Genetic Improvement Programs in the Fescue Belt: Do Incentive Programs Raise the Bar or Just the Price?

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Top Beef States (Beef Cow Numbers 2022, M)

1. Texas (4.36)
2. Oklahoma (2.01)
3. Missouri (1.97)
4. Nebraska (1.72)
5. South Dakota (1.54)
6. Kansas (1.33)
7. Montana (1.29)
8. Kentucky (.91)
9. North Dakota
10. Florida
11. Arkansas
12. Iowa
13. Tennessee (.86)
14. Alabama

Top Beef States (Beef Cows/Mile^2 2022)

1. Oklahoma (29)
2. Missouri (28)
3. Kentucky (23)
4. Nebraska (22)
5. Tennessee (20)
6. South Dakota (20)
7. Arkansas (17)
8. Texas
9. Kansas
10. Iowa
11. Florida
12. Virginia
13. Alabama
14. North Dakota

It just means more!

Tobacco is King!

Until it’s NOT!

Tobacco Settlement

Cigarette consumption has dropped by more than 50% and teenage consumption has gone from 36% to 6%!

Based on cigarette tax in each state

Kentucky has received $2.7B since 1998 (last year $105M)

Tennessee has received $3.9B since 1998 (last year $146M)

Both States have committed a significant portion of these funds back to AGRICULTURE!

Kentucky Beef Cattle Genetic Improvement Program (2001)

- Investment of Tobacco Settlement Funds
  - Direct payments to tobacco farmers based on allotment (onetime "buyout" payment)
  - State Funds – for programming to transition tobacco farmers away from tobacco into other agriculture commodities
  - County Funds – incentive programs to encourage new/better practices – based on county's tobacco allotments – County Agricultural Investment Program (CAIP)

KADF
KENTUCKY AGRICULTURAL DEVELOPMENT FUND

KENTUCKY DEPARTMENT OF AGRICULTURE

Kentucky Beef Cattle Genetic Improvement Program (2001)

- Bull Cost-share Program (part of CAIP)
  - Multiple counties requested similar assistants to develop bull cost-share
  - Developed a category (independent culling level) approach based on EPD, US-MARC data and discussions with breed associations
  - Other criteria such as BSE, vaccinations, continuing education, etc.

Photo: Lydia Yon

Kentucky Beef Cattle Genetic Improvement Program

- Initial program categories
  - Heifer Acceptable (CE, growth)
  - Balanced Trait (CE, growth, Milk) (index optional since 2020)
  - Terminal (CE, growth)
- Added categories (2003)
  - Low Maintenance (ended 2020)
  - High Performance (ended 2020)
  - Carcass Merit (CE, growth, REA, Fat, Marb) (index only since 2020)
- Phased in genomics requirement starting in 2021

https://www.kyagr.com/agpolicy/documents/2022-Program-Guidelines-Applications/ADF_APP_animal-large.pdf

Photo: Nichols Farms

Tennessee Agricultural Enhancement Program (TAEP)

- Initiated 2005 through the Tennessee Department of Agriculture
- Cost-share based on meeting EPD requirements
- Bull categories
  - Calving Ease/Maternal (CE, growth, Maternal Index)
  - Balanced Trait/Maternal (CE, growth, Maternal Index)
  - End Product/Terminal (CE, growth, Terminal Index)
  - Suggestions for Milk and Docility EPD
  - Genomic-enhanced EPD received increased incentive starting in 2016 (required – 2024)

TN Department of Agriculture

https://www.tn.gov/content/tn/agriculture/farms/taep/producer/genetics/cattle.html

KY and TN Programs

Similar

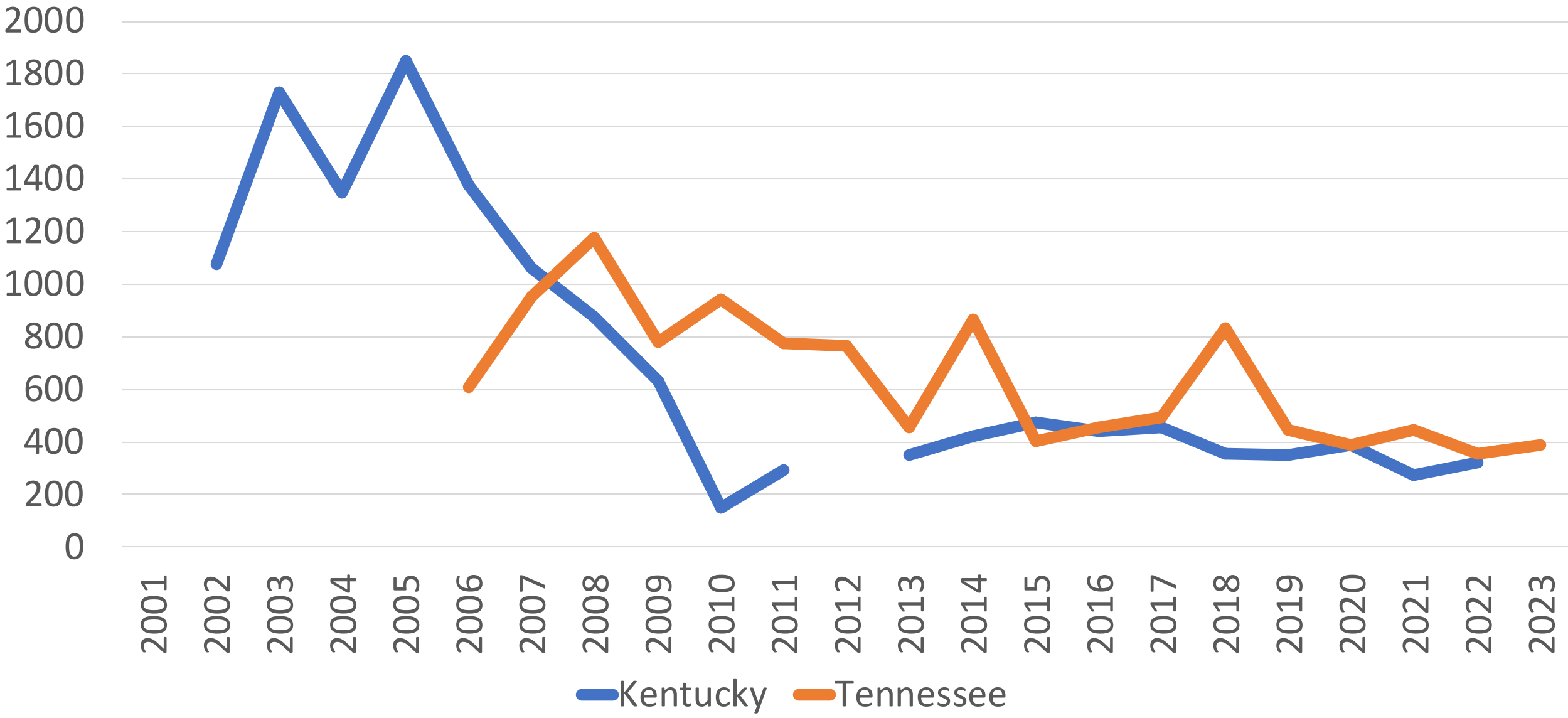
- Based on Science and Technology
  - Breed Association Computed Expected Progeny Differences
  - US-MARC
  - Genomics

- Encourage sound management practices
  - BSE
  - Vaccinations
  - BQA
  - Crossbreeding
- Education Requirements

Different

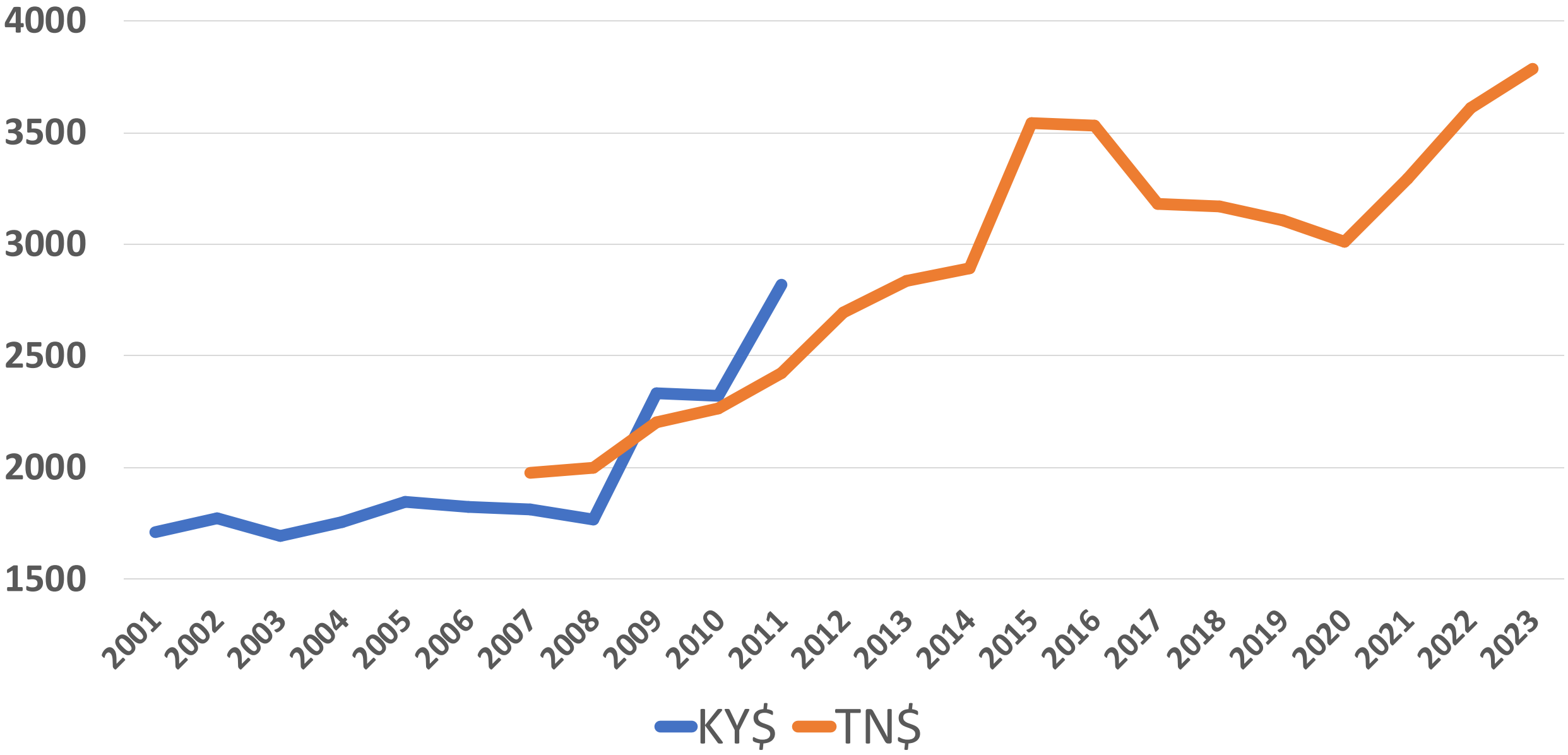
- Modifying EPD standards
  - KY – only change if changes made to NCE
  - TN – annual adjustments based on genetic trends
- Different bull categories

Bull Cost-share, n



2001 KY purchased 4514 bulls through cost-share

Bull Prices Paid, $



Bulls sold per state annually (very conservative)

Kentucky

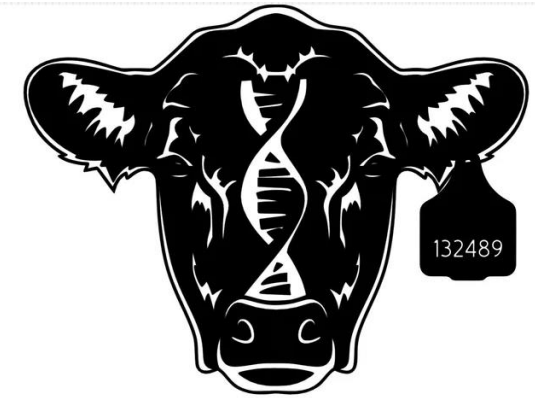
- 914,000 cows
- 30 head breeding unit
- 4 years of service
- ~7,600 bulls put into service annually
- Program **DIRECTLY** impacts about 12% of bull purchases (5% recently)

Tennessee

- 857,000 cows
- 30 head breeding unit
- 4 years of service
- ~7,100 bulls put into service annually
- Program **DIRECTLY** impacts about 12% of bull purchases

Observed Behavior Changes

- Seedstock
  - Increased data submissions with registrations
  - Increased use of genomics
  - Changes to genetic trends for some traits
- Commercial
  - Greatly improve understanding and use of EPD
  - Increased science-based knowledge of improved management practices including bull selection
  - Better understanding of crossbreeding
  - Improved understanding of genomics



Yearling Weight (YW) EPD

What does it measure or indicate?
- ✓ Total growth from birth to a year of age
- ✓ Calf growth to market weight
- ✓ Mature body size

What unit is it reported in?
- ✓ Pounds of calf

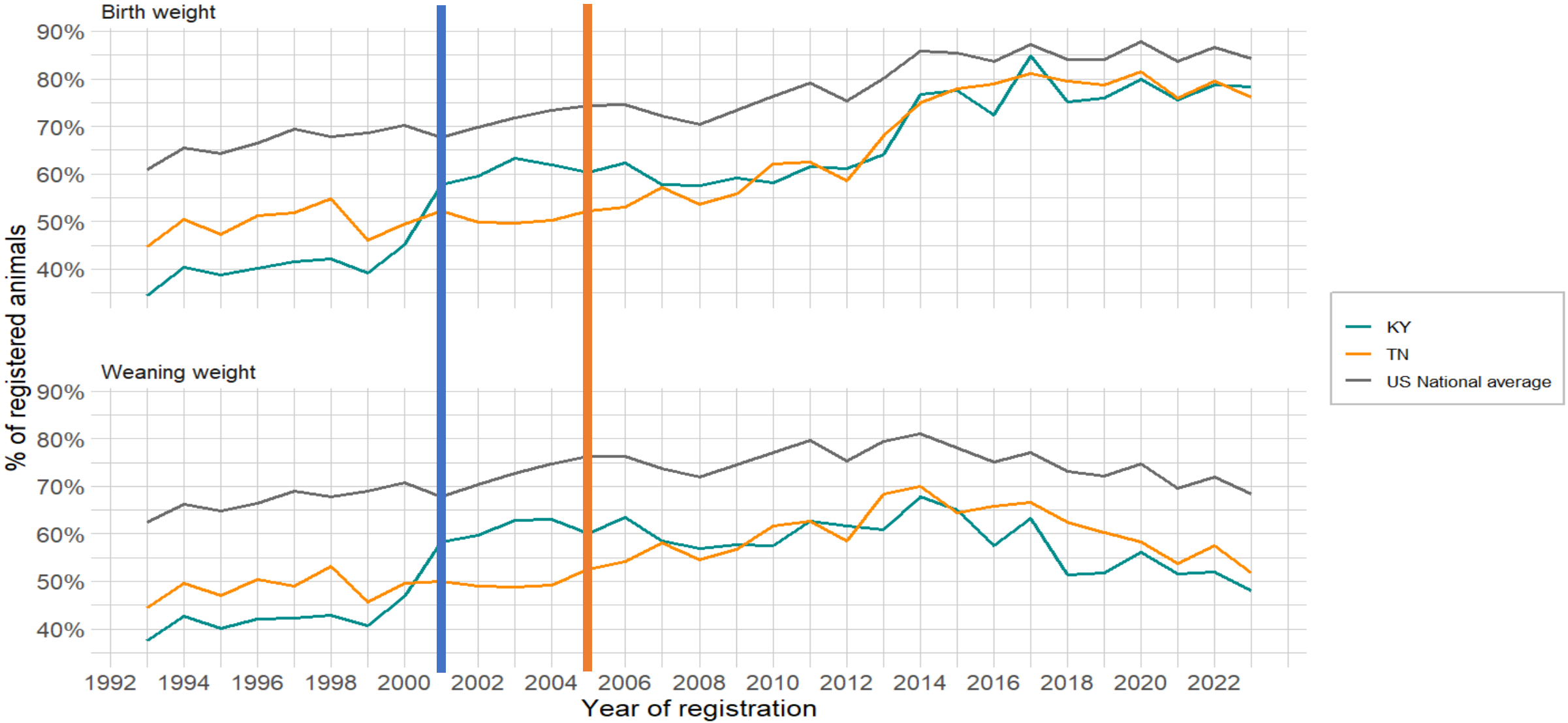
What value is desired?
- ✓ Higher yearling weights and faster growth to market weight are desired, so higher YW EPD values are desired. But, selecting for extreme growth may increase BW.

What does the data say?

- American Angus Association
  - Highest number of bulls purchased in both states
- Registration/Data Submissions
- Genetic Trends
- Index Trends
- Genomic Submissions

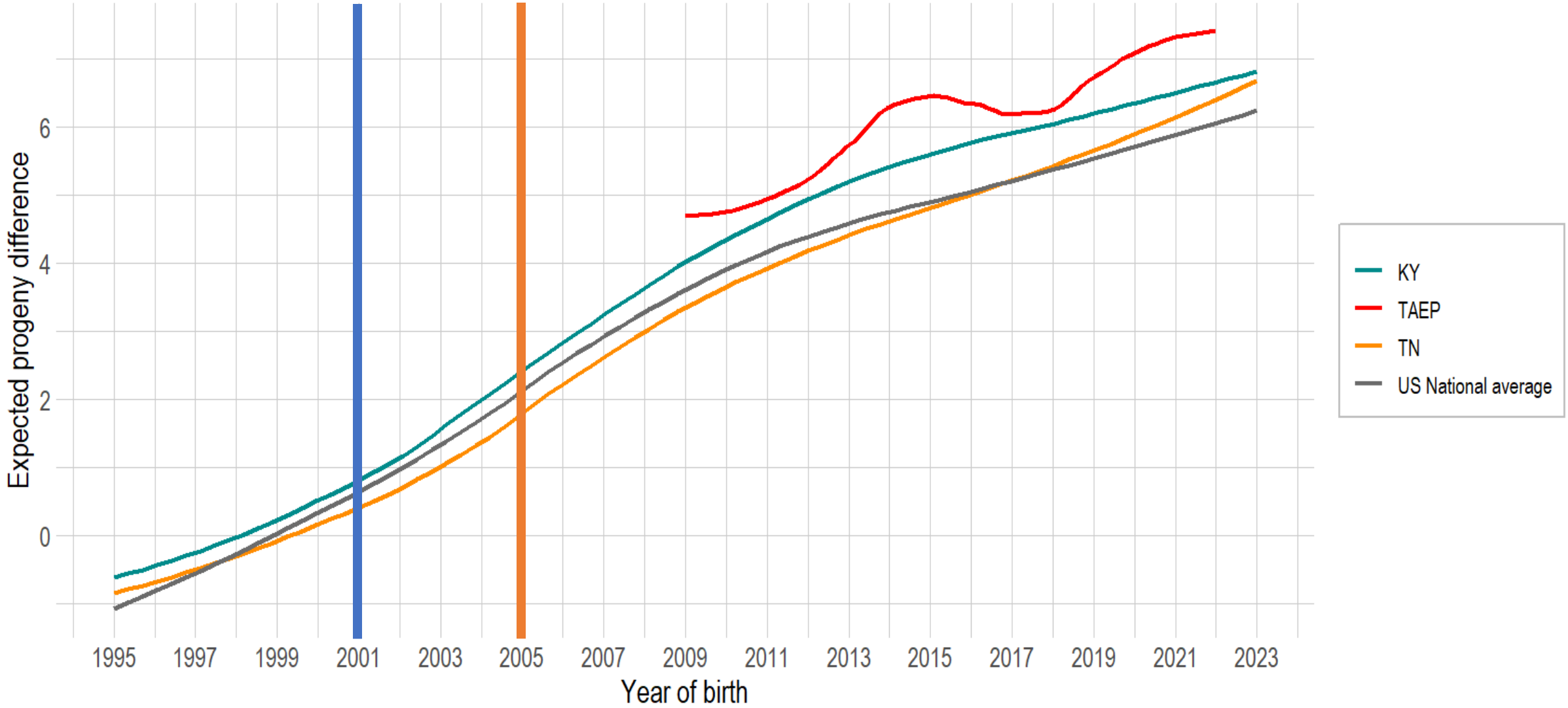
Data submission to the American Angus Association

Porportion of registered animals with phenotype submitted



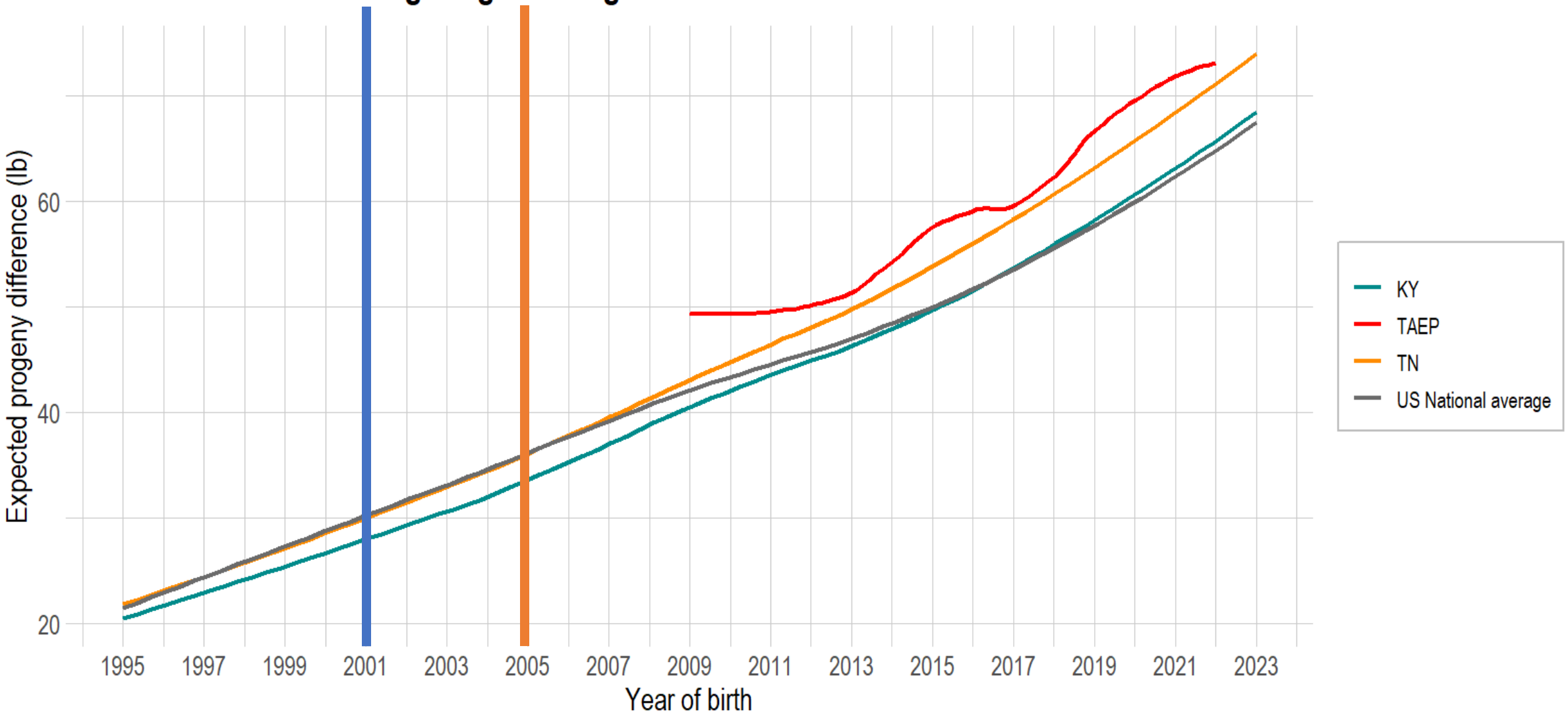
Source: Angus Genetics Inc.

Genetic trend for calving ease direct of Angus beef cattle



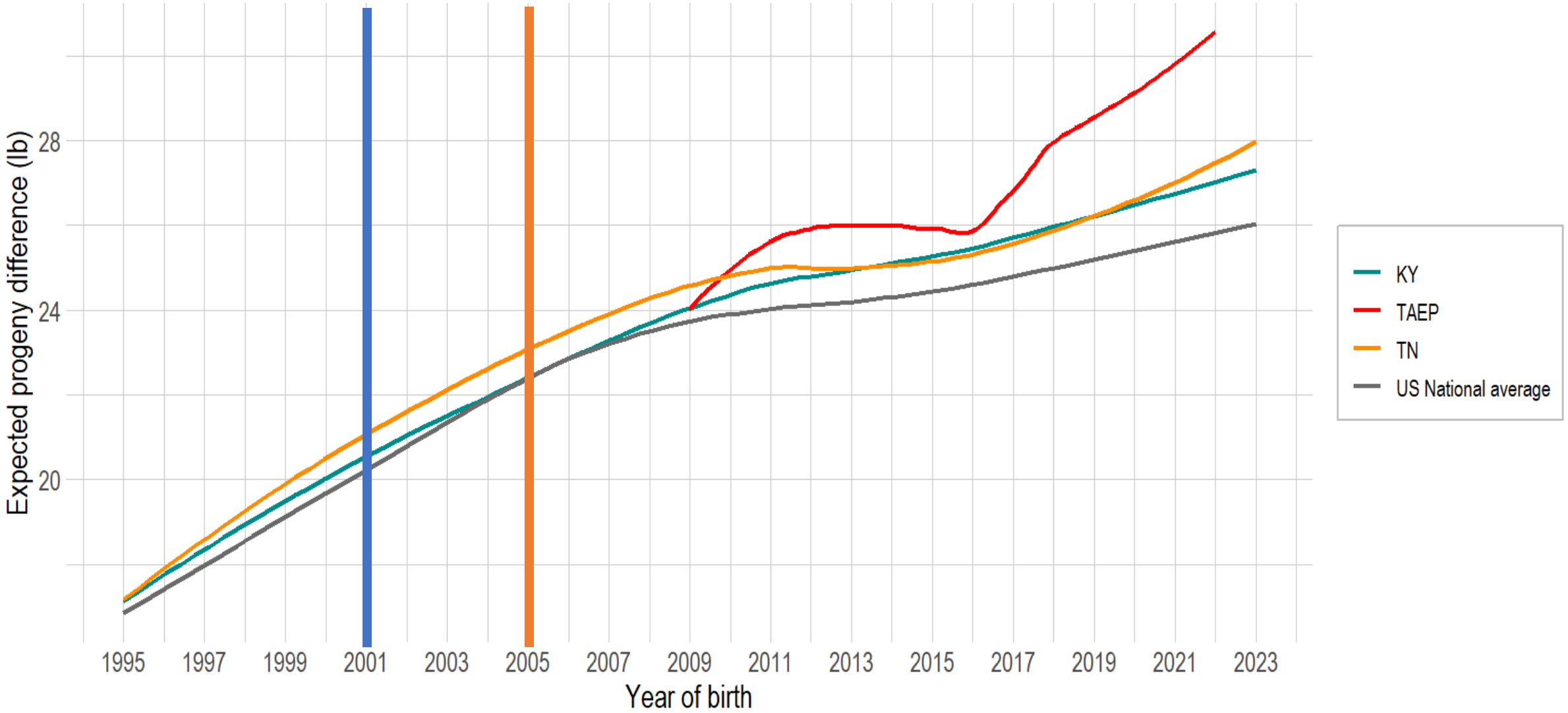
Source: Angus Genetics Inc.

Genetic trend for weaning weight of Angus beef cattle



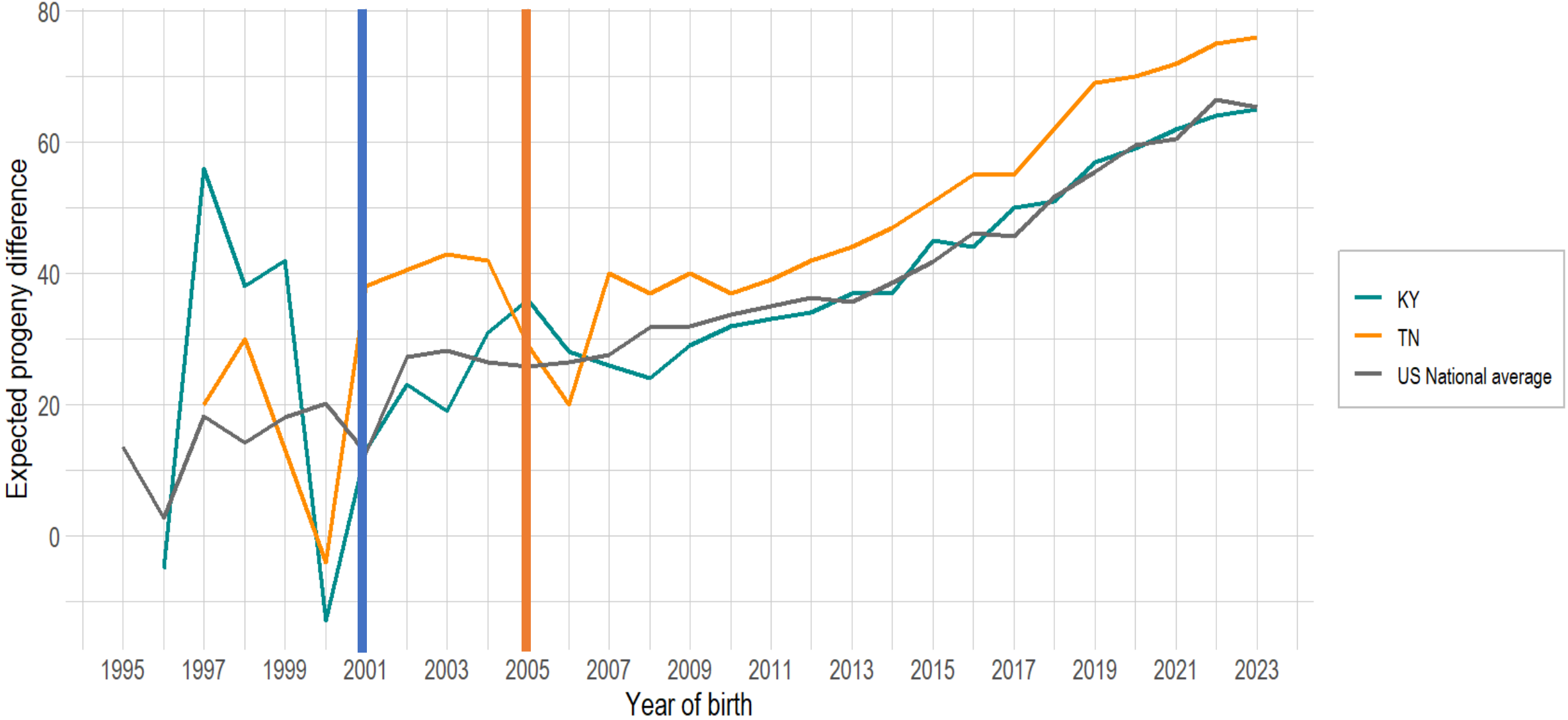
Source: Angus Genetics Inc.

Genetic trend for maternal milk effect of Angus beef cattle



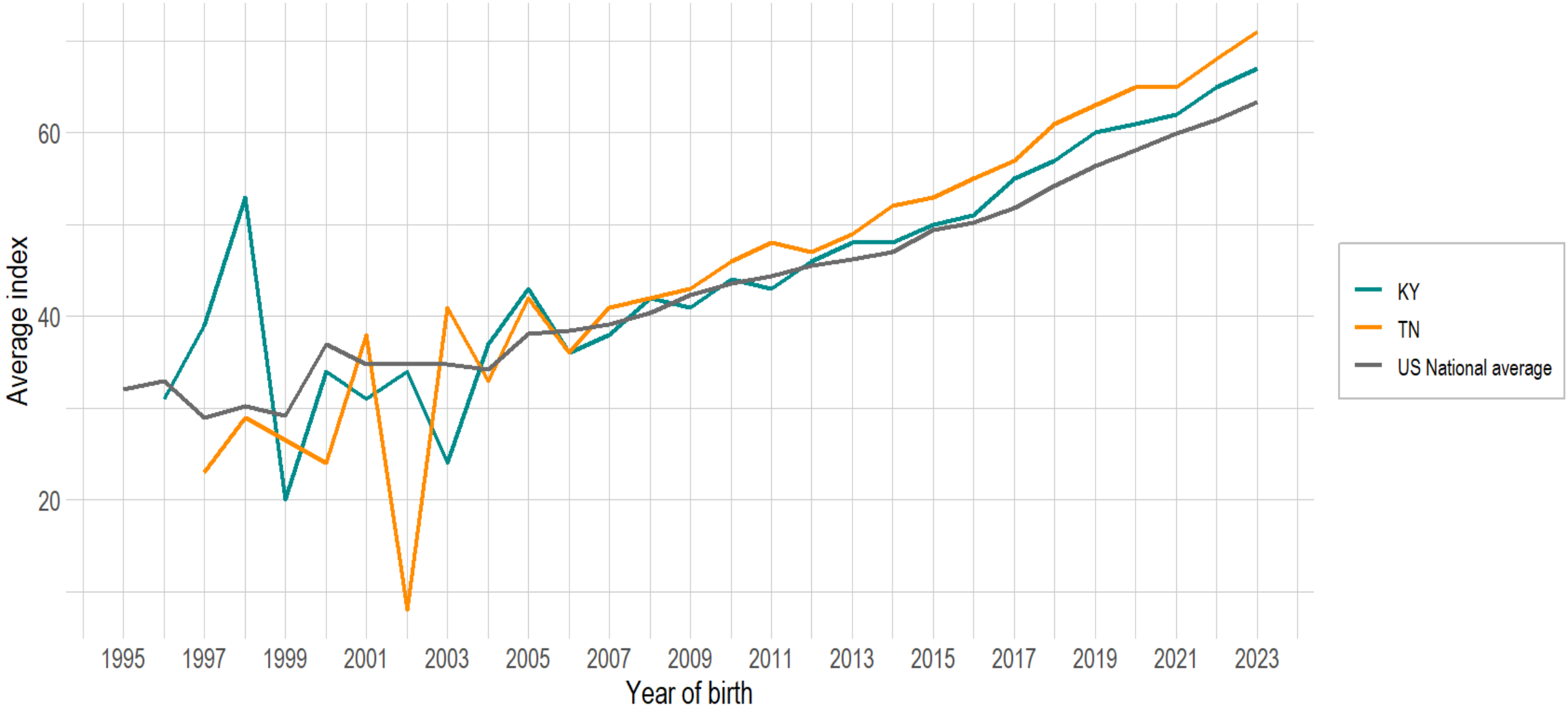
Source: Angus Genetics Inc.

Genetic trend for mature weight of Angus beef cattle



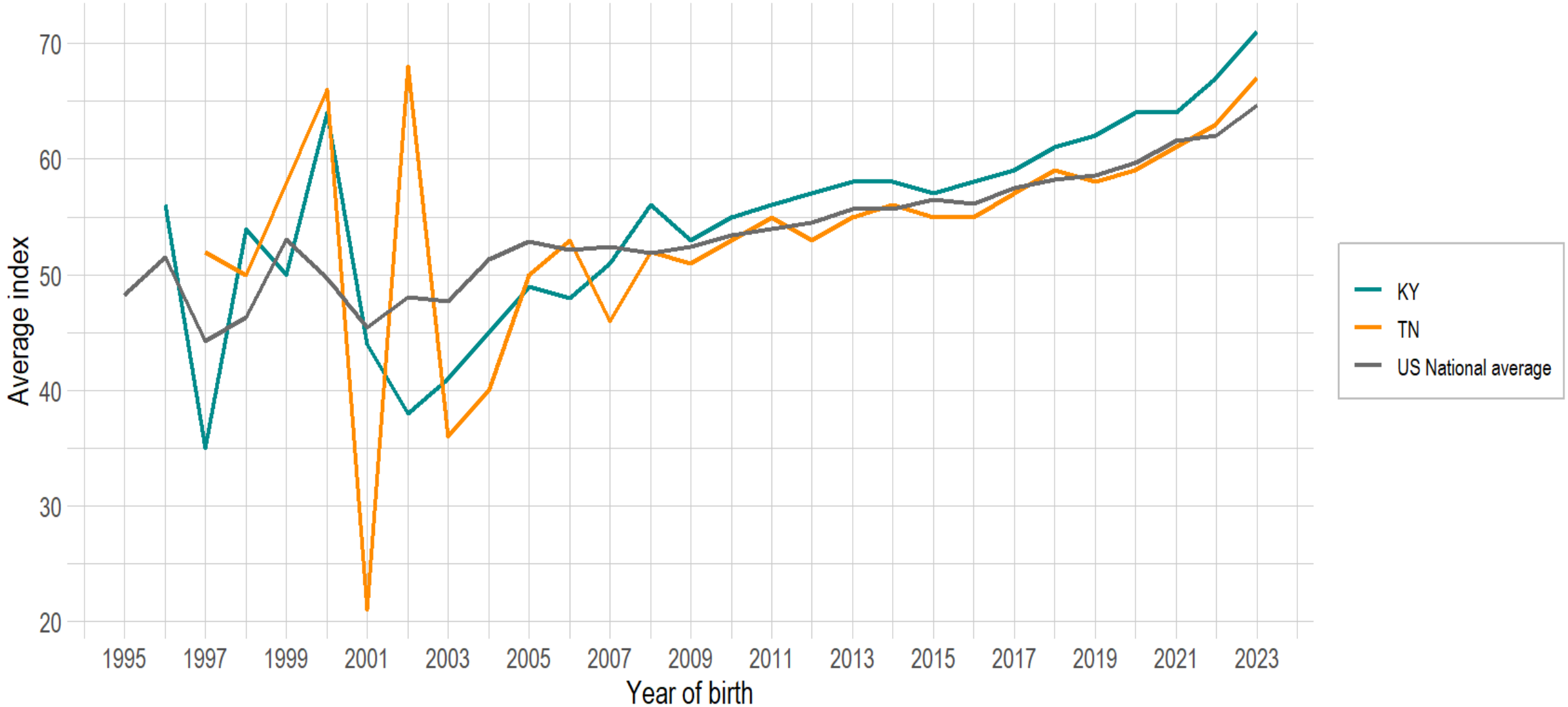
Source: Angus Genetics Inc.

Genetic trend for $W of Angus beef cattle



Source: Angus Genetics Inc.

Genetic trend for $M of Angus beef cattle



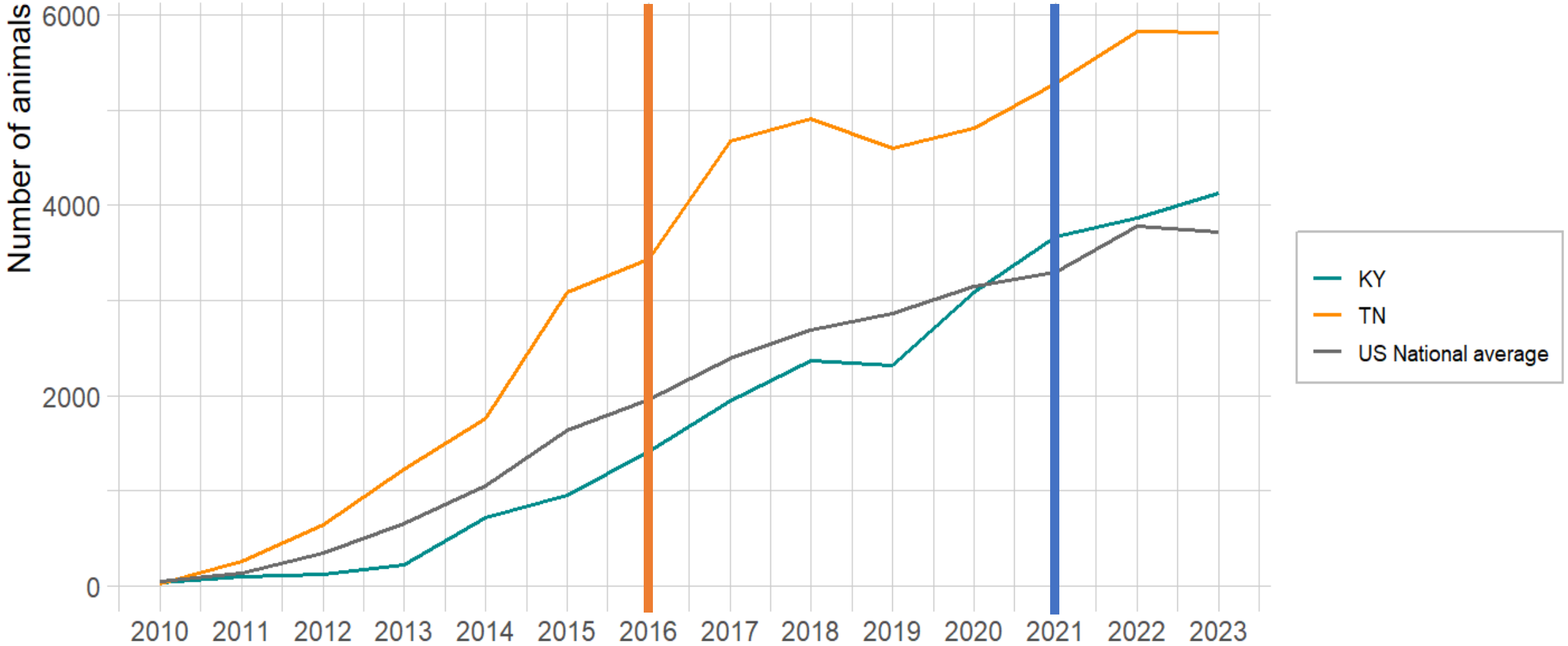
Source: Angus Genetics Inc.

Genomics/Accuracy

- Tennessee
  - Started in 2016
  - Added incentive, but not a requirement
  - 2017 started requirement of .15 minimum accuracy
  - 2024 made genomic testing a requirement
- Kentucky
  - Started in 2021 as a requirement for breeds that had genomically enhanced EPD
  - Alternatively, bulls with >.25 acc can qualify

Genomic tests submission for newly registered animals to the American Angus

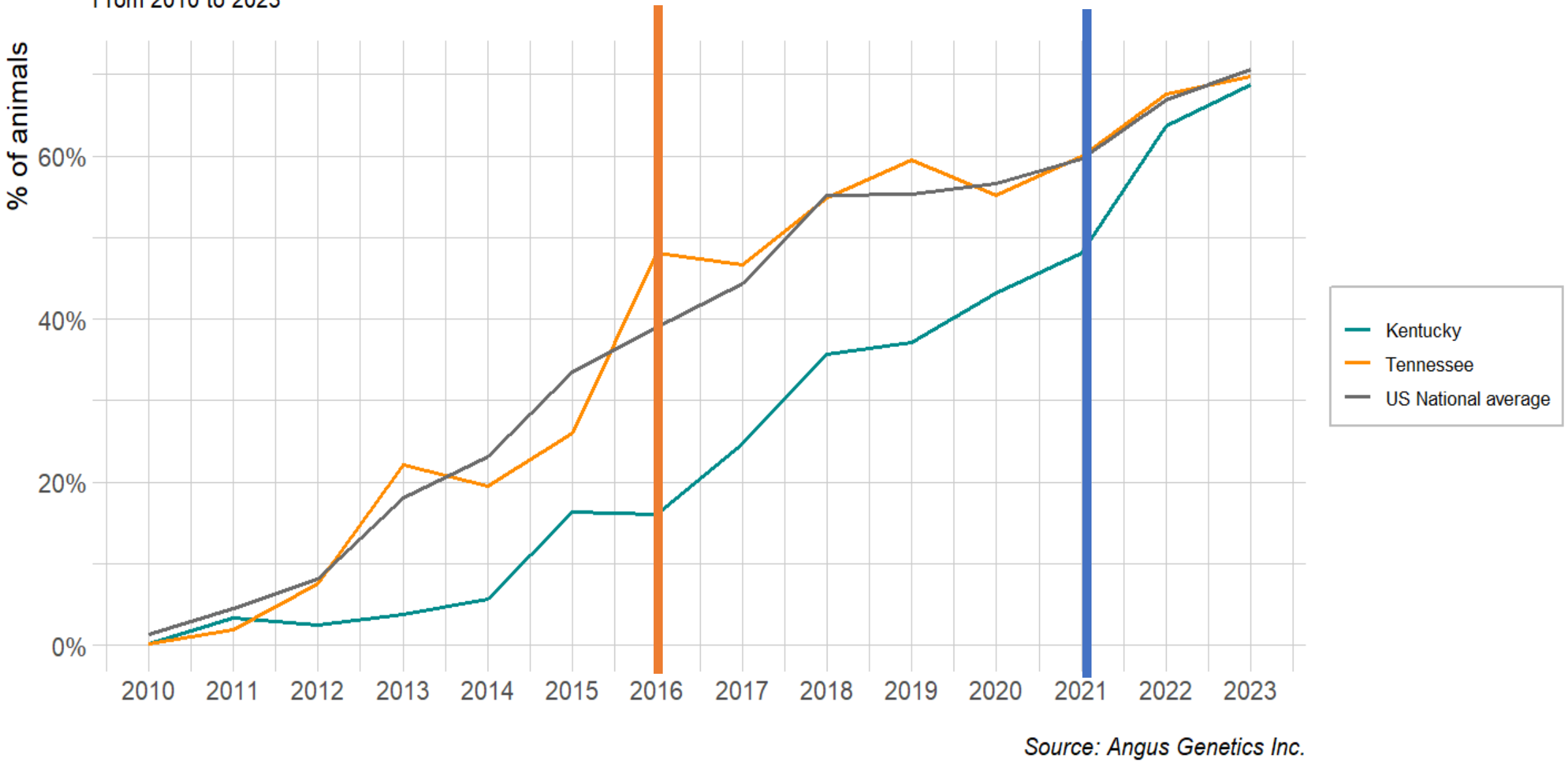
Animals with genomic tests requested within one year of registration



Source: Angus Genetics Inc.

Genomic test requests relative to animal registrations to the American Angus Association

From 2010 to 2023



Source: Angus Genetics Inc.

Summary

- Percentage of bulls that directly qualify for the program is quite low
- Negative impacts on commercial cattlemen
  - Probable slight increase in bull prices
- Positive impacts on beef industry
  - Improved understanding of selection practices by both seedstock and commercial cattlemen
  - Improved registration/phenotyping
  - Improved index values compared to national averages
  - Improved use of genomics technology
  - Positive economic benefits to the citizens of each state
    - Each TAEP dollar generates $6.55 in local economies
    - KY increased feeder calf value by approximately $7/hd (over $5M annually) based on improvements to $M

Thank You!

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  - Larissa Novo