Spanish flu," [A (H1N1)], caused the highest number of known influenza deaths. (However, the actual influenza virus subtype was not detected in the 1918-19 pandemic). More than 500,000 people died in the United States , and up to 50 million people may have died worldwide.

1957-58, "Asian flu," [A (H2N2)], caused about 70,000 deaths in the United States . First identified in China in late February 1957, the Asian flu spread to the United States by June 1957.

1968-69, " Hong Kong flu," [A (H3N2)], caused about 34,000 deaths in the United States . This virus was first detected in Hong Kong in early 1968 and spread to the United States later that year. Influenza A (H3N2) viruses still circulate today.

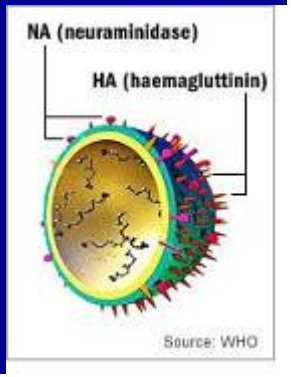


Influenza Pandemic Context



How is Seasonal Flu different from Pandemic…?

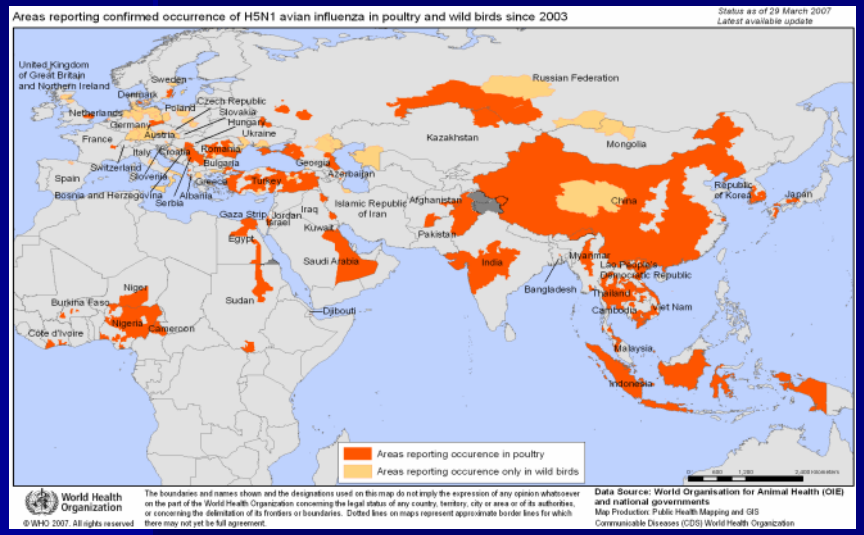
- ***Seasonal (or common) flu*** **is a respiratory illness that can be transmitted person to person. Most people have some immunity, and a vaccine is available.**
- ***Avian (or bird) flu*** **is caused by influenza viruses that occur naturally among wild birds. The H5N1 variant is deadly to domestic 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.**

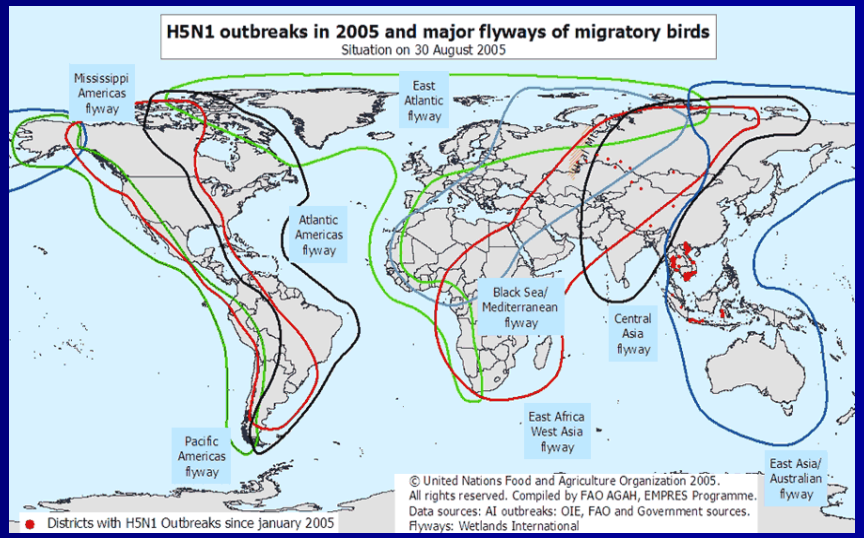


Influenza Pandemic Context

Avian Flu Is Not the Same as Human Pandemic Flu…

- Birds have probably had influenza viruses for centuries
- Vast majority of avian influenza viruses do not affect humans
- Pandemic potential comes from an influenza virus where:
  - A new influenza A virus emerges for which there is little or no immunity in the human population,
  - begins to cause serious illness and
  - then spreads easily person-to-person worldwide.





Influenza Pandemic Context

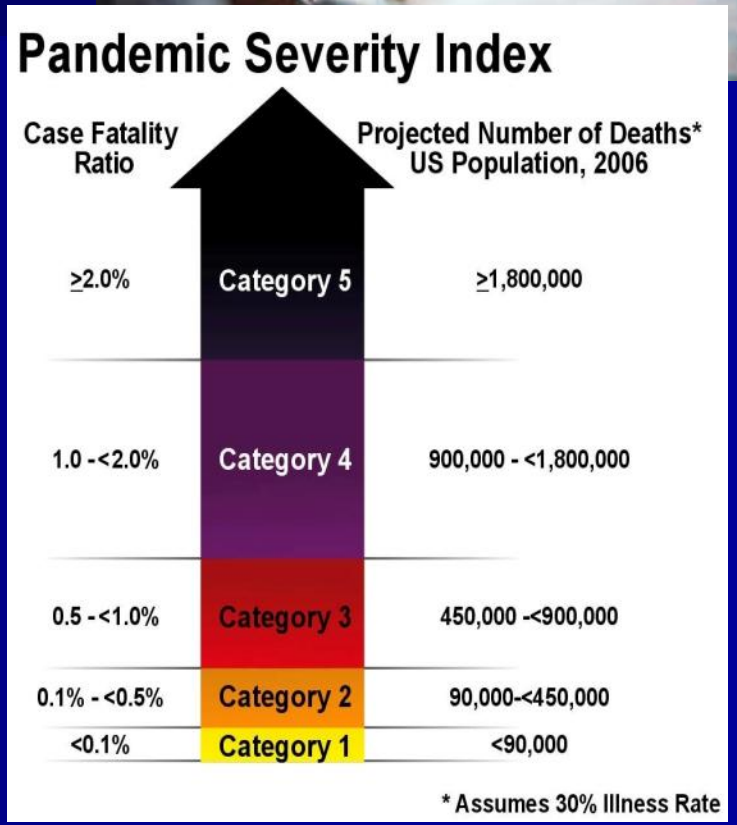
WHO and USG Current Pandemic Phase/Stage

WHO Phases		Federal Government Response Stages	
INTER-PANDEMIC PERIOD			
1	No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human disease is considered to be low.	0	New domestic animal outbreak in at–risk country
2	No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.		
PANDEMIC ALERT PERIOD			
3	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.	0	New domestic animal outbreak in at–risk country
		1	Suspected human outbreak overseas
4	Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.	2	Confirmed human outbreak overseas
5	Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).		
PANDEMIC PERIOD			
6	Pandemic phase: increased and sustained transmission in general population.	3	Widespread human outbreaks in multiple locations overseas
		4	First human case in North America
		5	Spread throughout United States
		6	Recovery and preparation for subsequent waves

www.who.int/csr/disease/avian_influenza/phase/en/index.html
www.pandemicflu.gov

Pandemic Severity Index

- Similar to the system for categorizing the strength of hurricanes, the CDC interim guidance introduces a **Pandemic Severity Index.**
  - Uses fatality ratio as the critical driver for forecasting a pandemic's severity.
  - Allows for better forecasting the impact of a pandemic
  - Enables recommendations to be made regarding trigger points and scope of mitigation strategies and interventions.



Interventions Tied to Index

- The Pandemic Severity Index provides businesses and communities a tool for scenario-based contingency planning to guide their pandemic preparedness efforts.
- The matrix summarizes the recommended strategies for families, schools, and workplaces. keyed to the severity index.

	Pandemic Severity Index		
Interventions by Setting	**1**	**2 and 3**	**4 and 5**
Home			
Voluntary isolation of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	Recommend[2,3]	Recommend[2,3]	Recommend[2,3]
Voluntary quarantine of household members in homes with ill persons[4] (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider[5]	Recommend[5]
School			
Child social distancing			
-dismissal of students from schools and school-based activities, and closure of childcare programs	Generally not recommended	Consider: ≤4 weeks[6]	Recommend: ≤12 weeks[7]
-reduce out-of-school social contacts and community mixing	Generally not recommended	Consider: ≤4 weeks[6]	Recommend: ≤12 weeks[7]
Workplace / Community			
Adult social distancing			
-decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)	Generally not recommended	Consider	Recommend
-increase distance between persons (e.g., reduce density in public transit)	Generally not recommended	Consider	Recommend
-modify or cancel selected public gatherings to promote social distance (e.g., postpone indoor stadium events)	Generally not recommended	Consider	Recommend
-modify work place schedules and practices (e.g., telework, staggered shifts)	Generally not recommended	Consider	Recommend

Influenza Pandemic Context

3 modes of virus transmission include:

- ***Droplet transmission*** **occurs when contagious droplets produced by the infected host through coughing or sneezing are propelled a short distance and come into contact with another person's conjunctiva, mouth, or nasal mucosa.**

- ***Airborne transmission*** **occurs when viruses travel on dust particles or on small respiratory droplets that may become aerosolized when people sneeze, cough, laugh, or exhale.**

  They can be suspended in the air, travel on air currents over considerable distances, and while the virus is highly vulnerable to changing environmental conditions (heat, humidity, chemicals) direct contact with someone who is infected is not absolutely necessary to become ill.

- ***Contact Transmission: Two Types***

Direct: involves body-to-body surface contact

Indirect: occurs via contact with contaminated intermediate objects, such as contaminated hands, or inanimate objects (fomites), such as countertops, door knobs, telephones, towels, money, clothing, dishes, etc.

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Johns Hopkins Bloomberg School of Public Health

Influenza Pandemic Context

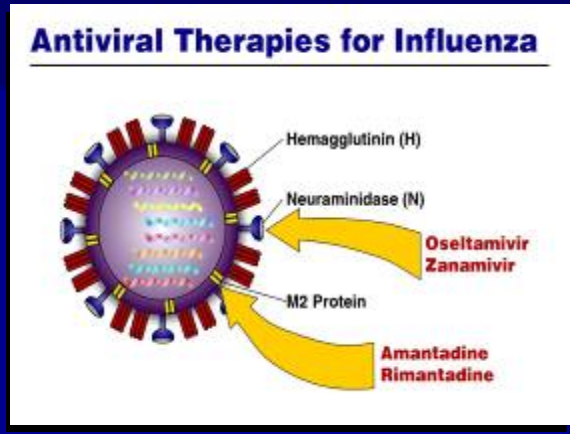
Vaccine Issues, Production and Availability…

- Current "standard" vaccine reflects 1950's technology
  - grown in chicken eggs and virus can be lethal to eggs
  - takes 6 months or more to produce
  - use of "reverse genetics" to develop prototype vaccine virus
- Cell-based and DNA-based vaccines being explored
- Will still require circulating pandemic strain for final vaccine production….and then 6 months
- With current world vaccine production capacity, only a small percentage of the world's population can be vaccinated in the first year of a pandemic.
- New research on vaccine adjuvants may improve vaccine efficiency and thus increase the numbers of persons who can be vaccinated.

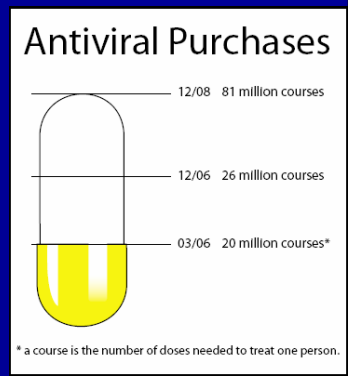
Influenza Pandemic Context

Antiviral Medications Issues and Availability…

- **Benefit of antivirals:**
  - May be useful in both treatment and prevention
- **Issues:**
  - Resistance to amantidine, least expensive and most widely available drug
  - ? Emerging resistance to Tamiflu
  - Use of Relenza limited to specific populations
  - No guarantee that eventual pandemic strain would retain its sensitivity to existing drugs



- **Availability:** The Department of Health and Human Services (HHS) is stockpiling antiviral drugs and is allocating them to states based on population. Purchases in FY2006 will bring the nation's stockpile of antivirals to 20 million courses by the end of this year (a course is the supply needed to treat one person). State antiviral allocations from the national stockpile are listed at www.pandemicflu.gov/state/antivirals.html



Influenza Pandemic Context

Although the use of surgical or procedure masks by asymptomatic individuals in community settings has not been demonstrated to be a public health measure to decrease infections during a community outbreak, persons may choose to wear a mask as part of individual protection strategies that include cough etiquette, hand hygiene, and avoiding public gatherings… HHS

Personal Protective Equipment (PPE)

- **Surgical masks**
  - Easily available and commonly used for routine surgical and examination procedures
- **High-filtration respiratory mask**
  - Special microstructure filter disc to flush out particles bigger than 0.3 micron. These masks are further classified:
    - oil proof
    - oil resistant
    - not resistant to oil
  - The more a mask is resistant to oil, the better it is
  - The masks have numbers beside them that indicate their filtration efficiency. For example, a N95 mask has 95% efficiency in filtering out particles greater than 0.3 micron under normal rate of respiration.

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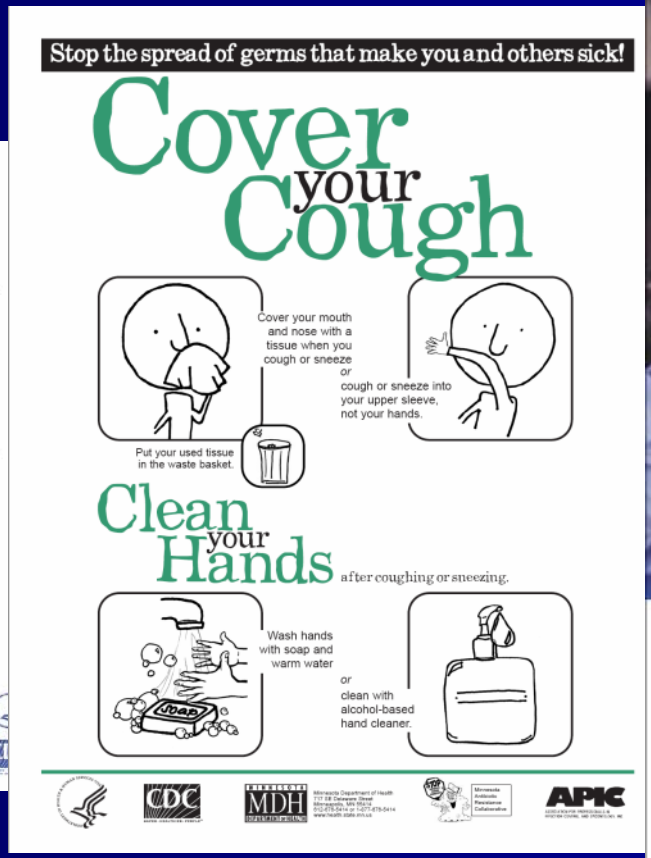
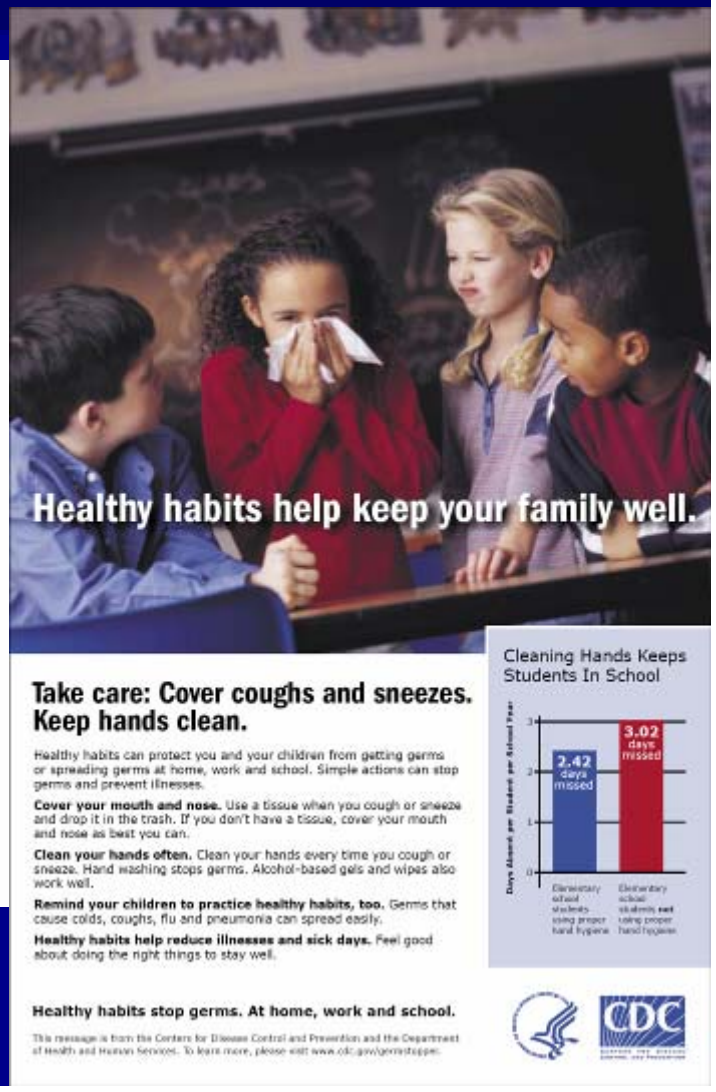
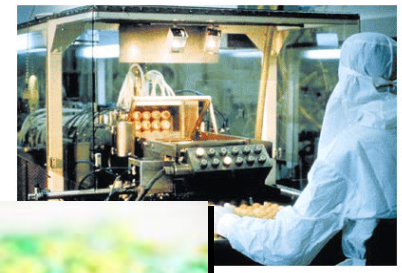
Everyday infection control methods may be the most effective means for individuals and businesses to prevent or limit influenza transmission…





Pandemic Planning Context

Key Health Planning Assumptions, how will these affect businesses?



- **Vaccines:** No medical "silver bullet", vaccines and antiviral drugs will be unavailable or not in sufficient quantities to treat most workers for at least the first wave.

- **Absenteeism:** Dramatic worker absenteeism at all levels (30-50%), from top management through front-line worker (e.g. illness, ill family member care, death, child care due to school closings, and worried well).

- **Scope:** Near-simultaneous outbreaks will rapidly sweep across the nation involving both urban and rural populations.

- **Duration:** 6-8 weeks per wave per community, with multiple waves at 3-6 month intervals over a period of 12-18 months or more.

Mitigation Strategies

What they Mean for Business

The CDC has issued interim **Community Mitigation Strategies** to use alongside individual control Measures such as **social distancing**, **hand washing**, **PPE use**, and **cough etiquette**. The proposed strategies are:

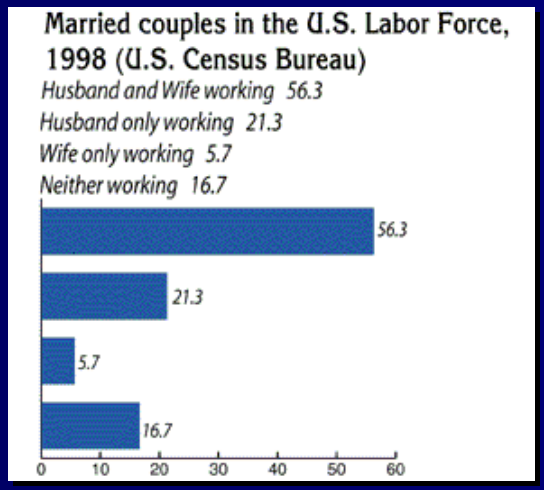
- **Voluntary isolation** (home or healthcare setting) of all persons with confirmed or probable pandemic flu coupled with influenza antiviral medication treatment, as appropriate.
- **Voluntary home quarantine** of households with confirmed or probable influenza cases combined with the preventative use of antiviral medications, when available.
- **Dismissal of students** from schools, colleges, and universities and school-based activities and closure of childcare programs coupled with community social distancing strategies for children.
- **Social distancing of adults in the community and workplace**, including canceling large public gatherings; altering workplace environments; and instituting flexible leave polices.

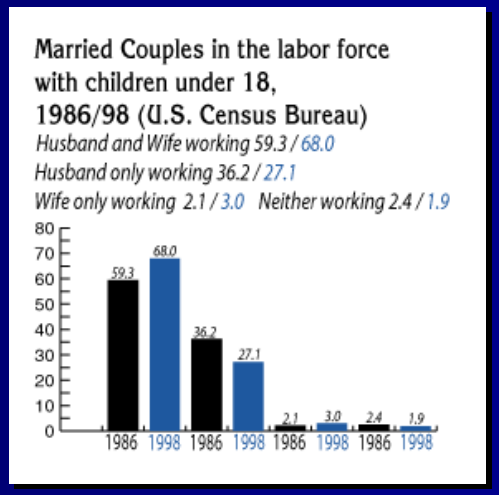
For a copy of the full CDC Planning Guidance, log on to **www.pandemicflu.gov**.

Pandemic Planning Context

Implications for CI/KR Businesses? *28.8% of families with children under 18 years are single-parent maintained…*

- **Employment Characteristics of Families in 2004*:**
  - **Total Families with own children under 18 years: 35, 379,000**
  - **Families maintained by women (single parent): 8,161,000**
  - **Families maintained by men (single parent): 2,043,000**
  - **Total Mothers with own children under 3 years old: 9,345,000**
  - **Without spouse with own children under 3 years old: 2,274,000**





*Bureau of Labor Statistics www.bls.gov/news.release/pdf/famee.pdf

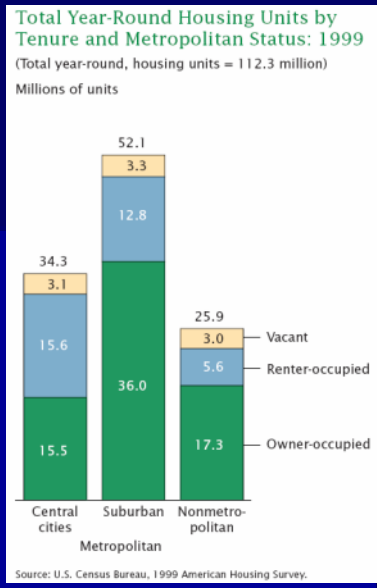
**Does not include 10 million plus unauthorized immigrants in the U.S. – Washington Post

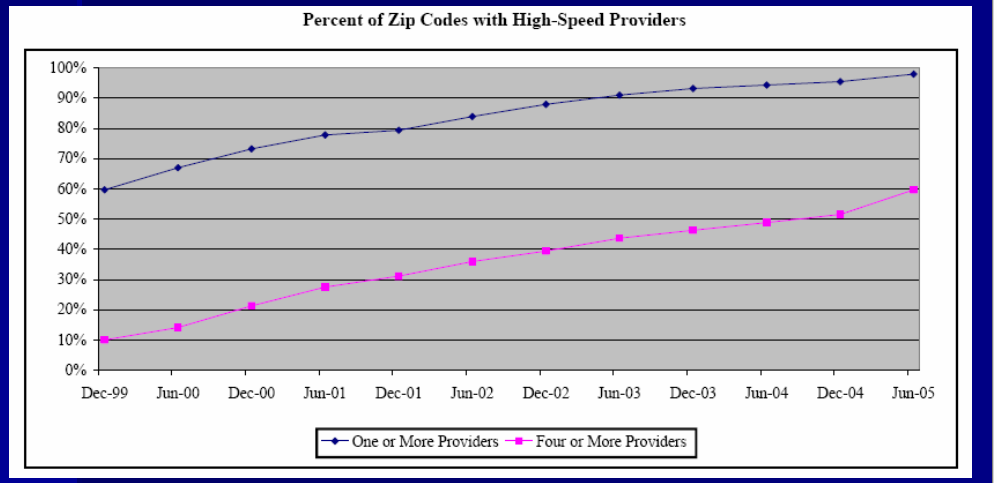
US Census Bureau www.census.gov/population/www/

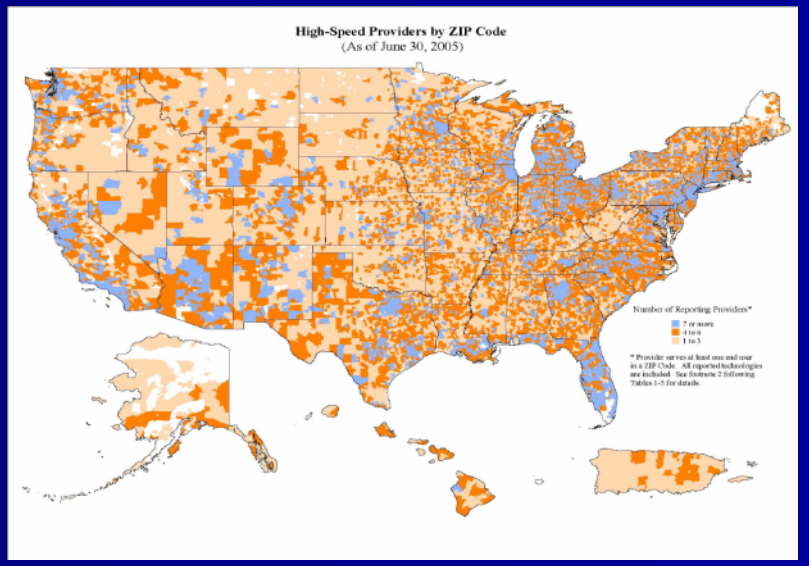
Pandemic Planning Context

Implications for CI/KR Businesses? ***high-speed internet providers reach 98% of zip codes, but less than 1/3 of homes & businesses are connected…***

FCC- Lines connecting homes and businesses to the Internet at transmission speeds that exceed 200 kbps in *both* directions increased from 28.9 million lines to 37.7 million lines during the first half of 2005.







FCC- www.hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-255669A1.pdf

Homeland Security Council's Pandemic Implementation Plan

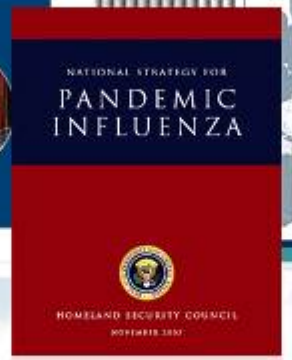
9.1.3.2: DHS, in coordination with all the Sector-Specific Agencies, shall develop and coordinate guidance regarding business continuity planning and preparedness with the owners/operators of critical infrastructure and develop a ***Critical Infrastructure Influenza Pandemic Preparedness, Response, and Recovery Guide*** tailored to national goals and capabilities and to the specific needs identified by the private sector. **Released September 2006** http://pandemicflu.gov/plan/pdf/cikrpandemicinfluenzaguide.pdf

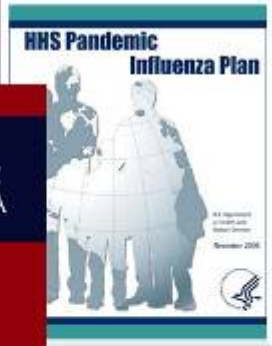
9.1.2.1: DHS, in coordination with Sector-Specific Agencies, critical infrastructure owners and operators, and States, localities and tribal entities, shall develop ***sector-specific planning guidelines*** focused on sector-specific requirements and cross-sector dependencies.

PANDEMIC INFLUENZA PLANNING TOOLKIT

PandemicFlu.gov Avian Flu.gov

- Critical Infrastructure & Key Resources (CI/KR) Pandemic Influenza Sector Guidelines
- CI/KR Sector-Specific Pandemic Influenza Business Planning Essential Considerations
- Business Pandemic Influenza Planning Checklist
- State & Local Pandemic Influenza Planning Checklist
- Colleges and Universities Pandemic Influenza Planning Checklist
- Pandemic Influenza Planning: Guide for Individuals and Families



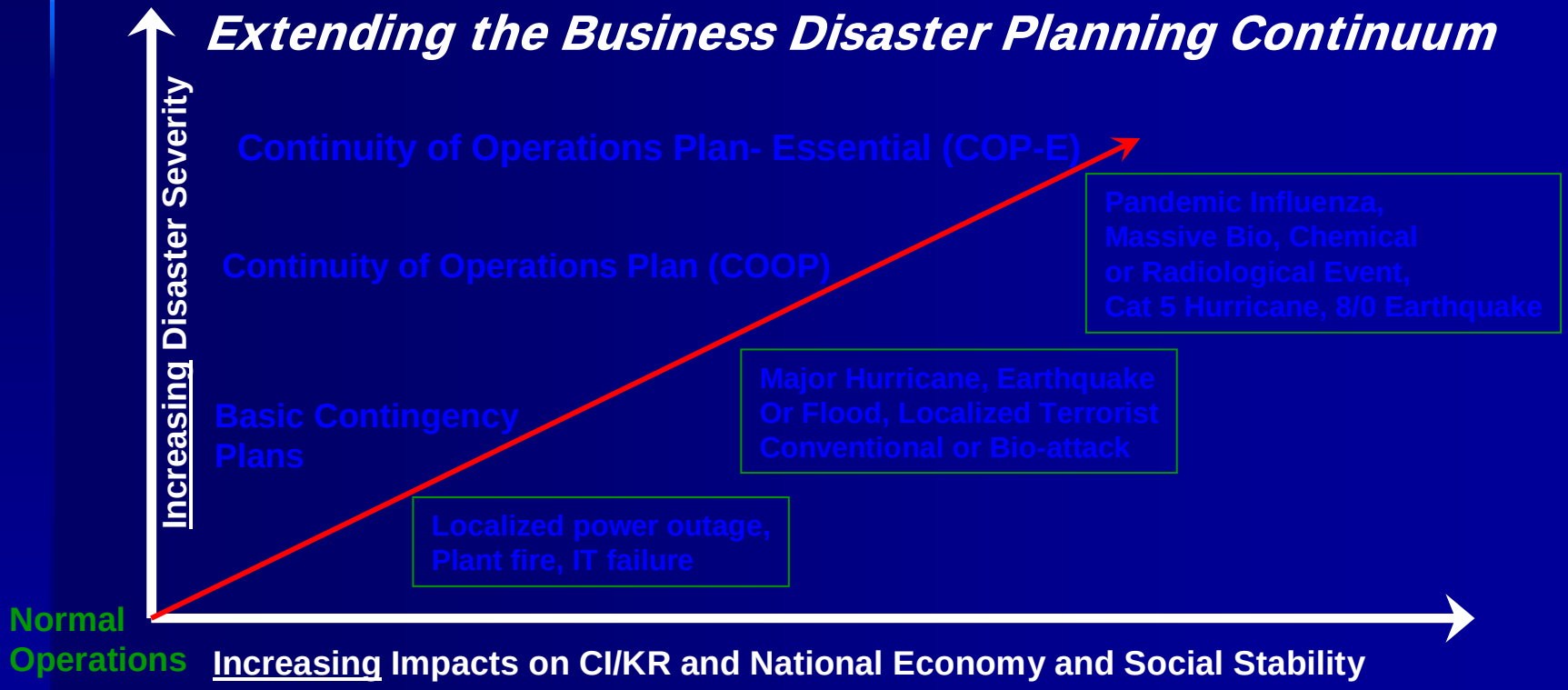


Business Continuity in a Pandemic Age

Continuity of Operations Plan-Essential (COP-E)

Supporting Businesses to Refine their Existing Plans to Account for a Catastrophic Disaster

Extending the Business Disaster Planning Continuum



Essential Goods/Products and Services:

The Maritime sub-sector is primarily a service sector whose chief purpose is the movement of people and others' goods. The transportation sector generally does not define the criticality or priority of the others' goods that they transport.

- What impacts will the pandemic disease have on Maritime operations affecting passengers, cargo and supporting operations?

- What impacts will potential changes in others' workplace operations have on passenger and cargo movement demands?




Essential Functions and Processes:

In supporting the transportation of people and critical goods, the essential components and operational characteristics of the Maritime sub-sector's critical functions include:

- Receive, Hold and Manage the Transport of Passengers and Goods
- Customer Service and Support
- Port and Intermodal Transfer Operations
- Scheduling and Dispatch
- Transport and Delivery
- HAZMAT and Specialty Transport
- Business and HR Support Operations
- Maintain Critical Equipment (mobile and fixed)
- Passenger, Cargo and Worker Safety and Security

Essential Assets and Equipment:

- **Identify equipment that must be available and operational 24/7 and/or at key periods to sustain critical functions.**
- **Prepare for the worst-case scenario by planning to rely only on in-house or available local resources for up to 12 weeks during a pandemic wave.**
- **Review all systems to include all their primary and supporting components to identify potential single-point failures and cascading consequences.**
- **What critical equipment/systems must be operational throughout a pandemic to support the critical functions identified?**
  - *Ships*
  - *Transfer Equipment for people and bags*
  - *Customer Ticketing and Electronic Interface*
  - *Telecommunications for Dispatch, Movement Monitoring and Safety*
  - *Computers and Internet*

Essential Assets and Equipment (cont.):

- **What are the most critical operational and maintenance requirements to sustain this critical equipment/system?**

  - *Adequate Critical Merchant Mariner Availability*
  - *Critical Ship Engine and Mariner Life Safety Support Equipment*
  - *Sustained Port Operations for Cargo and Housekeeping*
  - *Fuel and Stores Replacement*
  - *Maintenance and Repair Parts*
  - *Schedule and Dispatch Resilience*

Critical Materials/Supplies:

- **Identify supplies and materials necessary to support the most critical primary and supporting operations and equipment.**
- **Identify costs and creative options to reduce supply demands and/or required availability.**
- **Assess all internal and external supply-chain support operations and contract arrangements, to include potential 1st-, 2nd-, and n-order vulnerabilities to your internal and external supply chain.**
- **What critical materials/supplies must be available, in what quantities and how accessible during a pandemic to sustain critical functions and equipment? Plan for 12 weeks.**
  - Fuel
  - Lubricants
  - Replacement and Repair Parts
  - Electronics
  - Food and Water

Essential Workers:

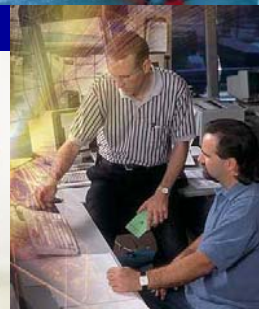


- **What are the worker types essential to sustain the most critical functions and equipment?**

- *Captains* or *masters*
- *Deck officers* or *mates*
- *Pilots*
- *Ship engineers*
- *Passenger hotel, traveler and administrative support personnel*
- *Port Operators:* ***workers who process the passengers and handle the baggage and ship stores,*** *licensed medical providers, material movement drivers , information technology specialists, food and fuel supply workers and unskilled laborers including tax and bus drivers..*
- *Operations Supervisors*
- *Executive Management*

- **How many workers are typically required and available in each critical category?**





Essential Workers (cont.):

- **Consider options to sustain and reduce the vulnerability of the most essential workers?**
  - Increase the numbers of available essential workers.
  - Reduce the operational demands on essential workers.
  - Temporarily augment essential worker ranks.

- **What HR and other actions may be taken to sustain the critical workforce, and are there any significant legal considerations arising out of these HR actions?**

- **What environmental and personal protection methods are planned for a pandemic—vaccine and antiviral priority, personal protective equipment (PPE) use?**

Essential Interdependencies:

- **What are the supply-chain, external contract, municipal support and other interdependencies that must be sustained in order to ensure critical functions?**
- **What actions may be taken to sustain interdependent support?**
  - Electricity
  - Water and Wastewater
  - Hazardous Material Disposal
  - Fuel (gasoline and diesel)
  - Telecommunications
  - Roadway/Bridge Emergency Management
  - Healthcare and First Responder Support

Regulatory Issues:

- **What are the international, federal, state and local regulatory requirements which may impact operations during a pandemic?**

- **What regulatory relief for the business and/or what temporary regulations on customers may be necessary to sustain operations?**

- Officer and Operator Licensure (temporary waiver for specific licensure requirements)

- Special Mariner/Ship Identification (special permits to identify critical workers, and to expedite critical goods transport to ports)

Impacts of Community Mitigation Strategies:

- **What direct and indirect impacts will the CDC mitigation strategies and other potential community pandemic response measures have on the business, workforce, and on worker families?**

www.pandemicflu.gov/plan/community/commitigation.html

- Self Isolation
- Voluntary Home Quarantine
- Student Dismissal
- Social Distancing
- Cancel Large Public Gatherings
- Alter Workplace Environments
- Workplace Leave Policies

Web Contacts

International: www.who.int/csr/disease/influenza/pandemic/en/
U.S. Government Pandemic: www.pandemicflu.gov
DHS Pandemic contact: dhspandemic@dhs.gov