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Factors Affecting Productive Lifespan of Dairy Cows

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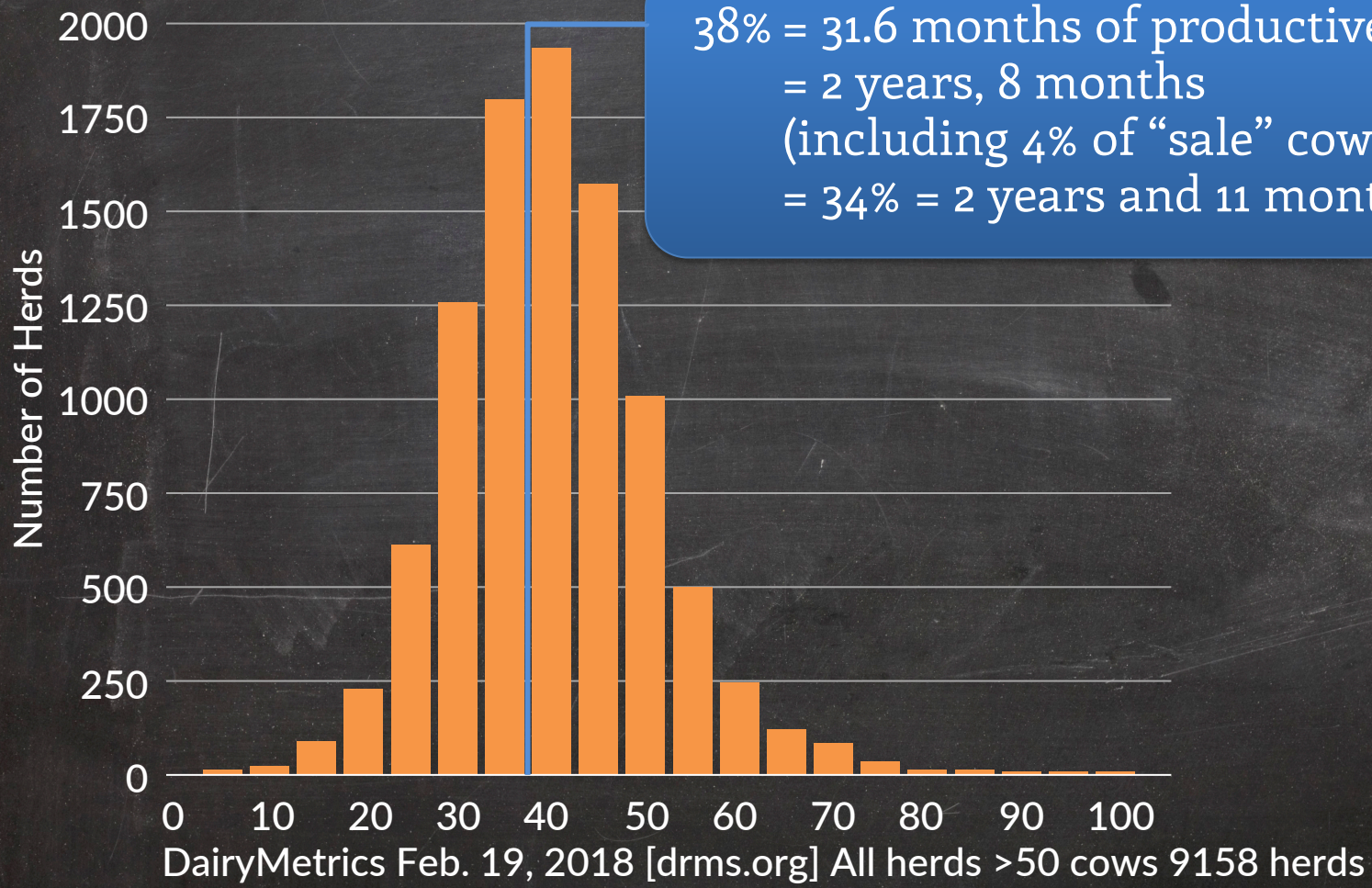
SMART SOLUTIONS FOR INNOVATIVE DAIRIES

Factors Affecting Productive Lifespan of Dairy Cows

Annual % of Cows to Leave Herd



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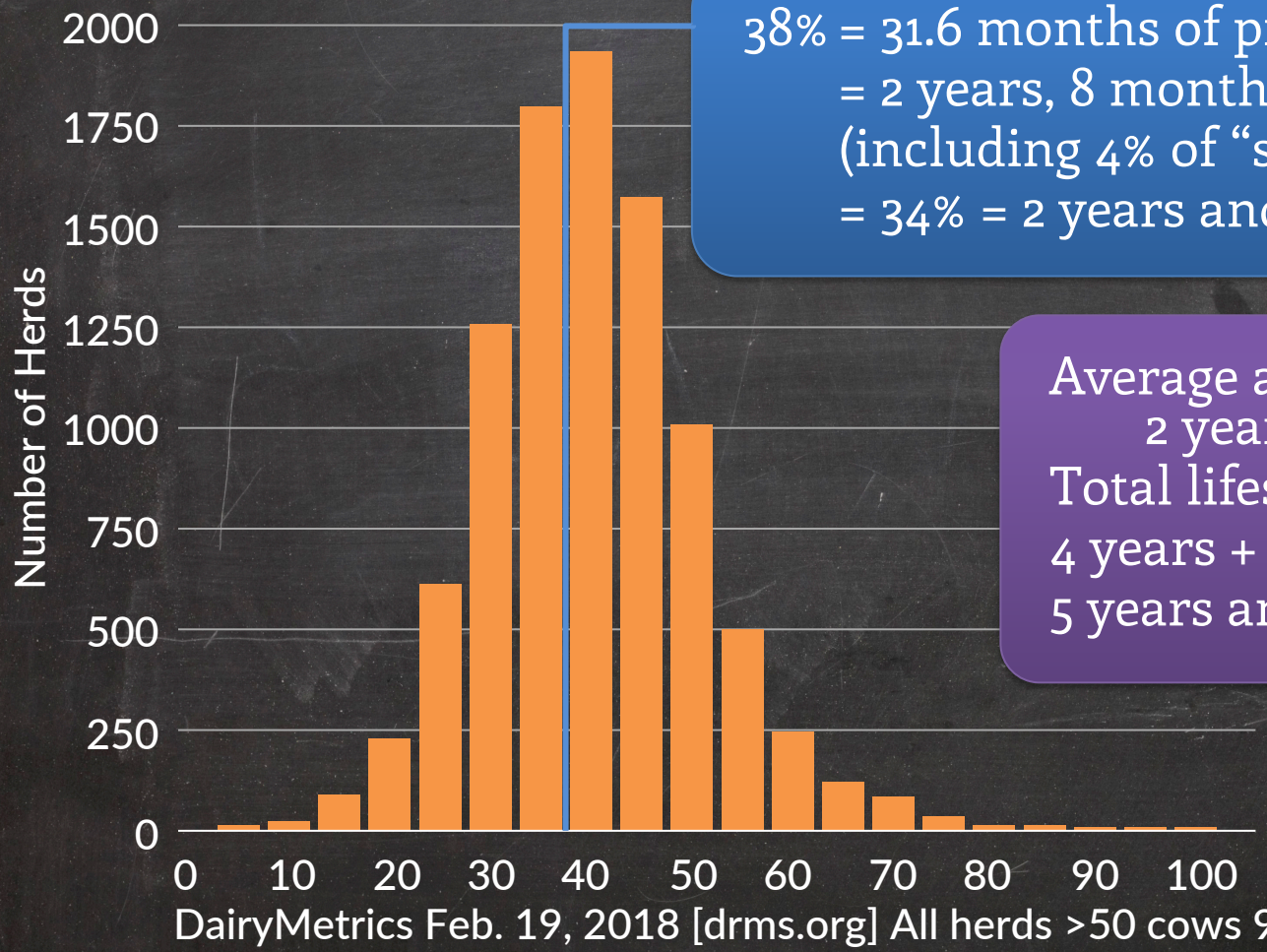
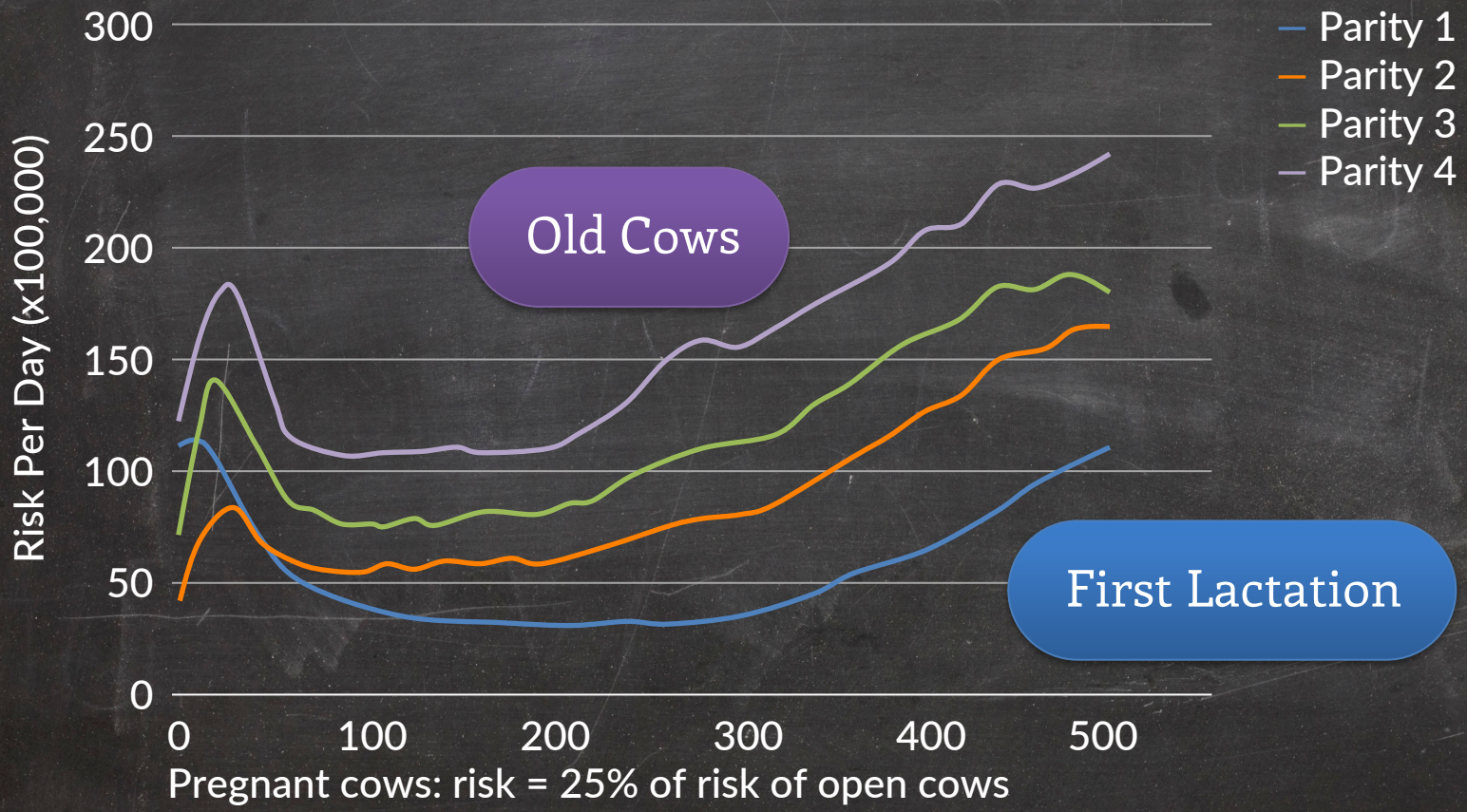


38% = 31.6 months of productive life
= 2 years, 8 months
(including 4% of "sale" cows)
= 34% = 2 years and 11 months

Average age at first calving:
2 years, 1 month
Total lifespan:
4 years + 12 months =
5 years and 0 months

Factors Affecting Productive Lifespan of Dairy Cows
Risk of Culling (Including Death) Per Day (Non-Pregnant Cows)



De Vries et al. (2010) J. Dairy Sci. 93:613

Factors Affecting Productive Lifespan of Dairy Cows
Surviving Cows

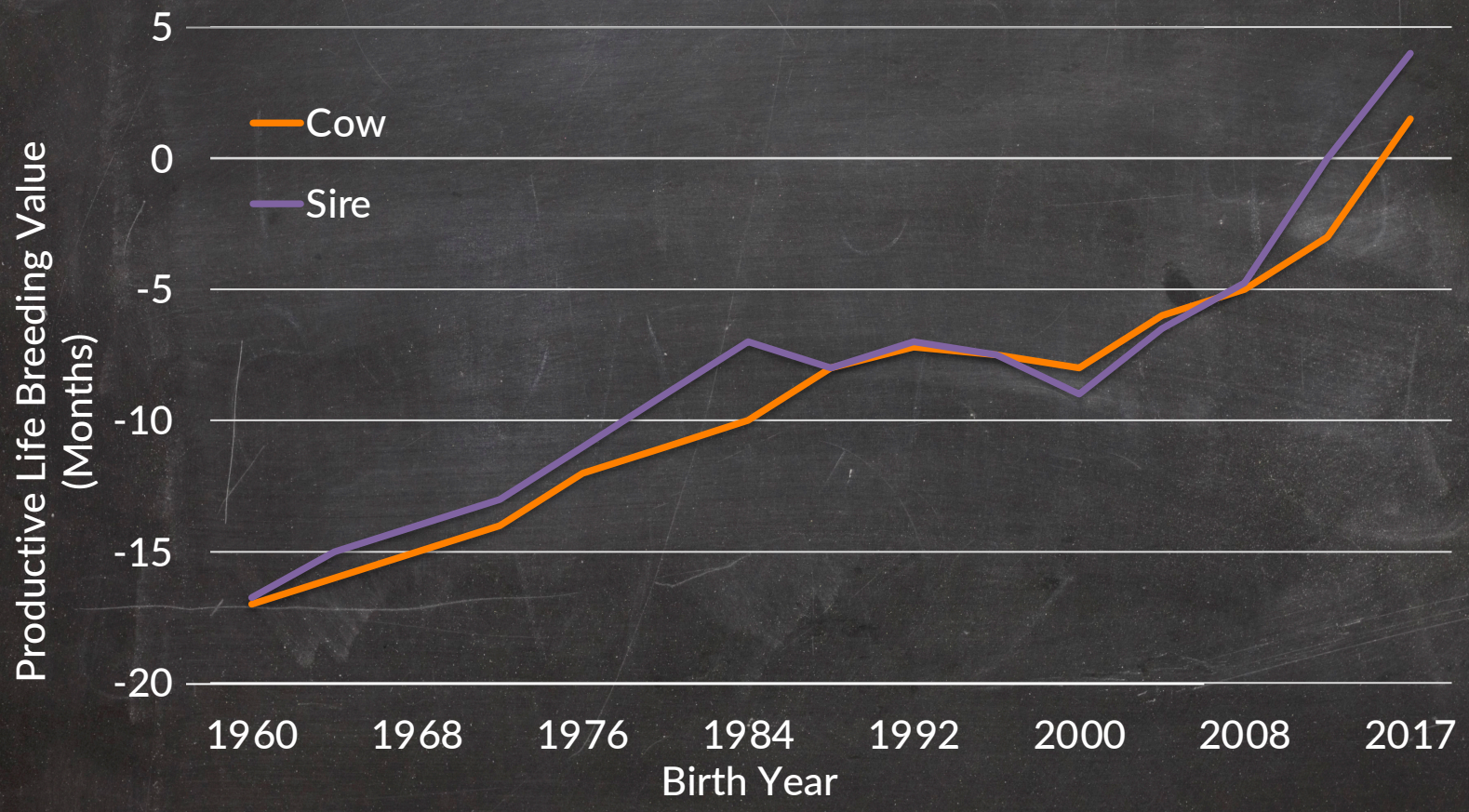
Four Events Per Lactation:

1. 1 calving
2. 1 breeding
3. 1 pregnancy diagnosis
4. 1 dry off

Risk factors for culling: sick, lame, not-pregnant, poor conformation, bad temperament, low milk yield, etc.

Reviewed in: De Vries and Marcondes (2020). Animal 14(S1):s155-s164

Factors Affecting Productive Lifespan of Dairy Cows
Productive Life Breeding Values



https://queries.uscdcb.com/eval/summary/trend.cfm

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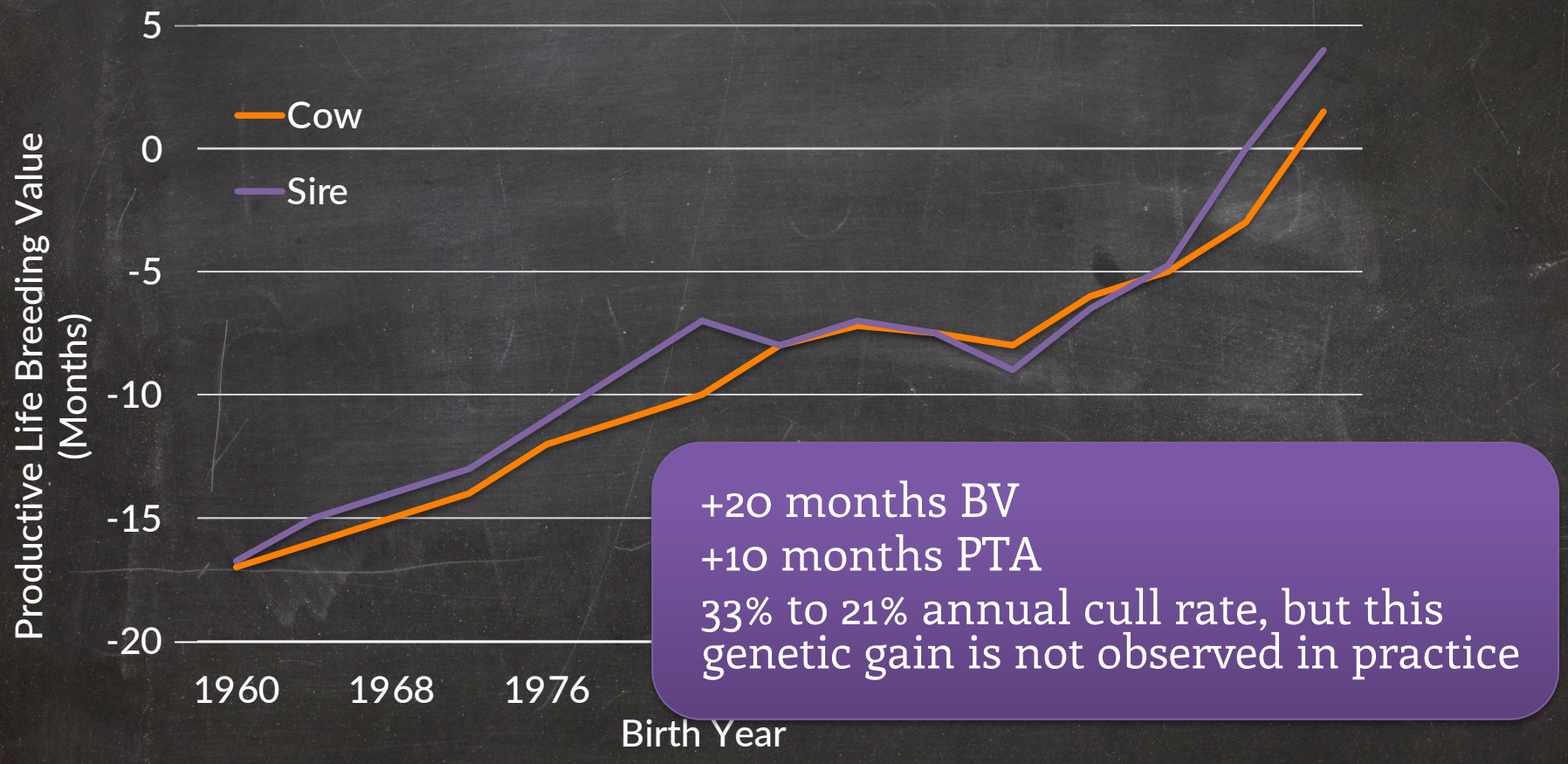
Productive Life Breeding Values



+20 months BV
+10 months PTA
33% to 21% annual cull rate, but this genetic gain is not observed in practice

https://queries.uscdcb.com/eval/summary/trend.cfm

Factors Affecting Productive Lifespan of Dairy Cows
Lifetime Profit Per Cow is NOT the Goal

Rule: Optimize profit per unit of most liming factor

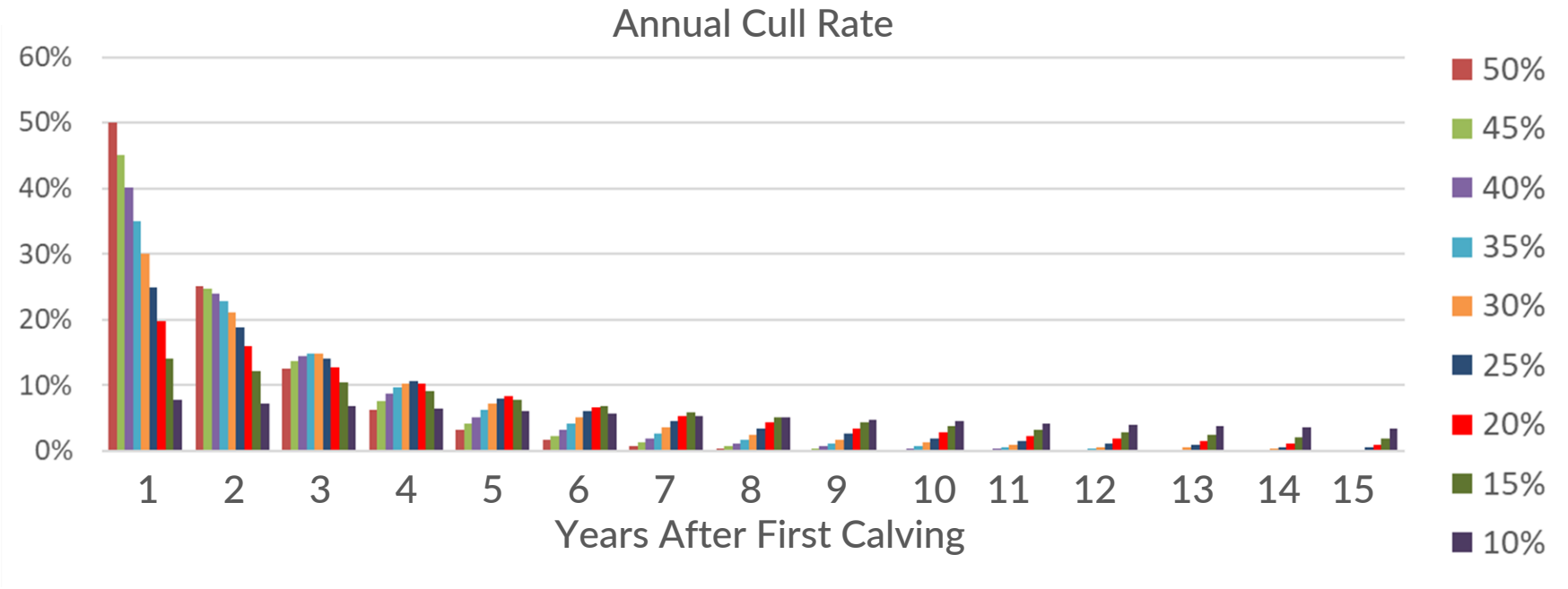
- $/cow/year
- $/milking cow/year
- $/cwt milk
- $/labor unit/year
- $/cwt phosphate (the Netherlands)
- $/acre/year (New Zealand)

Factors Affecting Productive Lifespan of Dairy Cows
Optimization of $ Per Cow Per Year

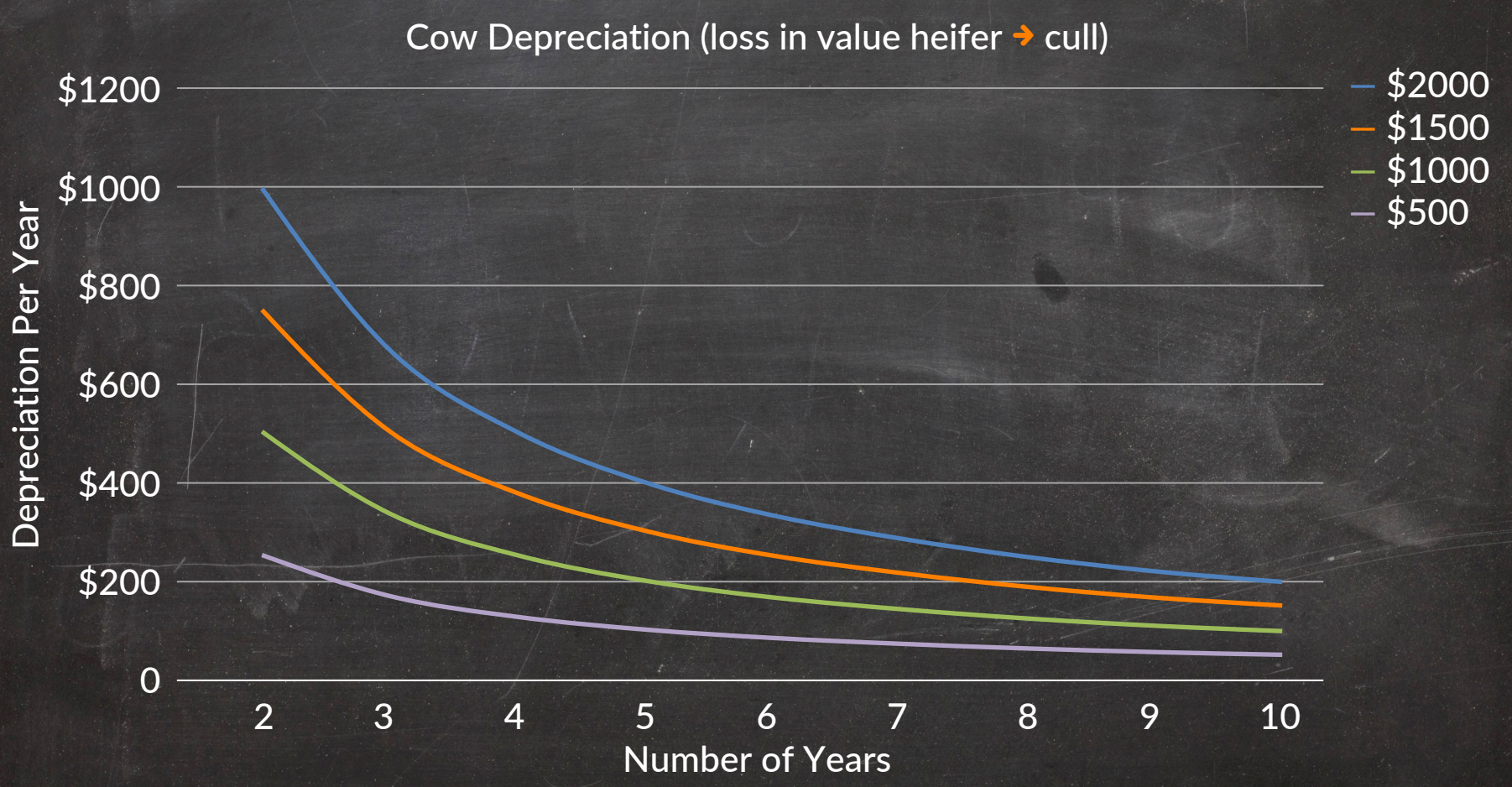
If we could choose, how long should the average cow remain in the herd?

A Simple Model
$/Cow/Year

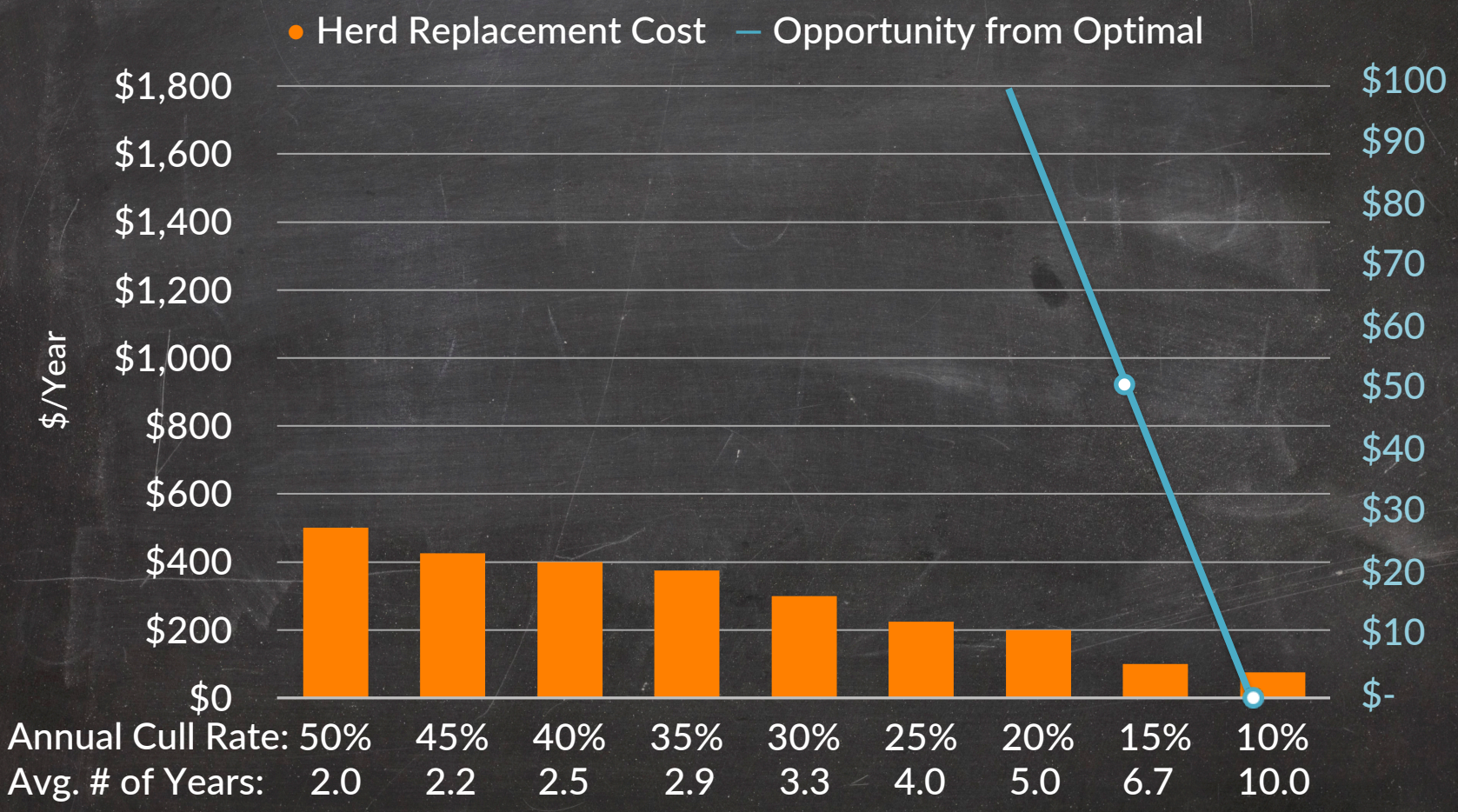
Factors Affecting Productive Lifespan of Dairy Cows
Herd Distribution: % Cows Per Parity



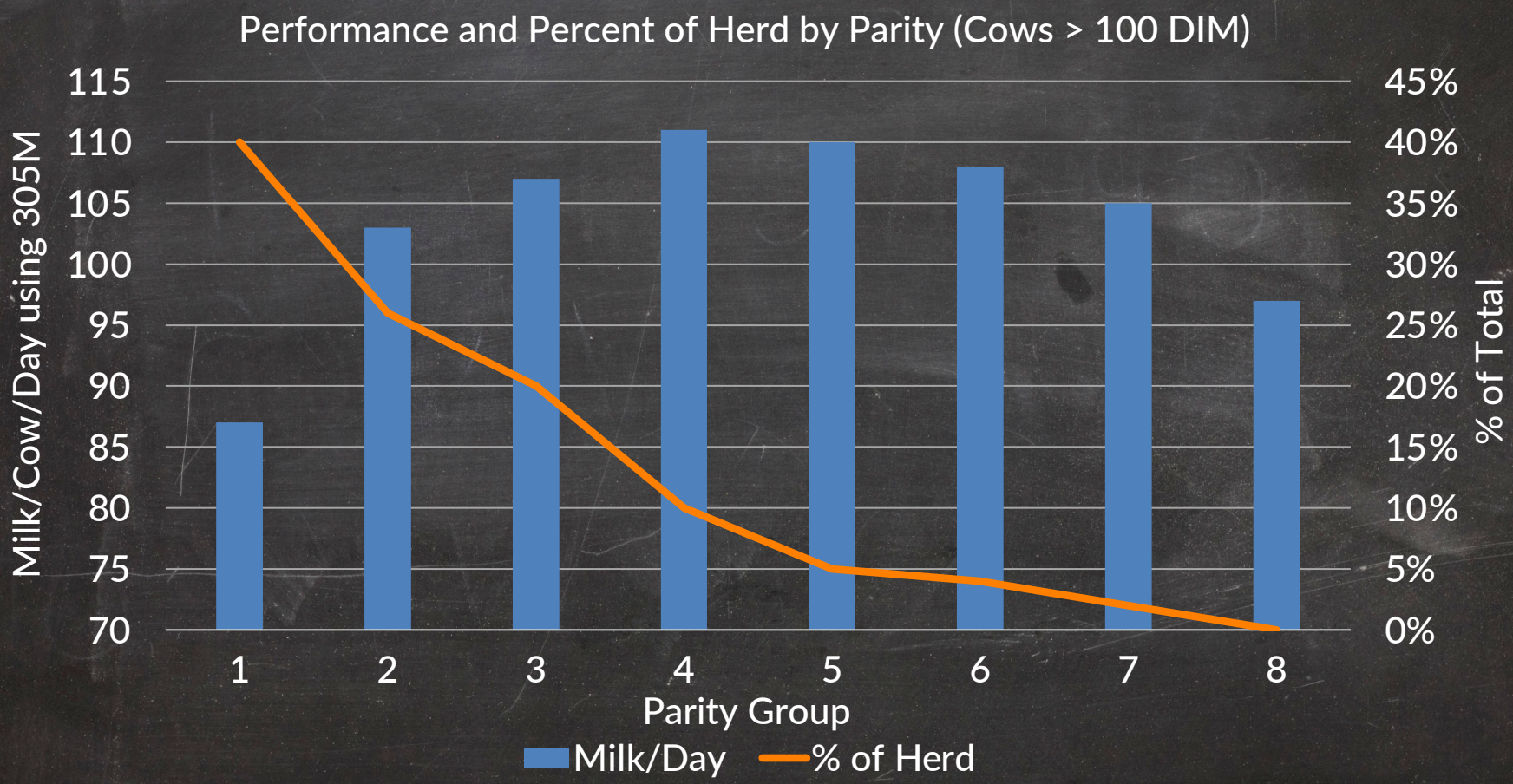
Factors Affecting Productive Lifespan of Dairy Cows
Herd Replacement Cost



Factors Affecting Productive Lifespan of Dairy Cows
Cost of Herd Structure: Herd Replacement Cost

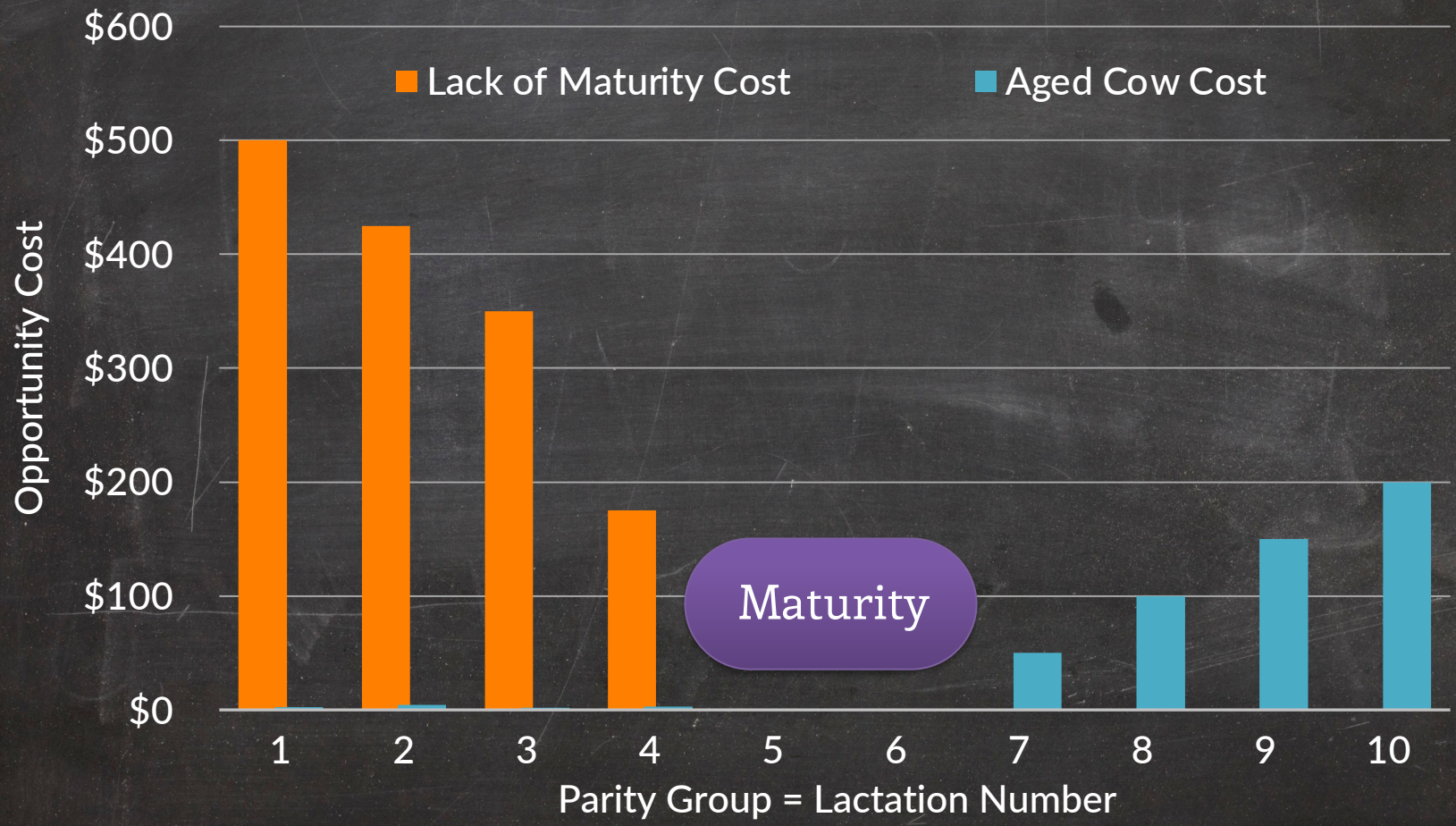


Factors Affecting Productive Lifespan of Dairy Cows
Longevity-Driven Profit



Data on file, Dec 2015 Herd Example, Zoetis, Inc.

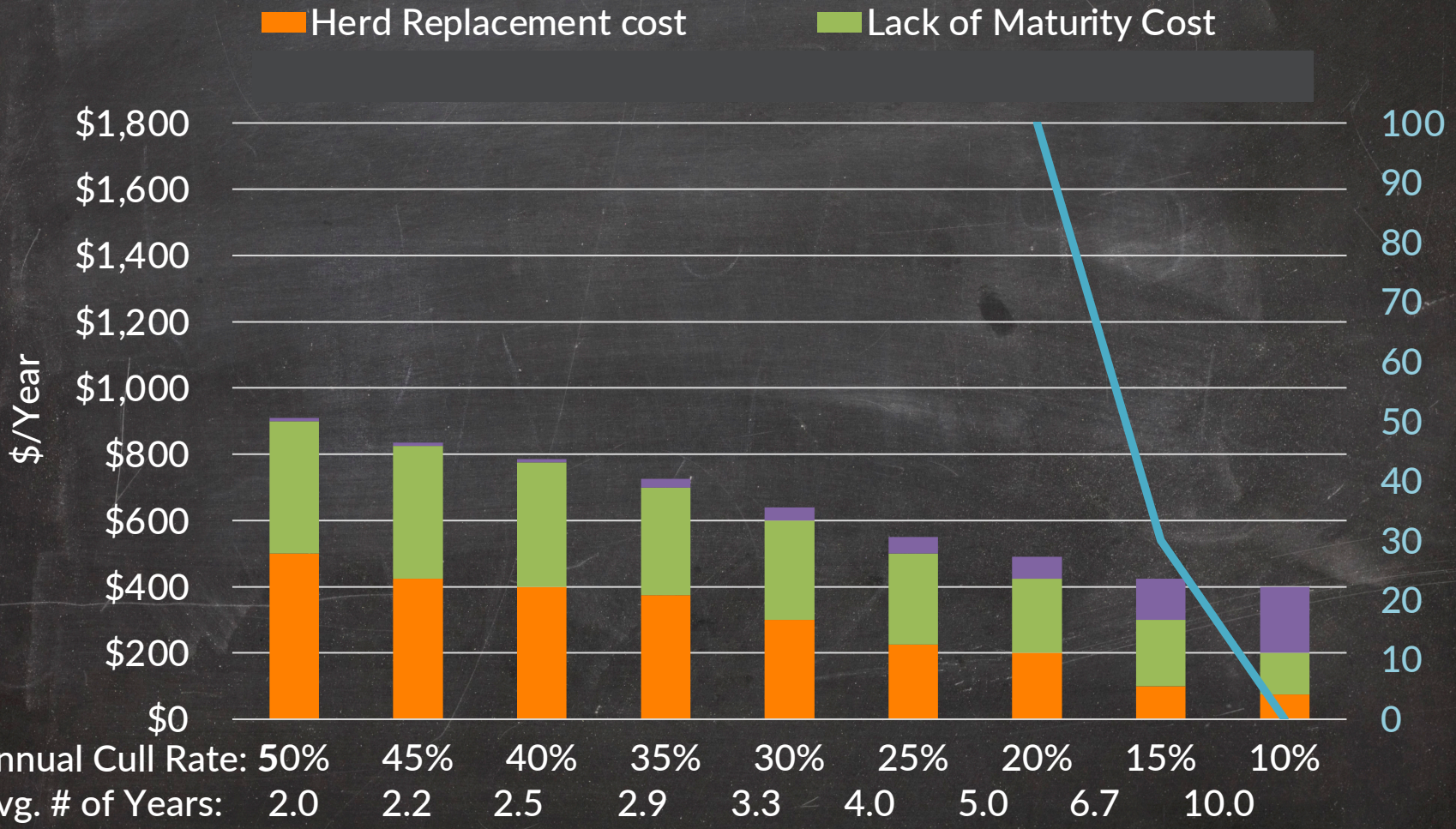
Factors Affecting Productive Lifespan of Dairy Cows
Opportunity Cost Net Return Per Parity



Assumes no genetic progress

Factors Affecting Productive Lifespan of Dairy Cows

Cost of Herd Structure:
Plus Lack of Maturity & Aged Cows



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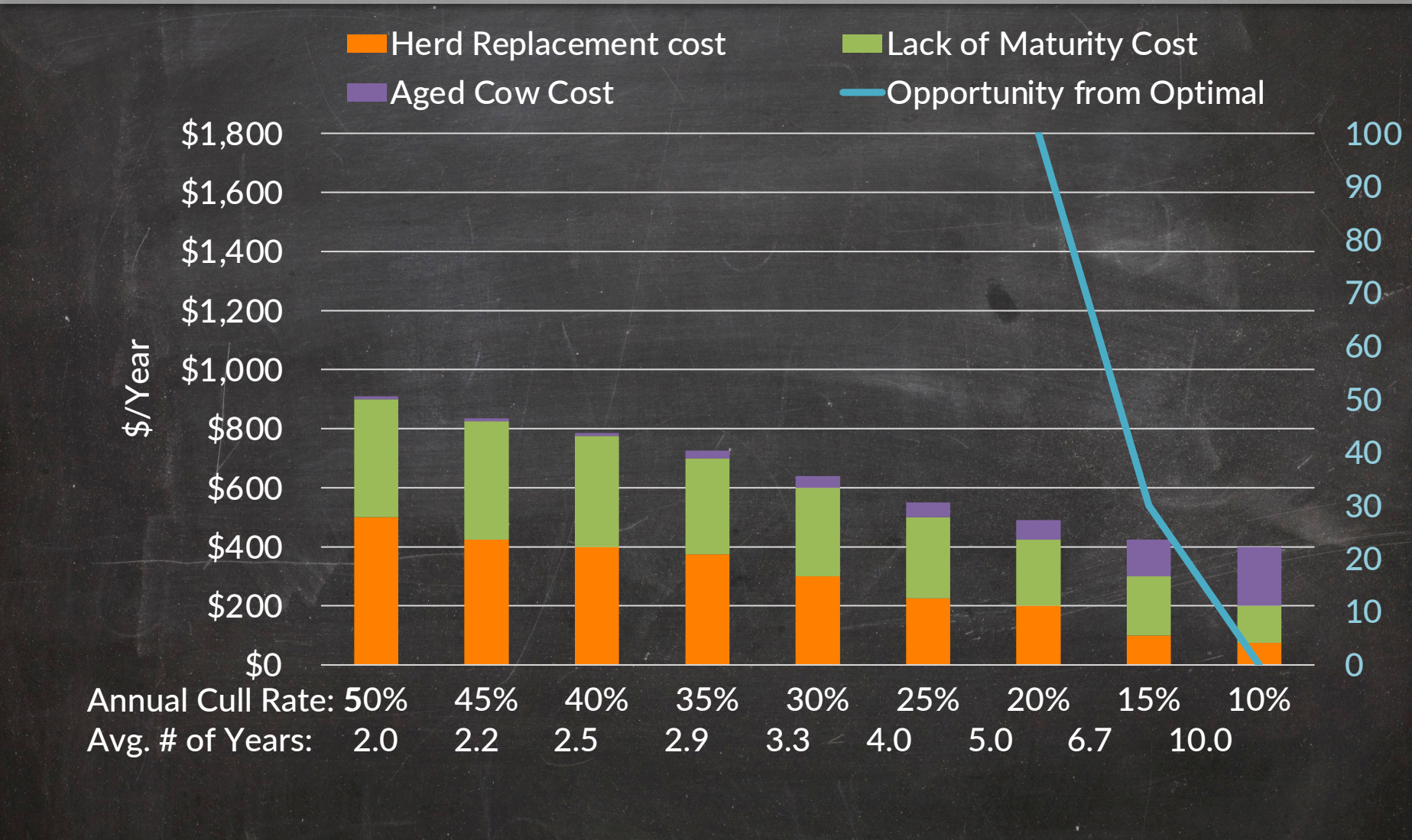
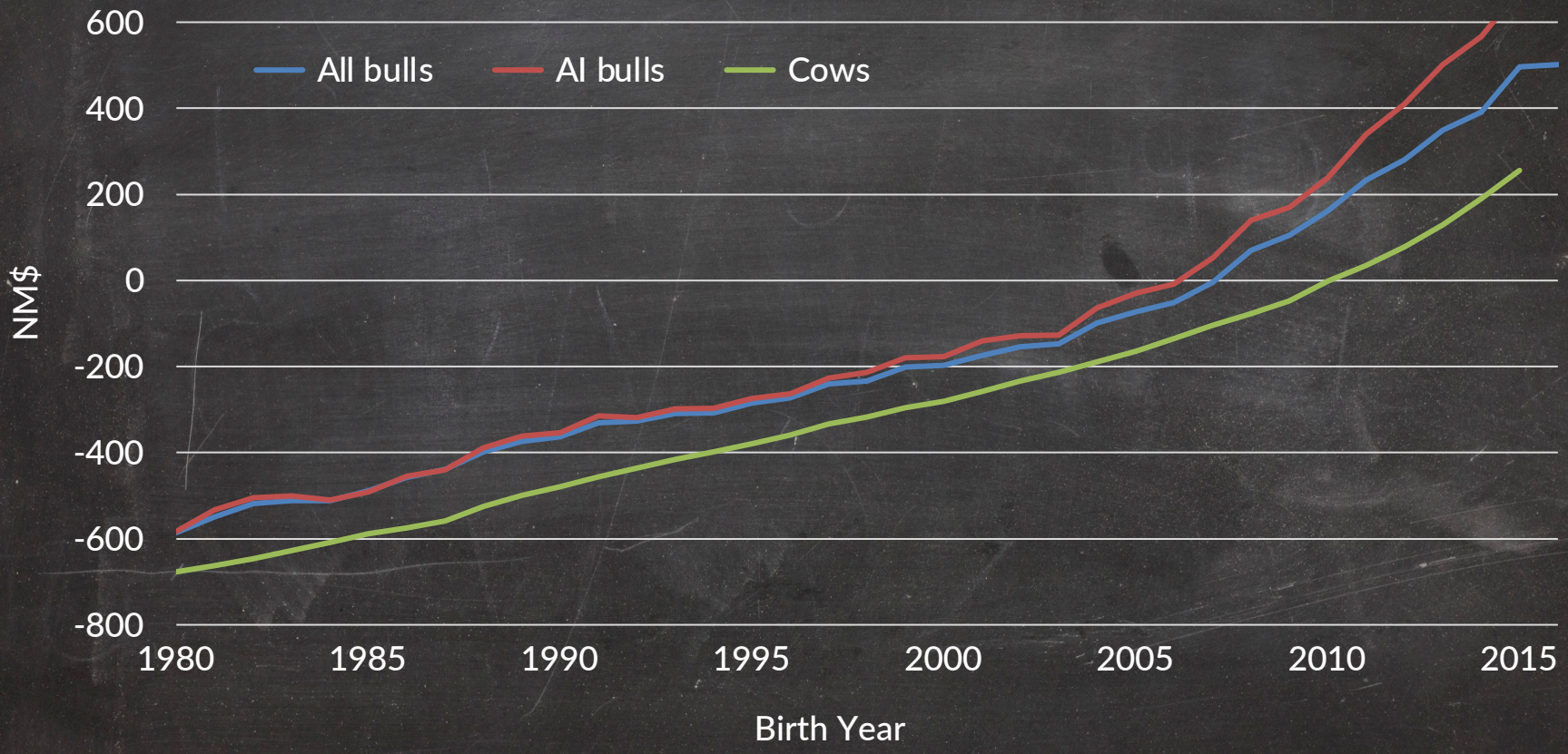


Factors Affecting Productive Lifespan of Dairy Cows
Genetic Trend (PTA Net Merit$ Selection Index)



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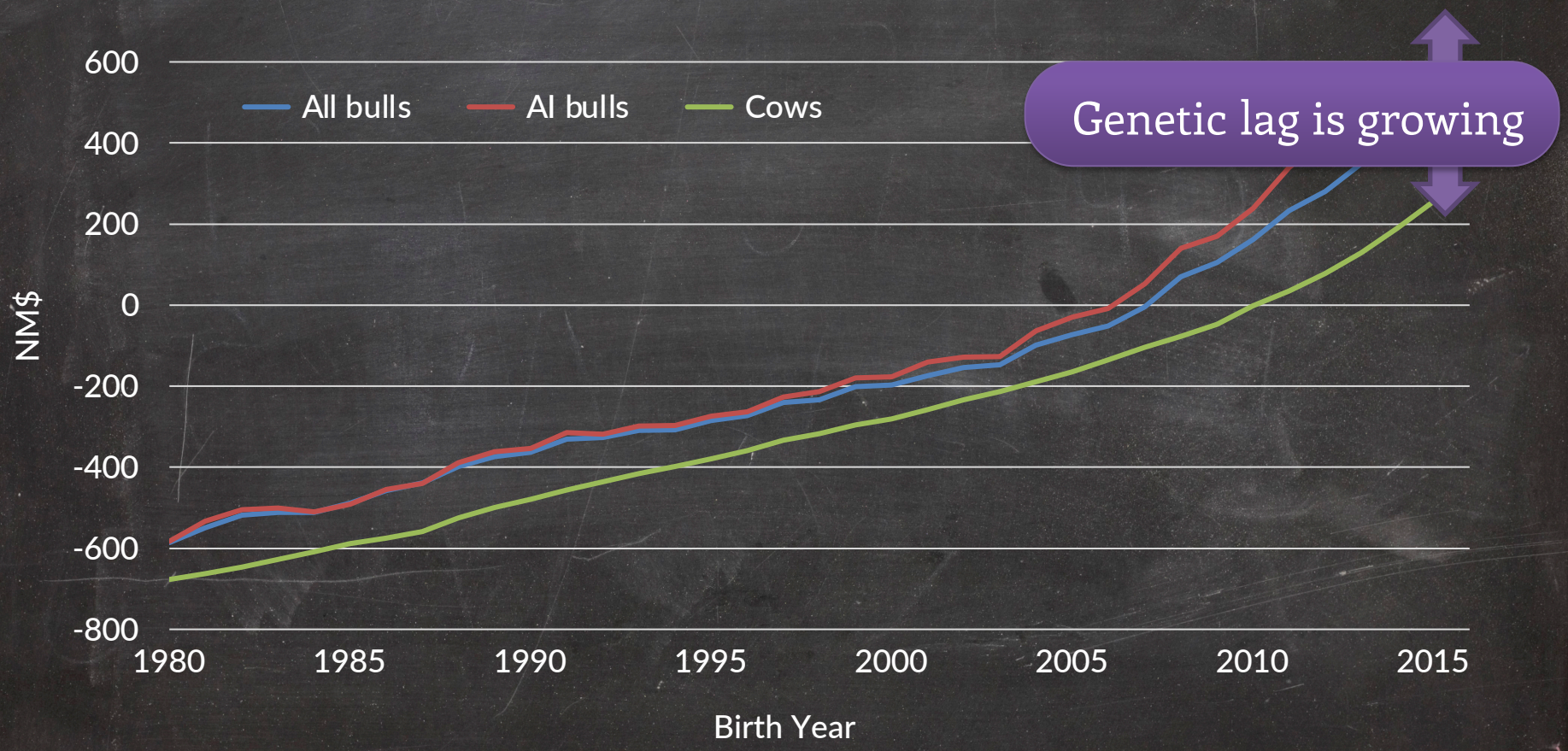

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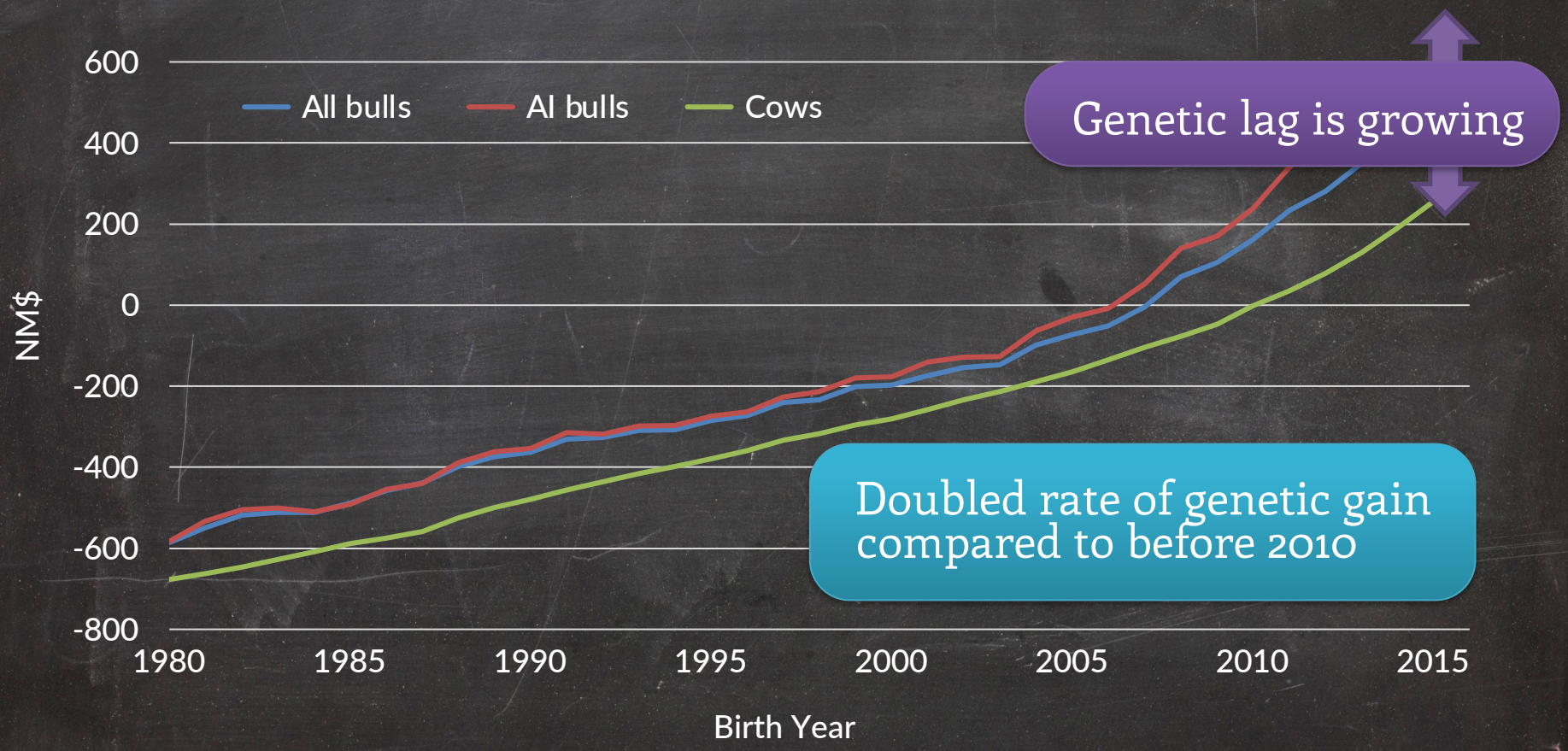

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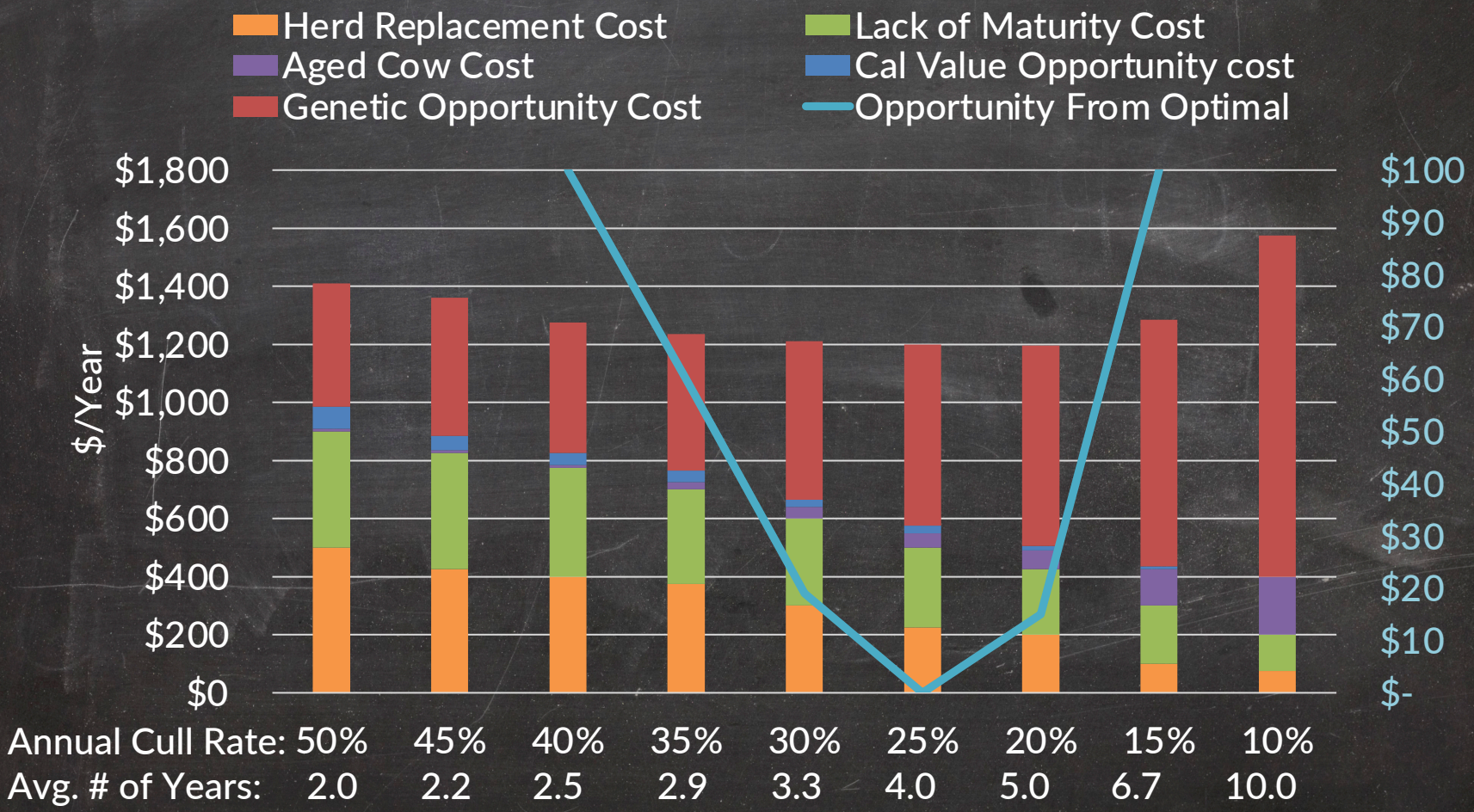
Cost of Herd Structure:
Plus Genetic Opportunity Cost



Factors Affecting Productive Lifespan of Dairy Cows
Summary

- All culling is driven by economics (choice)
- Most cows are “broken” when culled
- Faster genetic progress reduces optimal productive lifespan
- Increasing productive lifespan makes economic sense