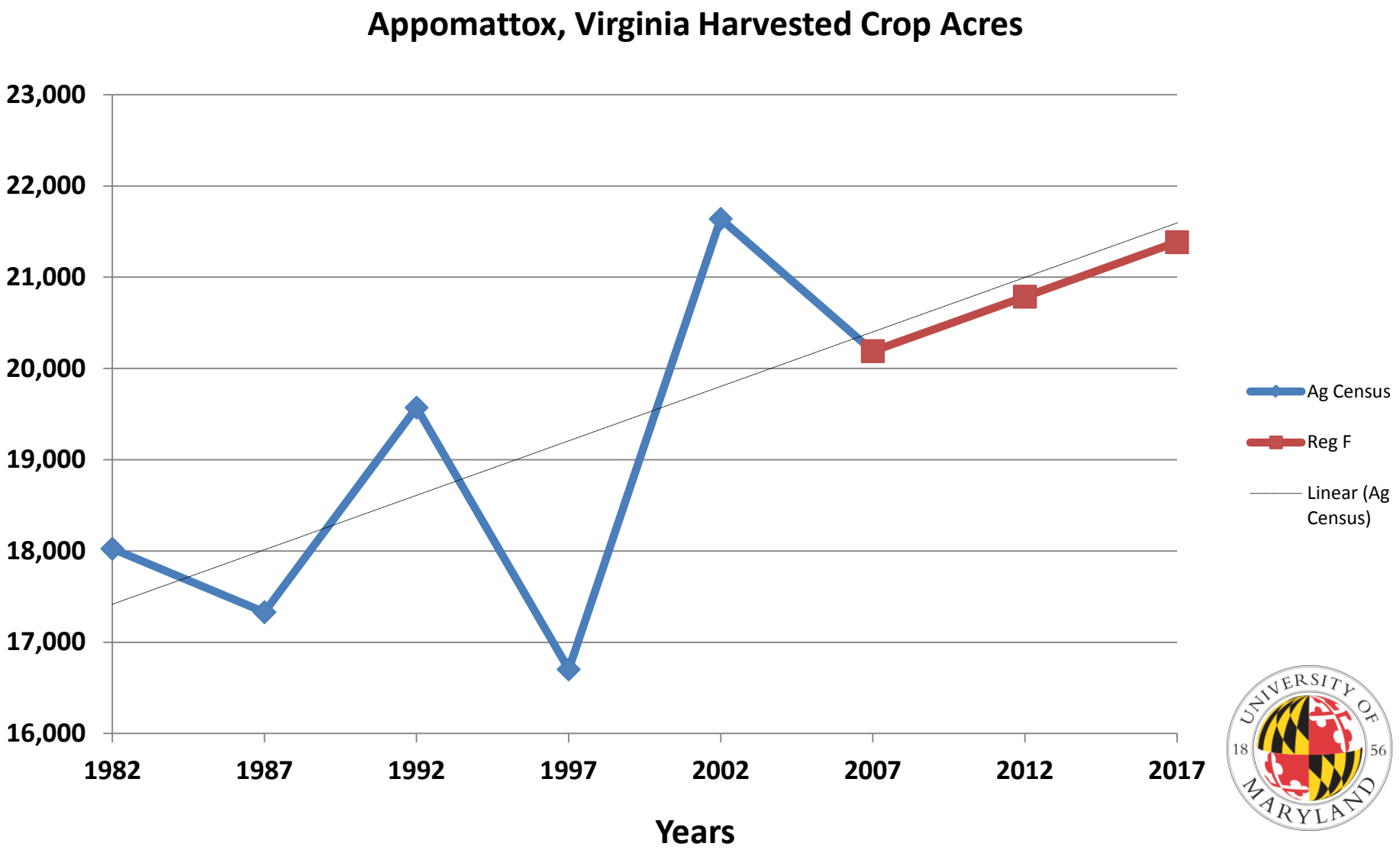
Short-Term Agricultural Forecasting Methods

Presentation to Land Use Workgroup 06172013
Matt Johnston
University of Maryland
Chesapeake Bay Program Non-Point Source Analyst

Previous Method

- USDA's Census of Agriculture provides acres and inventories of crops and animals from 1982 – 2007.
- Data is only available every 5 years.
- Long-term trend from 1982 – 2007 was used to estimate 2008 – 2012 acres and inventories.

What this looks like



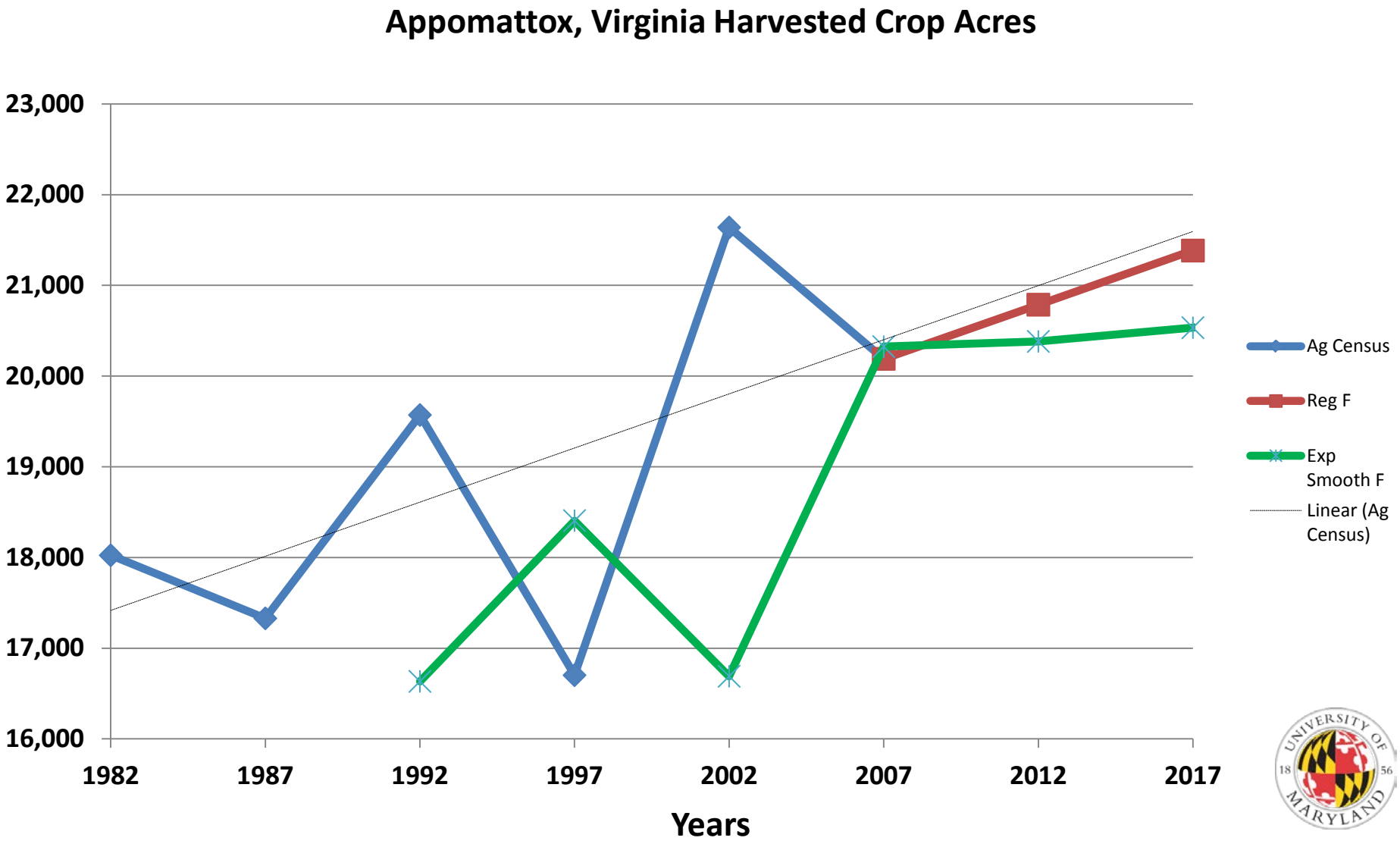
What we heard

- Long-term trends do not capture the realities of agricultural data.
- Economic, technological and regulatory changes impact agriculture on a short-term basis.
- We should consider the short-term trend more than the long-term trend.

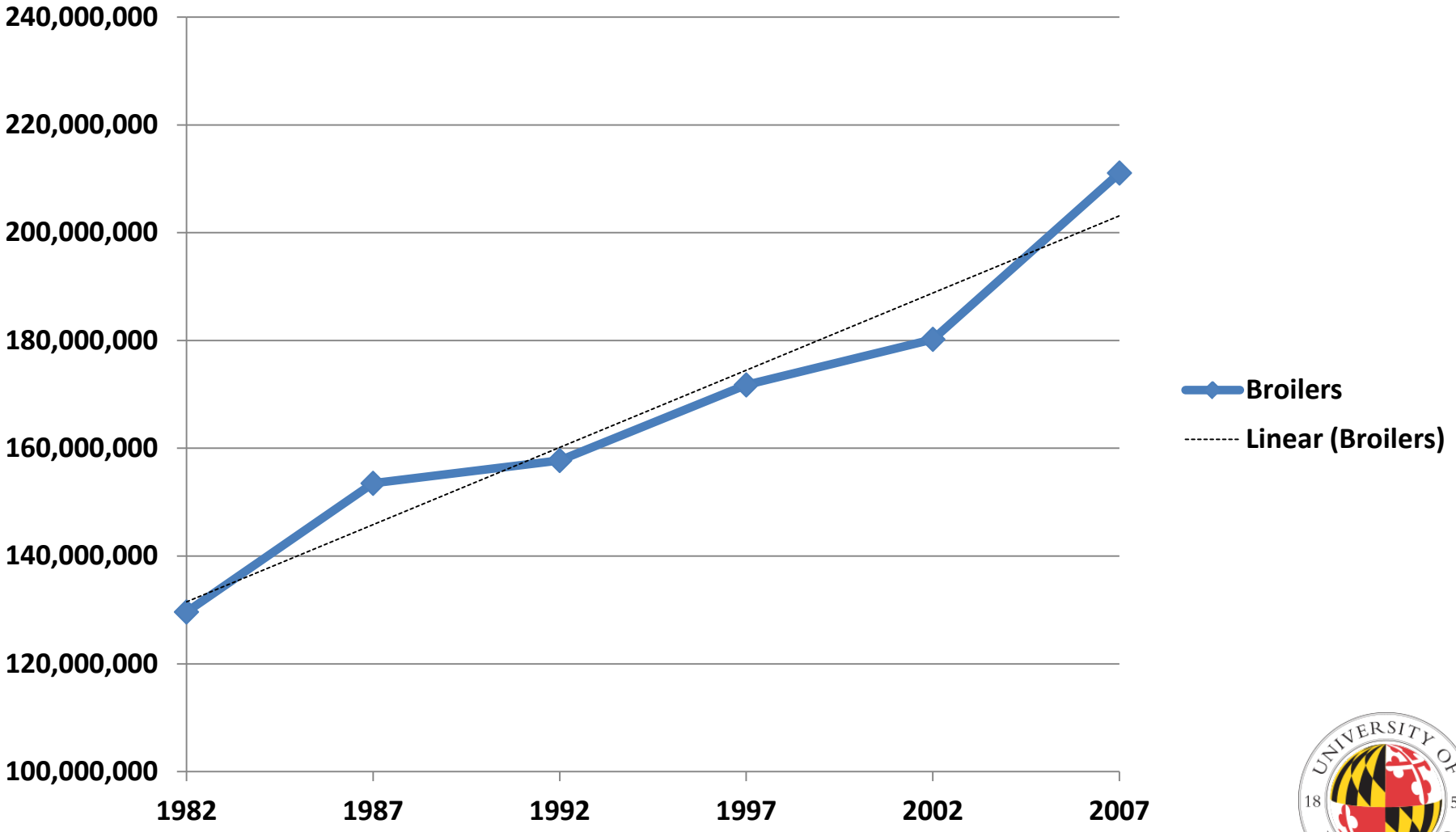
New Method (aka, double-exponential smoothing)

- Incorporates both the short-term trend (2002 to 2007) and the long-term trend (1982 through 2007) to forecast future agricultural data.
- Places a “weight” between 0 and 1 on the short-term trend and long-term trend so analysts and managers can place more value on one trend over the other.

What this looks like



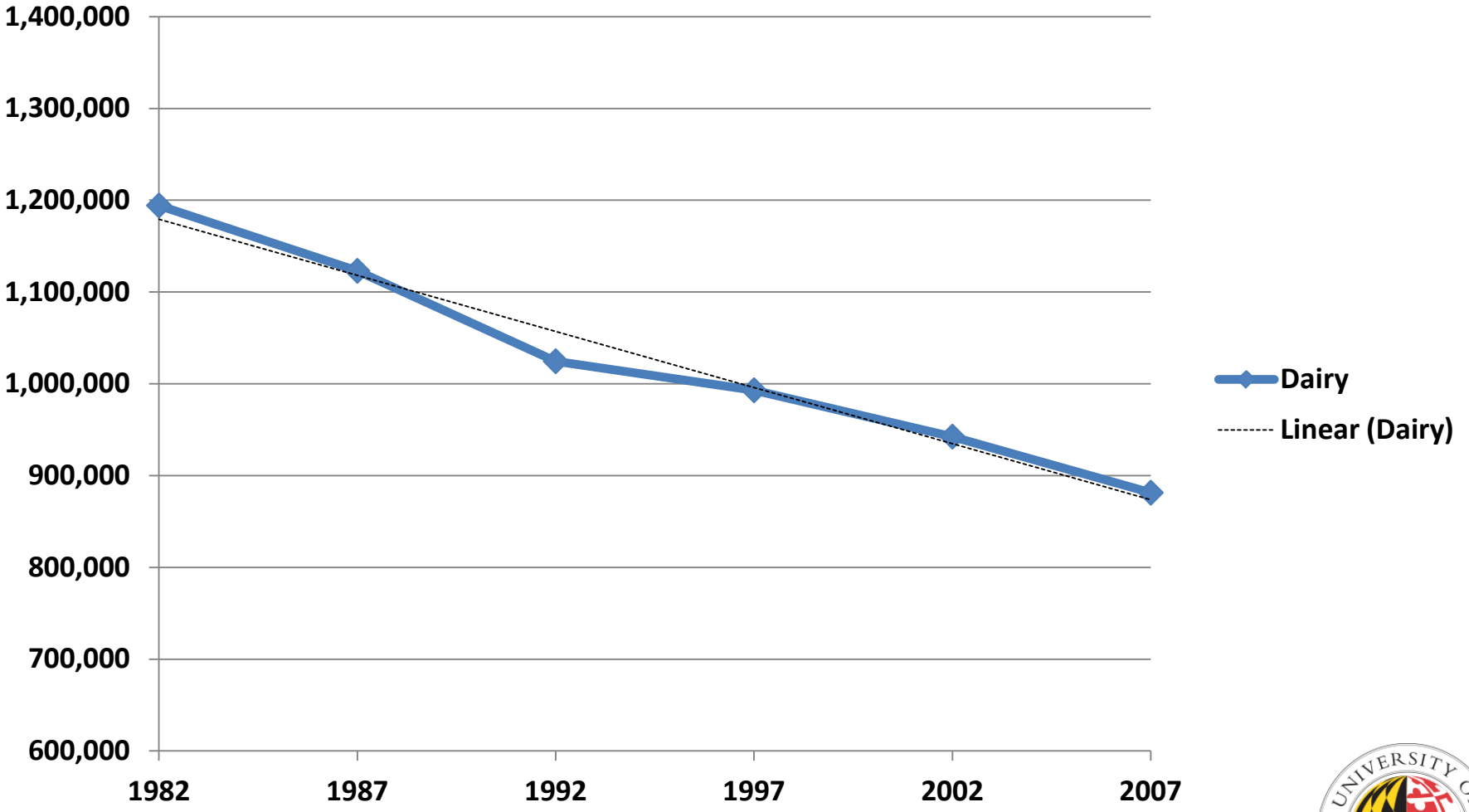
Broilers over time



Predicting 2007 Broilers

	AgCensus	Regression	Smoothing
2007	211,069,555	182,635,494	199,747,106
Delta	NA	-28,434,061	-11,322,449
Percent Delta	NA	-13.47%	-6.20%

Dairy over time



Predicting 2007 Dairy

	AgCensus	Regression	Smoothing
2007	881,370	930,080	859,060
Delta	NA	48,710	-22,310
Percent Delta	NA	5.53%	-2.53%

Pros and Cons

Pros

- Allows us to place weight on short-term trend rather than long-term trend
- Results in a better prediction of 2007 Ag Census numbers
- With the addition of the 2012 Ag Census, this method will likely have more predictive power going into the future

Cons

- Will result in higher than expected or lower than expected animal numbers in counties with volatility in data
- Represents a shift in the way we have historically projected agricultural data
- Is more difficult to explain

Agriculture Workgroup Decision

- Agriculture Workgroup decided opted to:
  - Replace the current forecasting method with the double exponential smoothing forecasting method for future agricultural short-term projections until 2017, at which time the availability of the new CBP Phase 6 models will require a reassessment of short-term projection methods. It is understood that the 2012 Ag Census will be available in 2014 and will be incorporated to produce agricultural forecasts in future years until the 2017 reassessment.