

FMD Simulations

08-24-2022

Optimistic Scenario:

- Year1: 5% decline in domestic demand and exports are banned
- Year2: Domestic demand is back up and exports are banned
- Year3: Everything goes back to pre FMD

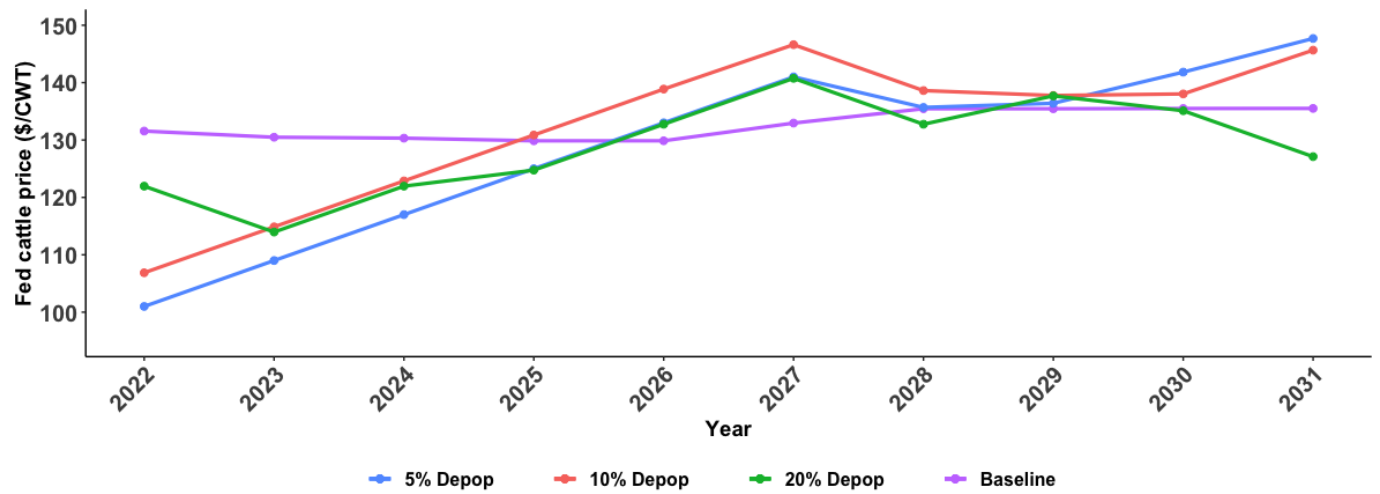


Figure 1: Fed cattle price

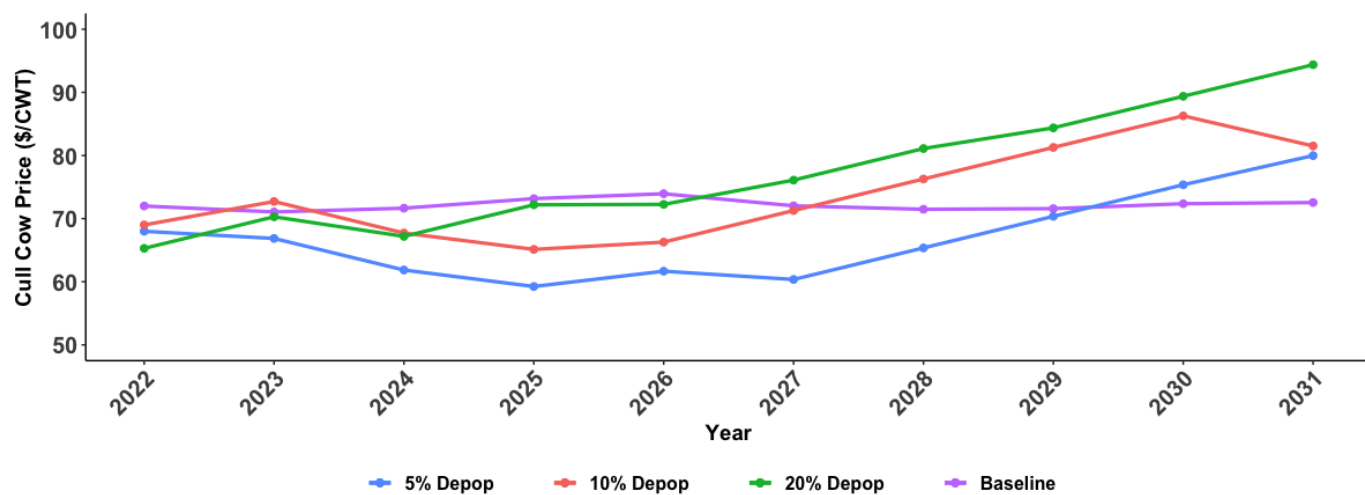


Figure 2: Cull cow price

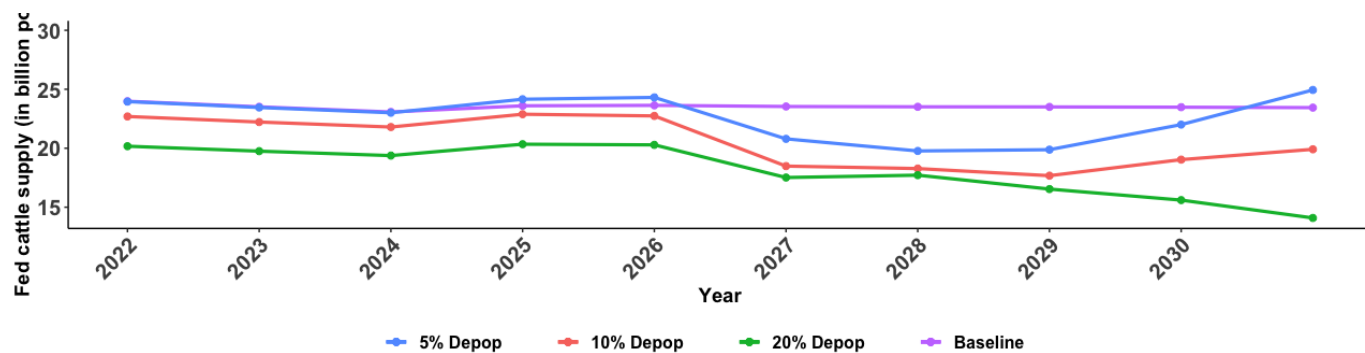


Figure 3: Fed Cattle Supply - Before adjusting for exports

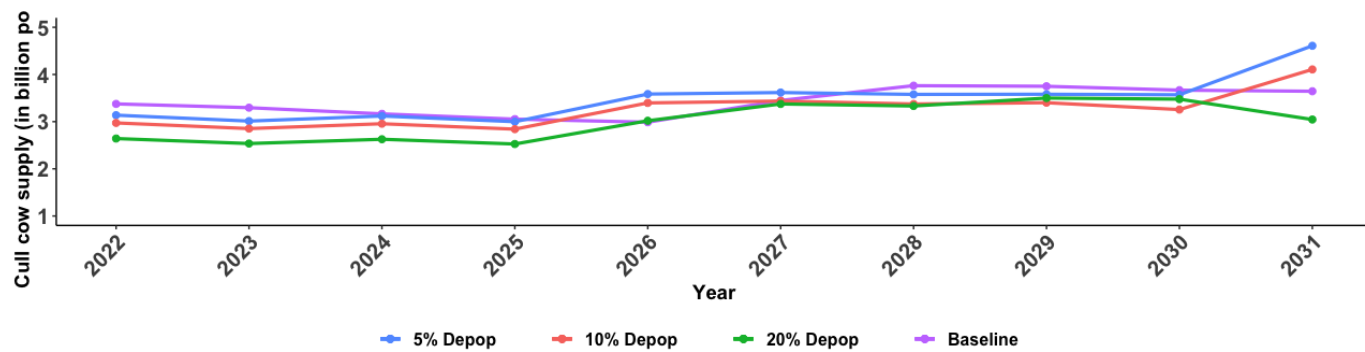


Figure 4: Cull cow supply - Before adjusting for exports

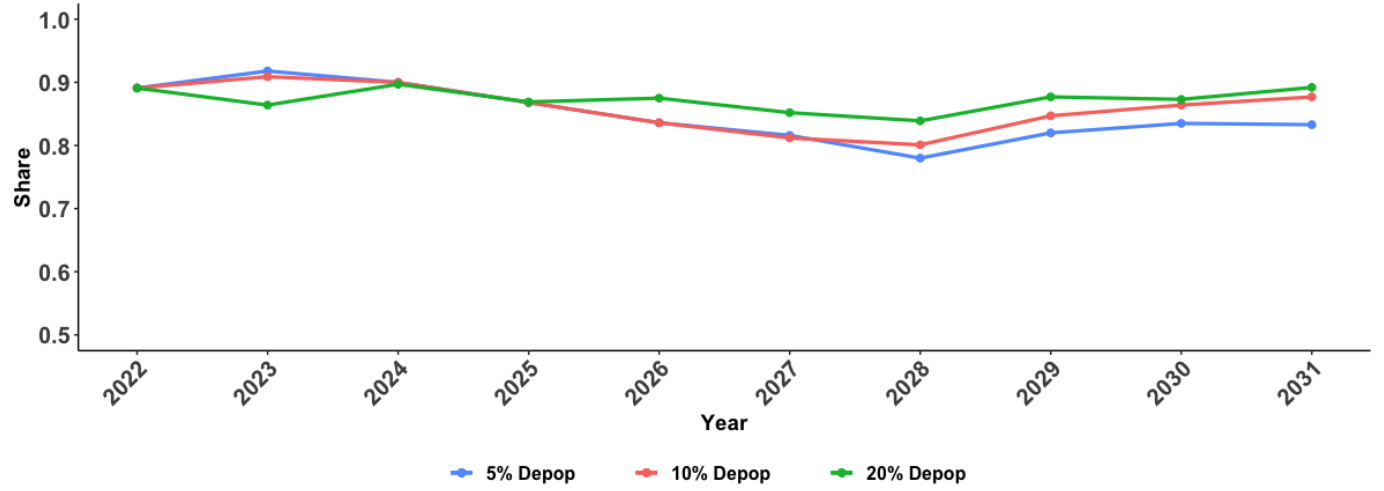


Figure 5: Share

Year	K	k3	k4	k5	k6	k7	k8	k9	k10
2022	29995052	6907361	5242532	5045566	4975167	4923723	0	0	0
2023	30464527	6967815	6561993	4980406	4793288	4726409	4677537	0	0
2024	29873946	6566009	6619425	6233893	4731385	4553623	4490088	4443660	0
2025	28727744	5971794	6237708	6288453	5922199	4494816	4325942	4265584	0
2026	28390873	6877700	5673204	5925823	5974031	5626089	4270075	4109645	0
2027	30059292	8877692	6533815	5389544	5629532	5675329	5344784	4056572	0
2028	33566793	10754572	8433807	6207125	5120067	5348055	5391563	5077545	0
2029	33573036	7361221	10216843	8012117	5896768	4864064	5080652	5121985	0
2030	33571262	7456374	6993160	9706001	7611511	5601930	4620860	4826620	0
2031	33570286	7670644	7083556	6643502	9220701	7230935	5321833	4389817	0

Figure 6: Age distribution under 5% percent depopulation

Year	K	k3	k4	k5	k6	k7	k8	k9	k10
2022	28416365	6543816	4966610	4780010	4713316	4664580	0	0	0
2023	28619022	6622064	6216625	4718279	4541010	4477650	4431351	0	0
2024	27204793	5616676	6290960	5905794	4482365	4313959	4253768	4209783	0
2025	26474696	6222329	5335842	5976412	5610504	4258247	4098261	4041079	0
2026	25682804	6273430	5911213	5069050	5677592	5329979	4045334	3893348	0
2027	26561114	7912921	5959759	5615652	4815597	5393712	5063480	3843068	0
2028	28045057	8448316	7517275	5661771	5334870	4574817	5124027	4810306	0
2029	30396947	9459227	8025900	7141412	5378682	5068126	4346077	4867825	0
2030	33566795	10400582	8986266	7624605	6784341	5109748	4814720	4128773	0
2031	33570804	7579387	9880553	8536952	7243375	6445124	0	0	0

Figure 7: Age distribution under 10% percent depopulation

Year	K	k3	k4	k5	k6	k7	k8	k9	k10
2022	25258991	5816725	4414764	4248898	4189614	4146293	0	0	0
2023	25499233	6501779	5525889	4194026	4036453	3980134	3938978	0	0
2024	25110479	6419343	6176691	5249594	3984325	3834630	3781127	3742029	0
2025	25071234	6742510	6098376	5867856	4987115	3785108	3642899	3592071	0
2026	24027969	5869328	6405385	5793457	5574463	4737759	3595853	3460754	0
2027	22915724	5825967	5575862	6085115	5503784	5295740	4500871	3416060	0
2028	21722021	5679537	5534669	5297068	5780860	5228595	5030953	4275827	0
2029	20039308	5167535	5395560	5257935	5032215	5491817	4967165	4779405	0
2030	18510275	5137936	4909158	5125782	4995039	4780604	0	0	0
2031	17062659	5137979	4881040	4663700	4869493	4745287	0	0	0

Figure 8: Age distribution under 20% percent depopulation

Year	imports	exports	importsBeef	exportsBeef
2022	0	0	0.00	0.000
2023	0	0	0.00	0.000
2024	0	495331	0.00	3.183
2025	0	509285	0.00	3.320
2026	2080000	509824	0.00	3.427
2027	0	473463	1.47	2.999
2028	0	790000	2.36	2.848
2029	0	7340000	2.27	2.823
2030	0	5750000	0.40	3.142
2031	0	1740000	0.00	3.630

Figure 9: Imports and Exports under 5% percent depopulation

Year	imports	exports	importsBeef	exportsBeef
2022	0	0	0.00	0.000
2023	0	0	0.00	0.000
2024	0	469261	0.59	3.016
2025	2080000	488165	0.00	3.145
2026	2080000	503288	0.00	3.211
2027	0	426638	3.49	2.693
2028	0	409280	3.67	2.604
2029	0	406463	4.20	2.568
2030	0	70000	3.01	2.739
2031	0	4800000	2.24	2.951

Figure 10: Imports and Exports under 10% percent depopulation

Year	imports	exports	importsBeef	exportsBeef
2022	0	0	0.00	0.000
2023	0	0	0.00	0.000
2024	0	469261	0.59	3.016
2025	2080000	488165	0.00	3.145
2026	2080000	503288	0.00	3.211
2027	0	426638	3.49	2.693
2028	0	409280	3.67	2.604
2029	0	406463	4.20	2.568
2030	0	70000	3.01	2.739
2031	0	4800000	2.24	2.951

Figure 11: Imports and Exports under 20% percent depopulation

Pessimistic Scenario:

- Year1: 5% decline in domestic demand and exports are banned
- Year2: 5% decline in domestic demand and exports are banned
- Year3: 5% decline in domestic demand and exports are banned
- Year4: Domestic demand goes back up, exports are still banned
- Year5: Exports are still banned
- Year6: Export band is lifted and everything goes back to pre FMD

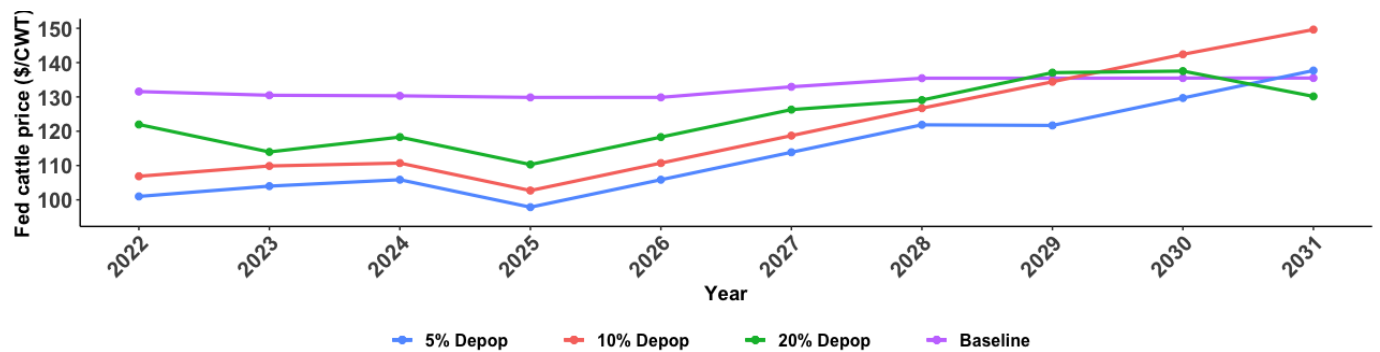


Figure 12: Fed cattle price

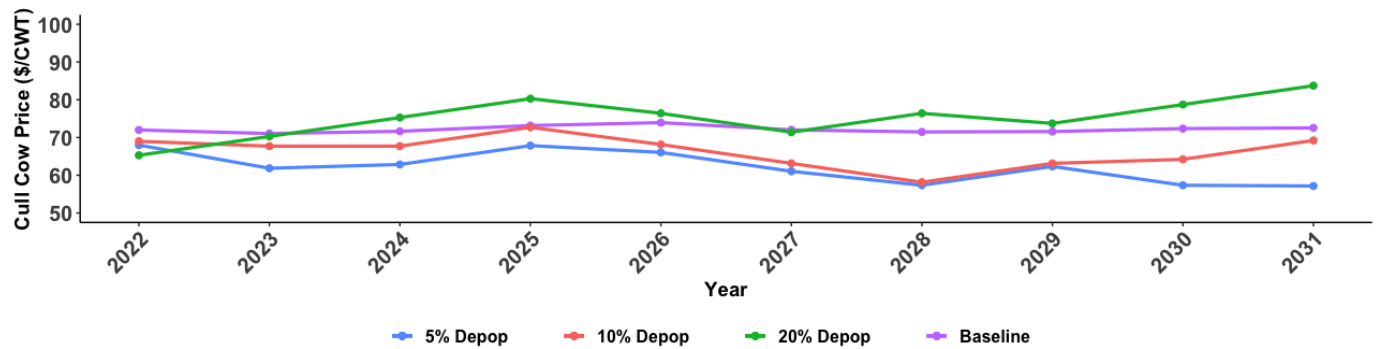


Figure 13: Cull cow price

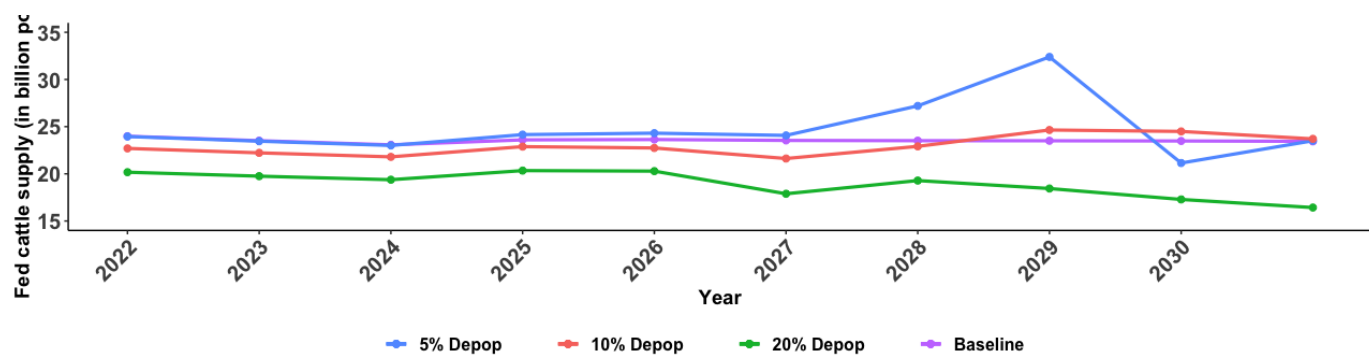


Figure 14: Fed Cattle Supply - Before adjusting for exports

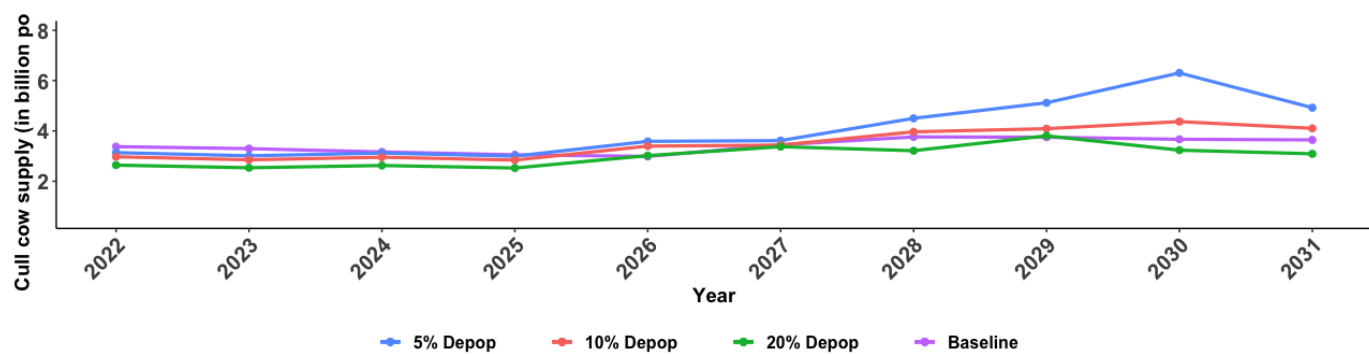


Figure 15: Cull cow supply - Before adjusting for exports

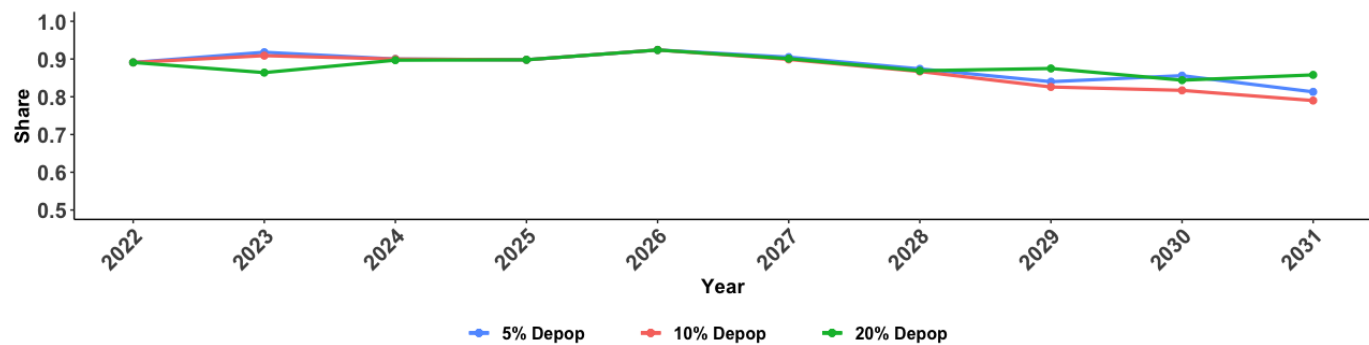


Figure 16: Share

Year	K	k3	k4	k5	k6	k7	k8	k9	k10
2022	29995052	6907360.9	5242532.2	5045566.1	4975167.1	4923723	0	0	0
2023	30464527	6967815.3	6561992.9	4980405.6	4793287.8	4726409	4677537	0	0
2024	32616103	8673390.0	6619424.6	6233893.2	4731385.4	4553623	4490088	4443660	0
2025	35848351	9861640.9	8239720.5	6288453.3	5922198.6	4494816	4325942	4265584	0
2026	41206175	12148829.9	9368558.9	7827734.5	5974030.7	5626089	4270075	4109645	0
2027	33565552	205189.3	11541388.4	8900130.9	7436347.8	5675329	5344784	4056572	0
2028	33566204	7642500.6	194929.8	10964319.0	8455124.4	7064530	5391563	5077545	0
2029	30943972	5134930.4	7260375.6	185183.4	10416103.0	8032368	6711304	5121985	0
2030	33061266	10030574.1	4878183.9	6897356.8	175924.2	9895298	7630750	6375739	0
2031	33567018	7180700.2	9529045.4	4634274.7	6552489.0	167128	9400533	7249212	0

Figure 17: Age distribution under 5% percent depopulation

Year	K	k3	k4	k5	k6	k7	k8	k9	k10
2022	28416365	6543816	4966610	4780010	4713316	4664580	0	0	0
2023	28619022	6622064	6216625	4718279	4541010	4477650	4431351	0	0
2024	29829468	7639984	6290960	5905794	4482365	4313959	4253768	4209783	0
2025	31219667	7880261	7257985	5976412	5610504	4258247	4098261	4041079	0
2026	33080516	8420419	7486247	6895086	5677592	5329979	4045334	3893348	0
2027	33568547	7892529	7999398	7111935	6550332	5393712	5063480	3843068	0
2028	33570508	7544066	7497902	7599428	6756338	6222815	5124027	4810306	0
2029	33565386	7557761	7166863	7123007	7219457	6418521	5911674	4867825	0
2030	33566445	7623668	7179873	6808520	6766857	6858484	6097595	5616091	0
2031	33570420	7571102	7242484	6820879	6468094	6428514	6515560	5792716	0

Figure 18: Age distribution under 10% percent depopulation

Year	K	k3	k4	k5	k6	k7	k8	k9	k10
2022	25258991	5816725	4414764	4248898	4189614	4146293	0	0	0
2023	25499233	6501779	5525889	4194026	4036453	3980134	3938978	0	0
2024	25420190	6194506	6176691	5249594	3984325	3834630	3781127	3742029	0
2025	26485274	7334681	5884781	5867856	4987115	3785108	3642899	3592071	0
2026	26088444	5926022	6967947	5590542	5574463	4737759	3595853	3460754	0
2027	25003112	5955903	5629721	6619550	5311015	5295740	4500871	3416060	0
2028	24360019	6308989	5658108	5348235	6288572	5045464	5030953	4275827	0
2029	23614914	6304279	5993539	5375203	5080823	5974144	4793191	4779405	0
2030	22624731	5862004	5989065	5693862	5106443	4826782	5675436	4553531	0
2031	22172630	6353970	5568904	5689612	5409169	4851120	0	0	0

Figure 19: Age distribution under 20% percent depopulation

Year	imports	exports	importsBeef	exportsBeef
2022	0	0	0.00	0.000
2023	0	0	0.00	0.000
2024	0	0	0.00	0.000
2025	0	0	0.00	0.000
2026	0	0	0.00	0.000
2027	0	16940000	0.00	3.402
2028	0	1280000	0.00	3.895
2029	3780000	509106	0.00	4.608
2030	0	509647	1.16	3.373
2031	0	6760000	1.85	2.901

Figure 20: Imports and Exports under 5% percent depopulation

Year	imports	exports	importsBeef	exportsBeef
2022	0	0	0.00	0.000
2023	0	0	0.00	0.000
2024	0	0	0.00	0.000
2025	0	0	0.00	0.000
2026	0	0	0.00	0.000
2027	0	2620000	0.74	3.079
2028	0	3250000	0.00	3.302
2029	0	2840000	0.00	3.531
2030	0	2970000	0.00	3.546
2031	0	4840000	0.00	3.416

Figure 21: Imports and Exports under 10% percent depopulation

Year	imports	exports	importsBeef	exportsBeef
2022	0	0	0.00	0.000
2023	0	0	0.00	0.000
2024	0	0	0.00	0.000
2025	2080000	0	0.00	0.000
2026	0	0	0.00	0.000
2027	0	414106	4.02	2.612
2028	2080000	435497	2.79	2.764
2029	2080000	435469	3.53	2.734
2030	0	395360	4.54	2.502
2031	2080000	380081	5.30	2.398

Figure 22: Imports and Exports under 20% percent depopulation

Plots without 20% depopulation

Optimistic Scenario

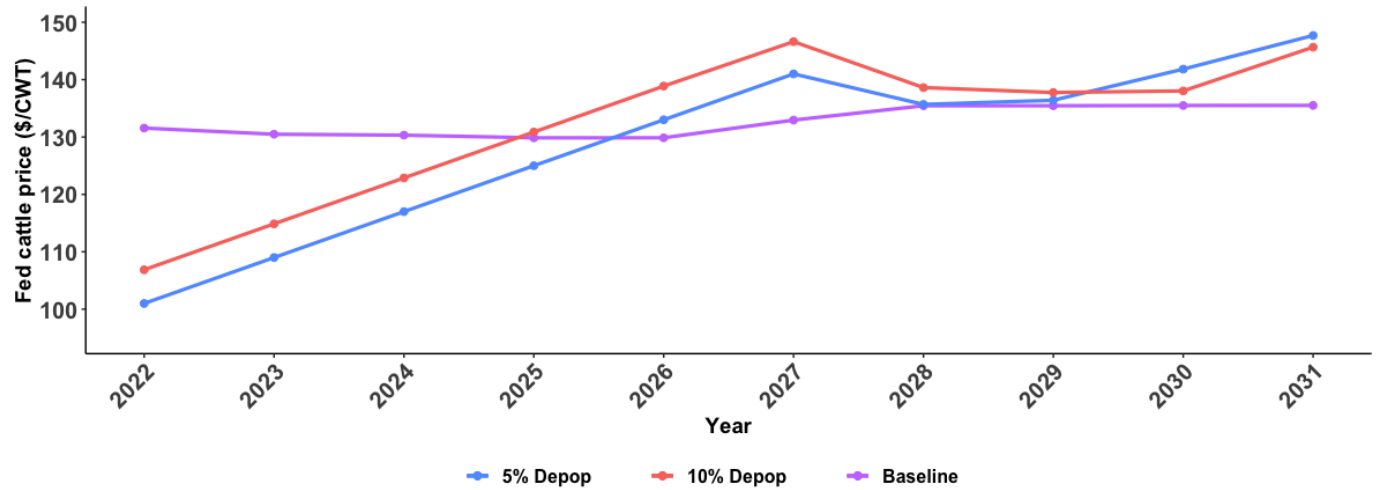


Figure 23: Fed cattle price

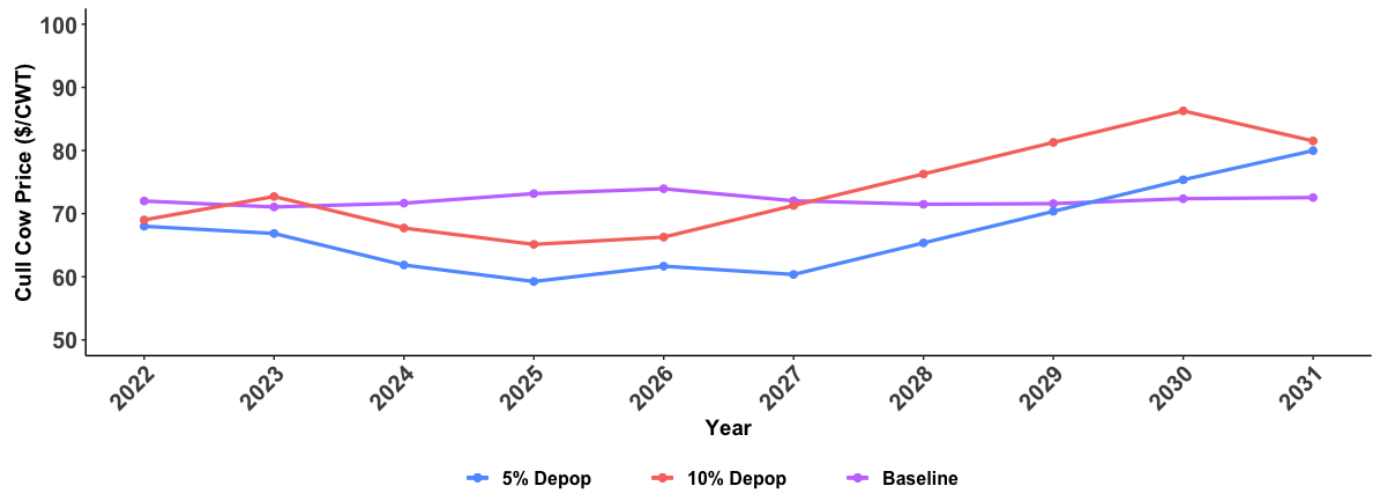


Figure 24: Cull cow price

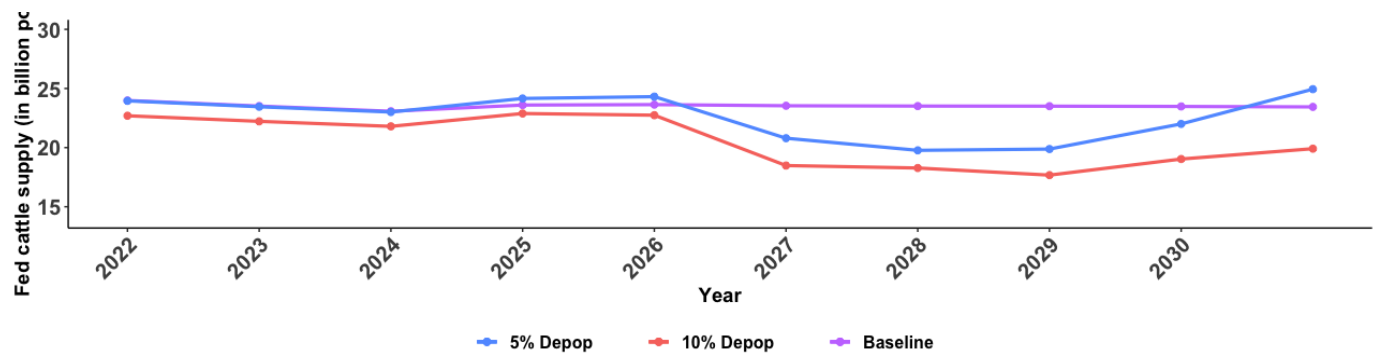


Figure 25: Fed Cattle Supply - Before adjusting for exports

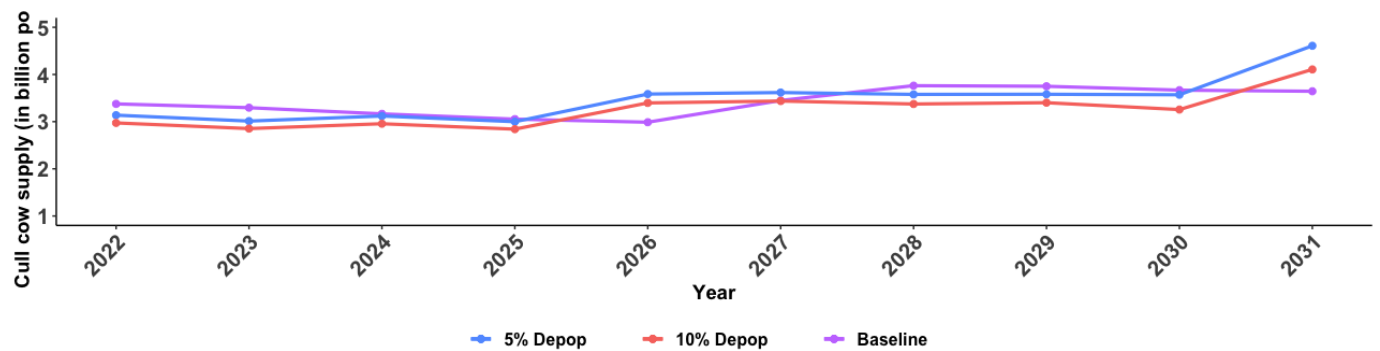


Figure 26: Cull cow supply - Before adjusting for exports

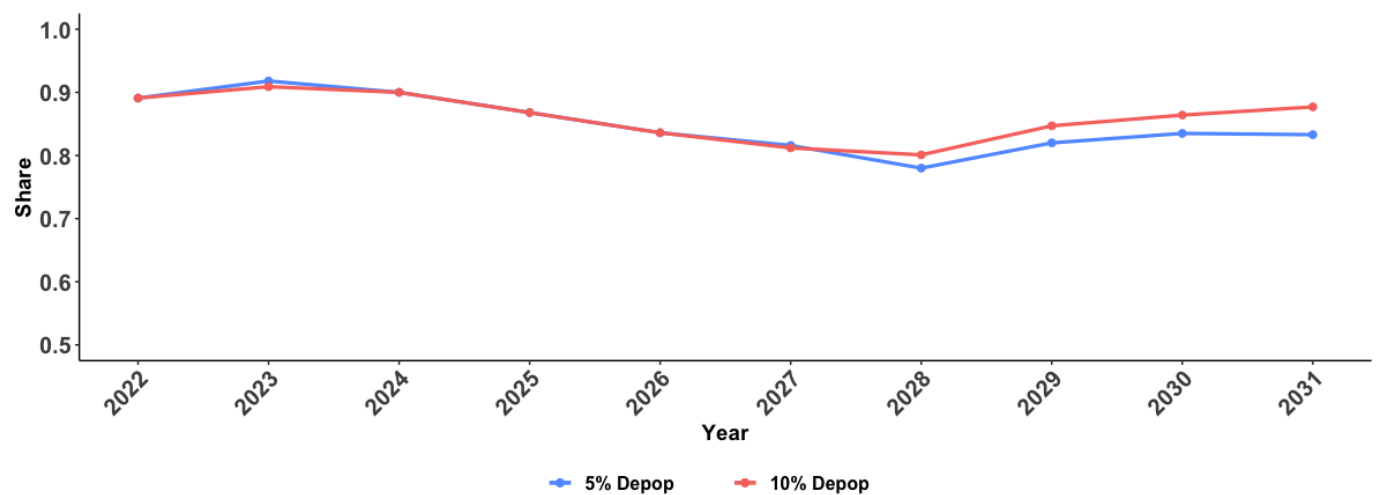


Figure 27: Total supply - Before adjusting for exports

Pessimistic Scenario:

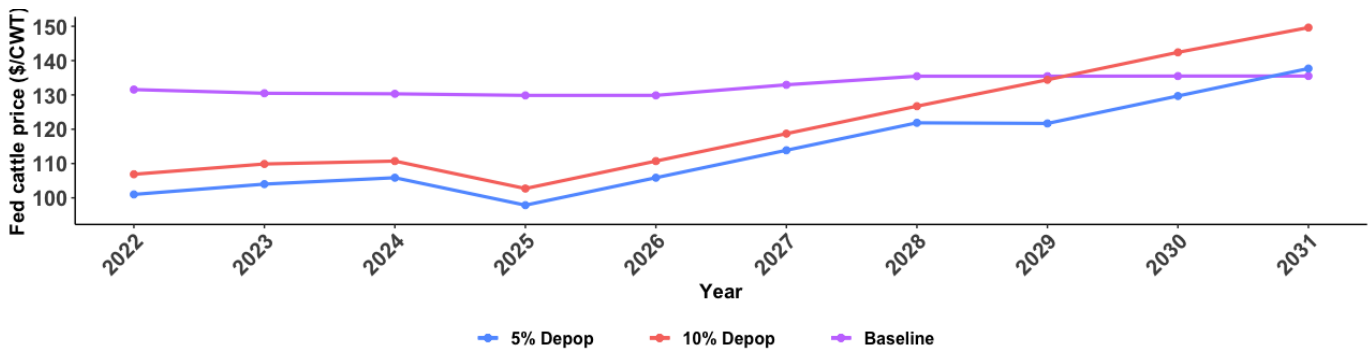


Figure 28: Fed cattle price

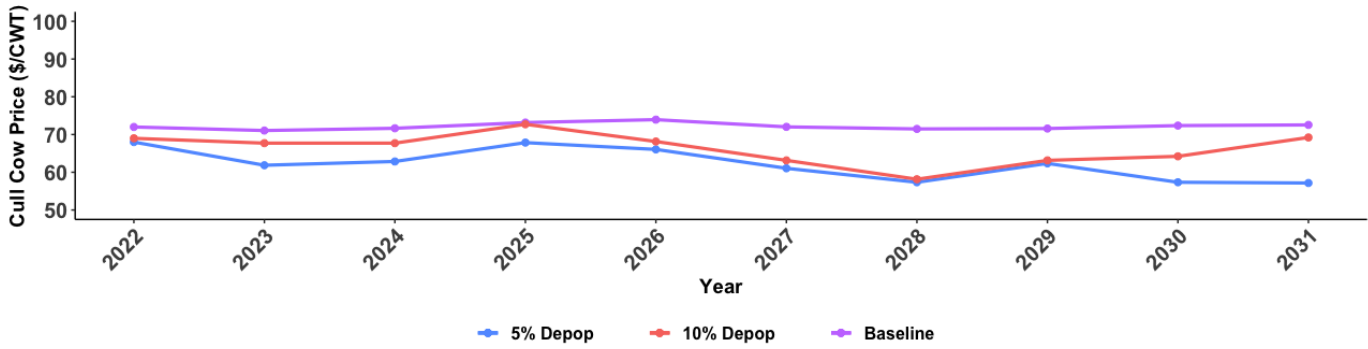


Figure 29: Cull cow price

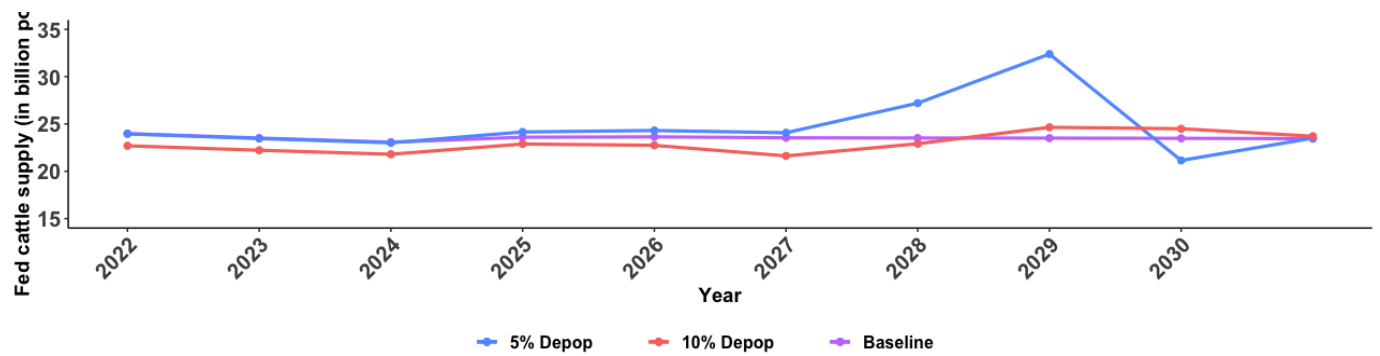


Figure 30: Fed Cattle Supply - Before adjusting for exports

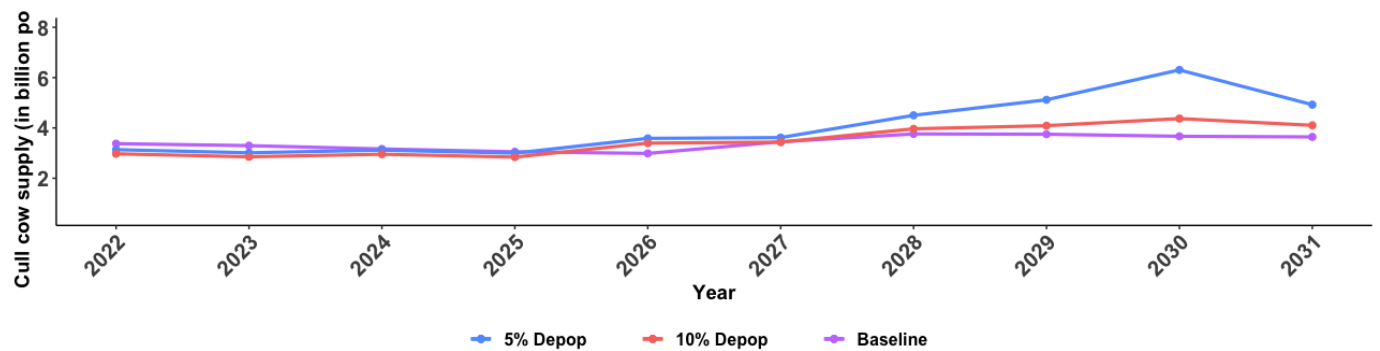


Figure 31: Cull cow supply - Before adjusting for exports

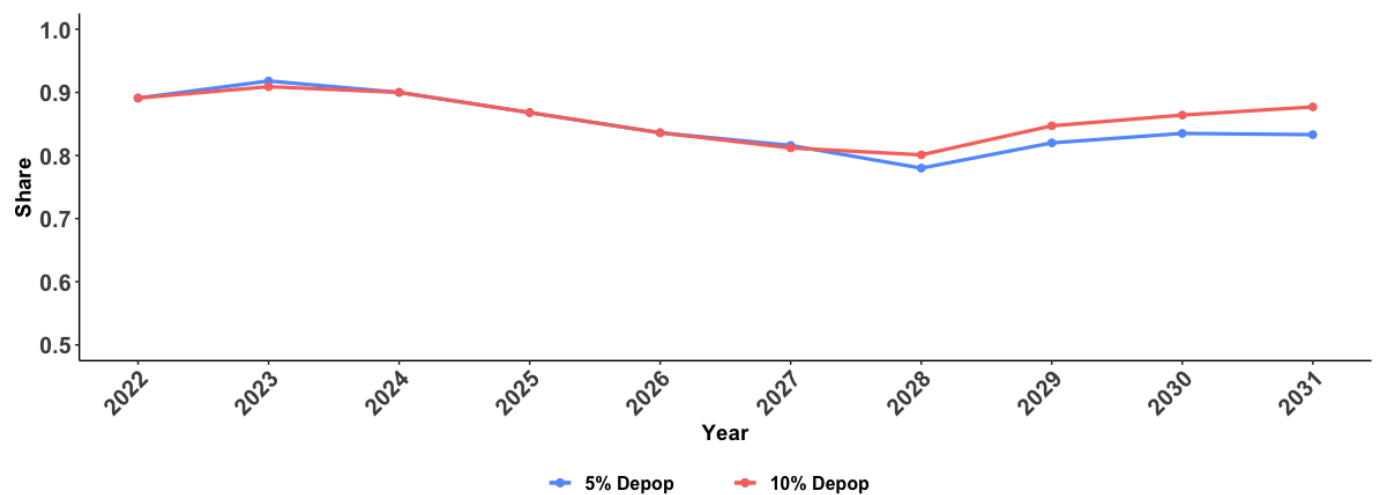


Figure 32: Total supply - Before adjusting for exports