Economics of Dairy Reproductive Programs

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How do I get her pregnant?

Heat Detection

Ovsynch

G-6-G

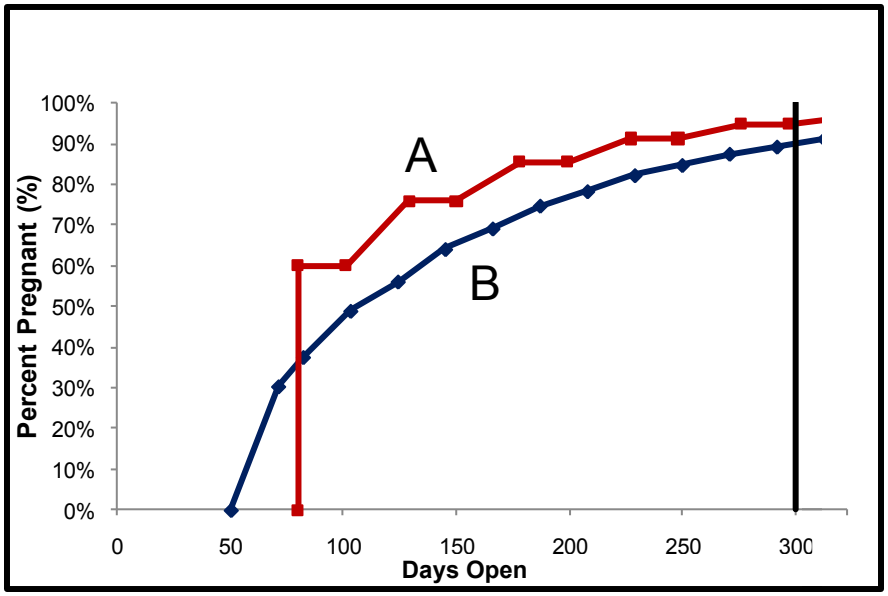
PREYSNCH-OVSYNCH

- Command : BREDSUM\E

Date	Ht Elig	Heat	Pct	Pg Elig	Preg	Pct	Aborts
9/23/02	74	36	49	74	10	14	1
10/14/02	64	34	53	64	12	19	0
11/04/02	58	40			15	27	3
11/25/02					10	19	3
12/16/02					0	20	2
1/06/03					8	18	0
1/27/03					6	13	0
2/17/03					8	13	2
3/10/03					13	19	0
3/31/03					9	15	0
4/21/03					9	16	3
5/12/03					7	12	1
6/02/03					11	19	1
6/23/03					12	18	3
7/14/03					7	12	0
8/04/03				68	6	9	2
8/25/03	6		43	0	0	0	0
9/15/03	65	44	68	0	0	0	0
Total	952	499	52	940	153	16	21

The Value of a Repro Program

- Net Present Value realized by the herd population dynamics depending on the probabilities of cows getting pregnant in successive reproduction services



Labor

Vet Check

Semen

Hormones

MILK

Beef

Calves

Discounted

Costs

Revenues

Justification and Goal

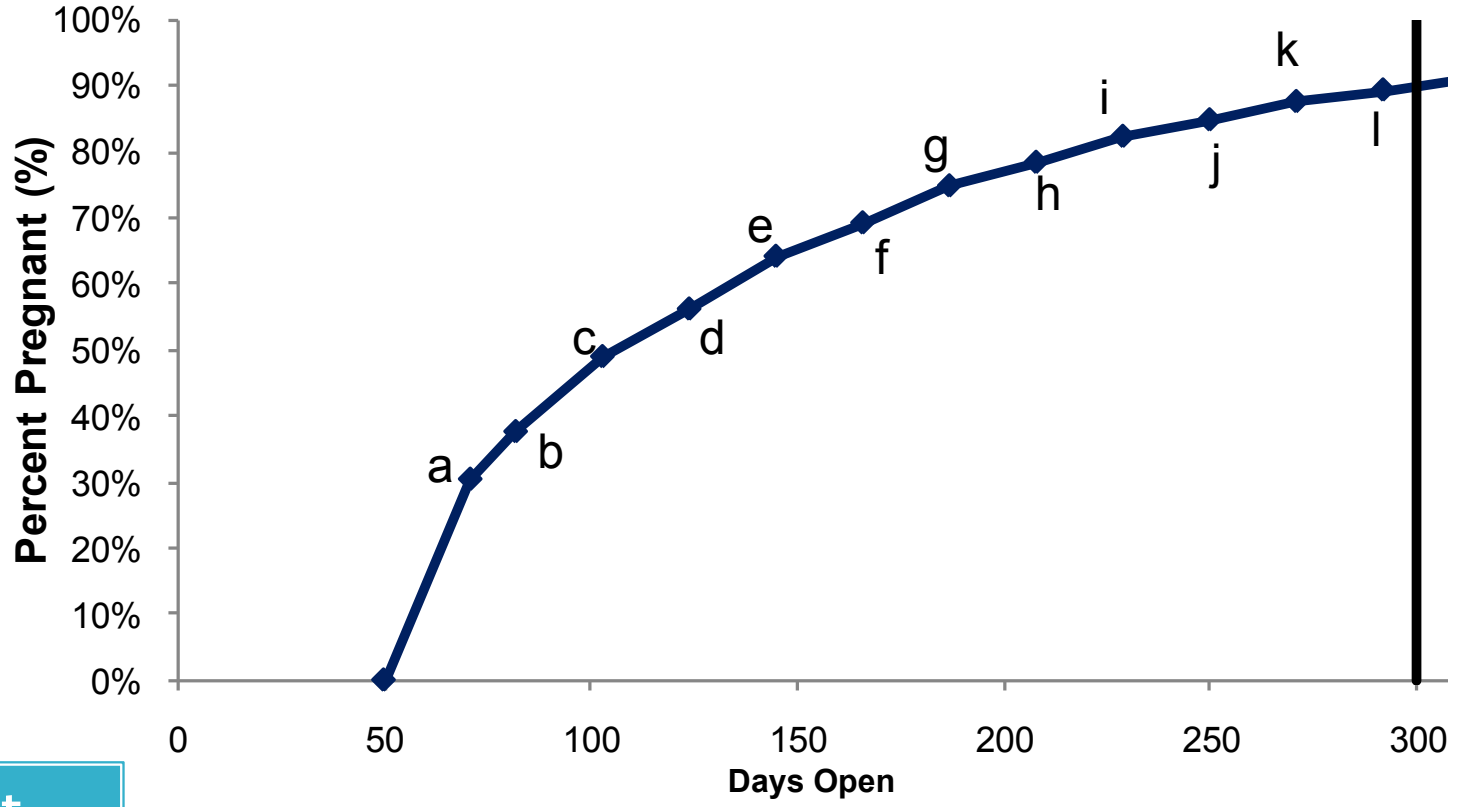
JUSTIFICATION:

Lack of supporting tools for selection of **repro programs**

GOAL:

Develop a decision support system to help producers on the **economic selection** of repro programs

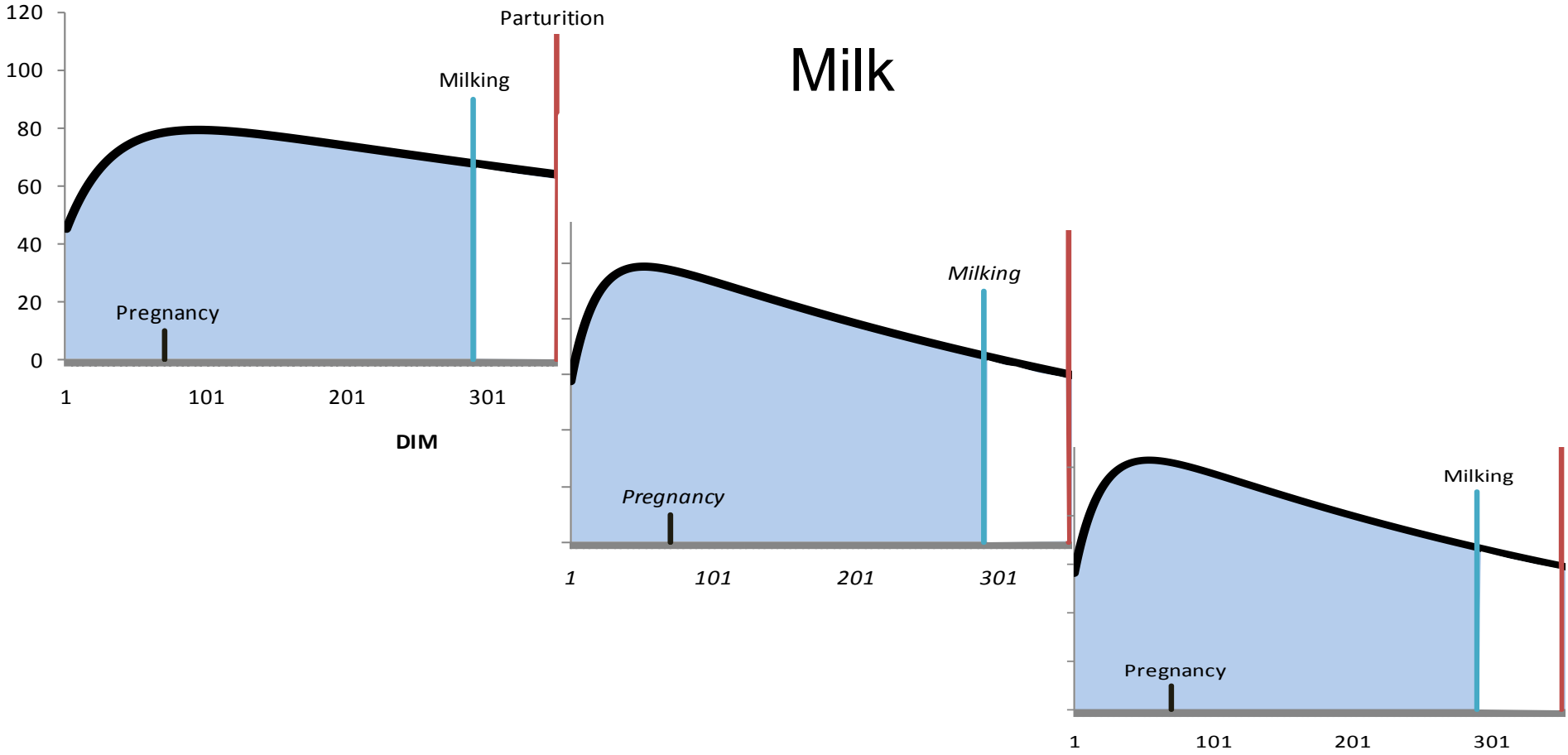
The Value of a Repro Program



Net Present Value (NPV) = Expected Monetary Value (a + b + c…) + Expected Monetary Value (repro culls)

Pregnant **Non-Pregnant**

Revenues of PREGNANTS



Revenues of PREGNANTS

- Value of a New Born

- Value of Salvage for Involuntary Culling

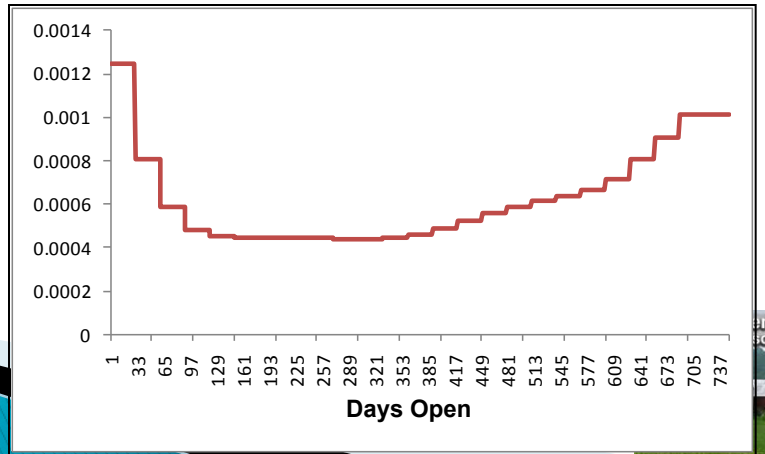
Expenses of PREGNANTS

- Repro Costs
  - Labor
  - Pregnancy Diagnosis
  - Semen Dose
  - Hormones

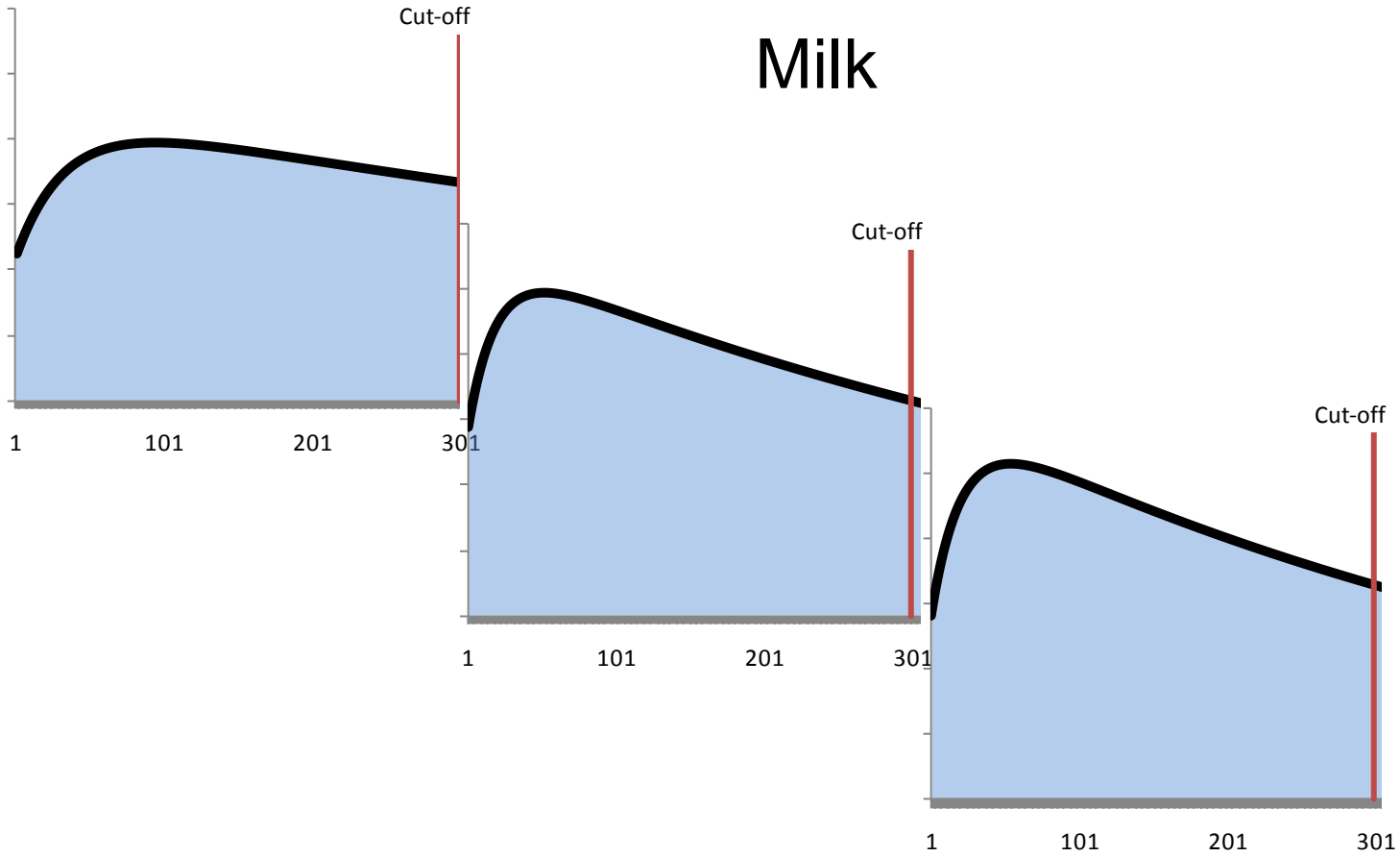
Expenses of PREGNANTS

- Milking Period Feed
  - Follows lactation curve

- Dry Period Feed
  - Fixed daily cost during dry period
- Cost of Involuntary Culling and Death



Revenues of NON-PREGNANTS



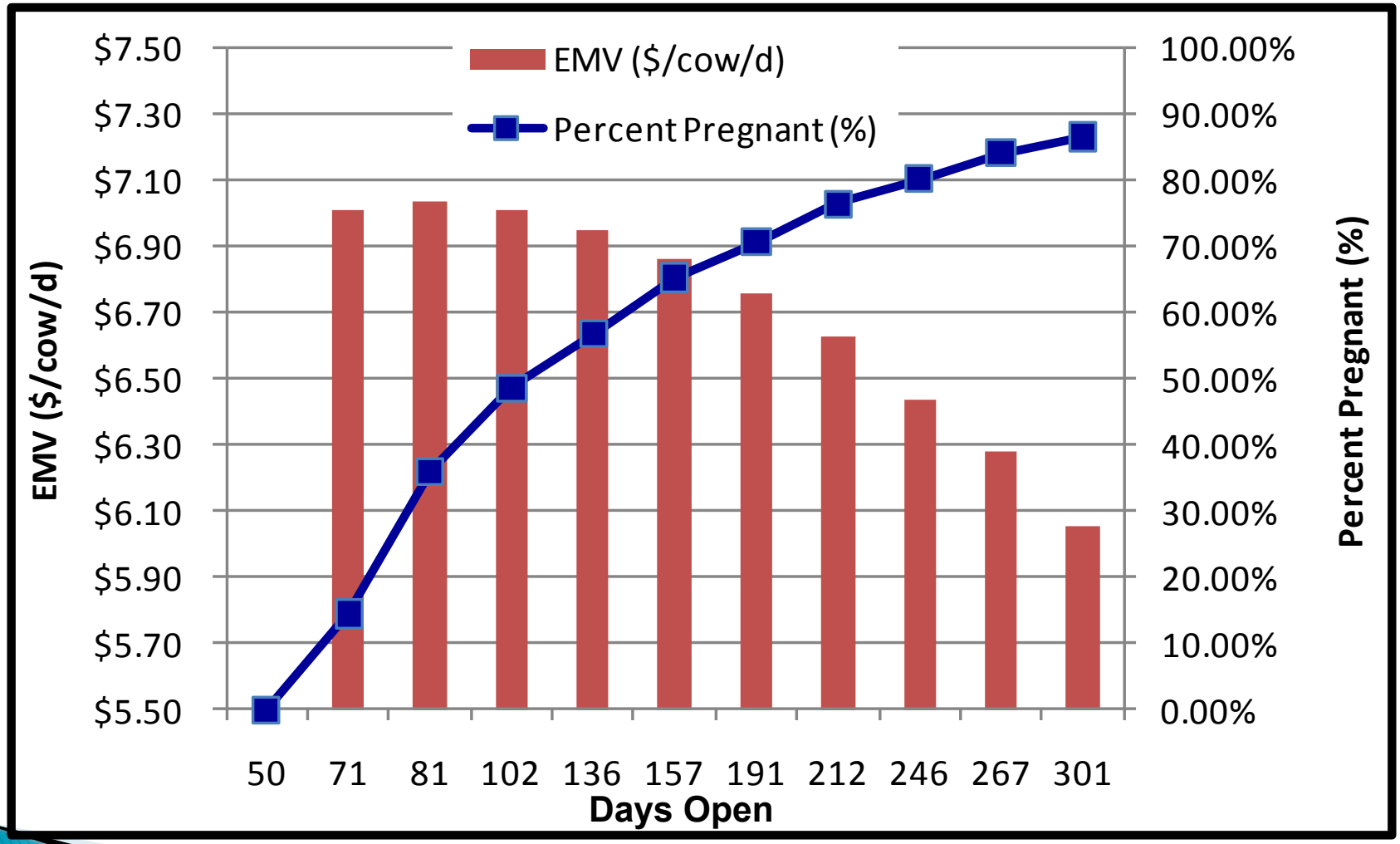
Revenues of NON-PREGNANTS

- Salvage Value for Voluntary Culling

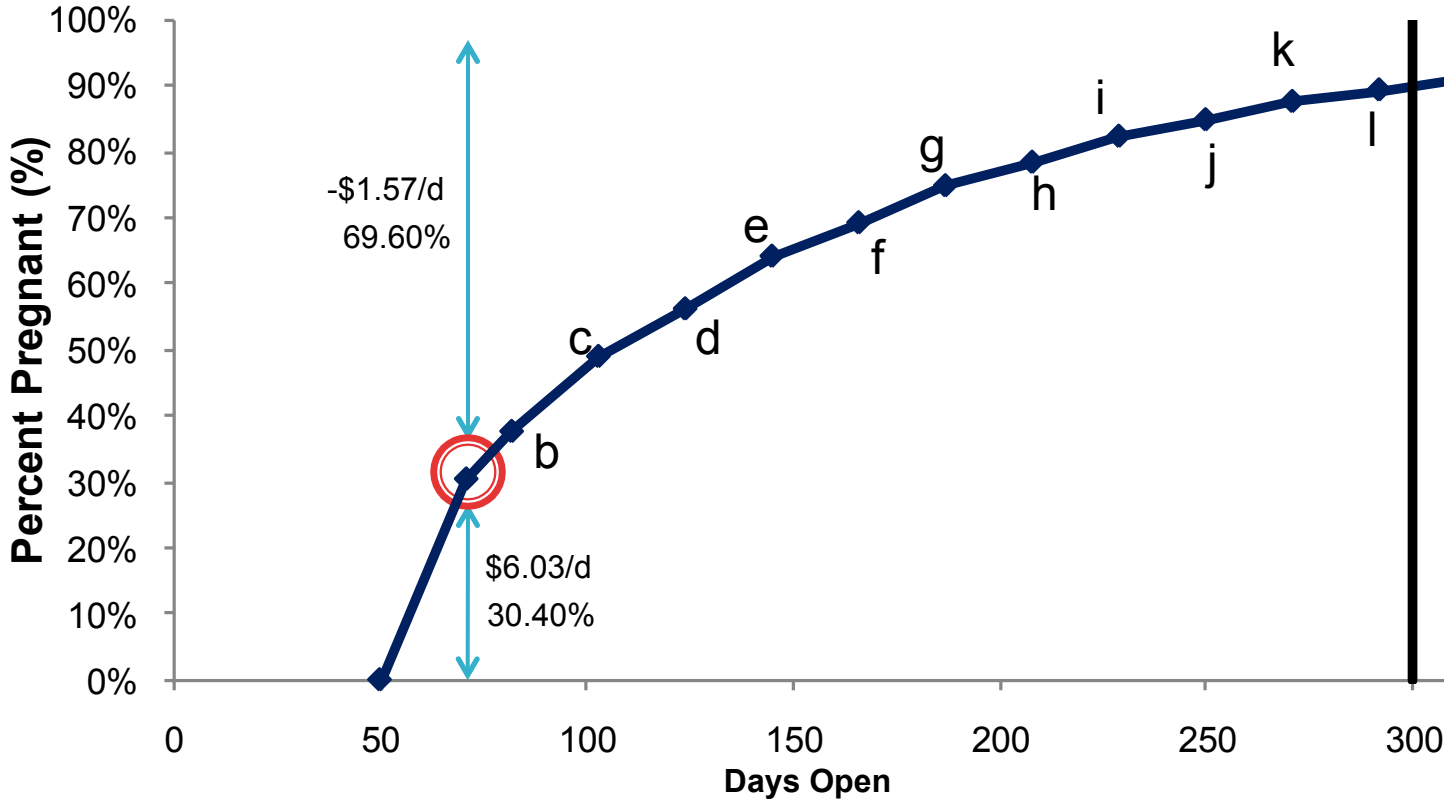
Expenses of NON-PREGNANTS

- Cost of Replacement
- Breeding Costs
- Feed
- Cost of Involuntary Culling

The Value of a Repro Program



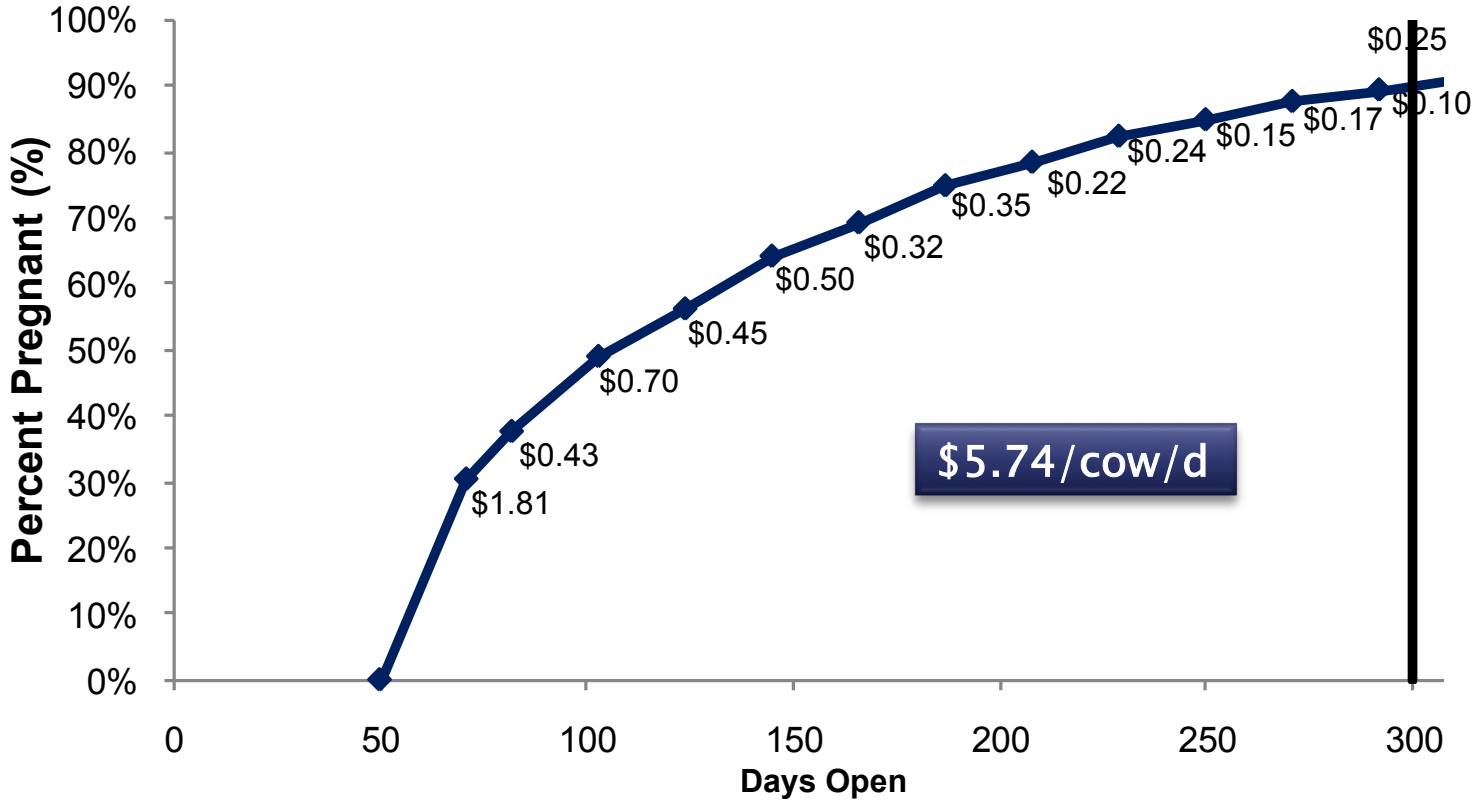
The Value of a Repro Program



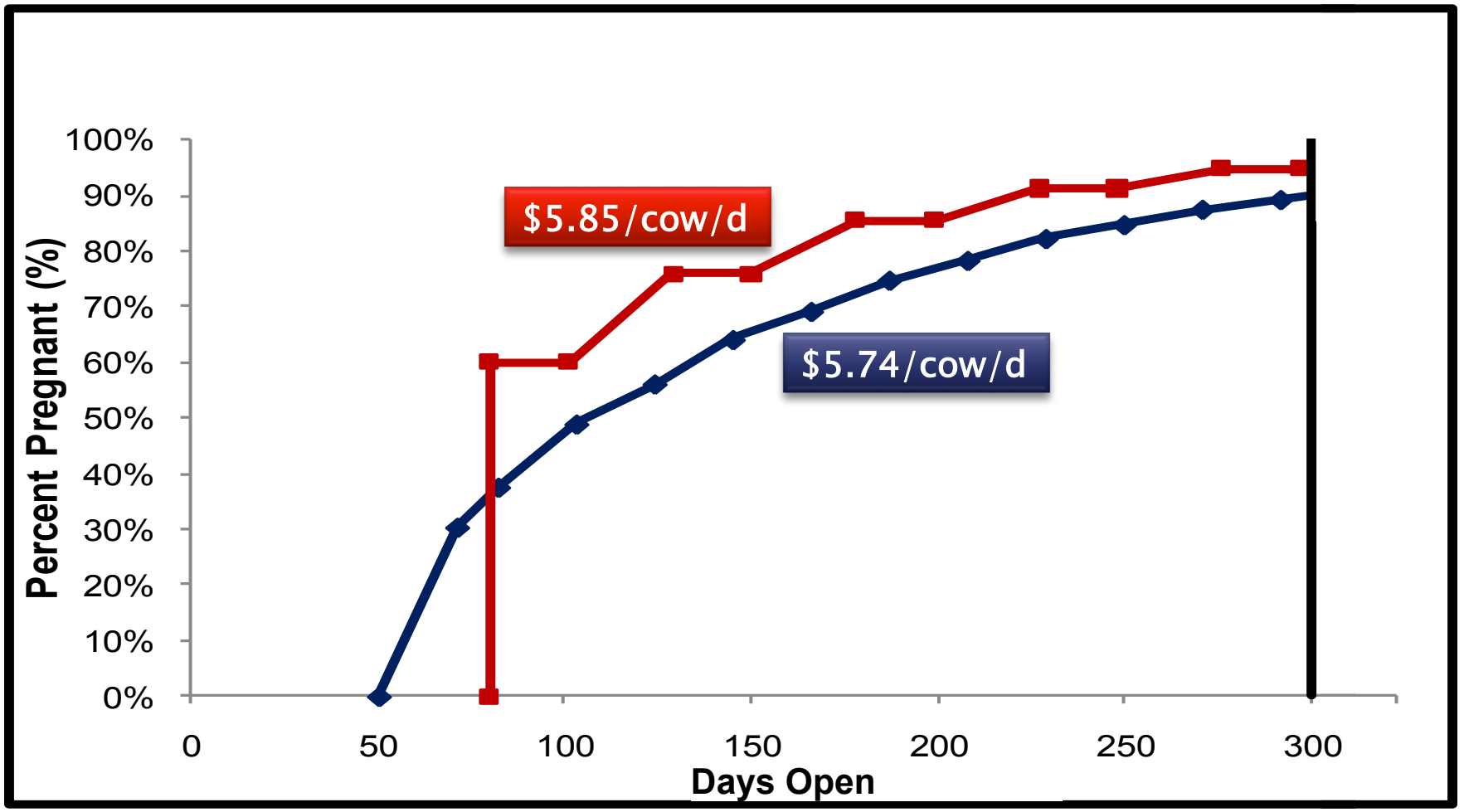
Expected Monetary Value (a + b + c…) + Expected Monetary Value (repro culls)

Pregnant **Non-Pregnant**

The Value of a Repro Program



The Value of a Repro Program



$40.2/cow/yr

Reproductive Economic Analysis

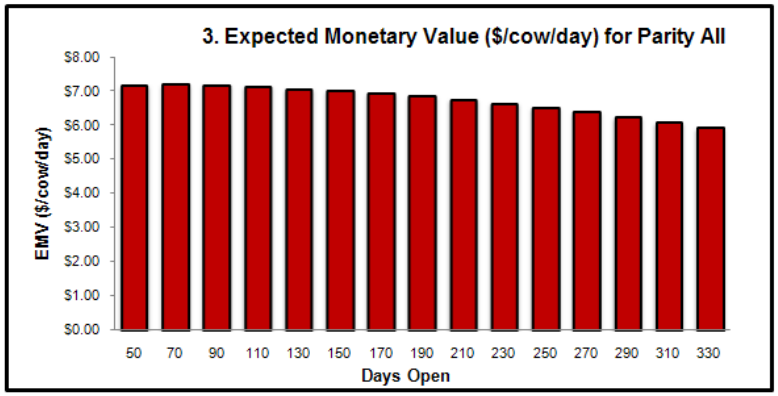
Reproductive Economic Analysis

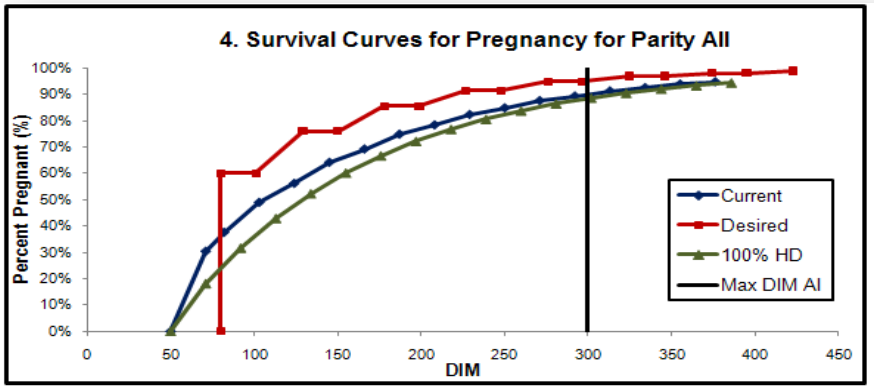
1. Productive and Economic Parameters Summary

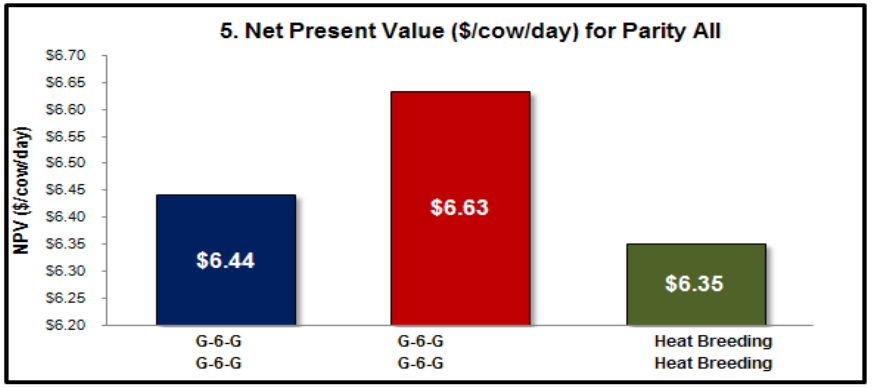
Lacating Cows in Parity All	(#)	1000
Rolling Herd Average	(lb/cow/y)	25000
Milk Price	($/cwt)	15.00
Average Value New Born	($)	175
Heifer Replacement Value	($)	1,600
Salvage Value	($)	450

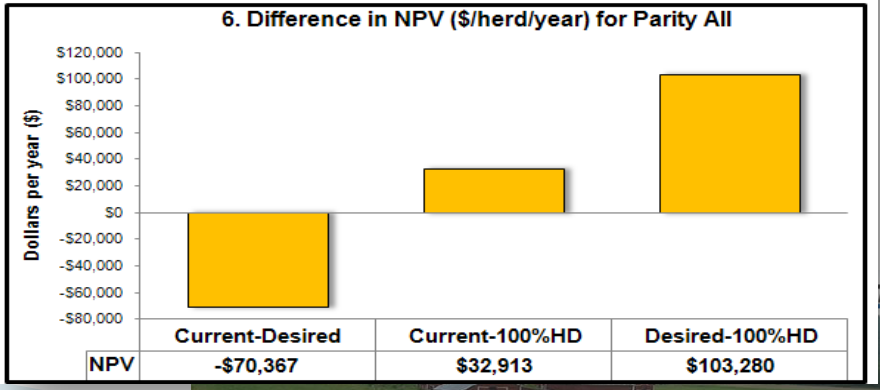
2. Reproductive Programs Summary

	Current	Desired	Baseline
1st Service Postpartum	G-6-G	G-6-G	Heat Breeding
2nd and Following Services	G-6-G	G-6-G	Heat Breeding
Voluntary Waiting Period	50d	80d	50d
Maximum DIM for Breeding		300d	
DIM 1st TAI	82d	80d	
Interbreeding Interval	42d	49d	21d
Heat Bred Before 1st TAI	80%	0%	55%
CR Heat Bred Before 1st TAI	55%	0%	33%
Heat Bred After 1st TAI	65%	0%	55%
CR Heat Bred After 1st TAI	28%	0%	30%
CR 1st Service TAI	36%	60%	
CR 2nd+ Services TAI	33%	40%	
Cost 1st Service Breeding	$39.60	$37.09	
Cost Resynch Breedings	$39.60	$37.09	
Cost Heat Breedings	$27.80	$23.89	$27.80
Pregnancy Diagnosis Method	Palpation	Palpation	Palpation
Pregnancy Diagnosis Cost	$12.80	$8.89	$12.80

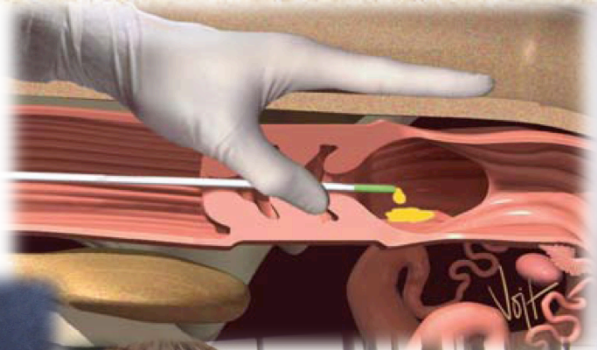








Data Inputs



Productive and Economic Data

Productive Parameters

- Lactating cow #
- RHA
- Lactation curves
- Involuntary Culling Rate
- Mortality Rate
- Stillbirth Rate

Economic Parameters

- Milk Price
- Cost Feed Lactating
- Dry Period Fixed Cost
- Value New Born
- Replacement Heifer
- Salvage Value
- Interest Rate

Reproduction Related Costs

- Heat Detection
- Artificial Insemination
- Pregnancy Diagnosis
- Hormones
- Labor for injections

Reproductive Program

	Current	Start day	Desired	Start day
1st Service Postpartum	Presynch-Ovsynch14	Tue	Ovsynch	Mon
2nd + Services	Ovsynch	Tue	Ovsynch	Mon

1st Service

- Presynch-Ovsynch
- G-6-G
- Double-Ovsynch
- Heat Breeding

2nd Plus Services

- Ovsynch
- Heat Breeding
- G-6-G
- Select Synch

General Reproductive Data

	Current	Desired	100% HD
Estrous Cycle Duration		21 d	
Calving Interval		13.4 mo	
Dry Period Length		65 d	
Maximum DIM for Breeding		300 d	

Specific Repro Program Data

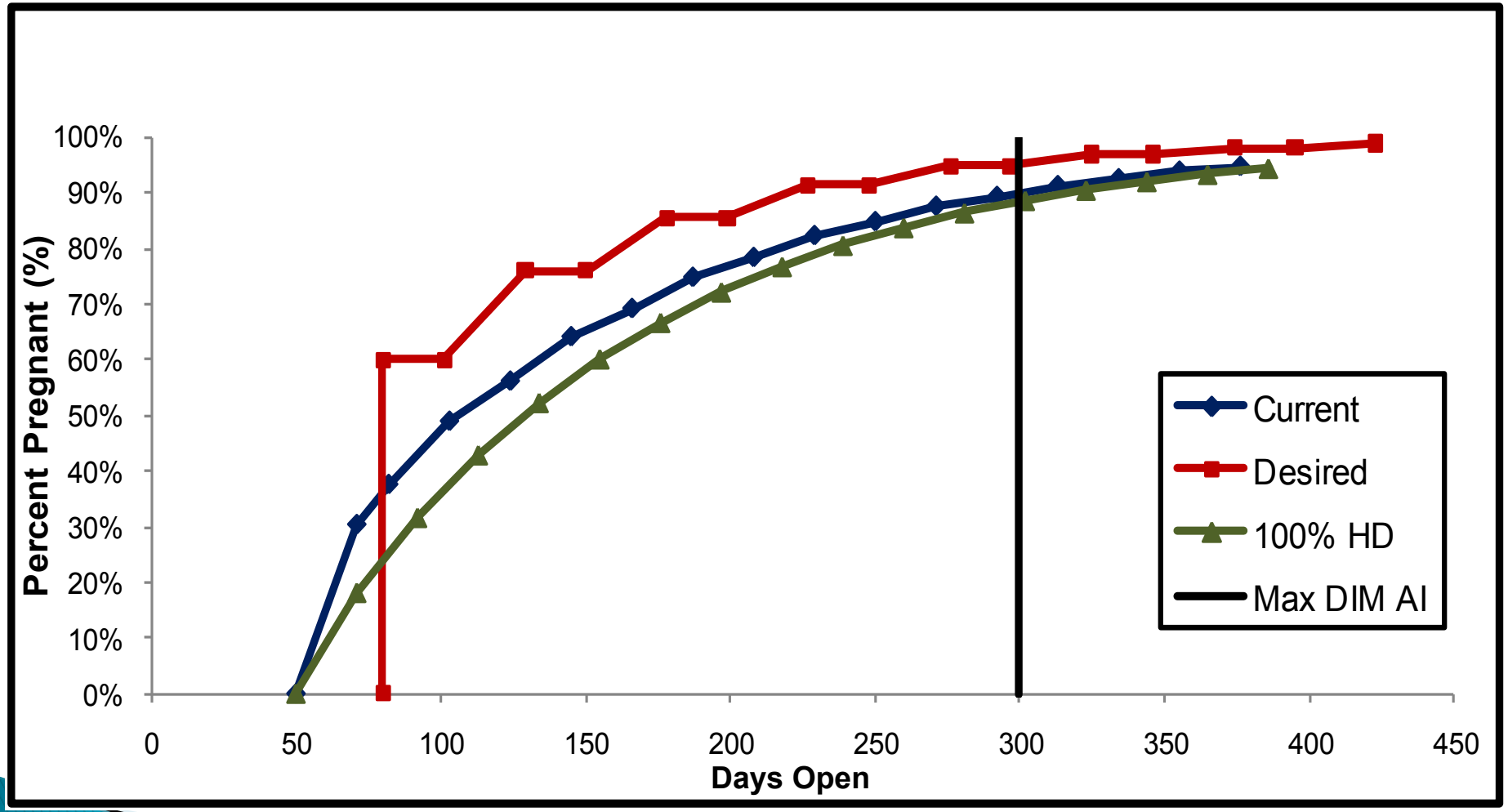
	Current	Desired	100% HD
Voluntary Waiting Period	50 d	80 d	50 d
DIM to 1st TAI	80 d	80 d	
Interbreeding interval	42 d	35 d	
Heat Bred before 1st TAI	60%	0%	55%
CR Heat Bred before 1st TAI	33%	0%	33%
Heat Bred after 1st TAI	40%	0%	55%
CR Heat Bred after 1st TAI	28%	0%	30%
CR 1st service TAI	38%	42%	
CR 2nd + Services TAI	30%	33%	

Results

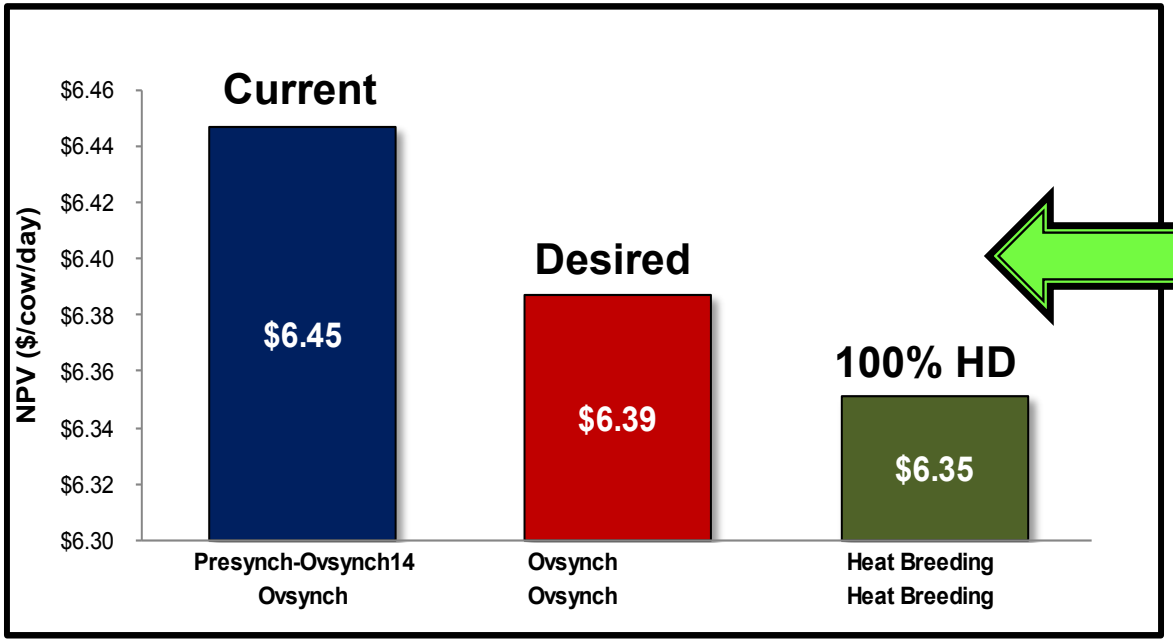
Breeding Costs

	Current	Desired	100% HD
1st Service Postpartum	Presynch-Ovs	Ovsynch	Heat Breeding
2nd + Services	Ovsynch	Ovsynch	Heat Breeding
Cost 1st Service Breeding	$41.0	$32.3	
Cost Resynch Breeding	$35.6	$32.3	
Cost Heat Breeding	$27.8	$23.9	$27.8
Preg. Diagnosis Method	Palpation	Ultrasound	Palpation
Pregnancy Diagnosis Cost	$6.5	$8.9	$6.0

Reproductive Performance

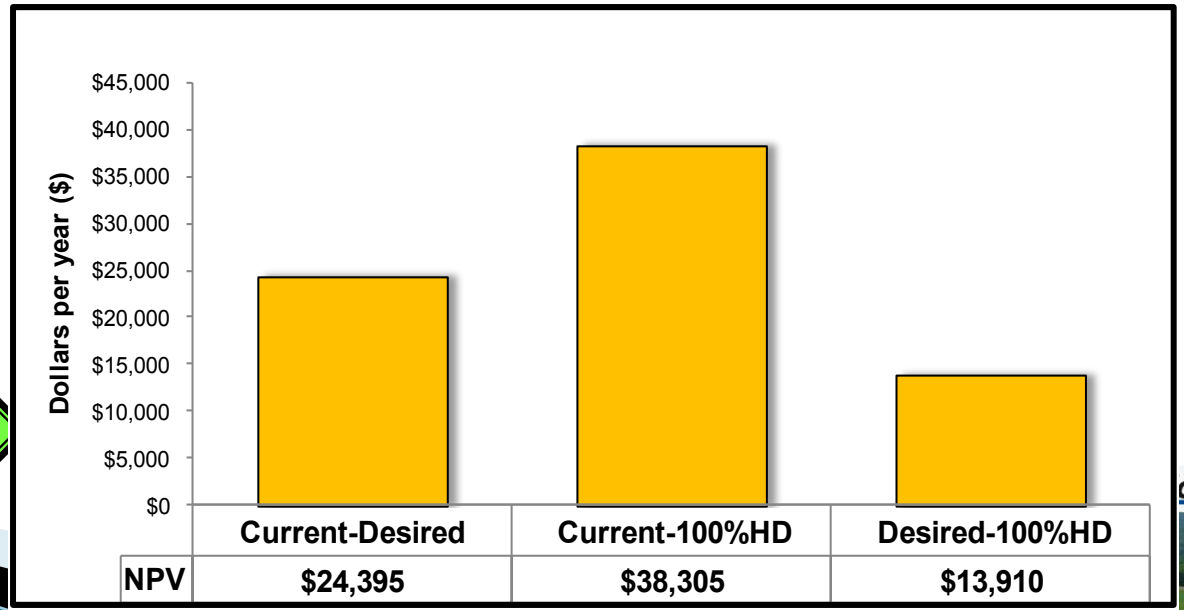


Economic Outcomes



Profit differences (NPV)
"per cow per day"

Profit differences (NPV)
"per herd per year"



	Current-Desired	Current-100%HD	Desired-100%HD
NPV	$24,395	$38,305	$13,910

Conclusions

- Breeding costs may become insignificant with respect to the EMV and/or NPV (gained or lost) with a pregnancy
- The “cost for pregnancy” could then be a misleading indicator of repro program value
- Reproduction performance has a strong and positive relationship with the value of a repro program

Limitations of the Model

- Analyses performed only for one lactation
- Pregnancy losses not accounted

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