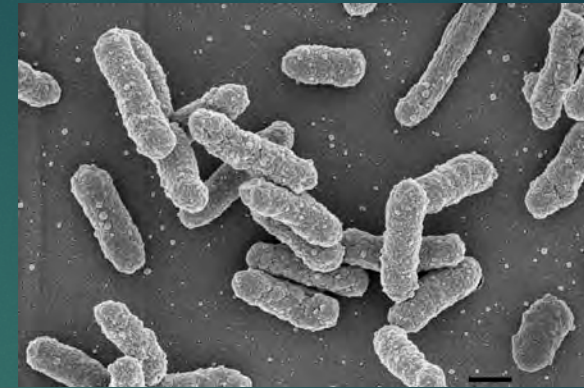


Pandemics: Then vs. Now

BY: KATHERINE

The Black Death background



- ▶ First arrived in Europe the October of 1347
- ▶ Rats on ships carried Yersinia Pestis, transferred it to flees which then transferred to humans
- ▶ Efficient bacteria -> killed in days/spread easily
- ▶ Began to spread from port to port via stowaways
- ▶ Poor sanitary conditions furthered the spread
- ▶ By 1352 over 20 million deaths



www.owenshistoryfair.com/biology-of-the-plague.html

https://en.wikipedia.org/wiki/Plague_doctor



<http://all-that-is-interesting.com/triumph-of-death>

The Great Antibiotic Acceleration

- ▶ Antibiotics have cured thousands of bacterial infections like The Plague.
- ▶ Being misused by patients and doctors
- ▶ Used for non medical purposes
- ▶ Used in mass amounts for livestock



U.S. Antimicrobial Use



Antibiotic Resistance

Bacteria are becoming highly resistant to antibiotics

Bacteria can mutate or transfer DNA to other bacteria to make them resistant

Diseases with antibiotic resistant strains include: MRSA, TB, Gonorrhea, Salmonella

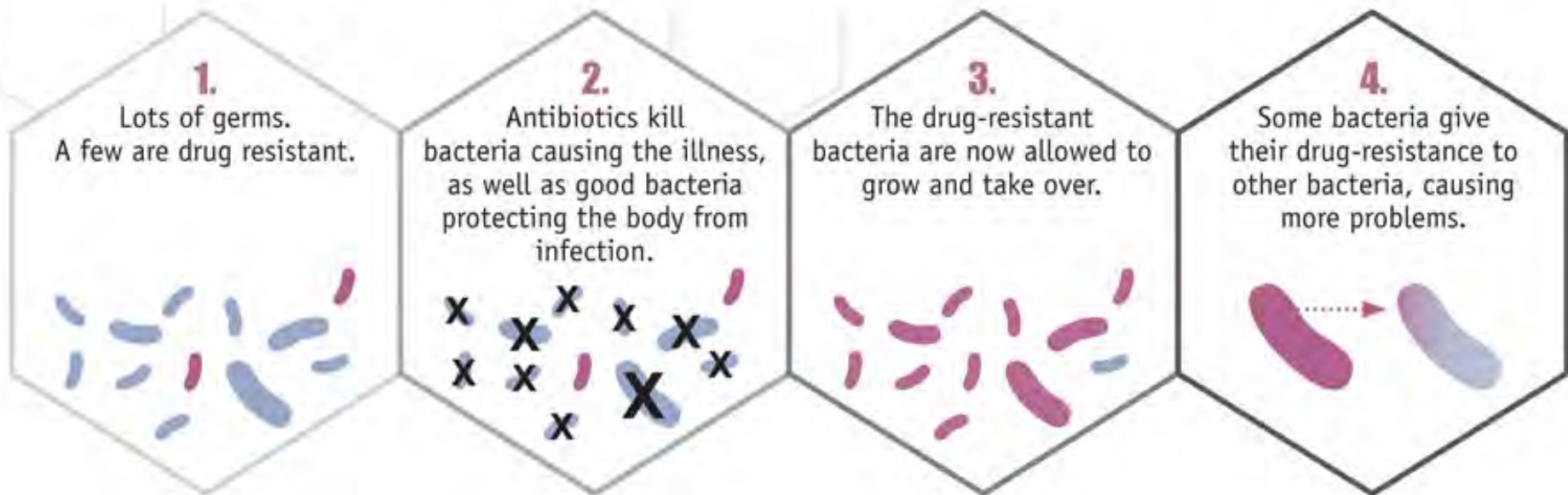
700,000 people died last year from antibiotic resistant bacteria

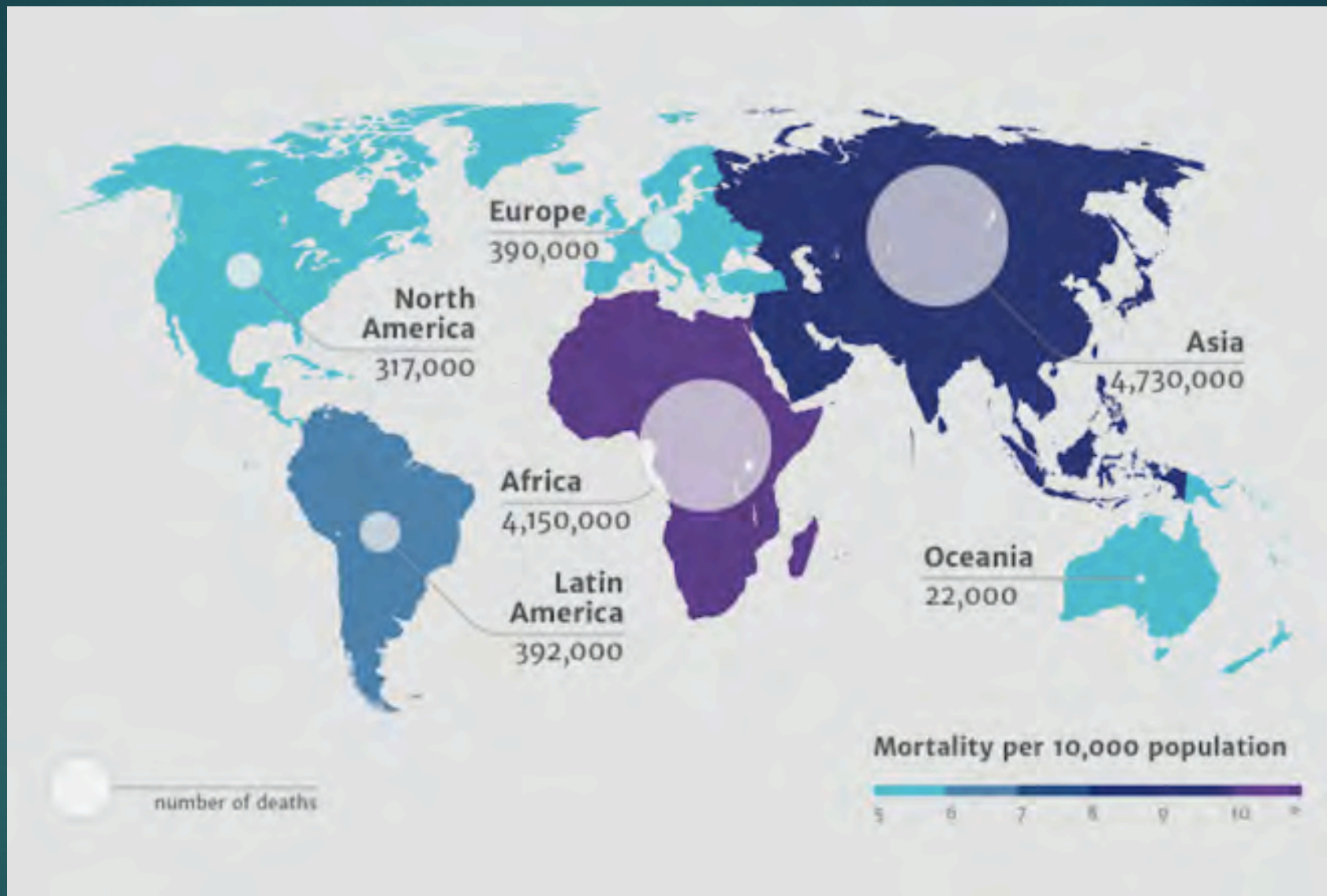


Process of Antibiotic Resistance



How Antibiotic Resistance Happens





Number of deaths due to antibiotic resistance.

<http://www.wired.com/2014/12/oneill-rpt-amr/>

the Plague Today

Cured with modern day antibiotics

Not yet eradicated

found in 10 countries since 2001.

Study finds antibiotic resistant bacteria found in meats has shared DNA with one case of antibiotic resistant *Yersinia Pestis*

Could easily produce entire strain of resistant *Yersinia Pestis*

Volunteer examines infected rat in the 2013 Madagascar Plague outbreak



Anthropogenic Effects on Pandemics

Disease like Yersinia Pestis could easily result in a global outbreak.

Marking Anthropocene at the start of The Great Acceleration

Air travel, global tourism, urbanization and increase CO₂ emissions could contribute in the global spread of a disease



<http://www.nearshoreamerica.com/travel-destinations-latin-america>



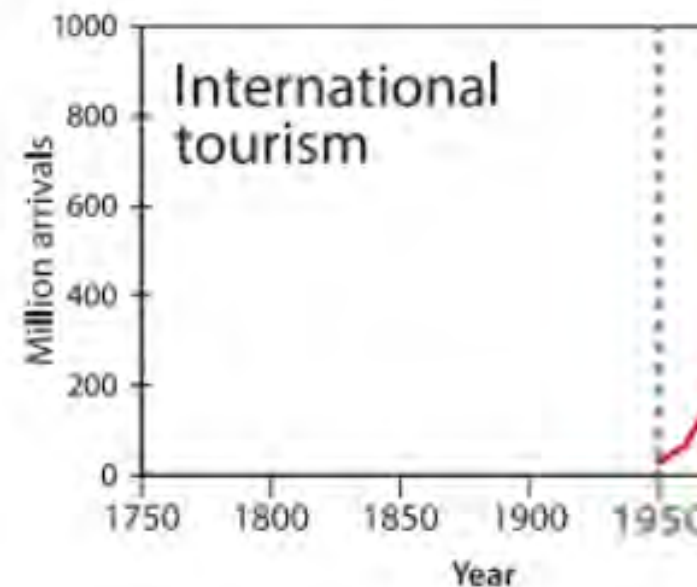
<http://www.rooshv.com/6-things-wrong-with-new-york-city>

Air Travel and Tourism

- ▶ Number of people riding airplanes has increased 10 fold since 1950.
- ▶ Average flight length doubled since the 50's
- ▶ International tourism began in the 50s
- ▶ Conditions make the global spread of a pathogen easy



[http://
www.malaysia.travel/en/experiences/
the-great-outdoors/
cave-exploration](http://www.malaysia.travel/en/experiences/the-great-outdoors/cave-exploration)

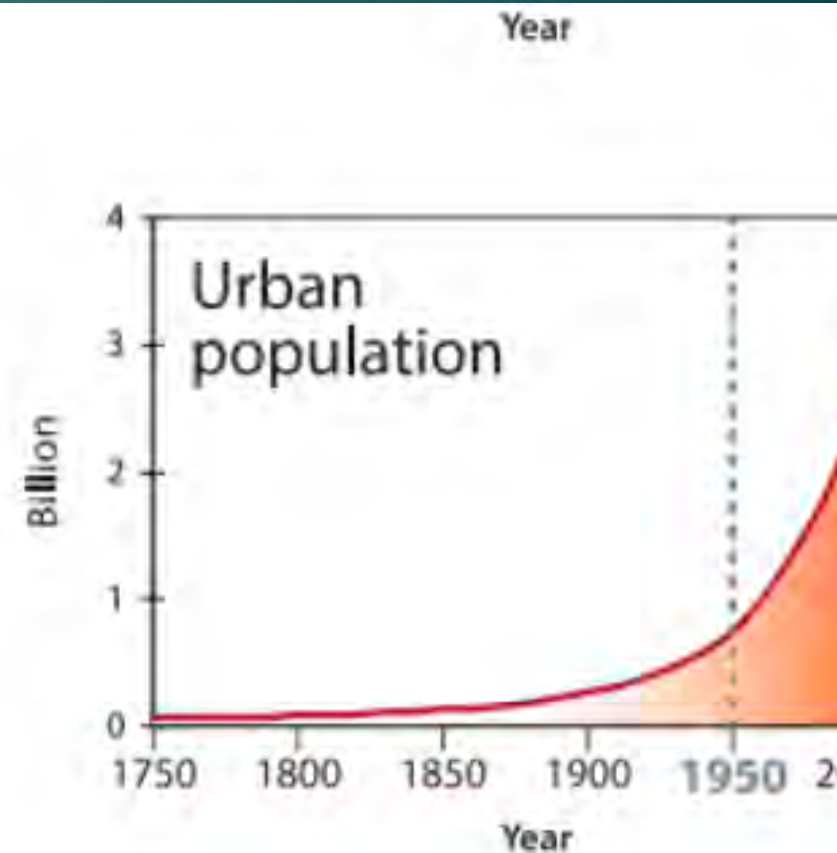


urbanization

Urban populations have soared since 1950

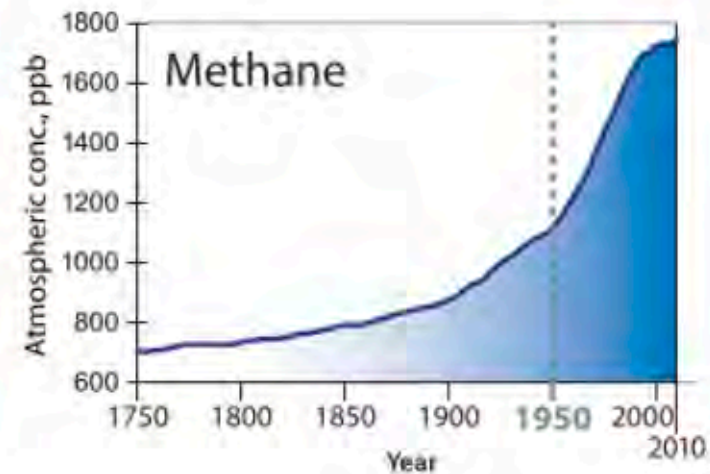
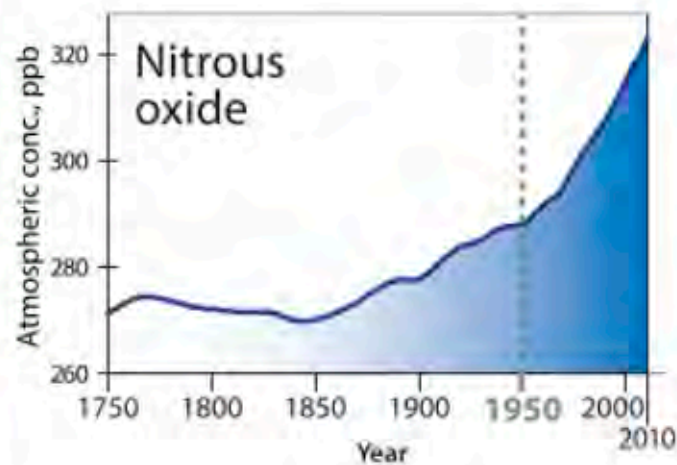
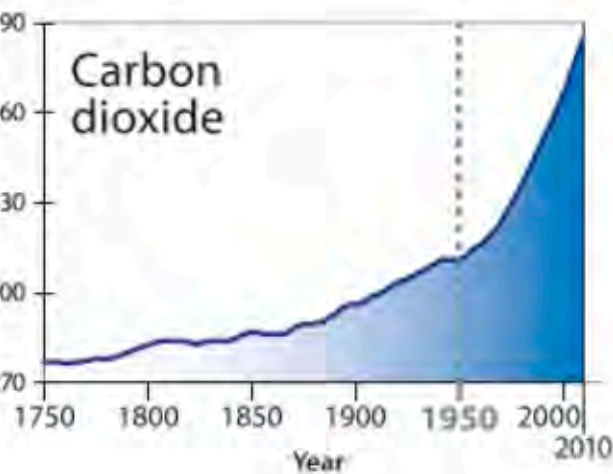
50% of global populations now live in urban areas

Dense urban areas could easily further the spread of a disease



Climate Change

Greenhouse gases affecting atmospheric temperature
Temperature affects the dispersal of disease vectors
Leads to tropical diseases throughout the world



Conclusion

Mass extinction is possible given the rise in antibiotic resistant bacteria and globalization

An Ice age could result

We can take preventative measures

<https://www.neogaf.com/forum/showthread.php?t=8638>



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