COVID-19 and the Bioeconomy

David zilberman

Influenza Pandemics have Random Outcomes

World average value of statistical life
$2.13 mil
Average annual death from pandemic
1918 -2020 2.2 million
Annual average Social cost of lives lost
4.69 TRil
With 1.1 mil lives lost in 2020 lives cost is
2.3 Tril

But pandemic costs also include economic adjustment $9.5Tril

Name	Date	Fatalities	2020 equvilance	Cost of Life in million dollars
Spanish Flu	1918-20	50 million	216,000,000	$460,080,000
Asian Flu	1957	1.1 million	2,960,000	$ 6,304,800
Hong Kong Flu	1968	1 million	2,190,000	$ 4,664,700
Swine Flu	2009	350,000	395,000	$ 841,350
COVID-19	2020	1010000	1010000	$ 2,300,000
Total			222,075,000	$474,419,750
Average			2177206	$ 4,637,449
Total since WWII			6,600,000	$ 13,939,750
Average since WWII			86,000	$ 180,530

Lessons of Covid

- The world expect government to Solve health problems
  - Ready to pay in recession and economic activity
- No of death per million depends on
  - population over 65
  - Weather
  - Demographic
  - population density
  - policy

Policy matters

- Ability to enforce social distancing
  - China
- Monitor disease spread and contacts
  - Korea Germany Africa
- Policy inconsistency /low access to medical treaent
  - Increase infection US
- Fast treatment –reduce death
  - learning by doing US

Risk is less likely in developing countries

- Younger population
- Less exposure
- Warmer climate
- But weaker social safety net
- Policy need to divert among countries recognizing diversity
- Fine tuning policies that
  - reducing exposure (especially to vulnerable population) while
  - maintaining economic activity is tough
- Tough adaptation under fire

High cost because we were not prepared

- Less than $10 billion annual costs of preventing flu- which costs hundreds of billions in average damages
- Low mitigating costs lead to high adaptation costs
- Lesson to climate change
- If we do not mitigate we will pay
- We do not meet the challenge of climate change
  - Behind on the Paris agreement
  - Greenhouse gases are accumulating

While Covid 19 is going on

- Climate change continues
  - Fires in California and the tropics.
  - Locust and drought in Africa
- Income distribution is getting worse – in many places
  - !00 Million people are driven back below the poverty line
- Africa Swine flu continues – and other crop diseases spread
- Supply chain contract – trade relations deteriorte
- At the same time
  - Jeniffer Doudna and the World food program win the NOBEL
  - There is recognition of the value of the value of science

The Bioeconomy to the rescue

- Bioeconomy key to decarbonization
- Moves away from non-renewable to renewable
  - Replacing fossil fuel with renewable fuels
  - Introducing recyclable renewable plastics
  - Replacing petroleum-based with plant-based products
- Sequester carbon by trees and biological processes
- Reduce GHG footprint of ag with better varieties and modern technologies
- Policies should enhance transition to the Bioeconomy and will endorse a new essential biotechnologies