# Census of Agriculture, Chesapeake Bay Watershed Modeling Uses and Trends

Joseph Delesantro, ORISE Fellow, CBPO, EPA

jdelesantro@chesapeakebay.net

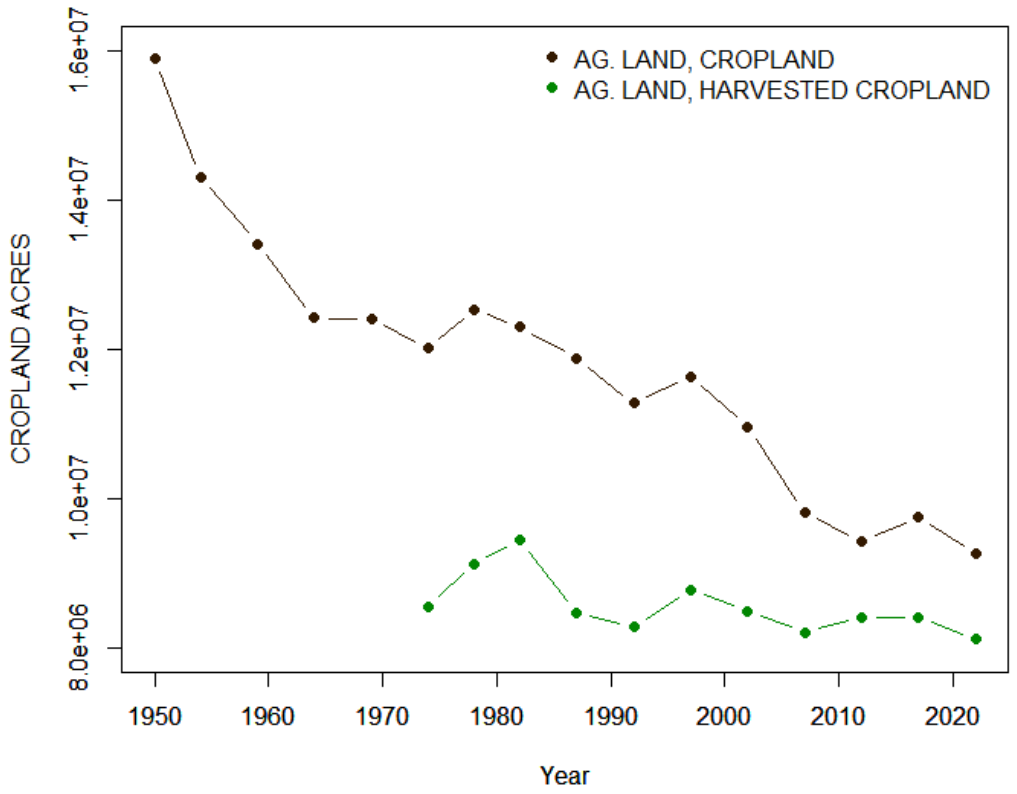
# Census of Agriculture (COA) in CAST

- Informs agricultural land-uses
  - Geospatial data provides broad land-uses and COA is used to subdivide into finer uses at county scale

- Informs agricultural inputs
  - 100+ crop and pasture types
  - 20 livestock categories

In total we use over 200 values (data items) from the COA at the county and state scale.

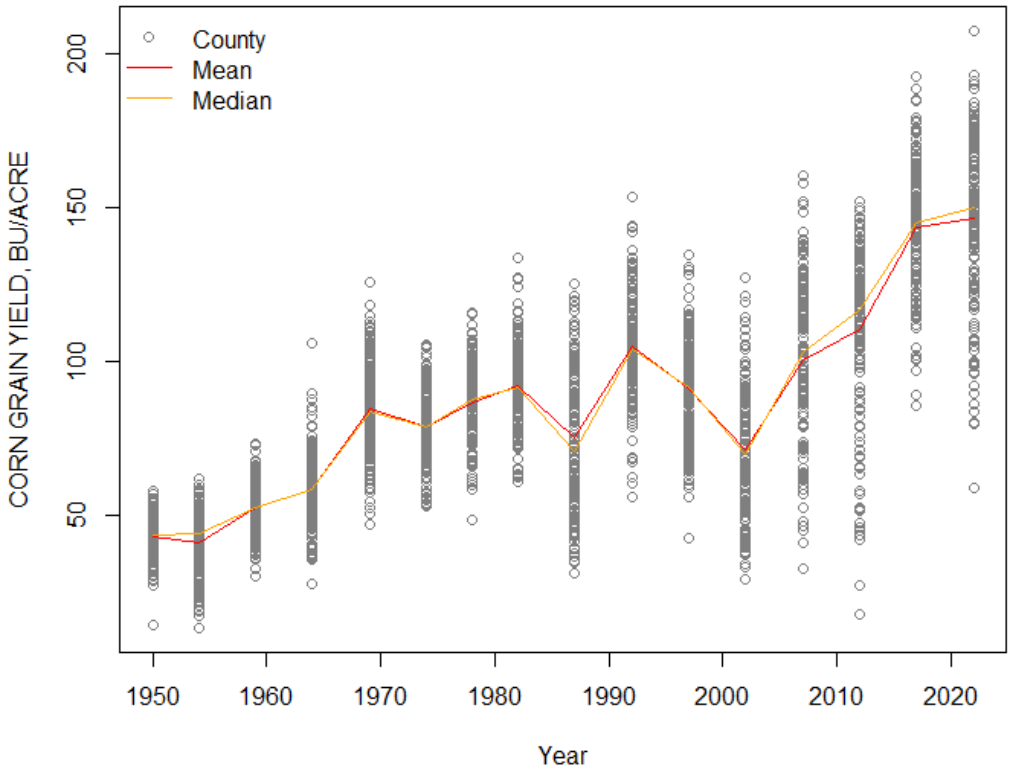
# Crop Acres

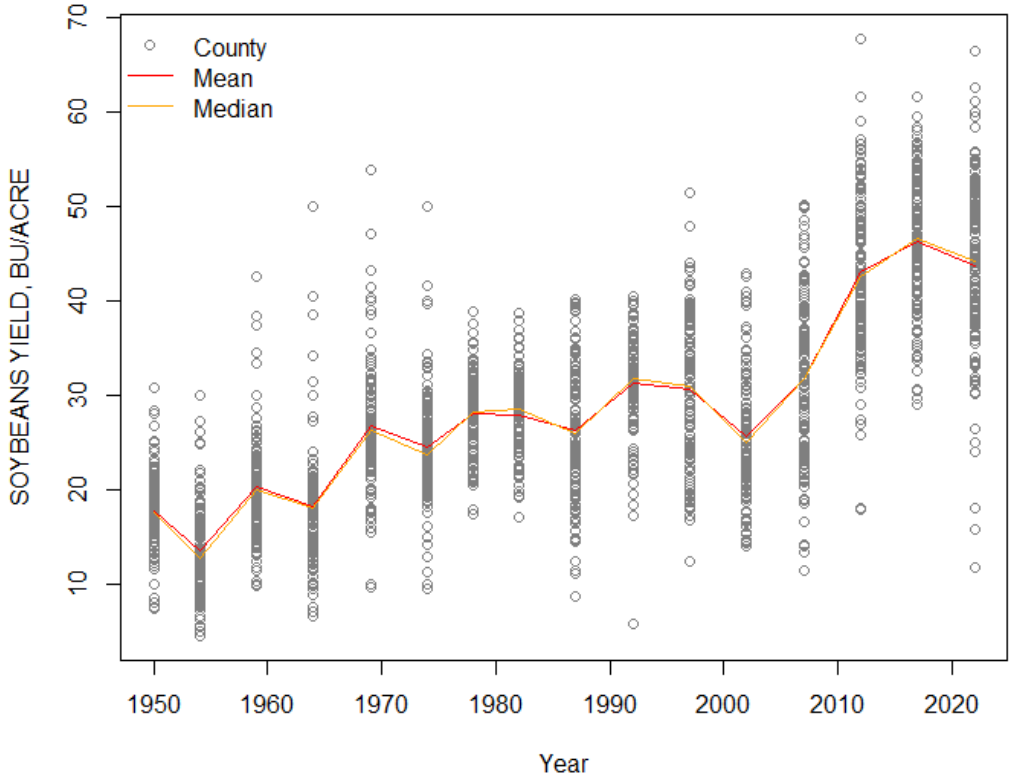



RAW DATA

- New lows for both cropland and harvested cropland in the CBW
- 88% of cropland harvested in 2022, vs 71% in 1974

# Crop Yields Increasing

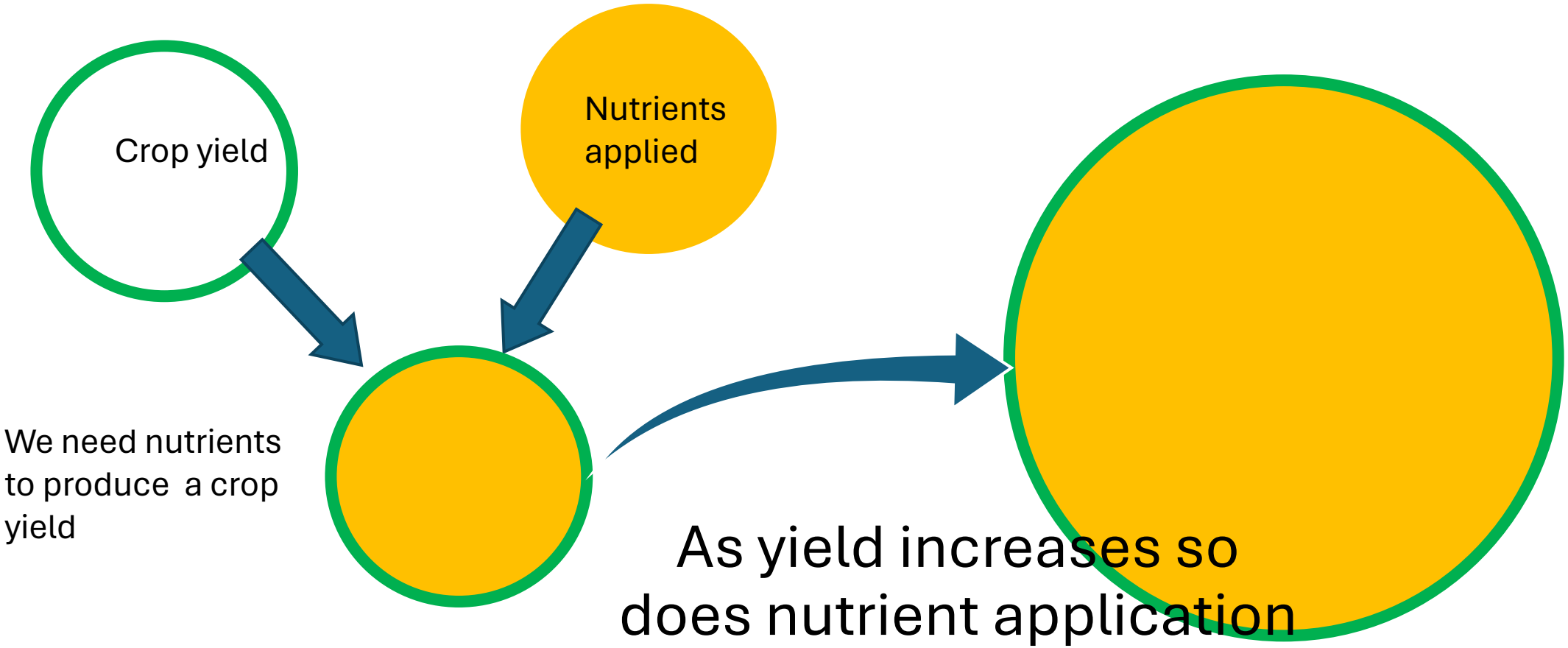



RAW DATA

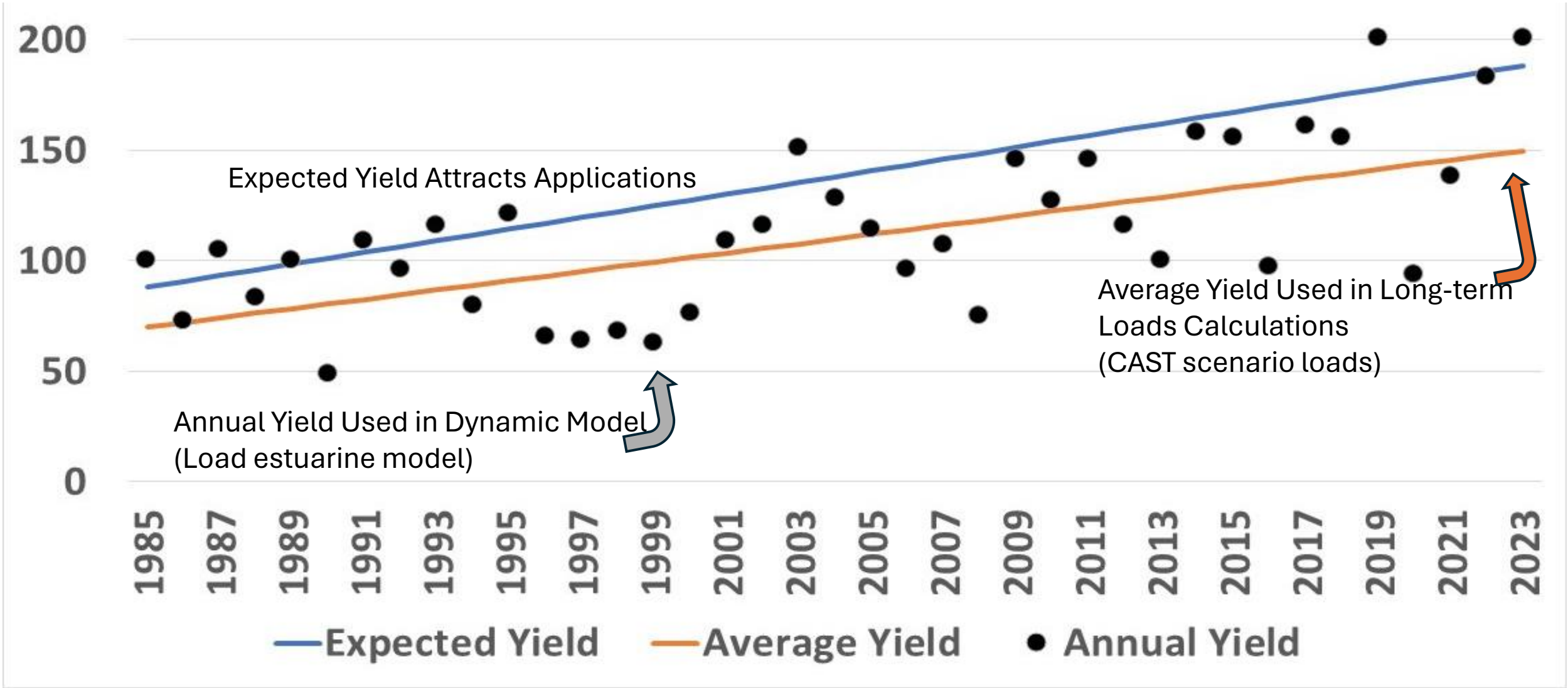
# Crop Yields Inform Estimated Nutrient Demand

- Yields and nutrient applications are tied together

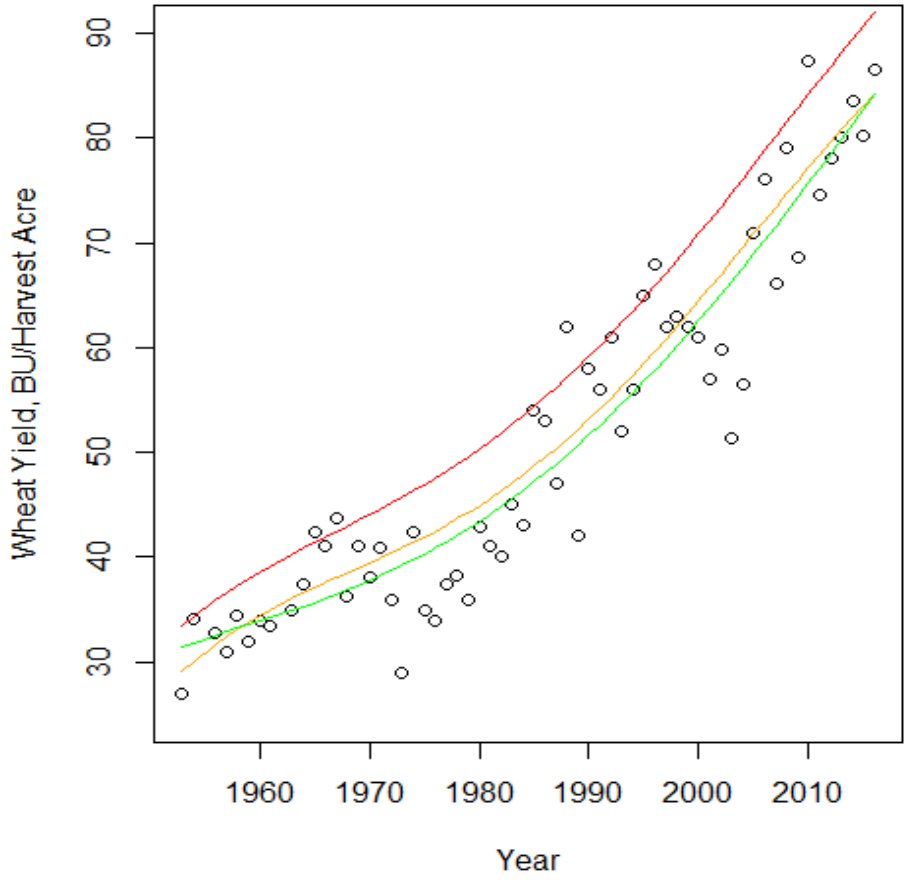


# Crop Yields

*EXAMPLE
DATA ONLY



# Crop Yields

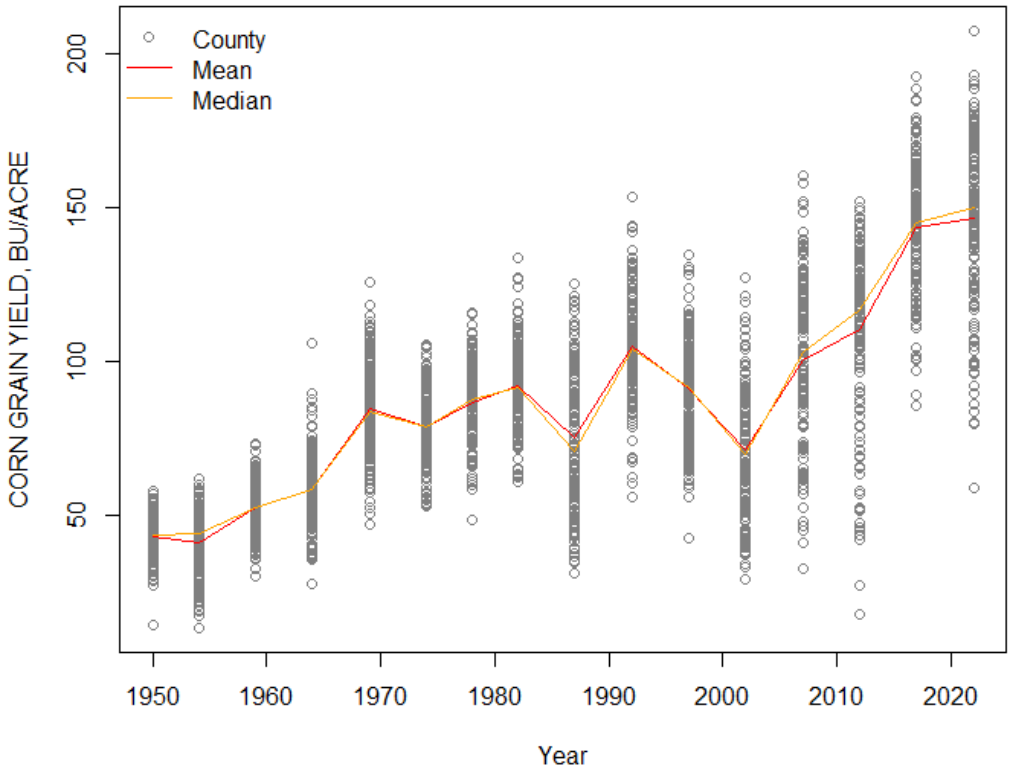


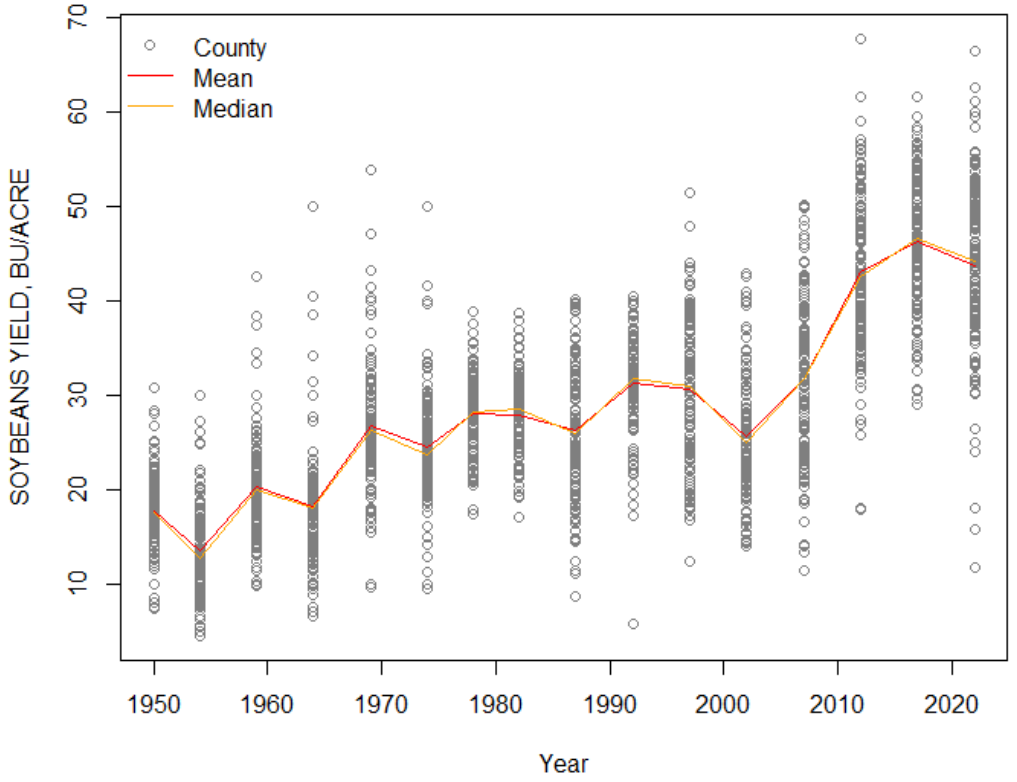

Extended data record to 1950:

- Improve trend analyses
- Provide better estimates of weather independent inputs
- Better interpolation of missing data
- Opportunities to account for legacy inputs

# Crop Yields

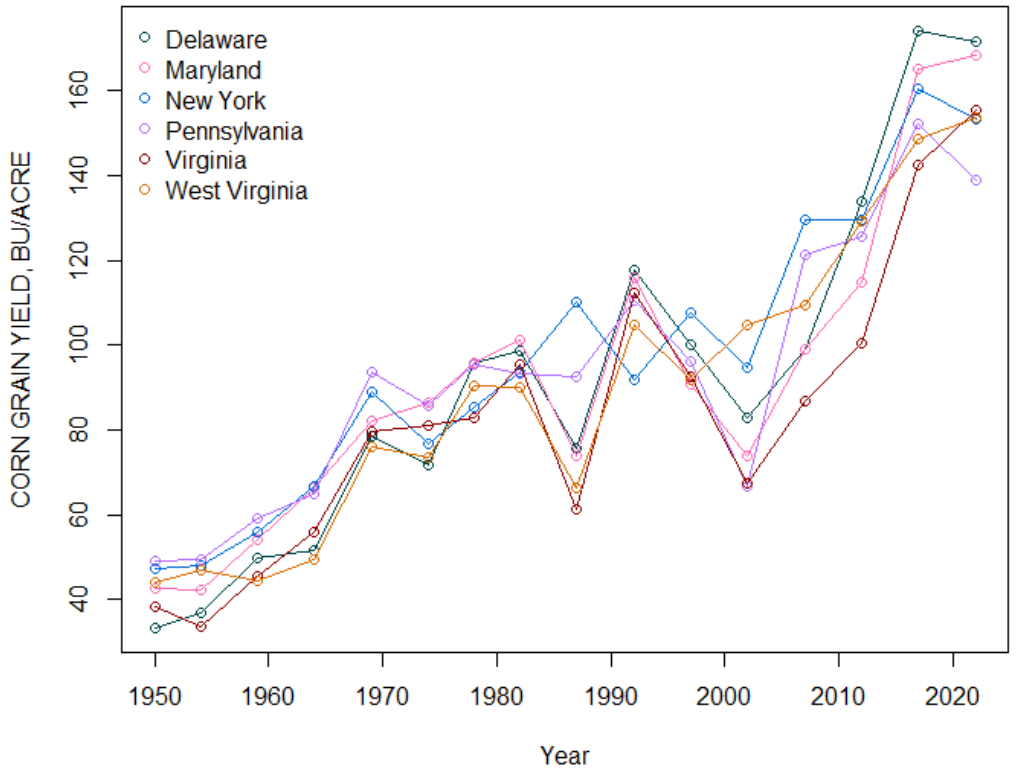
- Dramatic increases in most crop yields over the last 70 years
- But little change from 2017

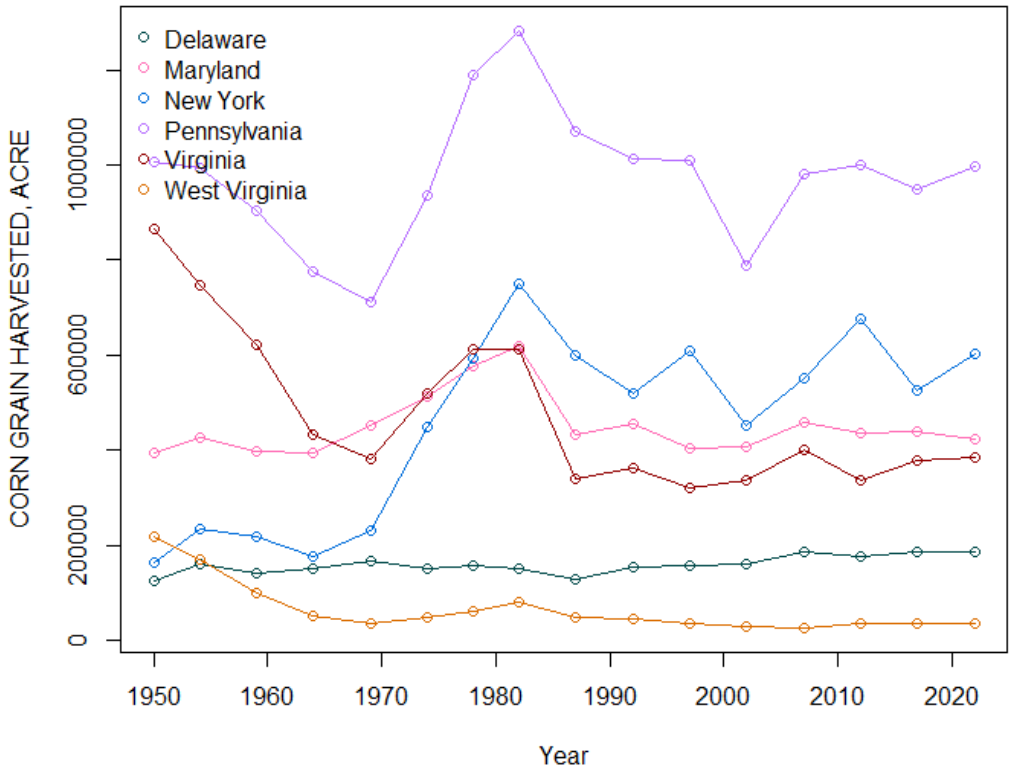



RAW DATA

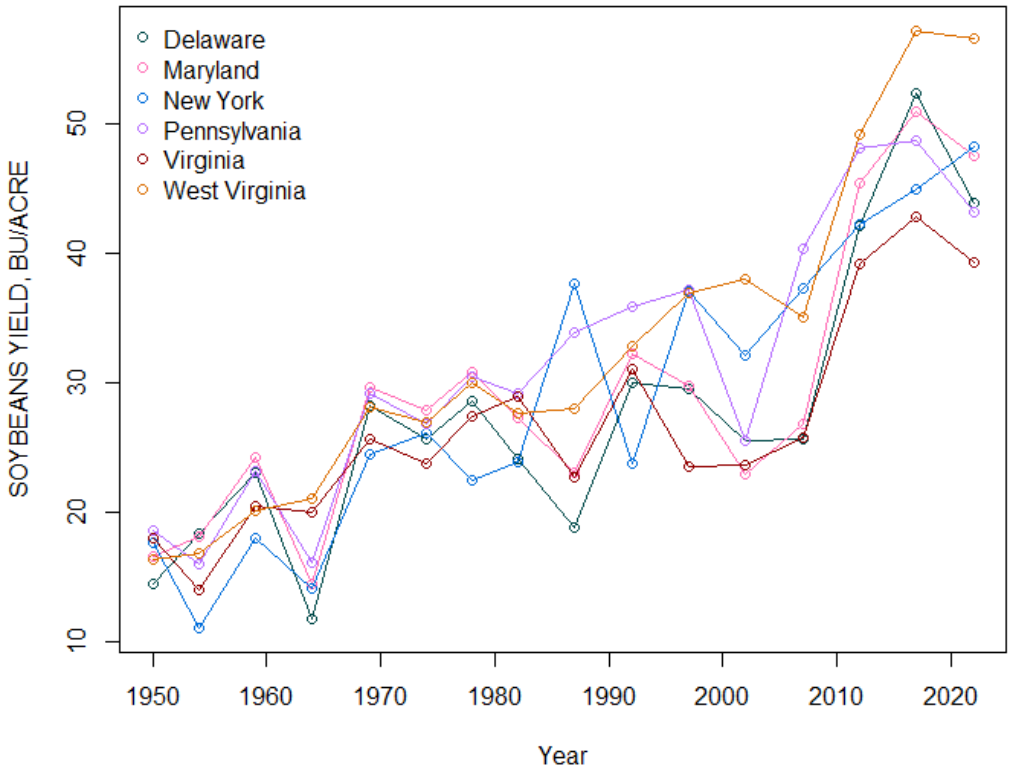
# Corn Yields and Acres by State

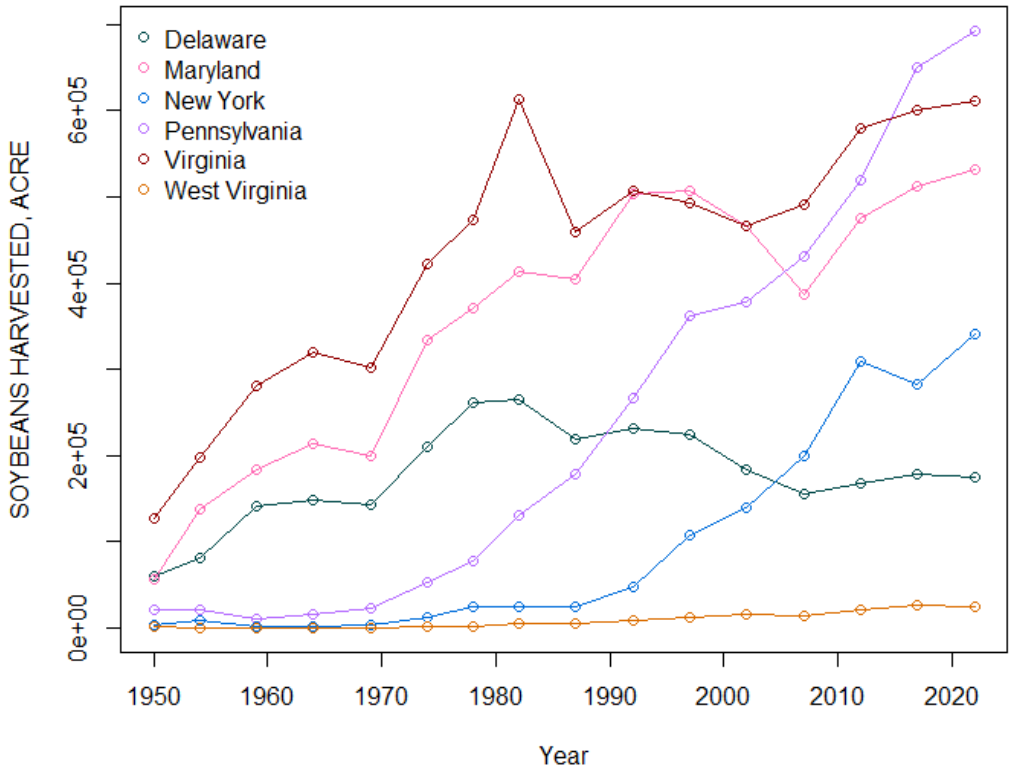



RAW DATA

# Soybean Yields and Acres by State




RAW DATA

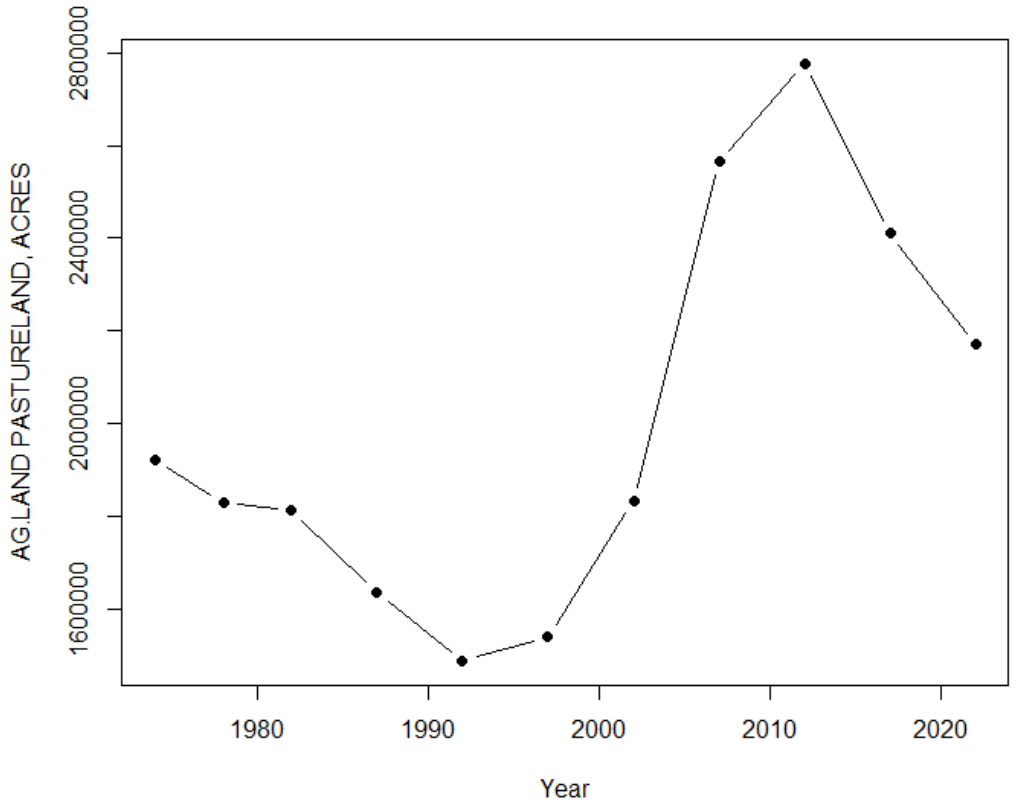
# Animal Number Inform Manure Estimates

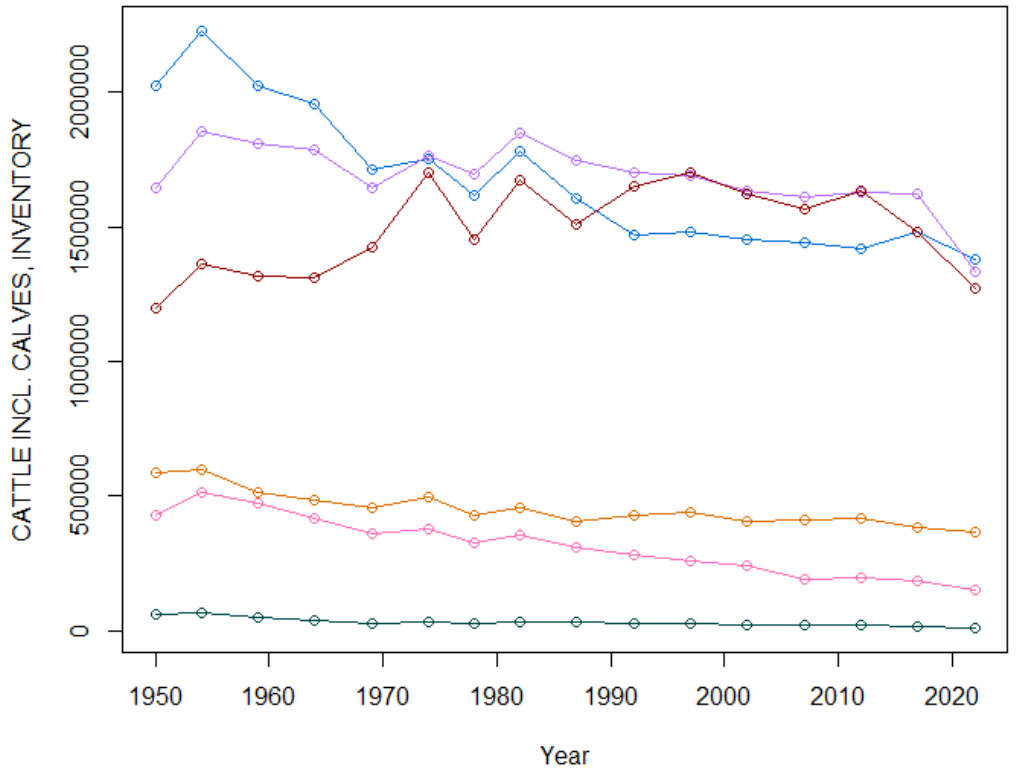
- Animal numbers by county inform estimates of manure generation

- The proportion of different animals in the county inform estimates of manure N and P content and availability

# Pasture Acres and Cattle

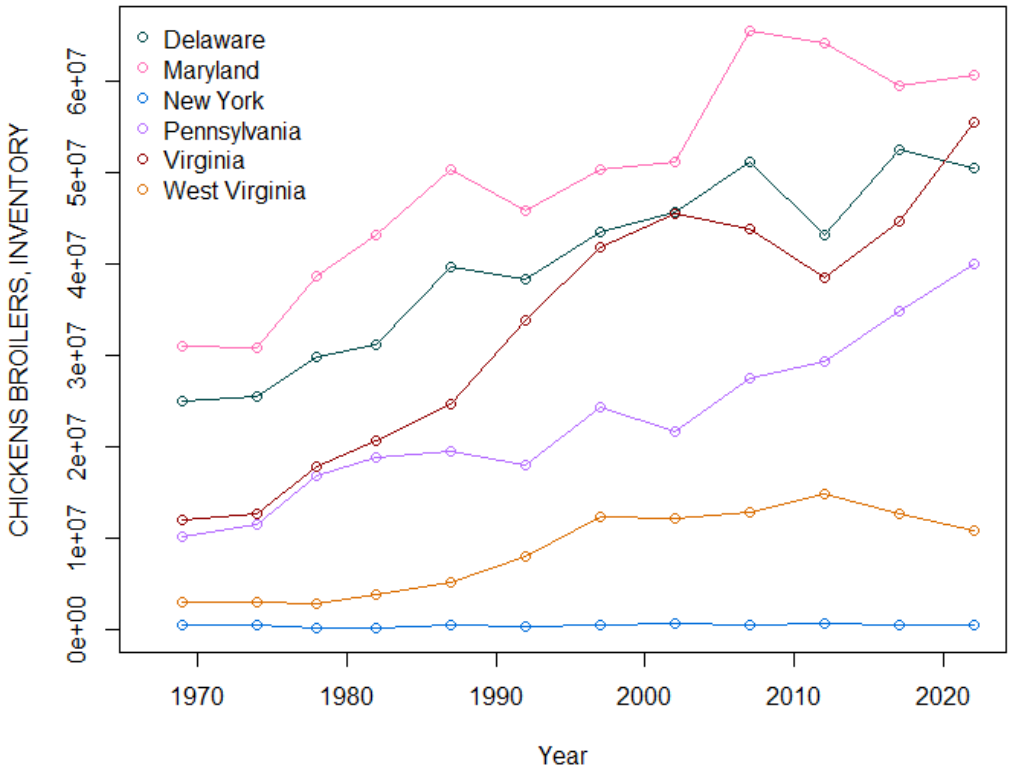
- Pasture acres down from 2017
- Decrease in cattle inventory across all states from 2017 to 2022

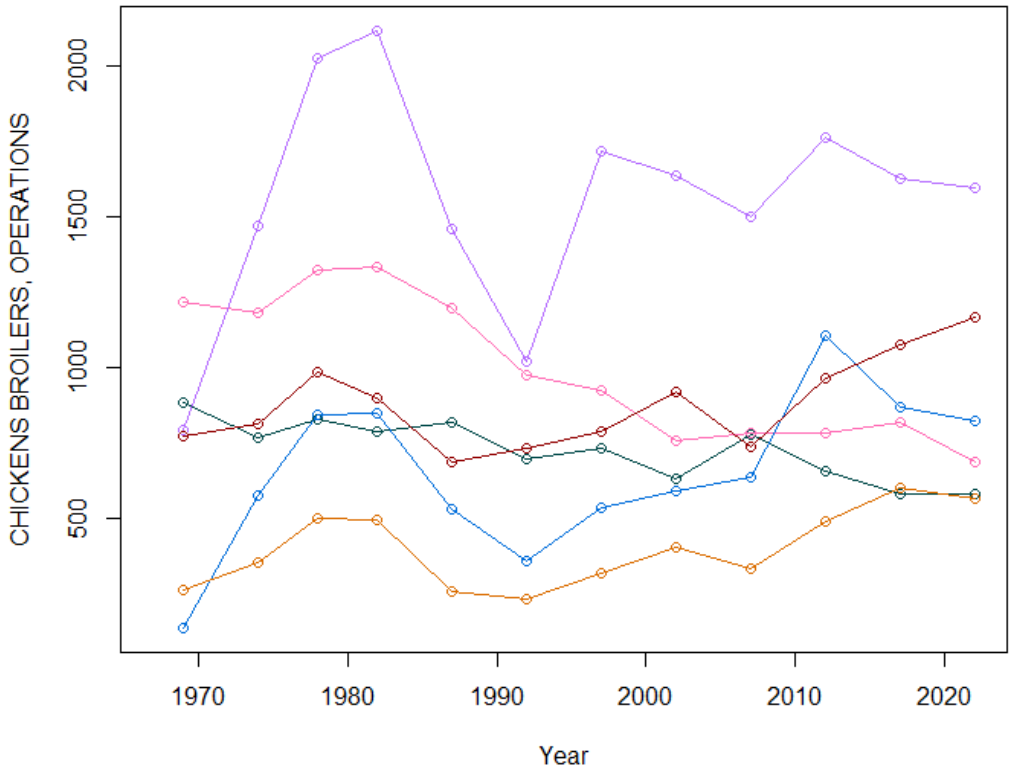



RAW DATA

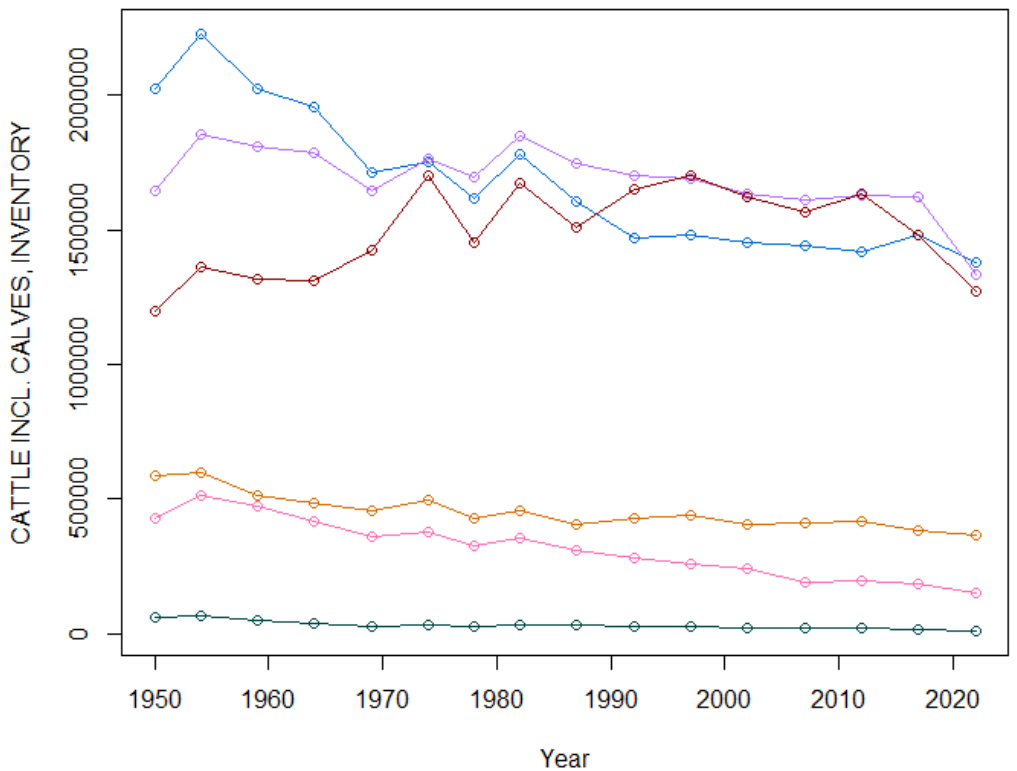
# Broilers Inventory and Operations by State

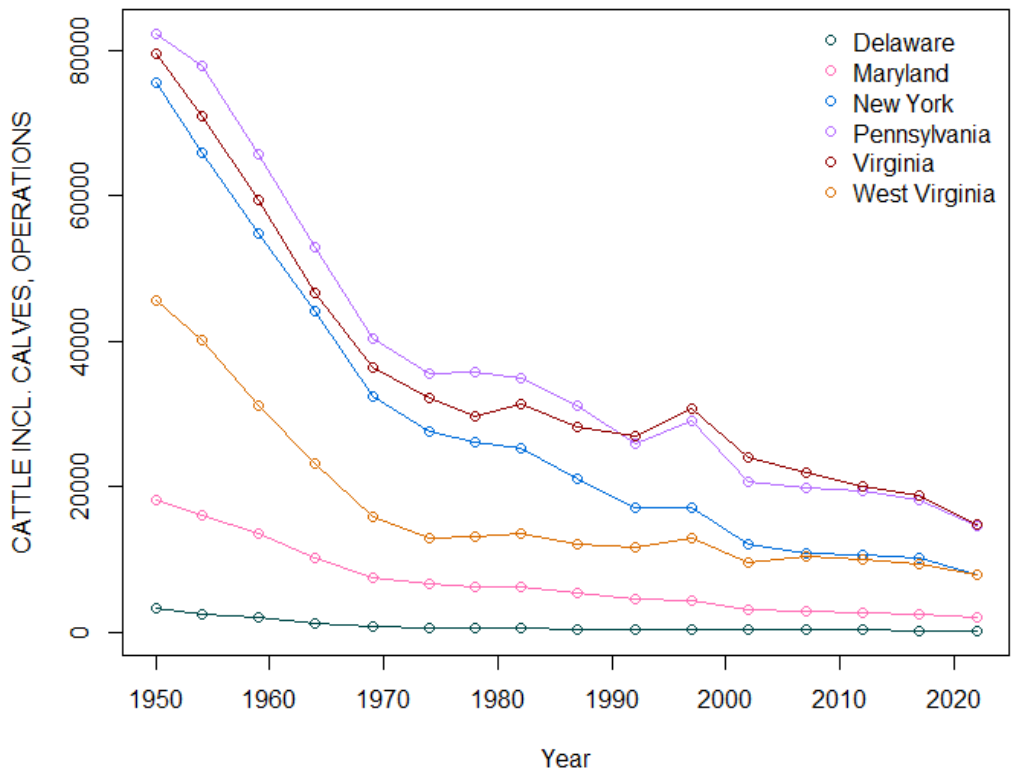



RAW DATA

# Questions


CATTLE INCL. CALVES, INVENTORY
0
500000
1000000
1500000
2000000
1950
1960
1970
1980
1990
2000
2010
2020
Year


CATTLE INCL. CALVES, OPERATIONS
0
20000
40000
60000
80000
1950
1960
1970
1980
1990
2000
2010
2020
Year
Delaware
Maryland
New York
Pennsylvania
Virginia
West Virginia

RAW DATA