

## COVID-19 North Dakota County by County Hospital Bed Demand versus Supply

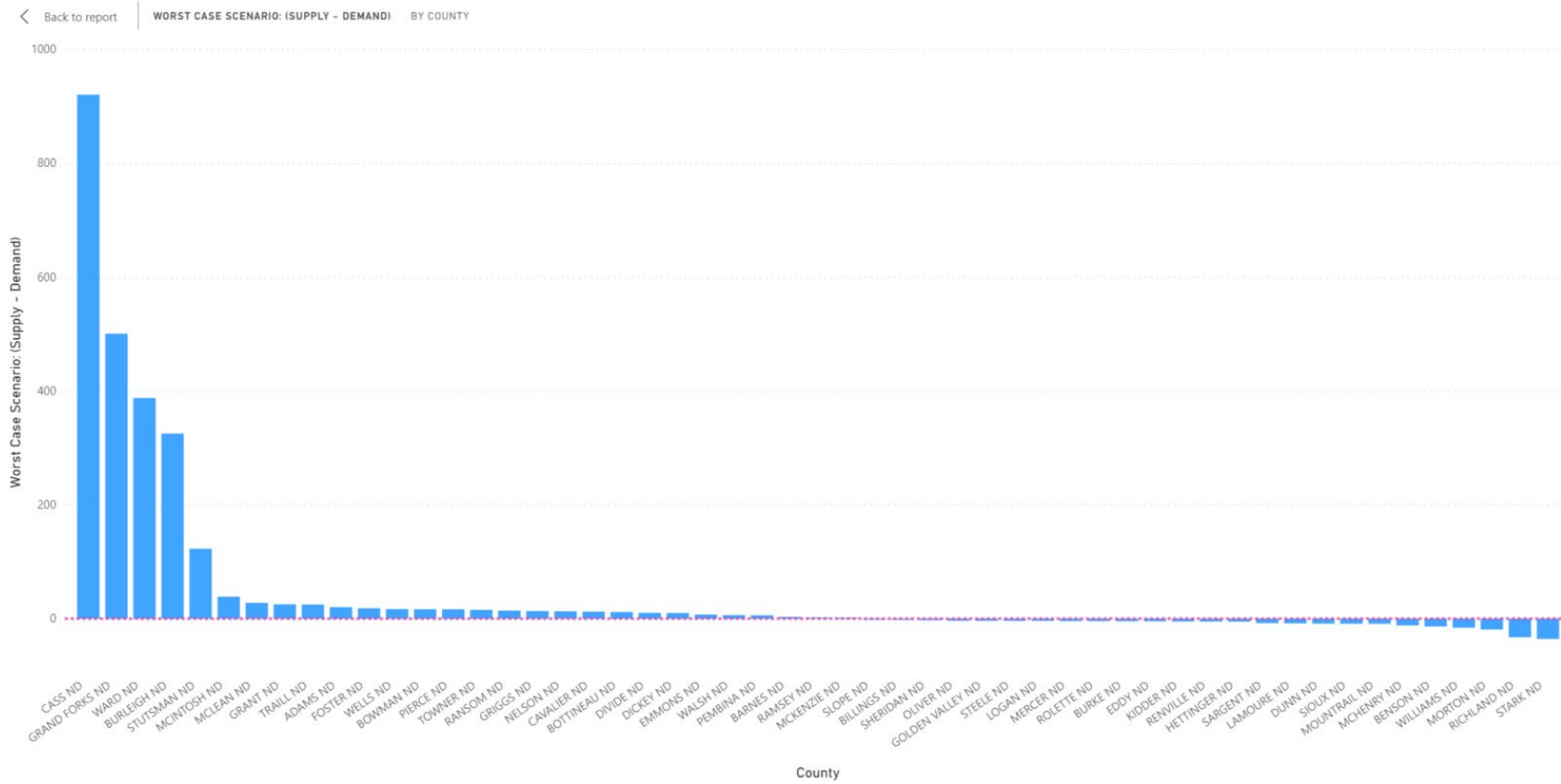


Fig 1: The above figure shows Supply minus Demand at peak using the Imperial-College-COVID19-NPI-modelling-16-03-2020 and the exponential regression model in the article published. All appearing above the red dashed line have capacity even at peak. All Counties that at or falling below the red line are will not be able to meet demand. In this scenario, peak will hit mid-May. Planning for servicing counties that either do not have hospitals or overburdened systems should be made. Some Counties will have capacity to redirect to needed areas.

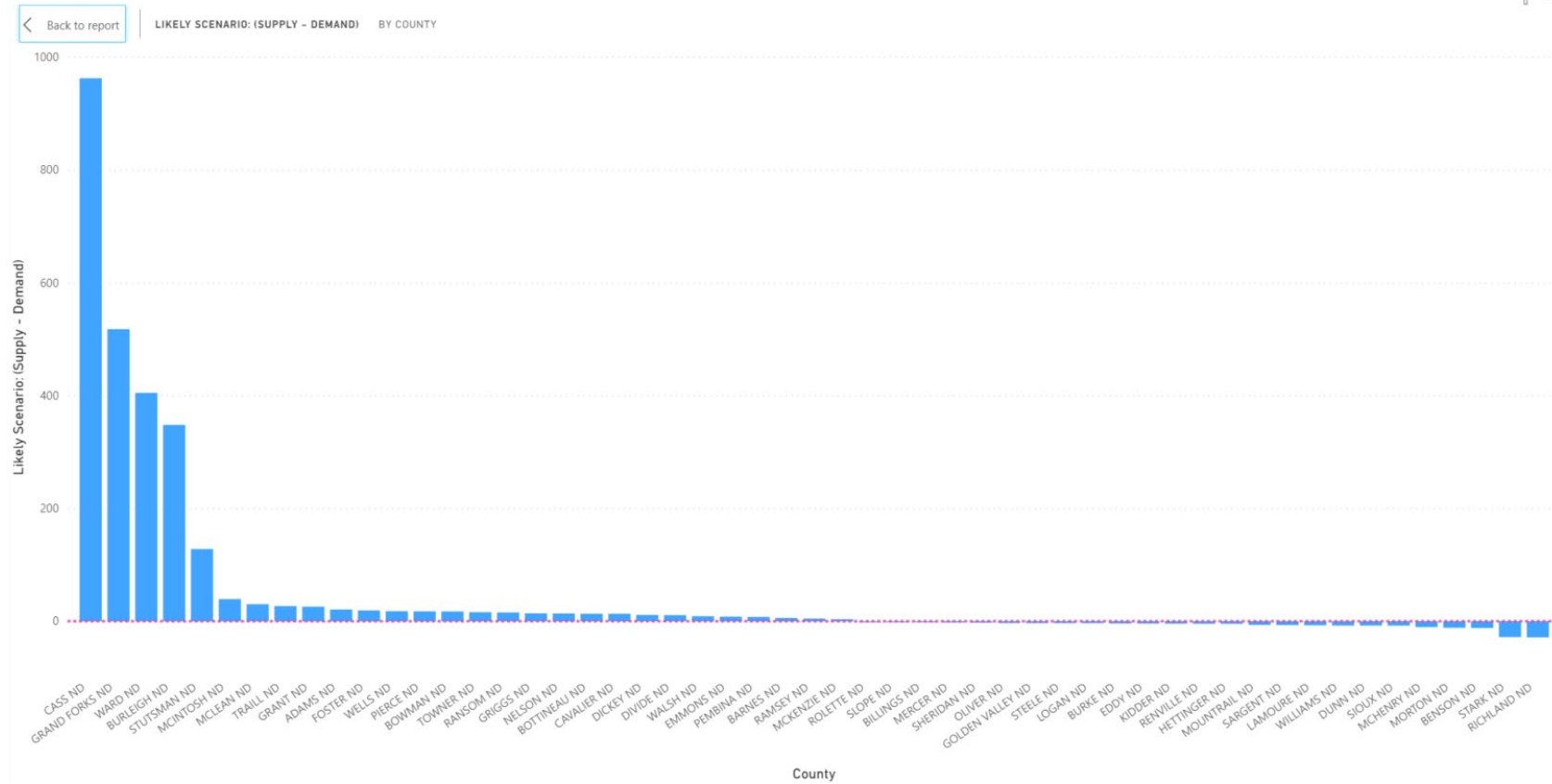


Fig 2: In the more likely scenario where some precautions are taken to flatten the curve, data suggests some Counties will still be unable to meet the needed demand. The peak will hit in early June. Planning for servicing counties that either do not have hospitals or overburdened systems should be made. Some Counties will have capacity to redirect to needed areas.

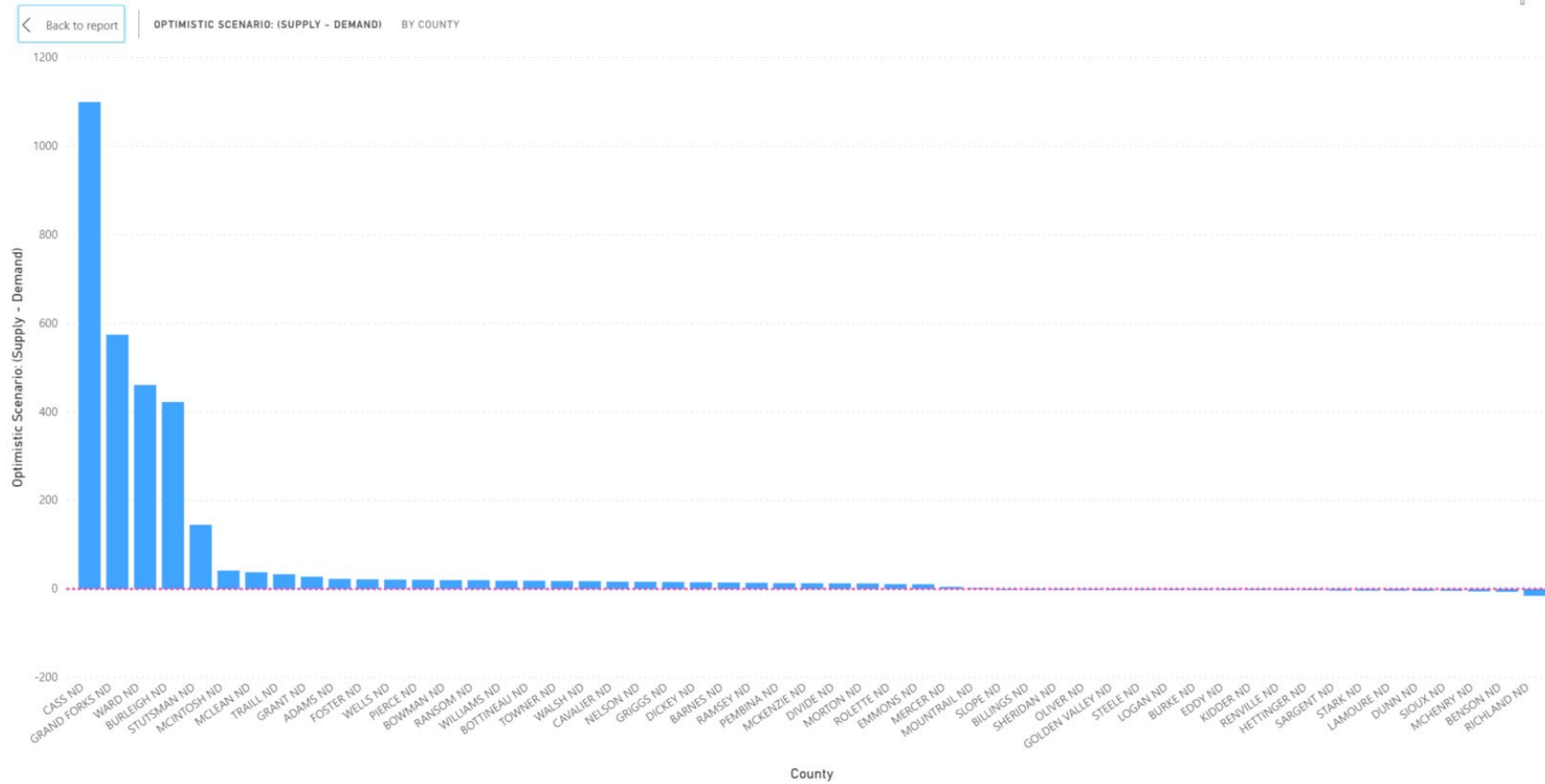


Fig 3: In the scenario where all precautions are taken to flatten the curve, data suggests almost all Counties will be able to meet the needed demand. The peak will hit in June. Planning for servicing counties that either do not have hospitals or overburdened systems should be made. Several Counties will have capacity to redirect to needed areas.

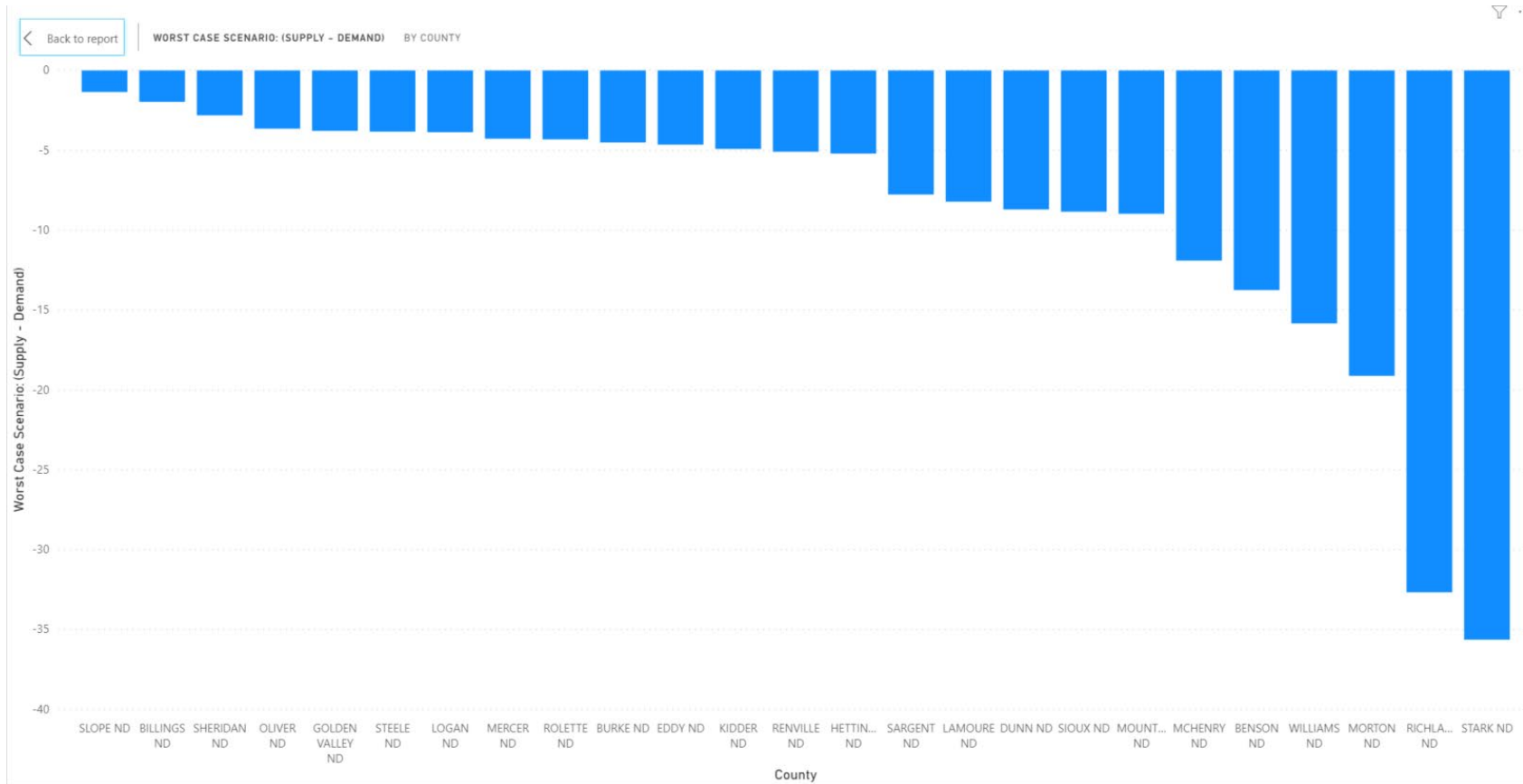


Fig 4: The figure above represents Counties that will run out of beds at peak for the Worst-Case scenario

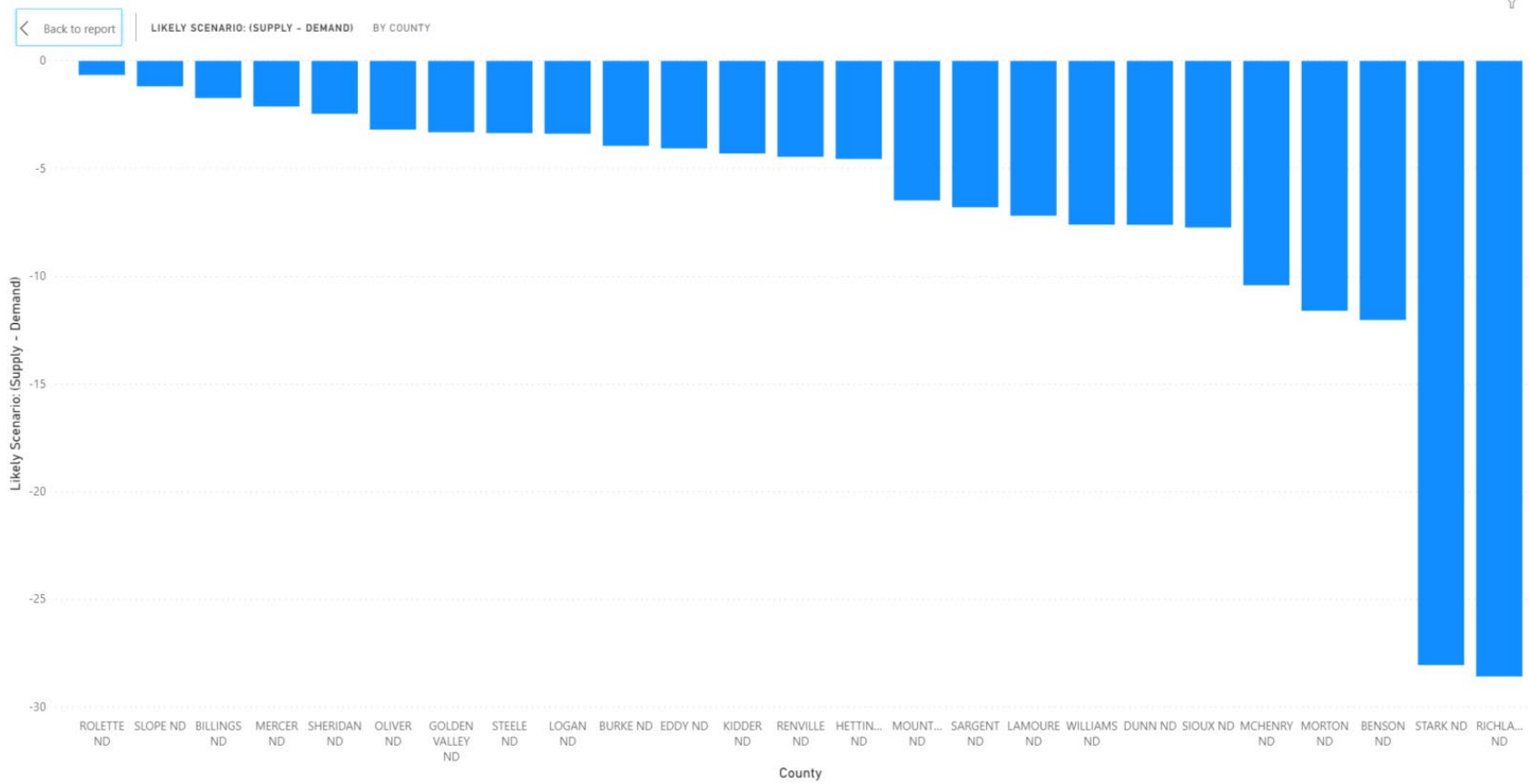


Fig 5: The figure above represents Counties that will run out of beds at peak for the Likely scenario

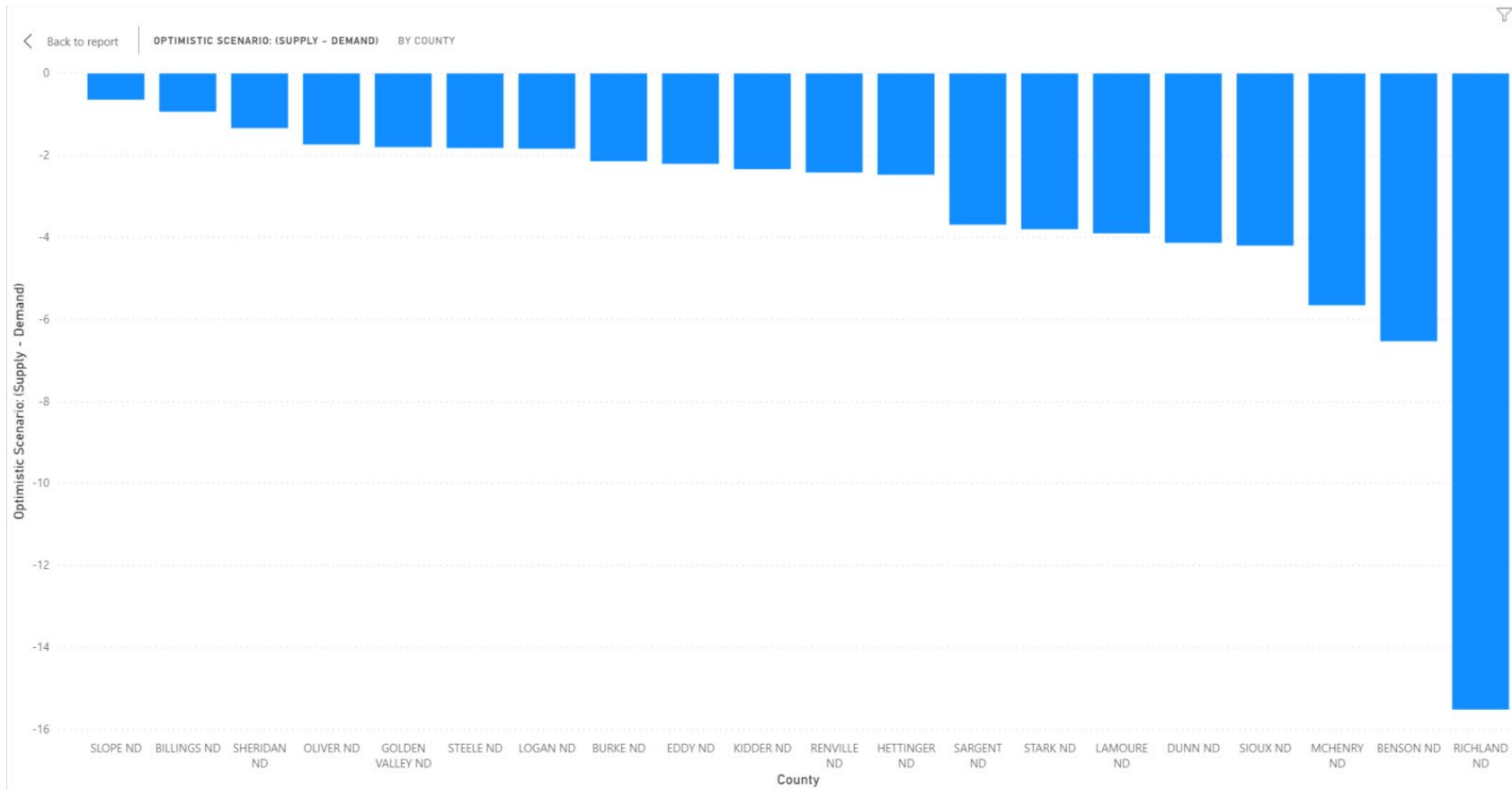


Fig 6: The figure above represents Counties that will run out of beds or do not have a hospital at peak for the Optimistic scenario

County	State	Total Population	65+ Population	Beds	With Full Precautions - Optimistic Scenario of needed Demand for Hospital Beds										With Some Precautions - Likely Scenario of needed Demand for Hospital Beds					With No Precautions - Worst Case Scenario of needed Demand for Hospital Beds					Counties to run out of beds (all precautions - Optimistic)	Counties to run out of beds (some precautions - Likely)	Counties to run out of beds (no precautions - Worstcase)
					O-April	O-May	O-June	O-Mid-June	O-July	O-August	L-Apr	L-May	L-June	L-July	L-August	W-April	W-May	Mid-May	W-June	W-July	W-August						
ADAMS ND	ND	2368	647	25	0	0	2	2	1	0	0	1	4	1	0	0	2	7	5	0	0						
BARNES ND	ND	10971	2750	25	1	1	10	10	5	1	1	5	19	5	1	1	11	30	22	2	1				x		
BENSON ND	ND	6875	1240	0	1	1	6	7	3	1	1	3	12	3	1	1	7	19	14	1	1	x		x	x		
BILLINGS ND	ND	983	223	0	0	0	1	1	0	0	0	0	2	0	0	0	1	3	2	0	0	x		x	x		
BOTTINEAU ND	ND	6651	1844	25	1	1	6	6	3	1	1	3	12	3	1	1	7	18	13	1	1						
BOWMAN ND	ND	3226	838	23	0	0	3	3	2	0	0	2	6	2	0	0	3	9	6	0	0						
BURKE ND	ND	2253	486	0	0	0	2	2	1	0	0	1	4	1	0	0	2	6	5	0	0	x		x	x		
BURLEIGH ND	ND	92372	16441	510	9	9	83	88	46	9	9	46	162	46	9	9	92	254	185	14	9						
CASS ND	ND	170620	24779	1262	17	17	154	162	85	17	17	85	299	85	17	17	171	469	341	26	17						
CAVALIER ND	ND	3817	1104	20	0	0	3	4	2	0	0	2	7	2	0	0	4	10	8	1	0						
DICKEY ND	ND	5041	1154	20	1	1	5	5	3	1	1	3	9	3	1	1	5	14	10	1	1						
DIVIDE ND	ND	2378	667	15	0	0	2	2	1	0	0	1	4	1	0	0	2	7	5	0	0						
DUNN ND	ND	4349	988	0	0	0	4	4	2	0	0	2	8	2	0	0	4	12	9	1	0	x		x	x		
EDDY ND	ND	2321	561	0	0	0	2	2	1	0	0	1	4	1	0	0	2	6	5	0	0	x		x	x		
EMMONS ND	ND	3389	1001	14	0	0	3	3	2	0	0	2	6	2	0	0	3	9	7	1	0						
FOSTER ND	ND	3318	793	25	0	0	3	3	2	0	0	2	6	2	0	0	3	9	7	0	0						
GOLDEN VALLEY ND	ND	1892	436	0	0	0	2	2	1	0	0	1	3	1	0	0	2	5	4	0	0	x		x	x		
GRAND FORKS ND	ND	70130	10444	641	7	7	63	67	35	7	7	35	123	35	7	7	70	193	140	11	7						
GRANT ND	ND	2387	792	30	0	0	2	2	1	0	0	1	4	1	0	0	2	7	5	0	0						
GRIGGS ND	ND	2276	716	18	0	0	2	2	1	0	0	1	4	1	0	0	2	6	5	0	0						
HETTINGER ND	ND	2601	764	0	0	0	2	2	1	0	0	1	5	1	0	0	3	7	5	0	0	x		x	x		
KIDDER ND	ND	2457	627	0	0	0	2	2	1	0	0	1	4	1	0	0	2	7	5	0	0	x		x	x		
LAMOURE ND	ND	4106	1167	0	0	0	4	4	2	0	0	2	7	2	0	0	4	11	8	1	0	x		x	x		
LOGAN ND	ND	1932	632	0	0	0	2	2	1	0	0	1	3	1	0	0	2	5	4	0	0	x		x	x		
MCHENRY ND	ND	5951	1448	0	1	1	5	6	3	1	1	3	10	3	1	1	6	16	12	1	1	x		x	x		
MCINTOSH ND	ND	2680	851	44	0	0	2	3	1	0	0	1	5	1	0	0	3	7	5	0	0						
MCKENZIE ND	ND	11679	1573	24	1	1	11	11	6	1	1	6	20	6	1	1	12	32	23	2	1				x		
MCLEAN ND	ND	9607	2711	47	1	1	9	9	5	1	1	5	17	5	1	1	10	26	19	1	1						
MERCER ND	ND	8637	2019	13	1	1	8	8	4	1	1	4	15	4	1	1	9	24	17	1	1			x	x		
MORTON ND	ND	30059	5529	41	3	3	27	29	15	3	3	15	53	15	3	3	30	83	60	5	3			x	x		
MOUNTRAIL ND	ND	9986	1479	11	1	1	9	9	5	1	1	5	17	5	1	1	10	27	20	1	1			x	x		
NELSON ND	ND	2971	903	19	0	0	3	3	1	0	0	1	5	1	0	0	3	8	6	0	0						
OLIVER ND	ND	1822	575	0	0	0	2	2	1	0	0	1	3	1	0	0	2	5	4	0	0	x		x	x		
PEMBINA ND	ND	7050	1896	20	1	1	6	7	4	1	1	4	12	4	1	1	7	19	14	1	1						
PIERCE ND	ND	4272	1146	25	0	0	4	4	2	0	0	2	7	2	0	0	4	12	9	1	0						
RAMSEY ND	ND	11574	2551	25	1	1	10	11	6	1	1	6	20	6	1	1	12	32	23	2	1				x		
RANSOM ND	ND	5411	1241	25	1	1	5	5	3	1	1	3	9	3	1	1	5	15	11	1	1						
RENVILLE ND	ND	2543	521	0	0	0	2	2	1	0	0	1	4	1	0	0	3	7	5	0	0	x		x	x		
RICHLAND ND	ND	16333	3431	0	2	2	15	16	8	2	2	8	29	8	2	2	16	45	33	2	2	x		x	x		
ROLETTE ND	ND	14657	2009	25	1	1	13	14	7	1	1	7	26	7	1	1	15	40	29	2	1			x	x		
SARGENT ND	ND	3883	1004	0	0	0	3	4	2	0	0	2	7	2	0	0	4	11	8	1	0	x		x	x		
SHERIDAN ND	ND	1403	446	0	0	0	1	1	1	0	0	1	2	1	0	0	1	4	3	0	0	x		x	x		
SIOUX ND	ND	4420	525	0	0	0	4	4	2	0	0	2	8	2	0	0	4	12	9	1	0	x		x	x		
SLOPE ND	ND	674	196	0	0	0	1	1	0	0	0	1	0	0	0	1	2	1	0	0	0	x		x	x		
STARK ND	ND	30316	4636	25	3	3	27	29	15	3	3	15	53	15	3	3	30	83	61	5	3	x		x	x		
STEELE ND	ND	1915	580	0	0	0	2	2	1	0	0	1	3	1	0	0	2	5	4	0	0	x		x	x		
STUTSMAN ND	ND	21058	4614	165	2	2	19	20	11	2	2	11	37	11	2	2	21	58	42	3	2						
TOWNER ND	ND	2258	615	20	0	0	2	2	1	0	0	1	4	1	0	0	2	6	5	0	0						
TRAILL ND	ND	8050	1751	41	1	1	7	8	4	1	1	4	14	4	1	1	8	22	16	1	1						
WALSH ND	ND	10920	2552	28	1	1	10	10	5	1	1	5	19	5	1	1	11	30	22	2	1				x		
WARD ND	ND	69628	10173	527	7	7	63	66	35	7	7	35	122	35	7	7	70	191	139	10	7						
WELLS ND	ND	4089	1255	25	0	0	4	4	2	0	0	2	7	2	0	0	4	11	8	1	0						
WILLIAMS ND	ND	32916	4360	50	3	3	30	31	16	3	3	16	58	16	3	3	33	91	66	5	3			x	x		

Table 1: Table with Data showing all three scenarios