HOW STABLE ARE GENOMIC PROOFS?

Most progressive dairy producers have now adopted and embraced genomics as the best way to make rapid genetic progress.

Yet, we don't blame you if the recent base change has left you wondering. Are genomic proofs as stable as they once were? Are genomic-proven bulls your best option, even when many daughter-proven sires still offer a great genetic package.

With these questions in mind, we look for answers in the real proof data on bulls across the entire AI industry.

WHAT HAVE WE LEARNED ABOUT GENOMICS?

To illustrate the stability of genomic proofs, PEAK geneticist, Ashley Mikshowsky, analyzed proof figures on nearly 7,800 industry Holstein bulls. These bulls were initially released as genomic-proven sires between January 2010 and December 2016 – and they all have a current daughter proof.

You can find the results in Graphs 1 and 2 below. The darker-colored line on each graph charts the average GTPI or NM$ by initial genomic release date. The lighter-colored line shows the average April 2020 daughter proven TPI or NM$ for those same bulls. The space between the two lines represents the average change for TPI or NM$ from initial genomic release to daughter proof.

Graph 1 illustrates TPI while Graph 2 illustrates NM$

Graph 1. Change in TPI from genomic release to April 2020 daughter proof
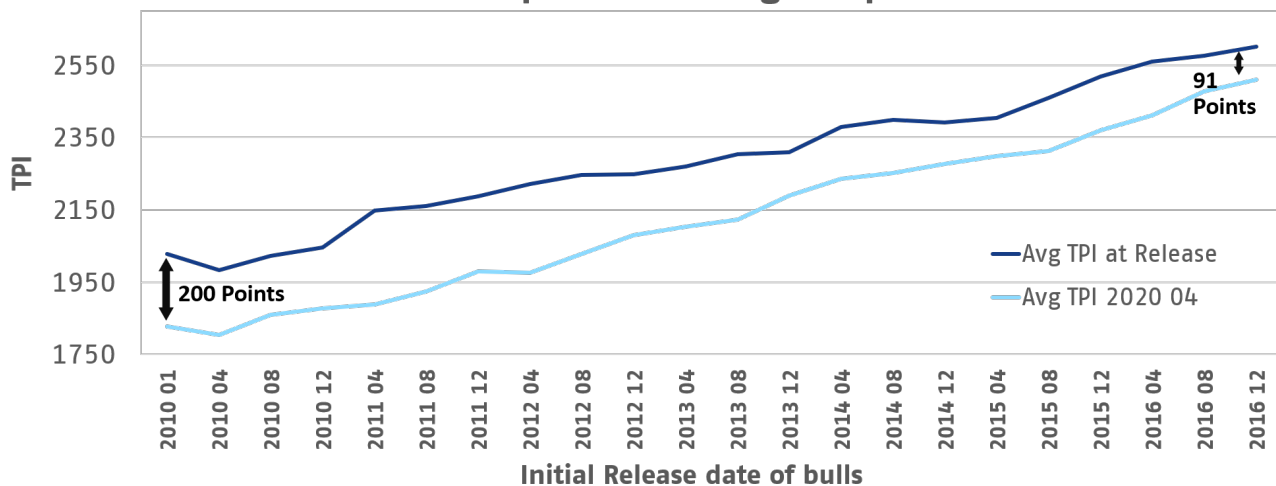
As you can see on the left side of the graph, the bulls first released in January 2010 changed 200 TPI points from their genomic debut to their April 2020 daughter proof.

Let's compare that to the newer daughter-proven bulls, including those released as genomic sires in December 2016. For these bulls, you see only a 91-point TPI difference from their first genomic proof to their April 2020 daughter proof.

This means the stability in GTPI from genomic release until daughter proofs has more than doubled – or the change is less than half! You also see the added bonus of genetic levels on a continual rise!

Graph 2. Change in NM$ from genomic release to April 2020 daughter proof
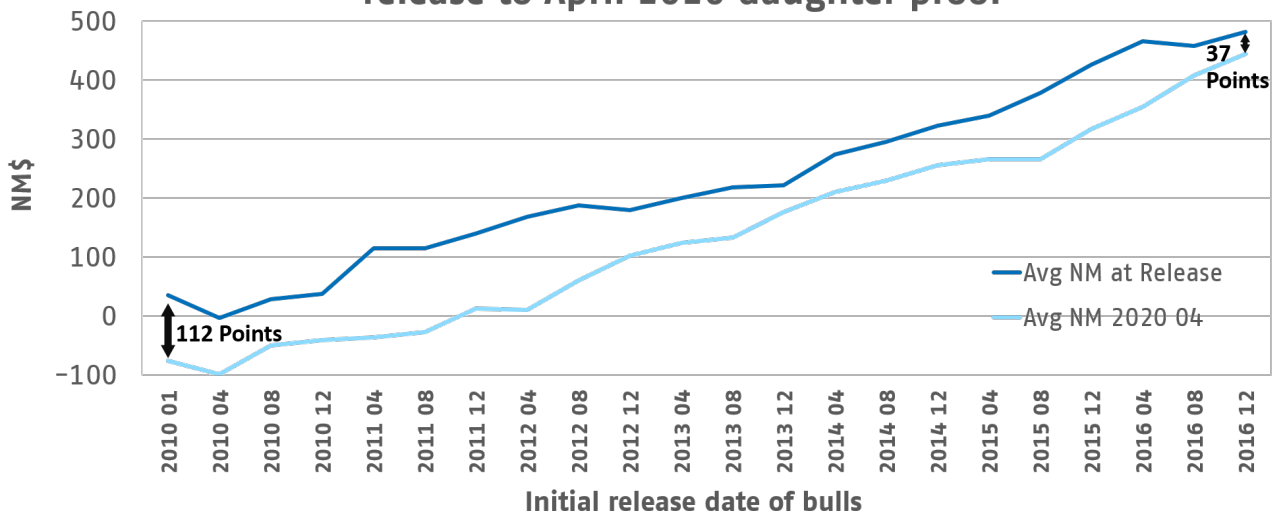
The same goes for Net Merit $. Check out those results here in Graph 2.

Industry bulls first released as genomic-proven sires in January 2010 dropped, on average, 112 NM$ from their first release until their April 2020 daughter proof. Whereas, the most recent bulls to get a daughter proof – those first released as genomic sires in December 2016 – only changed a mere 37 NM$ from their initial release.

Looking at these results, your argument might be that dairy genomics are still inflated. Yes, and while that may still be true, the gap between genomic and daughter proofs has clearly improved since the start of genomics.

## LET'S DIG DEEPER INTO GENOMIC PROOF STABILITY

Because two graphs may not have you convinced on the stability of genomics, let's check it out from another perspective.

Graph 3 and Graph 4 are based on additional proof data analyzed by PEAK geneticist, Ashley Mikshowsky. She evaluated 971 industry bulls released as genomic-proven sires in 2016. This is to see the distribution of chance from genomic proof to daughter proof – for both TPI and NM$. She uses this age group specifically because those bulls released in 2016 now have daughter proofs for production, health, and conformation traits.

Graph 3 shows the distribution of change for TPI and Graph 4 shows the distribution of change for NM$. The orange bar is in place to show the reference to a change of 0.

Graph 3. Histogram of TPI change for industry bulls released in 2016

Mean: -115
StDev: 113
N: 971
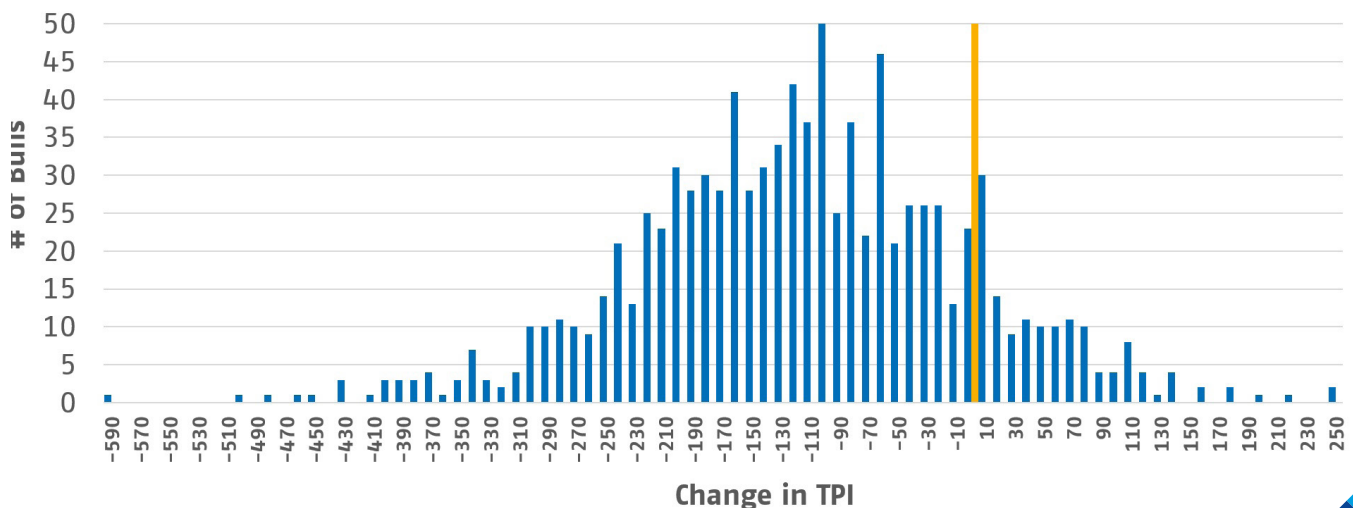
The bulls released in 2016 changed an average of −115 TPI points from their first release in 2016 to their daughter proof in April 2020.

More than 140 of these bulls have a daughter proven TPI within just thirty points of their original genomic TPI. And only thirty bulls from the entire group of 971 changed more than 300 TPI points.

Graph 4. Histogram of NM$ change for industry bulls released in 2016

Mean: −70
StDev: 96
N: 971

Y-axis: # of Bulls
X-axis: Change in NM$
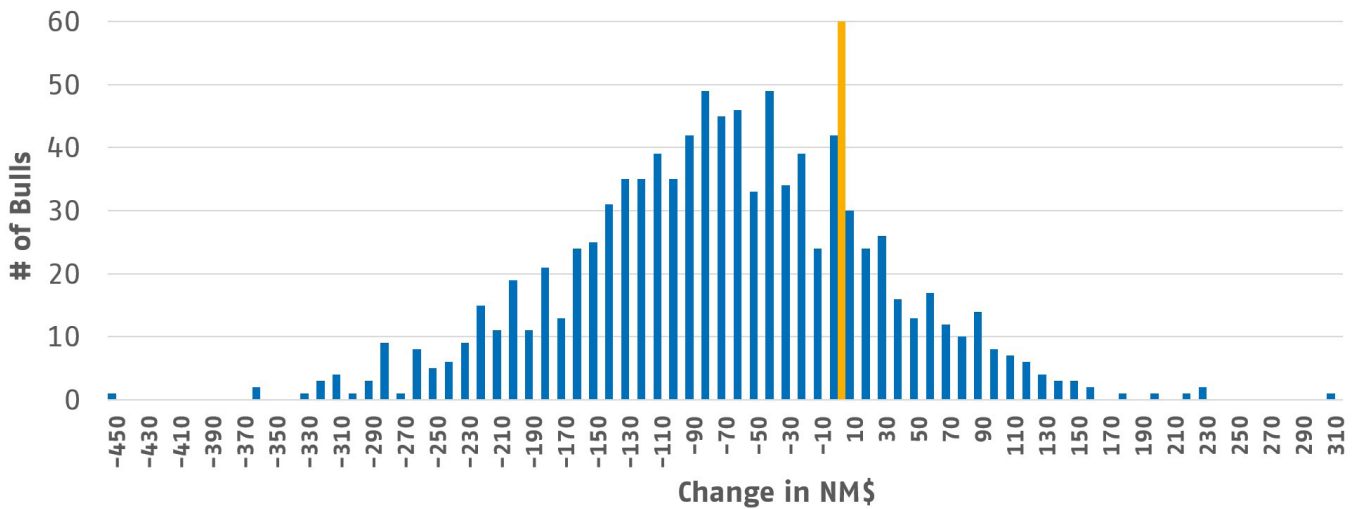
We see the same trend for NM$ in Graph 4, based on analysis of the same 971 industry bulls. The average sire released in 2016 changed just −70 NM$ from their first genomic proof in 2016 to their daughter proof in April 2020.

Nearly 160 of the 971 bulls held steady within the small 20-point swing from genomic to daughter-proven NM$. Just 13 bulls changed more than 300 NM$.

WHAT ABOUT YOUR GENETIC OPTIONS TODAY?

Still debating whether your best bet is to go with the higher reliability daughter-proven sires? Or do you prefer to accelerate your genetic progress with genomic-proven sire groups? Take a look at the tables below, using NM$ for a neutral comparison between daughter proven and genomic proven sires.

APRIL 2020 Top daughter-proven sires		NM$
011H011779	AltaTOPSHOT	766
011H011781	AltaUPSHOT	663
011H011718	AltaTURNKEY	634
011H011793	AltaKEYNOTE	634
011H011725	AltaAMULET	608
011H011750	AltaFLACCO	595
011H011740	AltaFACET	594
011H011841	AltaGHILLIE	582
011H011770	AltaROCKIT	575
011H011827	AltaMIGHTY P	557
	Group average	**621**

APRIL 2020 Top genomic-proven sires		NM$
011H012345	AltaSOHOT	840
011H012346	AltaTORRENT	817
011H012194	AltaCABOT	795
011H015061	AltaHAWTHORN	767
011H014126	AltaBRITISH	766
011H012407	AltaACER	765
011H014109	AltaPROCURE	764
011H012168	AltaGILMORE	754
011H015179	AltaINCEPTION	748
011H012219	AltaZAREK	746
	Group average	**776**

The top daughter-proven sires currently average a highly reliable 621 NM$. Whereas, the top, readily-available genomic-proven group offers a much more enticing 776 NM$ average. That's a $155 advantage over the daughter-proven choices!

Even the top-ranking daughter-proven sire, AltaTOPSHOT, who is among the top daughter-proven sires in the entire breed, still doesn't match up to the average of the genomic-proven group.

Some bulls will gain points and some bulls will lose points between their genomic proof and daughter proof. That is inevitable, and the data proves it. Yet we can also see that the stability of genomics continues to improve.
Keep in mind that your odds are essentially zero that every single bull atop the genomic-proven list would drop to rank lower than the current list of daughter-proven sires.

WITH YOUR GENETIC CHOICES, KEEP THESE POINTS IN MIND:

1. **Genomic proofs are still slightly inflated. Yet, even with a recent base change update, we see less chang from genomics to daughter proven TPI and NM$ over time because of model improvements made along the way.**

2. **Despite an average drop for TPI and NM$ from a bull's genomic to daughter proof, you will still make faster genetic progress using a group of genomic-proven sires than a group of daughter-proven sires.**

3. **Make sure the genetic progress you make is in the direction of your goals. Select a group of genomic-proven sires based on your farm's customized genetic plan. Emphasize only on the production, health or conformation traits that matter most to you to boost your farm's future progress and profitability.**

Proof analysis and graphs provided by Ashley Mikshowsky, PEAK Geneticist

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