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JOHNS HOPKINS
BLOOMBERG
SCHOOL *of* PUBLIC HEALTH

The Ins and Outs of IFAP: A Public Health Perspective

Jay P. Graham, PhD, MBA

Kellogg J. Schwab, PhD

Johns Hopkins University

Jay Graham

- American Academy for the Advancement of Science
Diplomacy Fellow with the U.S. Agency for International Development
- CLF Research Fellow
- PhD from JHSPH
- Co-authored publications for FAO on avian influenza
- Consultant to the Pew Commission on Industrial Farmed Animal Production



- Associate Professor, Environmental Health Sciences
- Director, Johns Hopkins Center for Water and Health
- Joint appointments in the Department of Molecular Microbiology and Immunology and the Johns Hopkins University Department of Geography and Environmental Engineering
- Interests focus on transport of pathogens in the environment
- Collaborations with CDC on investigations of foodborne outbreaks of viral gastroenteritis





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Section A: Managing Food Animal Waste in the United States: A Public Health Perspective

Jay P. Graham, PhD, MBA
Johns Hopkins University

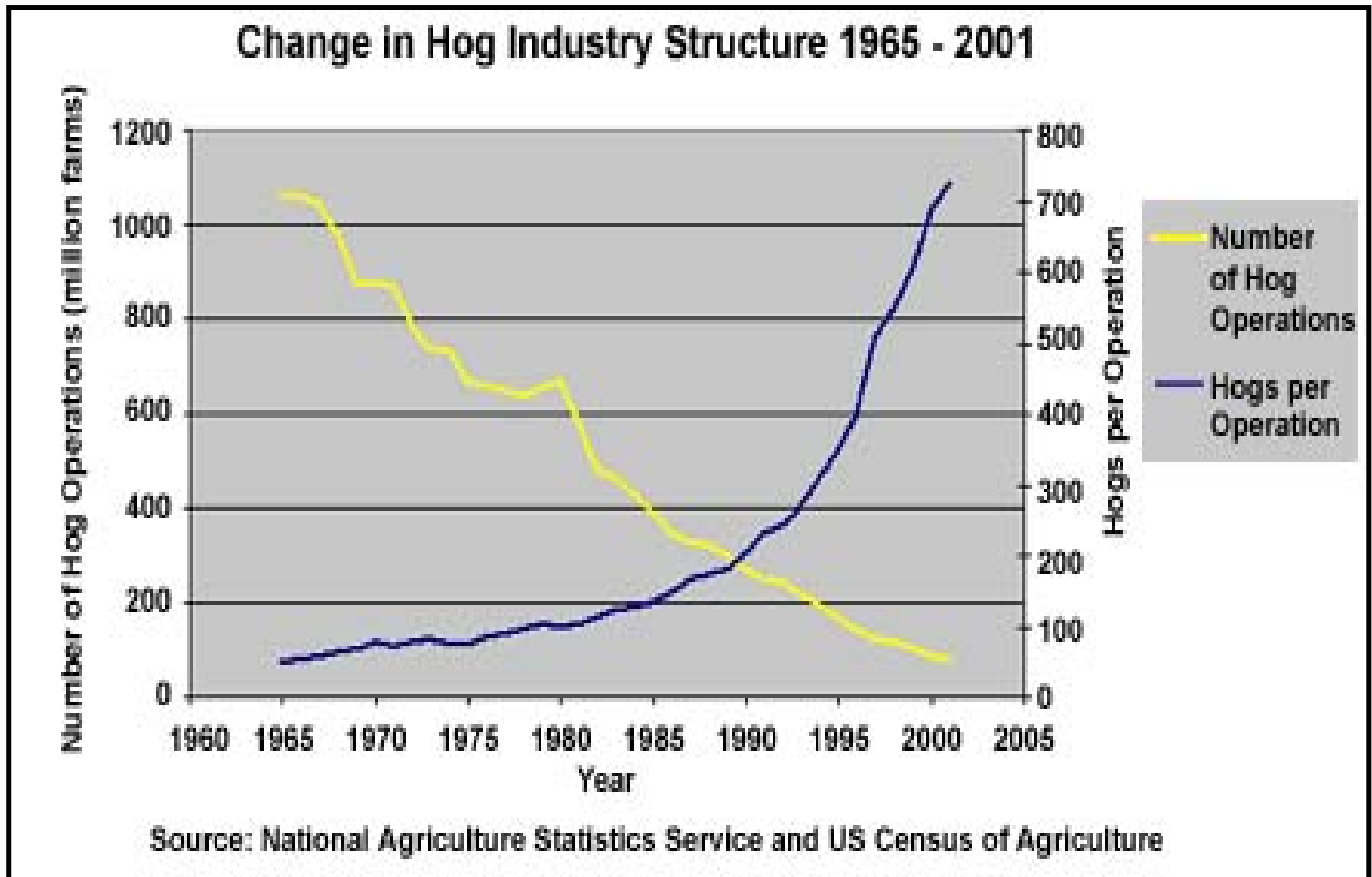
Topics in This Lecture

- Industrial food animal production (IFAP)
- Feed inputs
- Waste outputs from IFAP: changes in quantity, quality, and distribution
- Waste management policies
- Public health implications (Dr. Kellogg Schwab)
- Potential solutions

Industrial Food Animal Production (IFAP)

- Semi-vertically integrated industry
 - Example: broiler industry
 - ▶ Integrators, i.e., companies
 - Control hatcheries, breeder flocks, feed mills, and processing plants
 - Determine feed inputs
 - ▶ Farmers
 - Generally receive a one-year contract to raise the broilers
 - Heavily mortgaged
 - Own the waste (excreta and mortalities)
 - Paid a set amount per pound live weight

Growth of Industrial Food Animal Production



High-Density Confinement

- Fecal-oral route of disease very important here!



Image source: USDA.

Concentration of Chicken Production

- Chicken processing plants, 1949



- Major chicken production areas, 1982



AFOs and CAFOs

- Animal feeding operations (AFOs)
 - Lot or facility where animals will be stabled or confined
 - No sustained forage growth
- Concentrated animal feeding operations (CAFOs)
 - Have an equivalent of 1,000 animal units
 - ▶ Animal unit is 1,000 pounds of live weight
 - ▶ 125,000 broiler chickens, 2,500 swine, 700 dairy cattle
 - ▶ 15,500 AFOs out of 238,000 are now CAFOs
 - CAFOs provide 43 percent of animals raised for food in the U.S.

Total Annual U.S. Production

Cattle	32,734,000
Calves	847,000
Sheep	2,844,000
Hogs	103,584,000
Broilers	8,788,281,000
Turkeys	254,455,000
Total	9,182,745,000