

Annual Replacement Heifer Forecast for 2023 Production Season

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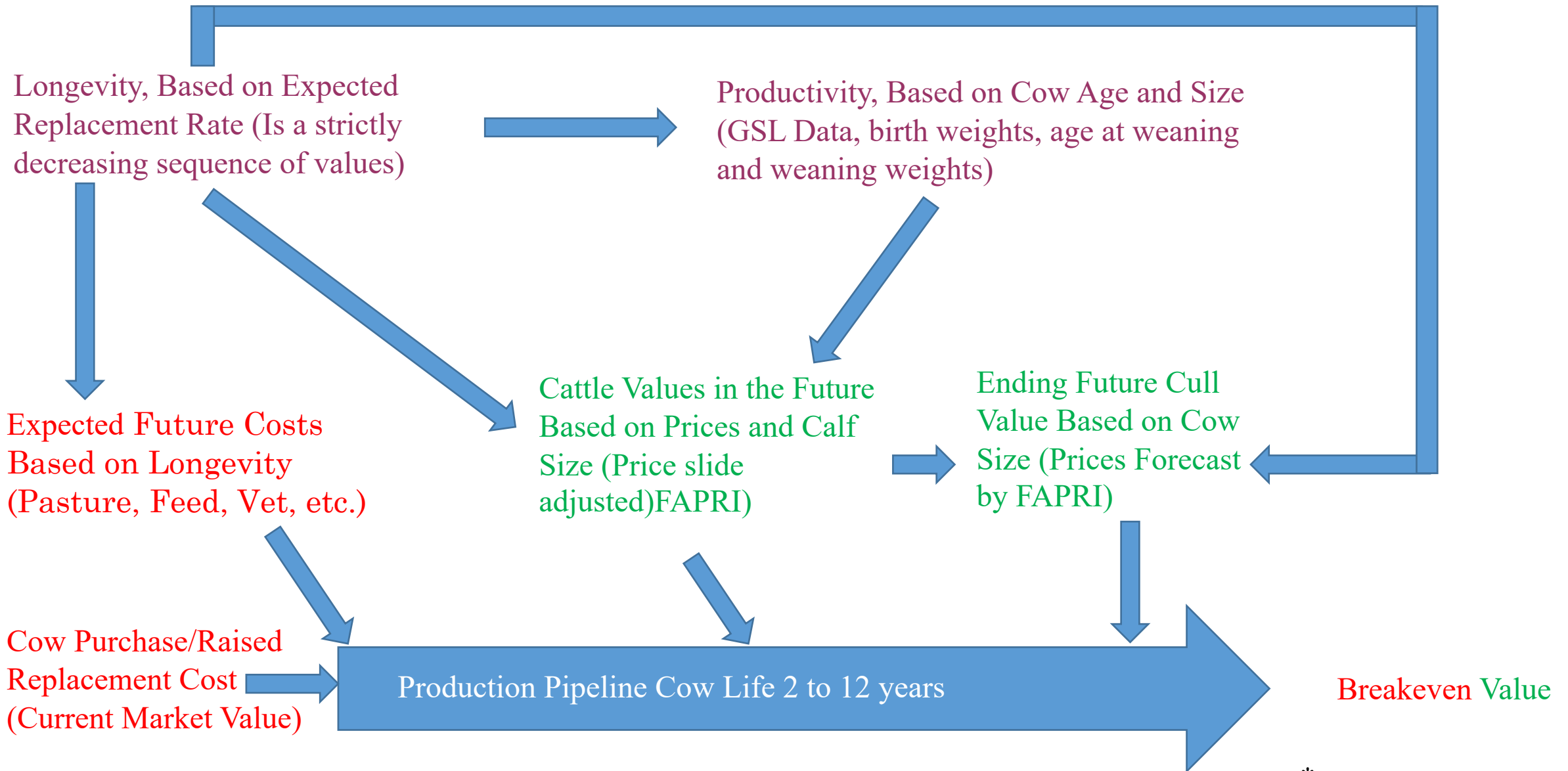
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Selecting Your Replacement Heifer

- Selecting replacement heifers differs from ranch to ranch, but value for both retained and purchased replacements generally depends on:
 - **Longevity** - the replacement heifer's ability to stay in the herd as a productive unit, heifer's productive life
 - **Productivity** – The size and quality of the calf she produces
 - *Compatibility - both genetic and phenotypic with herd mates (does the heifer conform with the production system and performance goals?)*
 - *Operator goals and management style - heifer's contribution to current needs and to the future plans of the operation*
 - *Financial standing - need for working capital and capacity to handle added debt*
 - *Current and expected future costs and revenues*

The CPC* Simulation Process



*CPC, Cow Purchase Cow-Q-Lator

Main Factors that Affect Replacement Value (Breakeven Value)

- Cow Replacement Cost (How much the replacement cost, could be bought or raised)
- Cow Salvage Value (How much the replacement is worth at the end of her productive life)
- Death Rate (Likelihood of death, 2%, per year)
- Cow Productivity (The pounds of calf she produces per year)
- Cow Longevity (The length of her productive life, in years)
- Calf Value (How much each pound of calf she produce is worth, by year)
- Costs (Total cost per cow per year, varies by year)

Forecast Assumptions

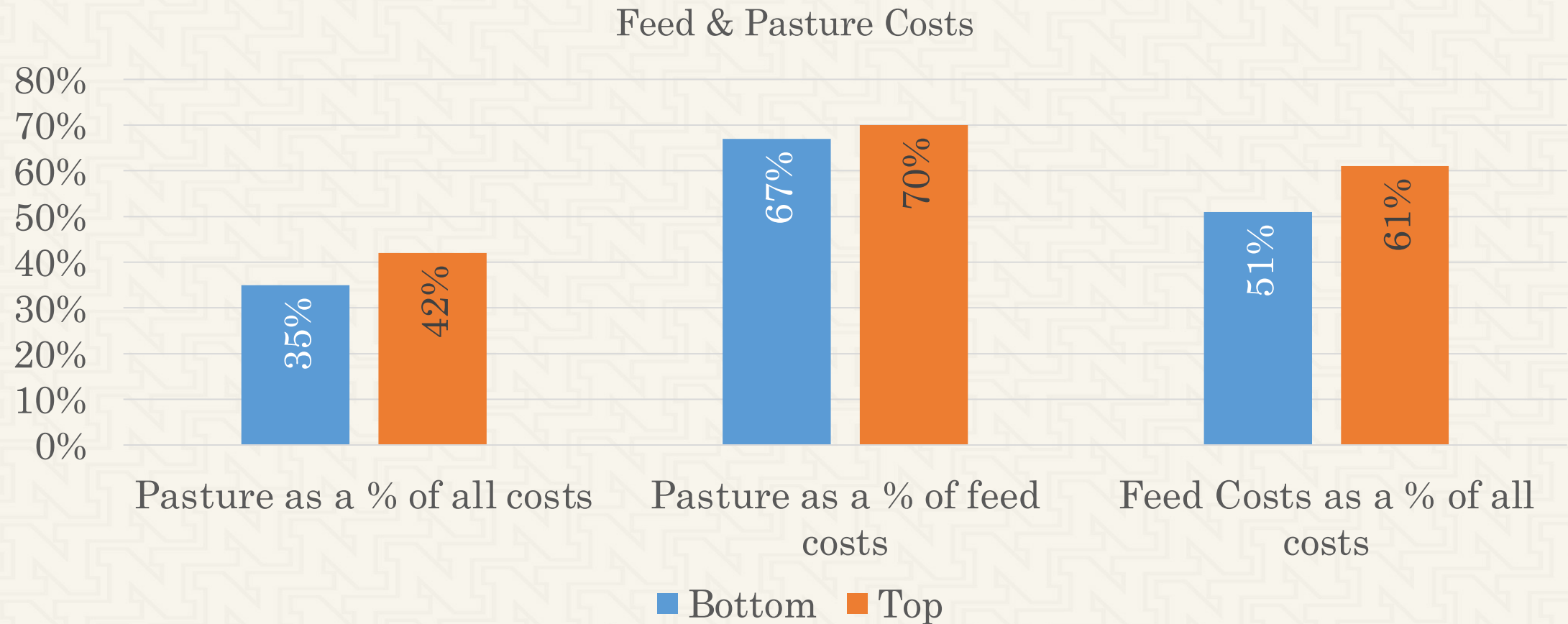
- This forecast requires several key pieces of information to “**cow-q-late**” an average breakeven value (cow replacement value) :
 1. The coming season’s annual cost of production per cow including bull cost, excluding replacement cost “cow-q-lated” by the Authors using UNL’s [Cow Cost Cow-Q-Lator](#) to estimate three levels of costs, Lo(\$747.41/cow), Avg(\$881.71/cow), and Hi (\$992.54/cow)*
 - A. Cost and revenue adjustments not included in the above cost levels:
 - i. Calving rate
 - ii. Cow Replacement costs
 - iii. Cow Depreciation
 - iv. Death Loss
- *These were accounted for in the simulation process

2022 Production Costs per Cow

- \$747.41/cow (Lo)
- \$881.71/cow (Avg)
- \$992.54/cow (Hi)
- Annual costs adjusted from FAPRI % change in costs
- Costs adjusted from 2022 Ag Real Estate Report
 - Low pasture rate of \$47.95/cow calf pair
 - Average pasture rate of \$61.45/cow calf pair
 - High pasture rate of \$71.40/cow calf pair
 - Winter rates were ½ of those charged in the summer



Pasture as % of all costs, pasture as % share of feed costs, feed costs as % share of all costs



Forecast Assumptions (continued)

1. Cow Longevity, This is the expected future replacement rate. This is the number of heifers needed each year to replace cows to maintain the herd. The Authors used three different rates 14%, 20% and 28% annual replacement
2. Cattle prices, both calf and cull cow values. Calves were forecast for the next 10 years (FAPRI). Prices for calves were adjusted according to historical price slide values.
3. Annual percent change in cost for the next 10 years (FAPRI).
4. Productivity – cow size, calving rate, calf size, calf gender, cow age, weaning rate, death rate etc. Historical cow records of past production from the GSL ranch were used to simulate productivity.

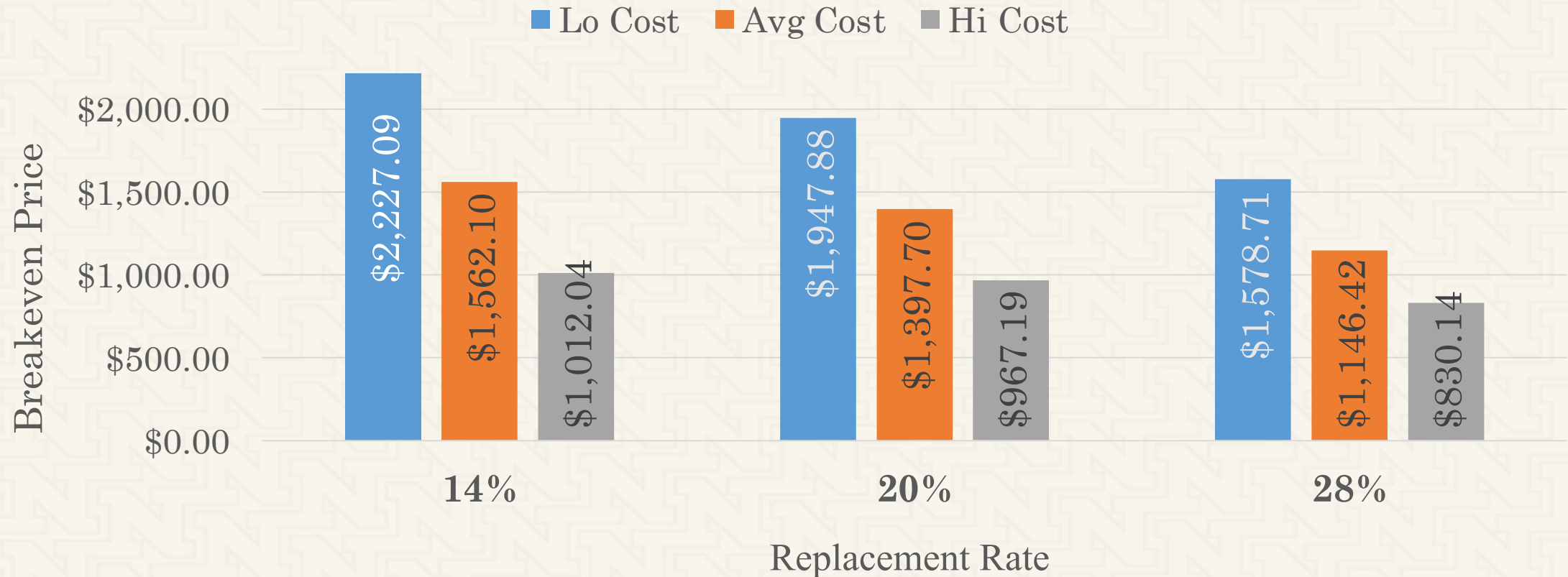
Three Replacement Rates (RR) were simulated

- 14% Lo RR
- 20% Mid RR
- 28% Hi RR



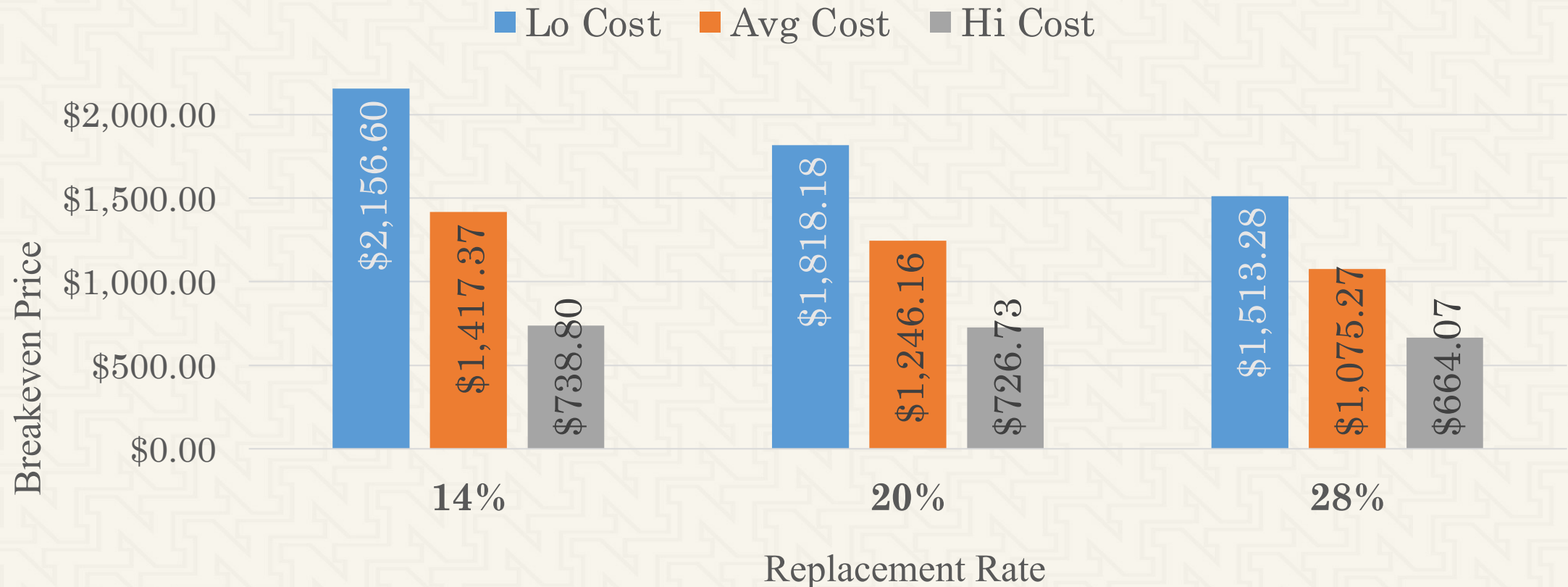
Forecasted replacement heifer breakeven values with Non-Borrowed Money (NBM)

2022 Replacement Heifer Breakeven Value Forecast NBM



Forecasted replacement heifer breakeven values with 50% Borrowed Money (BM) of purchase value

2022 Replacement Heifer Breakeven Value Forecast with Half the Purchase Value Borrowed



Differences of using no borrowed money(NBM) to using 50% borrowed money (BM) on breakeven values

Breakeven difference between BM and NBM \$/hd	Annual Replacement Rate		
	14% Replacement Rate	20% Replacement Rate	28% Replacement Rate
Costs/Hd./Year			
(Lo) \$747.41	-\$70.49	-\$129.70	-\$65.43
(Avg) \$881.71	-\$144.73	-\$151.54	-\$71.15
(Hi) \$992.54	-\$65.43	-\$71.15	-\$166.07

Dollar decrease in cow replacement value for each 1% increase in replacement rate

Changes in breakeven for NBM (no borrowed money) scenarios for cull rate changes		
Costs	Replacement Rate Range 14%-20%	Replacement Rate Range 20%-28%
(Lo) \$747.41	-\$45.53	-\$46.15
(Avg) \$881.71	-\$27.40	-\$31.41
(Hi) \$992.54	-\$7.48	-\$17.13
Changes in breakeven for 50% BM (borrowed money) scenarios for cull rate changes		
Costs	Replacement Rate Range 14%-20%	Replacement Rate Range 20%-28%
(Lo) \$747.41	-\$56.40	-\$38.11
(Avg) \$881.71	-\$28.53	-\$21.36
(Hi) \$992.54	-\$2.01	-\$7.83

Dollar decrease in cow replacement value for each \$1 increase in costs

Changes in breakeven for NBM scenarios for costs changes			
Costs/Hd./Year Range	14% Replacement Rate	20% Replacement Rate	28% Replacement Rate
\$747.41 to \$881.71	-\$4.95/\$1	-\$4.10/\$1	-\$3.22/\$1
\$881.71 to \$992.54	-\$4.96/\$1	-\$3.88/\$1	-\$2.85/\$1
Changes in breakeven for 50% BM scenarios for costs changes			
Costs/Hd./Year	14% Replacement Rate	20% Replacement Rate	28% Replacement Rate
\$747.41 to \$881.71	-\$5.50/\$1	-\$4.26/\$1	-\$4.26/\$1
\$881.71 to \$992.54	-\$6.12/\$1	-\$4.69/\$1	-\$3.71/\$1

Breakeven values of beef cow replacements based on annual production costs and replacement rate with NBM

Table 1 . Forecast of breakeven values for replacement cows based on the FAPRI simulated costs and prices no borrowed money (NBM)

		Annual Replacement Rate														
		14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%
Annual cow cost	\$747	\$2,227	\$2,181	\$2,134	\$2,087	\$2,041	\$1,994	\$1,948	\$1,902	\$1,856	\$1,809	\$1,763	\$1,717	\$1,671	\$1,625	\$1,579
	\$757	\$2,180	\$2,134	\$2,089	\$2,044	\$1,999	\$1,954	\$1,909	\$1,863	\$1,818	\$1,773	\$1,728	\$1,683	\$1,638	\$1,593	\$1,548
	\$767	\$2,132	\$2,088	\$2,044	\$2,001	\$1,957	\$1,913	\$1,869	\$1,825	\$1,781	\$1,737	\$1,693	\$1,649	\$1,605	\$1,561	\$1,517
	\$776	\$2,085	\$2,042	\$2,000	\$1,957	\$1,915	\$1,872	\$1,830	\$1,787	\$1,744	\$1,701	\$1,658	\$1,615	\$1,572	\$1,529	\$1,486
	\$786	\$2,037	\$1,996	\$1,955	\$1,914	\$1,873	\$1,832	\$1,791	\$1,749	\$1,707	\$1,665	\$1,623	\$1,581	\$1,539	\$1,497	\$1,455
	\$795	\$1,990	\$1,950	\$1,910	\$1,870	\$1,831	\$1,791	\$1,751	\$1,711	\$1,670	\$1,629	\$1,588	\$1,547	\$1,506	\$1,465	\$1,424
	\$805	\$1,942	\$1,904	\$1,865	\$1,827	\$1,789	\$1,750	\$1,712	\$1,672	\$1,632	\$1,593	\$1,553	\$1,513	\$1,473	\$1,433	\$1,393
	\$815	\$1,895	\$1,858	\$1,821	\$1,784	\$1,747	\$1,710	\$1,673	\$1,634	\$1,595	\$1,556	\$1,518	\$1,479	\$1,440	\$1,401	\$1,363
	\$824	\$1,847	\$1,811	\$1,776	\$1,740	\$1,705	\$1,669	\$1,633	\$1,596	\$1,558	\$1,520	\$1,483	\$1,445	\$1,407	\$1,369	\$1,332
	\$834	\$1,800	\$1,765	\$1,731	\$1,697	\$1,663	\$1,628	\$1,594	\$1,558	\$1,521	\$1,484	\$1,448	\$1,411	\$1,374	\$1,337	\$1,301
	\$843	\$1,752	\$1,719	\$1,686	\$1,653	\$1,621	\$1,588	\$1,555	\$1,519	\$1,484	\$1,448	\$1,412	\$1,377	\$1,341	\$1,306	\$1,270
	\$853	\$1,705	\$1,673	\$1,642	\$1,610	\$1,579	\$1,547	\$1,516	\$1,481	\$1,446	\$1,412	\$1,377	\$1,343	\$1,308	\$1,274	\$1,239
	\$863	\$1,657	\$1,627	\$1,597	\$1,567	\$1,537	\$1,506	\$1,476	\$1,443	\$1,409	\$1,376	\$1,342	\$1,309	\$1,275	\$1,242	\$1,208
	\$872	\$1,610	\$1,581	\$1,552	\$1,523	\$1,495	\$1,466	\$1,437	\$1,405	\$1,372	\$1,340	\$1,307	\$1,275	\$1,242	\$1,210	\$1,177
	\$882	\$1,562	\$1,535	\$1,507	\$1,480	\$1,453	\$1,425	\$1,398	\$1,366	\$1,335	\$1,303	\$1,272	\$1,241	\$1,209	\$1,178	\$1,146
	\$890	\$1,520	\$1,494	\$1,468	\$1,442	\$1,416	\$1,390	\$1,365	\$1,334	\$1,304	\$1,274	\$1,243	\$1,213	\$1,183	\$1,152	\$1,122
	\$899	\$1,477	\$1,453	\$1,429	\$1,404	\$1,380	\$1,356	\$1,331	\$1,302	\$1,273	\$1,244	\$1,215	\$1,185	\$1,156	\$1,127	\$1,098
	\$907	\$1,435	\$1,412	\$1,390	\$1,367	\$1,344	\$1,321	\$1,298	\$1,270	\$1,242	\$1,214	\$1,186	\$1,158	\$1,130	\$1,102	\$1,073
	\$916	\$1,393	\$1,372	\$1,350	\$1,329	\$1,308	\$1,287	\$1,265	\$1,238	\$1,211	\$1,184	\$1,157	\$1,130	\$1,103	\$1,076	\$1,049
	\$924	\$1,351	\$1,331	\$1,311	\$1,291	\$1,272	\$1,252	\$1,232	\$1,206	\$1,180	\$1,154	\$1,128	\$1,103	\$1,077	\$1,051	\$1,025
\$933	\$1,308	\$1,290	\$1,272	\$1,254	\$1,235	\$1,217	\$1,199	\$1,174	\$1,149	\$1,125	\$1,100	\$1,075	\$1,050	\$1,025	\$1,000	
\$941	\$1,266	\$1,249	\$1,233	\$1,216	\$1,199	\$1,183	\$1,166	\$1,142	\$1,118	\$1,095	\$1,071	\$1,047	\$1,024	\$1,000	\$976	
\$950	\$1,224	\$1,208	\$1,193	\$1,178	\$1,163	\$1,148	\$1,133	\$1,110	\$1,088	\$1,065	\$1,042	\$1,020	\$997	\$974	\$952	
\$958	\$1,181	\$1,168	\$1,154	\$1,140	\$1,127	\$1,113	\$1,100	\$1,078	\$1,057	\$1,035	\$1,014	\$992	\$971	\$949	\$927	
\$967	\$1,139	\$1,127	\$1,115	\$1,103	\$1,091	\$1,079	\$1,067	\$1,046	\$1,026	\$1,005	\$985	\$964	\$944	\$924	\$903	
\$975	\$1,097	\$1,086	\$1,076	\$1,065	\$1,055	\$1,044	\$1,033	\$1,014	\$995	\$975	\$956	\$937	\$917	\$898	\$879	
\$984	\$1,054	\$1,045	\$1,036	\$1,027	\$1,018	\$1,009	\$1,000	\$982	\$964	\$946	\$927	\$909	\$891	\$873	\$854	
\$993	\$1,012	\$1,005	\$997	\$990	\$982	\$975	\$967	\$950	\$933	\$916	\$899	\$882	\$864	\$847	\$830	

Using The Tables (NBM)

Suppose a Mighty Fine Ranch figures it has a cost of \$767/cow and a replacement rate of 17%

What would their breakeven value forecast equal?

The closest annual cow cost would be \$767/cow and 17%, The Breakeven Replacement Value would be \$2,001/cow.

If the same ranch were to borrow half the value of the replacement heifer the (BM) Table below would indicate a Breakeven Replacement Value of \$1894/cow, \$107/cow less the NBM.

Breakeven values of beef cow replacements based on annual production costs and replacement rate with 50% BM

Table 2 . Forecast of breakeven values for replacement cows based on the FAPRI simulated costs and prices with 50% of cow value borrowed at 6% (BM)

		Annual Replacement Rate														
		14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%
Annual cow cost	\$747	\$2,157	\$2,100	\$2,044	\$1,987	\$1,931	\$1,875	\$1,818	\$1,780	\$1,742	\$1,704	\$1,666	\$1,628	\$1,590	\$1,551	\$1,513
	\$757	\$2,104	\$2,049	\$1,995	\$1,941	\$1,886	\$1,832	\$1,777	\$1,740	\$1,703	\$1,667	\$1,630	\$1,593	\$1,556	\$1,519	\$1,482
	\$767	\$2,051	\$1,999	\$1,946	\$1,894	\$1,841	\$1,789	\$1,736	\$1,701	\$1,665	\$1,629	\$1,594	\$1,558	\$1,522	\$1,486	\$1,451
	\$776	\$1,998	\$1,948	\$1,897	\$1,847	\$1,796	\$1,746	\$1,696	\$1,661	\$1,627	\$1,592	\$1,558	\$1,523	\$1,488	\$1,454	\$1,419
	\$786	\$1,945	\$1,897	\$1,849	\$1,800	\$1,752	\$1,703	\$1,655	\$1,621	\$1,588	\$1,555	\$1,521	\$1,488	\$1,455	\$1,421	\$1,388
	\$795	\$1,893	\$1,846	\$1,800	\$1,753	\$1,707	\$1,660	\$1,614	\$1,582	\$1,550	\$1,517	\$1,485	\$1,453	\$1,421	\$1,389	\$1,357
	\$805	\$1,840	\$1,795	\$1,751	\$1,706	\$1,662	\$1,617	\$1,573	\$1,542	\$1,511	\$1,480	\$1,449	\$1,418	\$1,387	\$1,356	\$1,326
	\$815	\$1,787	\$1,745	\$1,702	\$1,660	\$1,617	\$1,575	\$1,532	\$1,502	\$1,473	\$1,443	\$1,413	\$1,383	\$1,354	\$1,324	\$1,294
	\$824	\$1,734	\$1,694	\$1,653	\$1,613	\$1,572	\$1,532	\$1,491	\$1,463	\$1,434	\$1,406	\$1,377	\$1,349	\$1,320	\$1,292	\$1,263
	\$834	\$1,681	\$1,643	\$1,604	\$1,566	\$1,527	\$1,489	\$1,450	\$1,423	\$1,396	\$1,368	\$1,341	\$1,314	\$1,286	\$1,259	\$1,232
	\$843	\$1,629	\$1,592	\$1,556	\$1,519	\$1,483	\$1,446	\$1,410	\$1,383	\$1,357	\$1,331	\$1,305	\$1,279	\$1,253	\$1,227	\$1,200
	\$853	\$1,576	\$1,541	\$1,507	\$1,472	\$1,438	\$1,403	\$1,369	\$1,344	\$1,319	\$1,294	\$1,269	\$1,244	\$1,219	\$1,194	\$1,169
	\$863	\$1,523	\$1,490	\$1,458	\$1,425	\$1,393	\$1,360	\$1,328	\$1,304	\$1,280	\$1,257	\$1,233	\$1,209	\$1,185	\$1,162	\$1,138
	\$872	\$1,470	\$1,440	\$1,409	\$1,379	\$1,348	\$1,318	\$1,287	\$1,264	\$1,242	\$1,219	\$1,197	\$1,174	\$1,152	\$1,129	\$1,107
	\$882	\$1,417	\$1,389	\$1,360	\$1,332	\$1,303	\$1,275	\$1,246	\$1,225	\$1,203	\$1,182	\$1,161	\$1,139	\$1,118	\$1,097	\$1,075
	\$890	\$1,365	\$1,339	\$1,312	\$1,286	\$1,259	\$1,233	\$1,206	\$1,186	\$1,166	\$1,145	\$1,125	\$1,105	\$1,084	\$1,064	\$1,044
	\$899	\$1,313	\$1,289	\$1,264	\$1,240	\$1,215	\$1,191	\$1,166	\$1,147	\$1,128	\$1,108	\$1,089	\$1,070	\$1,051	\$1,031	\$1,012
	\$907	\$1,261	\$1,238	\$1,216	\$1,194	\$1,171	\$1,149	\$1,126	\$1,108	\$1,090	\$1,072	\$1,053	\$1,035	\$1,017	\$999	\$980
	\$916	\$1,209	\$1,188	\$1,168	\$1,147	\$1,127	\$1,107	\$1,086	\$1,069	\$1,052	\$1,035	\$1,018	\$1,000	\$983	\$966	\$949
	\$924	\$1,156	\$1,138	\$1,120	\$1,101	\$1,083	\$1,065	\$1,046	\$1,030	\$1,014	\$998	\$982	\$966	\$949	\$933	\$917
\$933	\$1,104	\$1,088	\$1,072	\$1,055	\$1,039	\$1,023	\$1,006	\$991	\$976	\$961	\$946	\$931	\$916	\$901	\$885	
\$941	\$1,052	\$1,038	\$1,023	\$1,009	\$995	\$981	\$966	\$952	\$938	\$924	\$910	\$896	\$882	\$868	\$854	
\$950	\$1,000	\$988	\$975	\$963	\$951	\$939	\$927	\$913	\$900	\$887	\$874	\$861	\$848	\$835	\$822	
\$958	\$948	\$937	\$927	\$917	\$907	\$897	\$887	\$875	\$863	\$851	\$839	\$827	\$815	\$803	\$791	
\$967	\$895	\$887	\$879	\$871	\$863	\$855	\$847	\$836	\$825	\$814	\$803	\$792	\$781	\$770	\$759	
\$975	\$843	\$837	\$831	\$825	\$819	\$813	\$807	\$797	\$787	\$777	\$767	\$757	\$747	\$737	\$727	
\$984	\$791	\$787	\$783	\$779	\$775	\$771	\$767	\$758	\$749	\$740	\$731	\$722	\$713	\$705	\$696	
\$993	\$739	\$737	\$735	\$733	\$731	\$729	\$727	\$719	\$711	\$703	\$695	\$688	\$680	\$672	\$664	

Conclusion

- Increased productivity without changing costs results in greater revenue and a higher breakeven value for replacement cows
 - A. Productivity changes could include
 - Calving rate - Pregnancy rate - Calf growth rates – etc.
- Revenue changes due to higher or lower calf prices and cull cows affects breakeven values similarly, increased revenue means higher breakeven values for cow replacements and vice versa
 - A. Such as demand shifts in the cattle market, e.g. increased exports
 - B. Supply shifts less cattle available for market, e.g. cattle cycle, post drought etc.
 - C. Cow disease outbreaks, BSE (Mad Cow)

Conclusion (continued)

- All these factors come into play since the future is never known and the longer the production life of the cow the more unpredictable these events become. So, value must also include the producer's ability and/or desire to take on risk
- A positive outcome to purchasing a replacement heifer comes down to the ability of the heifer to return as much or more value than was paid for her.
- Selecting the right heifer that fits your operation is important to making a profit regardless of whether buying or raising that animal.



EXTENSION

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<https://go.unl.edu/2023cowreplacementvalues>

