

Transportation and Public Health

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TRB Policy Panel

January 13, 2016



NATIONAL ACADEMY OF MEDICINE

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Overview

Transportation's effects on health & disease

- Transportation-related injuries and fatalities
- Transportation and the spread of disease
- Transportation's environmental footprint and adverse health effects

Transportation to enable health improvement

- Importance of promoting healthy and safe transportation options
- Transportation enables access to healthcare
- Transportation as means to enhance mobility for elderly & disabled



Transportation-related injuries and fatalities

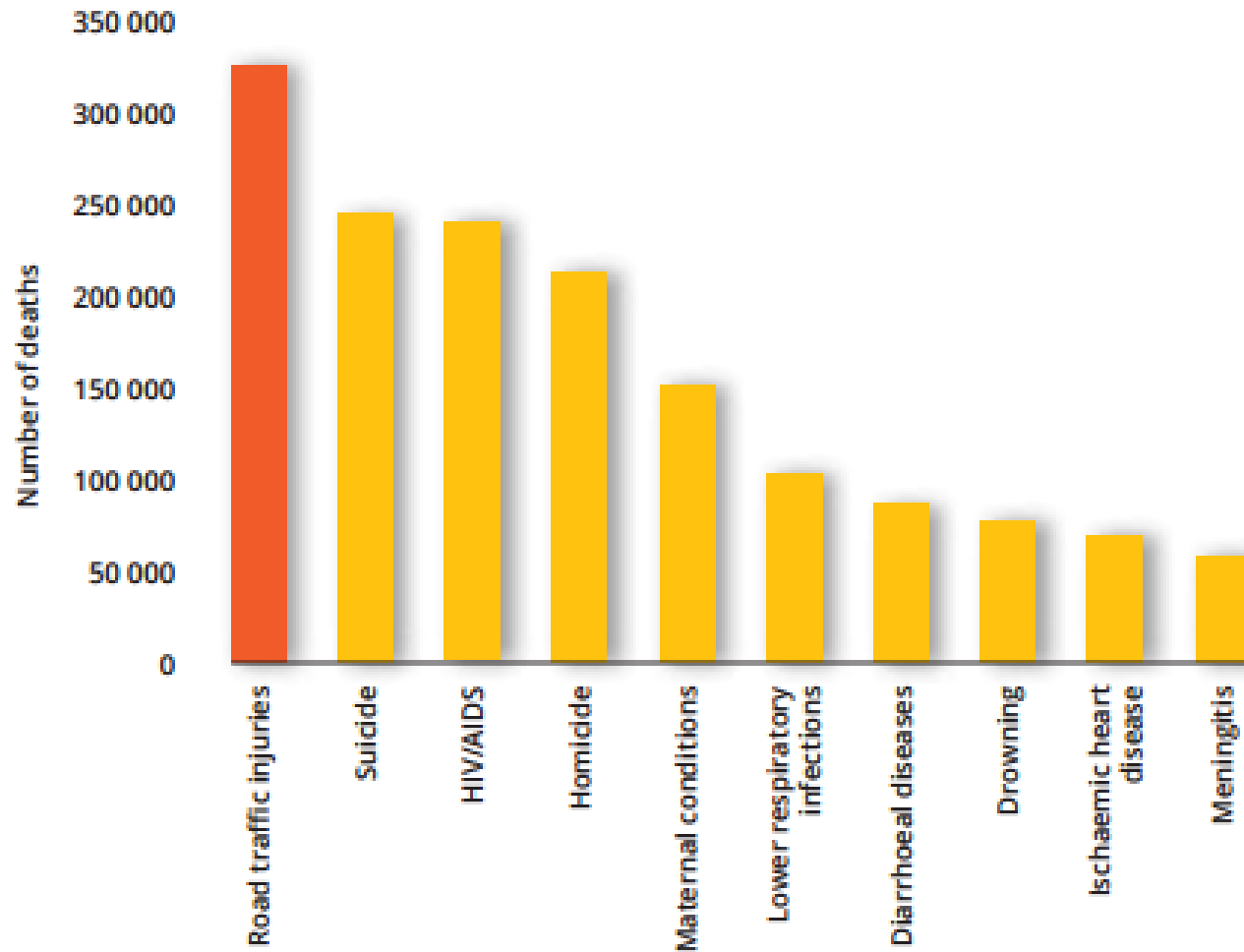


Transportation-related injuries and fatalities

- About 1.25 million people die each year from road traffic crashes. Between 20 and 50 million more people suffer non-fatal injuries, many incurring a disability. (WHO 2015)
- Road traffic injuries are currently estimated to be the ninth leading cause of death across all age groups globally, and are predicted to become the seventh leading cause of death by 2030 (WHO 2015)
 - Road traffic injuries are the leading cause of death among young people, aged 15–29 years. (WHO)
- In 2014, 32,675 people were killed in motor vehicle crashes on US roadways. 2.3 million people were injured in crashes in 2014.
- There are higher rates of traffic related injuries and fatalities among lower income communities and communities of color
- Significant disparities in transportation infrastructure for walking and bicycling exist



Top ten causes of death among people aged 15–29 years, 2012



THE FULL IMPACT OF MOTOR VEHICLE CRASHES

Crash injuries in 2012 totaled **\$18 BILLION** in lifetime medical costs (ED visits and hospitalizations).



For every 1 person killed in a motor vehicle crash



8 people were hospitalized



100 people were treated and released from the ED

SOURCE: CDC WISQARS (Web-based Injury Statistics Query and Reporting System), 2012



Vitalsigns[™]

<http://www.cdc.gov/vitalsigns/crash-injuries/>

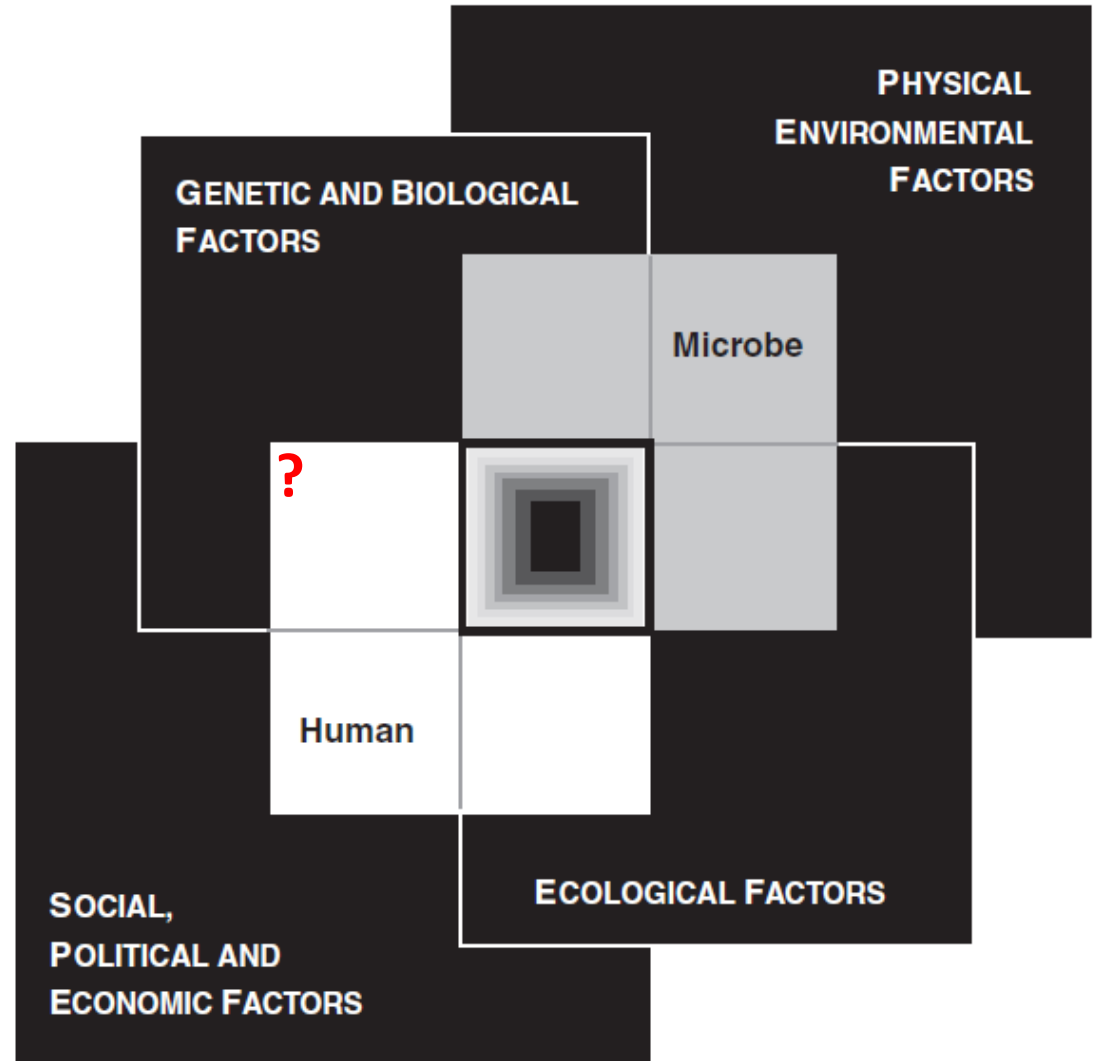
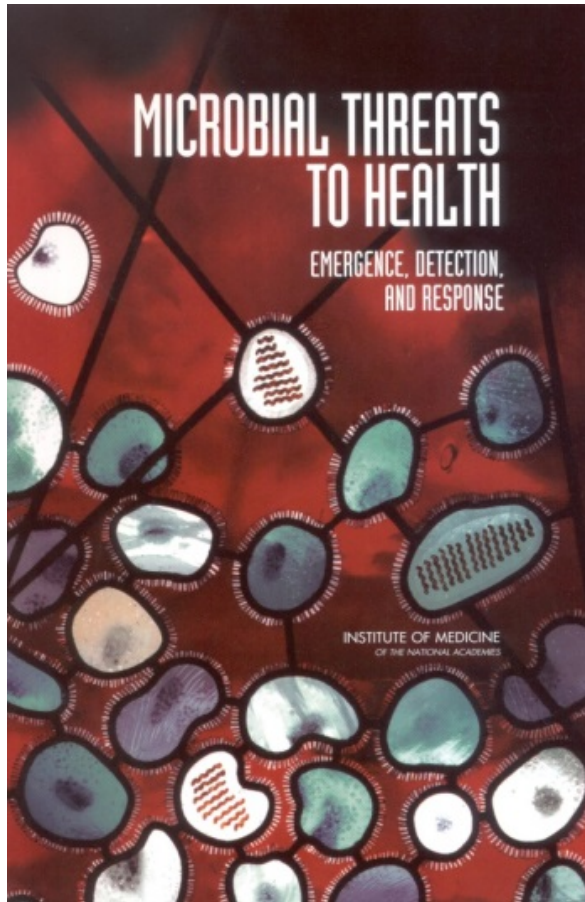


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Transportation and the spread of disease



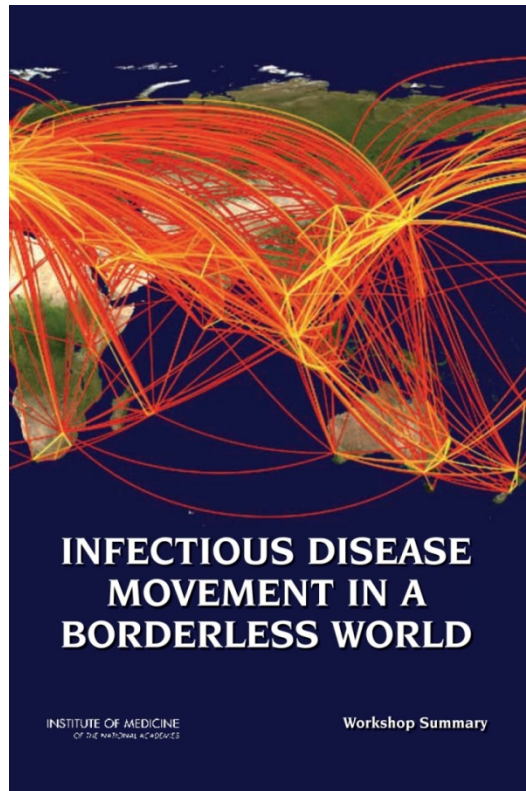
Transportation and the spread of disease



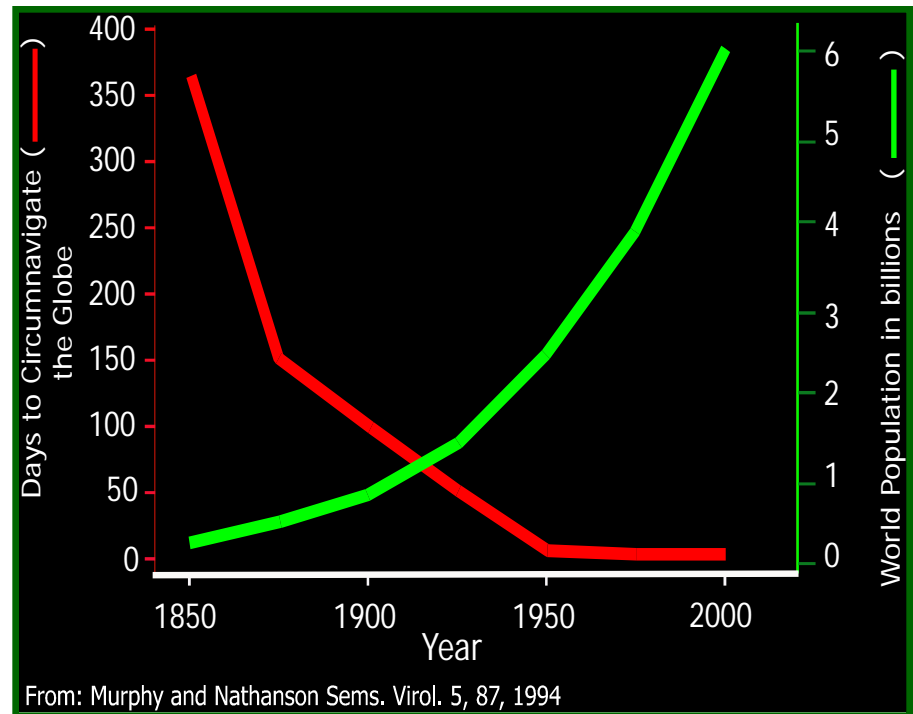
Factors in Disease Emergence

Human Factors - Behavior

- Moving people and things

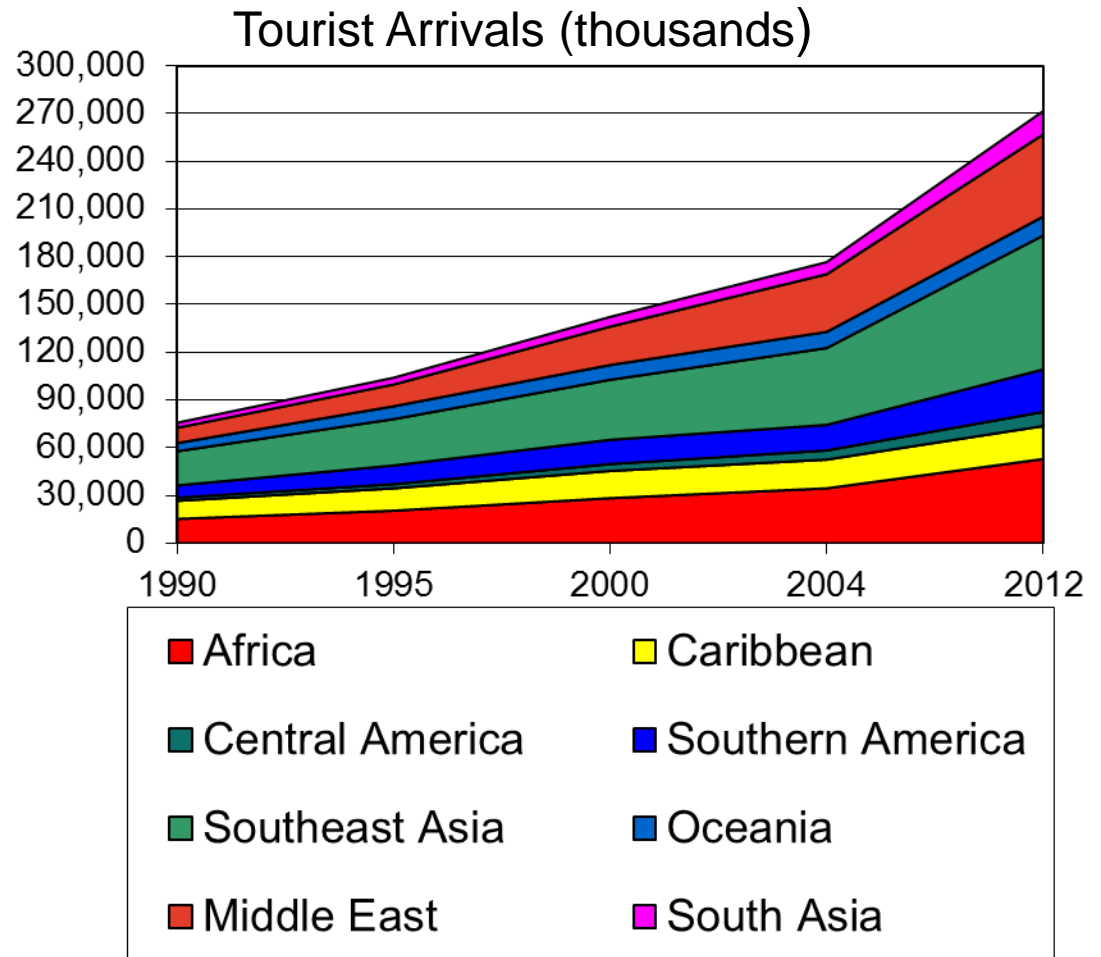


Speed of Global Travel in Relation to World Population Growth



Factors in Disease Emergence

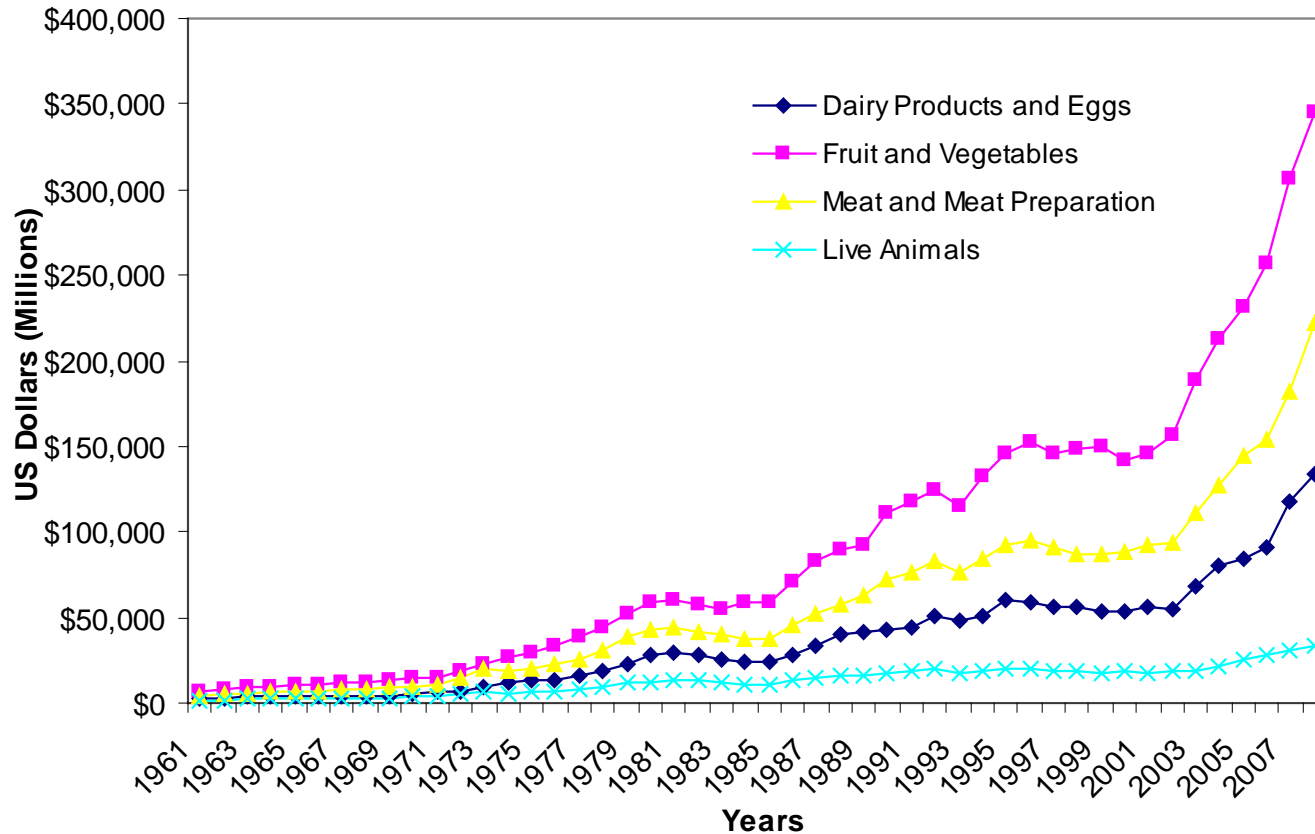
- Human Factors - Behavior
 - Moving people and things



Source: World Tourism Organization

Factors in Disease Emergence

Trends in International Agricultural Trade, 1961-2010



Source: UN Food and Agriculture Organization

1997 Hong Kong H5N1 Avian Influenza

- Environment
 - Urban Crowding
 - Zoonotic Factors



West African Ebola Outbreak

SENEGAL

1 case | **0** deaths

MALI

8 cases | **6** deaths

GUINEA

2799 cases | **1807** deaths

SIERRA LEONE

10094 cases | **3049** deaths

LIBERIA

8278 cases | **3515** deaths

UNITED STATES

4 case | **1** death

EBOLA OUTBREAK

21205 cases suspected and 8386 deaths since March 2014

SPAIN

1 case | **0** deaths

NIGERIA

20 cases | **8** deaths

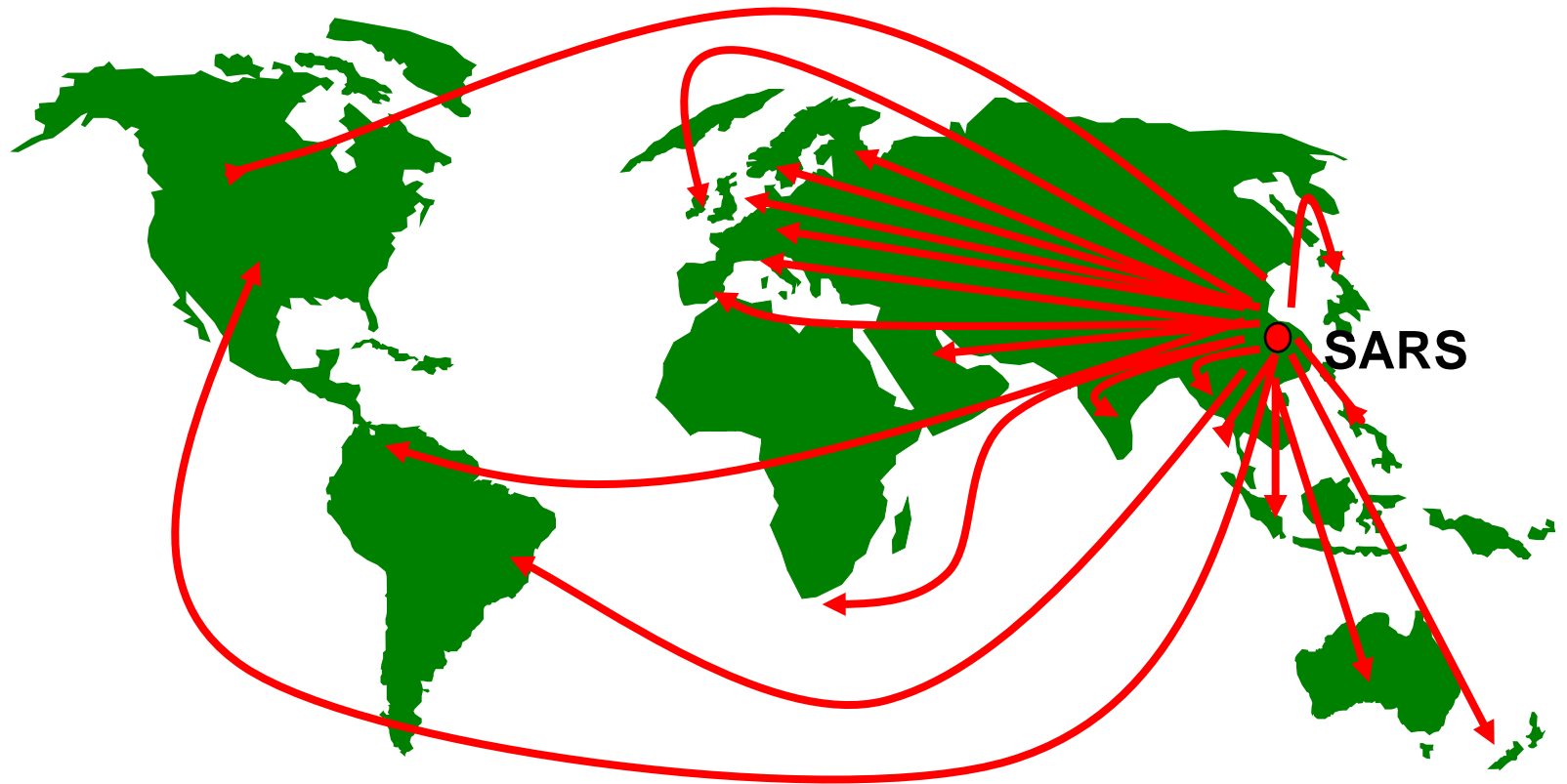


+map ebola outbreak response
INTERNATIONAL

DATA SOURCE: CDC JANUARY 9, 2015



Global Dissemination of SARS, 2003



MERS-CoV



Negative health impacts of transportation's environmental footprint



Negative health impacts of transportation's environmental footprint

- Transportation is a source of pollution
- Outdoor air pollution kills more than 3 million people across the world every year, and causes health problems from asthma to heart disease for many more.
- Individuals who live, work, or attend school near major roads appear to have an increased incidence and severity of health problems that may be related to roadway traffic



Negative health impacts of transportation's environmental footprint

- Asthma
 - Risk of life-time asthma was 1.9-fold among children with closer residential distance to a freeway (Gauderman 2005)
- Cognitive development
 - children from highly polluted schools had a smaller growth in cognitive development than children from the paired lowly polluted schools (Sunyer 2015)
- Cardiovascular health
- Cancer

- However, more data is needed



Promoting healthy and safe transportation options



Promoting healthy and safe transportation options

- When transportation infrastructure is designed to accommodate or even encourage nonmotorized transportation, it can have a positive effect on public health
 - Communities with high transit use tend to have high rates of walking and cycling
 - Physical activity, including active transportation activities, can help prevent weight gain and lower the risks of obesity, diabetes, and heart disease
 - One third of public transit users get their entire recommended amount of physical activity just by walking to and from transit stops



Enabling access to healthcare



Enabling access to healthcare

- Lack of access to transportation is often cited as a barrier to healthcare, e.g.,
 - Guidry et al. (1996) surveyed 593 cancer patients throughout Texas, and found 38 % of whites, 55 % of African Americans, and 60 % of Hispanics identified poor access to a vehicle as a barrier that could result in missing a cancer treatment.
 - Yang et al. (2006) studied 183 urban caregivers from Houston and their children's missed appointments, finding that an inability to find a ride resulted in at least one missed appointment for 25 % of the sample.
- Certain populations may face unique circumstances with transportation barriers, such as children and the elderly



Enhancing mobility



Enhancing mobility

- Elderly individuals find their ability to navigate by vehicle diminishes over time
 - A 2004 study found that seniors age 65 and older make 59 percent fewer trips to shop or eat out, and 65 percent fewer trips to visit friends and family and 15 percent fewer trips to the doctor than individuals of the same age who drive.
- Transportation barriers also seriously affect the disabled
 - Approximately 6 million people with disabilities have difficulties getting the transportation they need. According to the US Dept. of Transportation, approximately 500,000 people with disabilities never leave home because of transportation difficulties.



TRB & Health: Opportunities

- Making transportation safer
- Reducing transportation's environmental footprint
- Promoting active transportation
- Utilizing a systems approach to improve transportation and public health



Thank you