



Professional Certificate Program in Product Management

Massachusetts Institute of Technology

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## CardioAI

B2B2C Medical Hardware and Software Platform Impact Project - Group 2

Author: Ariel Gonzalez

## Logistic Growth Model

Using the Logistic Growth equation and a density-dependent decline term (also known as the Allee Effects equation), our Team has developed a system of seven differential equations that allow us to model multiple business-specific and topology-specific metrics such as the number of computing units based on processing requirements, computing cost, storage cost, archive cost, number of storage data IO operations, number of archive data IO operations, storage data IO operations cost, archive data IO operations cost, infrastructure cost, total carbon footprint, carbon footprint by infrastructure tier, gross revenue, net revenue, and cost per platform user, among other metrics. In addition, our model has 34 different coefficients that can be adjusted to perform various business growth experiments, including defining multiple rate plans and modeling those simultaneously to analyze profitability under different growth rates. The results below were derived using 3.5 million users as the carrying capacity ( $K$ ), an initial pool of 1000 customers ( $N_0$ ), a 7% intrinsic growth rate ( $r$ ), a 2% intrinsic decline rate ( $d$ ), and a time projection of 15 years. We also modeled a Premium, Standard, and Basic plan with costs of \$75.00, \$35.00, and \$15.00, respectively. To review the system of differential equations and the complete list of coefficients, please refer to the document: Logistic Growth Model - R5.

Date	Customers	Delta	Units	Units Cost	Storage Size (GB)	Archive Size (GB)	Storage Cost	Archive Cost	Storage IO Cost	Archive IO Cost	Infrastructure Cost	Per User Cost	CO <sub>2</sub> e (g)	Gross Revenue	Net Revenue
2026-01-01	1000	50	2	\$27,714.66	733.34	488.89	\$16.87	\$0.73	\$48.96	\$0.83	\$27,782.05	\$27.78	5,119.84	\$45,200.00	\$17,417.95
2026-02-01	1050	52	2	\$27,714.66	770.00	513.34	\$17.71	\$0.76	\$51.41	\$0.88	\$27,785.42	\$26.46	5,144.22	\$47,460.00	\$19,674.58
2026-03-01	1102	55	2	\$27,714.66	808.14	538.76	\$18.59	\$0.80	\$53.95	\$0.92	\$27,788.92	\$25.22	5,169.58	\$49,810.40	\$22,021.48
2026-04-01	1157	57	2	\$27,714.66	848.47	565.65	\$19.51	\$0.84	\$56.65	\$0.97	\$27,792.63	\$24.02	5,196.40	\$52,296.40	\$24,503.77
2026-05-01	1214	60	2	\$27,714.66	890.27	593.51	\$20.48	\$0.88	\$59.44	\$1.01	\$27,796.47	\$22.90	5,224.20	\$54,872.80	\$27,076.33
2026-06-01	1274	63	2	\$27,714.66	934.27	622.85	\$21.49	\$0.92	\$62.38	\$1.06	\$27,800.51	\$21.82	5,253.46	\$57,584.80	\$29,784.29
2026-07-01	1337	66	2	\$27,714.66	980.47	653.65	\$22.55	\$0.97	\$65.46	\$1.12	\$27,804.76	\$20.80	5,284.18	\$60,432.40	\$32,627.64
2026-08-01	1403	70	2	\$27,714.66	1,028.87	685.91	\$23.66	\$1.02	\$68.69	\$1.17	\$27,809.20	\$19.82	5,316.37	\$63,415.60	\$35,606.40
2026-09-01	1473	73	2	\$27,714.66	1,080.21	720.14	\$24.84	\$1.07	\$72.12	\$1.23	\$27,813.92	\$18.88	5,350.50	\$66,579.60	\$38,765.68
2026-10-01	1546	77	2	\$27,714.66	1,133.74	755.83	\$26.08	\$1.12	\$75.69	\$1.29	\$27,818.84	\$17.99	5,386.10	\$69,879.20	\$42,060.36
2026-11-01	1623	81	2	\$27,714.66	1,190.21	793.47	\$27.37	\$1.18	\$79.46	\$1.35	\$27,824.03	\$17.14	5,423.65	\$73,359.60	\$45,535.57
2026-12-01	1704	85	2	\$27,714.66	1,249.61	833.07	\$28.74	\$1.24	\$83.43	\$1.42	\$27,829.49	\$16.33	5,463.15	\$77,020.80	\$49,191.31
2027-01-01	1789	89	2	\$27,714.66	1,311.94	874.63	\$30.17	\$1.30	\$87.59	\$1.49	\$27,835.22	\$15.56	5,504.61	\$80,862.80	\$53,027.58
2027-02-01	1878	93	2	\$27,714.66	1,377.21	918.14	\$31.68	\$1.36	\$91.95	\$1.57	\$27,841.21	\$14.82	5,548.01	\$84,885.60	\$57,044.39
2027-03-01	1971	98	2	\$27,714.66	1,445.41	963.61	\$33.24	\$1.43	\$96.50	\$1.65	\$27,847.48	\$14.13	5,593.36	\$89,089.20	\$61,241.72
2027-04-01	2069	103	2	\$27,714.66	1,517.28	1,011.52	\$34.90	\$1.50	\$101.30	\$1.73	\$27,854.08	\$13.46	5,641.15	\$93,518.80	\$65,664.72
2027-05-01	2172	108	2	\$27,714.66	1,592.81	1,061.87	\$36.63	\$1.58	\$106.34	\$1.81	\$27,861.03	\$12.83	5,691.38	\$98,174.40	\$70,313.37
2027-06-01	2280	114	2	\$27,714.66	1,672.01	1,114.67	\$38.46	\$1.66	\$111.63	\$1.90	\$27,868.30	\$12.22	5,744.05	\$103,056.00	\$75,187.70
2027-07-01	2394	119	2	\$27,714.66	1,755.61	1,170.41	\$40.38	\$1.74	\$117.21	\$2.00	\$27,875.99	\$11.64	5,799.65	\$108,208.80	\$80,332.81
2027-08-01	2513	125	2	\$27,714.66	1,842.88	1,228.58	\$42.39	\$1.82	\$123.04	\$2.10	\$27,884.00	\$11.10	5,857.68	\$113,587.60	\$85,703.60
2027-09-01	2638	131	2	\$27,714.66	1,934.54	1,289.70	\$44.49	\$1.92	\$129.16	\$2.20	\$27,892.43	\$10.57	5,918.64	\$119,237.60	\$91,345.17
2027-10-01	2769	138	2	\$27,714.66	2,030.61	1,353.74	\$46.70	\$2.01	\$135.57	\$2.31	\$27,901.26	\$10.08	5,982.52	\$125,158.80	\$97,257.54
2027-11-01	2907	145	2	\$27,714.66	2,131.81	1,421.21	\$49.03	\$2.11	\$142.33	\$2.43	\$27,910.56	\$9.60	6,049.82	\$131,396.40	\$103,485.84

Date	Customers	Delta	Units	Units Cost	Storage Size (GB)	Archive Size (GB)	Storage Cost	Archive Cost	Storage IO Cost	Archive IO Cost	Infrastructure Cost	Per User Cost	CO <sub>2</sub> e (g)	Gross Revenue	Net Revenue
2027-12-01	3052	152	2	\$27,714.66	2,238.15	1,492.10	\$51.48	\$2.22	\$149.43	\$2.55	\$27,920.33	\$9.15	6,120.53	\$137,950.40	\$110,030.07
2028-01-01	3204	160	2	\$27,714.66	2,349.61	1,566.41	\$54.04	\$2.33	\$156.87	\$2.67	\$27,930.57	\$8.72	6,194.66	\$144,820.80	\$116,890.23
2028-02-01	3364	168	2	\$27,714.66	2,466.95	1,644.63	\$56.74	\$2.44	\$164.70	\$2.81	\$27,941.35	\$8.31	6,272.69	\$152,052.80	\$124,111.45
2028-03-01	3532	176	2	\$27,714.66	2,590.15	1,726.77	\$59.57	\$2.56	\$172.93	\$2.95	\$27,952.67	\$7.91	6,354.61	\$159,646.40	\$131,693.73
2028-04-01	3708	185	2	\$27,714.66	2,719.22	1,812.81	\$62.54	\$2.69	\$181.54	\$3.10	\$27,964.53	\$7.54	6,440.44	\$167,601.60	\$139,637.07
2028-05-01	3893	194	2	\$27,714.66	2,854.88	1,903.26	\$65.66	\$2.83	\$190.60	\$3.25	\$27,977.00	\$7.19	6,530.66	\$175,963.60	\$147,986.60
2028-06-01	4087	204	2	\$27,714.66	2,997.15	1,998.10	\$68.93	\$2.97	\$200.10	\$3.41	\$27,990.07	\$6.85	6,625.27	\$184,732.40	\$156,742.33
2028-07-01	4291	214	2	\$27,714.66	3,146.75	2,097.83	\$72.38	\$3.12	\$210.09	\$3.58	\$28,003.82	\$6.53	6,724.76	\$193,953.20	\$165,949.38
2028-08-01	4505	225	2	\$27,714.66	3,303.68	2,202.46	\$75.98	\$3.27	\$220.56	\$3.76	\$28,018.24	\$6.22	6,829.12	\$203,626.00	\$175,607.76
2028-09-01	4730	236	2	\$27,714.66	3,468.69	2,312.46	\$79.78	\$3.43	\$231.58	\$3.95	\$28,033.40	\$5.93	6,938.84	\$213,796.00	\$185,762.60
2028-10-01	4966	248	2	\$27,714.66	3,641.75	2,427.84	\$83.76	\$3.61	\$243.14	\$4.15	\$28,049.31	\$5.65	7,05		

Date	Customers	Delta	Units	Units Cost	Storage Size (GB)	Archive Size (GB)	Storage Cost	Archive Cost	Storage IO Cost	Archive IO Cost	Infrastructure Cost	Per User Cost	CO <sub>2</sub> e (g)	Gross Revenue	Net Revenue
2030-11-01	16791	839	2	\$27,714.66	12,313.47	8,208.98	\$283.21	\$12.19	\$822.09	\$14.02	\$28,846.16	\$1.72	12,820.62	\$758,953.20	\$730,107.04
2030-12-01	17630	881	2	\$27,714.66	12,928.74	8,619.16	\$297.36	\$12.80	\$863.16	\$14.72	\$28,902.70	\$1.64	13,229.78	\$796,876.00	\$767,973.30
2031-01-01	18511	925	2	\$27,714.66	13,574.81	9,049.87	\$312.22	\$13.44	\$906.30	\$15.45	\$28,962.07	\$1.56	13,659.41	\$836,697.20	\$807,735.13
2031-02-01	19436	971	2	\$27,714.66	14,253.15	9,502.10	\$327.82	\$14.11	\$951.59	\$16.22	\$29,024.40	\$1.49	14,110.51	\$878,507.20	\$849,482.80
2031-03-01	20407	1020	2	\$27,714.66	14,965.22	9,976.81	\$344.20	\$14.82	\$999.13	\$17.04	\$29,089.84	\$1.43	14,584.03	\$922,396.40	\$893,306.56
2031-04-01	21427	1071	2	\$27,714.66	15,713.22	10,475.48	\$361.40	\$15.56	\$1,049.07	\$17.89	\$29,158.57	\$1.36	15,081.46	\$968,500.40	\$939,341.83
2031-05-01	22498	1124	2	\$27,714.66	16,498.62	10,999.08	\$379.47	\$16.33	\$1,101.50	\$18.78	\$29,230.74	\$1.30	15,603.75	\$1,016,909.60	\$987,678.86
2031-06-01	23622	1181	2	\$27,714.66	17,322.90	11,548.60	\$398.43	\$17.15	\$1,156.53	\$19.72	\$29,306.49	\$1.24	16,151.89	\$1,067,714.40	\$1,038,407.91
2031-07-01	24803	1240	2	\$27,714.66	18,188.97	12,125.98	\$418.35	\$18.01	\$1,214.35	\$20.71	\$29,386.07	\$1.18	16,727.83	\$1,121,095.60	\$1,091,709.53
2031-08-01	26043	1302	2	\$27,714.66	19,098.31	12,732.20	\$439.26	\$18.91	\$1,275.07	\$21.74	\$29,469.63	\$1.13	17,332.54	\$1,177,143.60	\$1,147,673.97
2031-09-01	27345	1367	2	\$27,714.66	20,053.11	13,368.74	\$461.22	\$19.85	\$1,338.81	\$22.83	\$29,557.37	\$1.08	17,967.48	\$1,235,994.00	\$1,206,436.63
2031-10-01	28712	1435	2	\$27,714.66	21,055.58	14,037.06	\$484.28	\$20.85	\$1,405.74	\$23.97	\$29,649.49	\$1.03	18,634.13	\$1,297,782.40	\$1,268,132.91
2031-11-01	30147	1507	2	\$27,714.66	22,107.92	14,738.62	\$508.48	\$21.89	\$1,476.00	\$25.17	\$29,746.19	\$0.99	19,333.93	\$1,362,644.40	\$1,332,898.21
2031-12-01	31654	1582	2	\$27,714.66	23,213.06	15,475.37	\$533.90	\$22.98	\$1,549.78	\$26.42	\$29,847.75	\$0.94	20,068.85	\$1,430,760.80	\$1,400,913.05
2032-01-01	33236	1661	2	\$27,714.66	24,373.20	16,248.80	\$560.58	\$24.13	\$1,627.23	\$27.74	\$29,954.35	\$0.90	20,840.35	\$1,502,267.20	\$1,472,312.85
2032-02-01	34897	1744	3	\$41,571.99	25,591.28	17,060.85	\$588.60	\$25.34	\$1,708.56	\$29.13	\$43,923.61	\$1.26	23,966.45	\$1,577,344.40	\$1,533,420.79
2032-03-01	36641	1832	3	\$41,571.99	26,870.22	17,913.48	\$618.01	\$26.60	\$1,793.94	\$30.59	\$44,041.14	\$1.20	24,816.94	\$1,656,173.20	\$1,612,132.06
2032-04-01	38473	1923	3	\$41,571.99	28,213.69	18,809.13	\$648.91	\$27.93	\$1,883.64	\$32.12	\$44,164.59	\$1.15	25,710.35	\$1,738,979.60	\$1,694,815.01
2032-05-01	40396	2019	3	\$41,571.99	29,623.90	19,749.27	\$681.35	\$29.33	\$1,977.79	\$33.72	\$44,294.18	\$1.10	26,648.14	\$1,825,899.20	\$1,781,605.02
2032-06-01	42415	2120	3	\$41,571.99	31,104.51	20,736.34	\$715.40	\$30.79	\$2,076.64	\$35.41	\$44,430.23	\$1.05	27,632.75	\$1,917,158.00	\$1,872,727.77
2032-07-01	44535	2226	3	\$41,571.99	32,659.18	21,772.79	\$751.16	\$32.33	\$2,180.43	\$37.18	\$44,573.09	\$1.00	28,666.60	\$2,012,982.00	\$1,968,408.91
2032-08-01	46761	2338	3	\$41,571.99	34,291.59	22,861.06	\$788.71	\$33.95	\$2,289.42	\$39.04	\$44,723.10	\$0.96	29,752.16	\$2,113,597.20	\$2,068,874.10
2032-09-01	49099	2454	3	\$41,571.99	36,006.13	24,004.09	\$828.14	\$35.65	\$2,403.89	\$40.99	\$44,880.65	\$0.91	30,892.33	\$2,219,274.80	\$2,174,394.15
2032-10-01	51553	2577	4	\$55,429.32	37,805.74	25,203.83	\$869.53	\$37.43	\$2,524.03	\$43.04	\$58,903.35	\$1.14	34,405.15	\$2,330,195.60	\$2,271,292.25
2032-11-01	54130	2706	4	\$55,429.32	39,695.55	26,463.70	\$913.00	\$39.30	\$2,650.20	\$45.19	\$59,077.01	\$1.09	35,661.88	\$2,446,676.00	\$2,387,598.99
2032-12-01	56836	2841	4	\$55,429.32	41,679.96	27,786.64	\$958.64	\$41.26	\$2,782.69	\$47.45	\$59,259.36	\$1.04	36,981.51	\$2,568,987.20	\$2,509,727.84
2033-01-01	59677	2983	4	\$55,429.32	43,763.38	29,175.58	\$1,006.56	\$43.33	\$2,921.79	\$49.82	\$59,450.81	\$1.00	38,366.98	\$2,697,400.40	\$2,637,949.59
2033-02-01	62660	3133	4	\$55,429.32	45,950.92	30,633.95	\$1,056.87	\$45.49	\$3,067.83	\$52.31	\$59,651.82	\$0.95	39,821.69	\$2,832,232.00	\$2,772,580.18
2033-03-01	65793	3289	4	\$55,429.32	48,248.47	32,165.65	\$1,109.71	\$47.77	\$3,221.23	\$54.92	\$59,862.95	\$0.91	41,349.56	\$2,973,843.60	\$2,913,980.65
2033-04-01	69082	3454	5	\$69,286.65	50,660.41	33,773.61	\$1,165.19	\$50.15	\$3,382.25	\$57.67	\$73,941.92	\$1.07	45,269.59	\$3,122,506.40	\$3,048,564.48
2033-05-01	72536	3626	5	\$69,286.65	53,193.36	35,462.24	\$1,223.45	\$52.66	\$3,551.36	\$60.55	\$74,174.67	\$1.02	46,954.00	\$3,278,627.20	\$3,204,452.53
2033-06-01	76162	3808	5	\$69,286.65	55,852.44	37,234.96	\$1,284.61	\$55.29	\$3,728.89	\$63.58	\$74,419.02	\$0.98	48,722.29	\$3,442,522.40	\$3,368,103.38
2033-07-01	79970	3998	5	\$69,286.65	58,644.99	39,096.66	\$1,348.83	\$58.06	\$3,915.33	\$66.76	\$74,675.63	\$0.93	50,579.33	\$3,614,644.00	\$3,539,968.37
2033-08-01	83968	4198	5	\$69,286.65	61,576.88	41,051.25	\$1,416.27	\$60.96	\$4,111.07	\$70.09	\$74,945.05	\$0.89	52,529.04	\$3,795,353.60	\$3,720,408.55
2033-09-01	88166	4408	6	\$83,143.98	64,655.43	43,103.62	\$1,487.07	\$64.01	\$4,316.61	\$73.60	\$89,085.27	\$1.01	56,892.36	\$3,985,103.20	\$3,896,017.93
Date	Customers	Delta	Units	Units Cost	Storage Size (GB)	Archive Size (GB)	Storage Cost	Archive Cost	Storage IO Cost	Archive IO Cost	Infrastructure Cost	Per User Cost	CO <sub>2</sub> e (g)	Gross Revenue	Net Revenue
2033-10-01	92574	4628	6	\$83,143.98	67,887.98	45,258.65	\$1,561.42	\$67.21	\$4,532.42	\$77.28	\$89,382.31	\$0.97	59,042.00	\$4,184,344.80</	

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2036-09-01	510600	25530	30	\$415,719.90	374,442.08	249,628.05	\$8,612.17	\$370.70	\$24,998.98	\$426.24	\$450,127.98	\$0.88	318,486.47	\$23,079,120.00	\$22,628,992.02
2036-10-01	536130	26806	32	\$443,434.56	393,164.18	262,109.45	\$9,042.78	\$389.23	\$26,248.92	\$447.55	\$479,563.05	\$0.89	335,568.84	\$24,233,076.00	\$23,753,512.95
2036-11-01	562936	28146	34	\$471,149.22	412,822.02	275,214.68	\$9,494.91	\$408.69	\$27,561.35	\$469.93	\$509,084.10	\$0.90	353,273.47	\$25,444,707.20	\$24,935,623.10
2036-12-01	591082	29554	35	\$485,006.55	433,462.54	288,975.03	\$9,969.64	\$429.13	\$28,939.37	\$493.42	\$524,838.12	\$0.89	369,315.49	\$26,716,906.40	\$26,192,068.28
2037-01-01	620636	31031	37	\$512,721.21	455,135.59	303,423.73	\$10,468.12	\$450.58	\$30,386.34	\$518.10	\$554,544.35	\$0.89	388,360.24	\$28,052,747.20	\$27,498,202.85
2037-02-01	651667	32583	39	\$540,435.87	477,891.78	318,594.52	\$10,991.51	\$473.11	\$31,905.62	\$544.00	\$584,350.11	\$0.90	408,125.27	\$29,455,348.40	\$28,870,998.29
2037-03-01	684250	34212	41	\$568,150.53	501,786.12	334,524.08	\$11,541.08	\$496.77	\$33,500.88	\$571.20	\$614,260.46	\$0.90	428,647.17	\$30,928,100.00	\$30,313,839.54
2037-04-01	718462	35923	43	\$595,865.19	526,875.06	351,250.04	\$12,118.13	\$521.61	\$35,175.90	\$599.76	\$644,280.58	\$0.90	449,963.48	\$32,474,482.40	\$31,830,201.82
2037-05-01	754385	37719	45	\$623,579.85	553,218.74	368,812.49	\$12,724.03	\$547.69	\$36,934.69	\$629.75	\$674,416.00	\$0.89	472,114.19	\$34,098,202.00	\$33,423,786.00
2037-06-01	792104	39605	47	\$651,294.51	580,879.49	387,252.99	\$13,360.23	\$575.07	\$38,781.41	\$661.23	\$704,672.46	\$0.89	495,140.76	\$35,803,100.80	\$35,098,428.34
2037-07-01	831709	41585	49	\$679,009.17	609,923.32	406,615.55	\$14,028.24	\$603.82	\$40,720.47	\$694.30	\$735,056.00	\$0.88	519,087.07	\$37,593,246.80	\$36,858,190.80
2037-08-01	873294	43664	52	\$720,581.16	640,419.15	426,946.10	\$14,729.64	\$634.01	\$42,756.47	\$729.01	\$779,430.30	\$0.89	546,315.05	\$39,472,888.80	\$38,693,458.50
2037-09-01	916958	45847	54	\$748,295.82	672,439.60	448,293.07	\$15,466.11	\$665.72	\$44,894.26	\$765.46	\$810,087.37	\$0.88	572,240.81	\$41,446,501.60	\$40,636,414.23
2037-10-01	962805	48140	57	\$789,867.81	706,060.92	470,707.28	\$16,239.40	\$699.00	\$47,138.93	\$803.73	\$854,748.88	\$0.89	601,547.24	\$43,518,786.00	\$42,664,037.12
2037-11-01	1010945	50547	60	\$831,439.80	741,363.78	494,242.52	\$17,051.37	\$733.95	\$49,495.87	\$843.92	\$899,564.90	\$0.89	631,971.89	\$45,694,714.00	\$44,795,149.10
2037-12-01	1061492	53074	63	\$873,011.79	778,431.79	518,954.52	\$17,903.93	\$770.65	\$51,970.65	\$886.12	\$944,543.13	\$0.89	663,570.37	\$47,979,438.40	\$47,034,895.27
2038-01-01	1114566	55728	66	\$914,583.78	817,352.94	544,901.96	\$18,799.12	\$809.18	\$54,569.15	\$930.42	\$989,691.65	\$0.89	696,401.18	\$50,378,383.20	\$49,388,691.55
2038-02-01	1170294	58514	69	\$956,155.77	858,220.36	572,146.91	\$19,739.07	\$849.64	\$57,297.59	\$976.94	\$1,035,019.01	\$0.88	730,526.27	\$52,897,288.80	\$51,862,269.79
2038-03-01	1228808	61440	73	\$1,011,585.09	901,130.87	600,753.91	\$20,726.01	\$892.12	\$60,162.44	\$1,025.79	\$1,094,391.45	\$0.89	768,326.09	\$55,542,121.60	\$54,447,730.15
2038-04-01	1290248	64512	76	\$1,053,157.08	946,187.12	630,791.41	\$21,762.30	\$936.73	\$63,170.54	\$1,077.08	\$1,140,103.73	\$0.88	805,236.74	\$58,319,209.60	\$57,179,105.87
2038-05-01	1354760	67738	80	\$1,108,586.40	993,496.18	662,330.79	\$22,850.41	\$983.56	\$66,329.05	\$1,130.93	\$1,199,880.35	\$0.89	845,961.60	\$61,235,152.00	\$60,035,271.65
2038-06-01	1422498	71124	84	\$1,164,015.72	1,043,170.99	695,447.33	\$23,992.93	\$1,032.74	\$69,645.50	\$1,187.48	\$1,259,874.37	\$0.89	888,259.68	\$64,296,909.60	\$63,037,035.23
2038-07-01	1493622	74681	88	\$1,219,445.04	1,095,328.88	730,219.25	\$25,192.56	\$1,084.38	\$73,127.73	\$1,246.85	\$1,320,096.56	\$0.88	932,209.01	\$67,511,714.40	\$66,191,617.84
2038-08-01	1568303	78415	93	\$1,288,731.69	1,150,095.25	766,730.17	\$26,452.19	\$1,138.59	\$76,784.11	\$1,309.19	\$1,394,415.78	\$0.89	980,209.06	\$70,887,295.60	\$69,492,879.82
2038-09-01	1646718	82335	97	\$1,344,161.01	1,207,599.90	805,066.60	\$27,774.80	\$1,195.52	\$80,623.31	\$1,374.65	\$1,455,129.30	\$0.88	1,027,713.98	\$74,431,653.60	\$72,976,524.30
2038-10-01	1729053	86452	102	\$1,413,447.66	1,267,979.24	845,319.49	\$29,163.52	\$1,255.30	\$84,654.43	\$1,443.38	\$1,529,964.30	\$0.88	1,079,446.66	\$78,153,195.60	\$76,623,231.30
2038-11-01	1815505	90775	107	\$1,482,734.31	1,331,377.72	887,585.15	\$30,621.69	\$1,318.06	\$88,887.12	\$1,515.55	\$1,605,076.74	\$0.88	1,133,187.07	\$82,060,826.00	\$80,455,749.26
2038-12-01	1906280	95314	112	\$1,552,020.96	1,397,946.42	931,964.28	\$32,152.77	\$1,383.97	\$93,331.47	\$1,591.33	\$1,680,480.49	\$0.88	1,189,035.67	\$86,163,856.00	\$84,483,375.51
2039-01-01	2001594	100079	118	\$1,635,164.94	1,467,843.74	978,562.50	\$33,760.41	\$1,453.17	\$97,998.04	\$1,670.90	\$1,770,047.45	\$0.88	1,249,413.88	\$90,472,048.80	\$88,702,001.35
2039-02-01	2101673	105083	124	\$1,718,308.92	1,541,235.42	1,027,490.28	\$35,448.41	\$1,525.82	\$102,897.91	\$1,754.44	\$1,859,935.51	\$0.88	1,312,115.85	\$94,995,619.60	\$93,135,684.09
2039-03-01	2206756	110337	130	\$1,801,452.90	1,618,296.71	1,078,864.48	\$37,220.82	\$1,602.11	\$108,042.77	\$1,842.16	\$1,950,160.77	\$0.88	1,377,258.10	\$99,745,371.20	\$97,795,210.43
2039-04-01	2317093	115854	137	\$1,898,454.21	1,699,210.96	1,132,807.31	\$39,081.85	\$1,682.22	\$113,444.87	\$1,934.27	\$2,054,597.42	\$0.89	1,447,278.66	\$104,732,603.60	\$102,678,006.18
2039-05-01	2432947	121647	143	\$1,981,598.19	1,784,171.03	1,189,447.36	\$41,035.93	\$1,766.33	\$119,117.09	\$2,030.98	\$2,145,548.52	\$0.88	1,51		