



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Division of Migratory Bird Management  
Branch of Assessment and Decision Support  
11510 American Holly Drive  
Laurel, Maryland 20708-4016



## MEMORANDUM

TO: Patrick Devers, Acting Chief, Branch of Assessment and Decision Support

FROM: Joshua Dooley, Goose Biologist, Branch of Assessment and Decision Support

DATE: 2 September 2025

SUBJECT: Atlantic Population Canada Goose Integrated Population Model 2026 Abundance Prediction

In fall 2020, the Atlantic Flyway Council adopted the use of an integrated population model (IPM) to inform harvest management decisions for Atlantic Population Canada geese (AP CAGO; Dooley 2019). The AP CAGO harvest strategy established regulatory thresholds relative to the IPM out-year prediction of breeding pairs (Table 1) and consideration of status and trends in productivity and total population size. The AP CAGO IPM predicted 2026 median number of breeding pairs was 163,500 (95% CI = 113,000–227,500; Figure 1, Table 3).

Input data included Ungava aerial survey counts during 1997–2025, banding age ratios and band-recovery data from summer 1997 through the 2024–2025 hunting season, and selected hunting regulations through the 2025–2026 hunting season (Table 2). The IPM predicted adult harvest probability for the 2025–26 hunting season was 0.039 (95% CI = 0.031–0.049; Figure 1, Table 3). The IPM predicted August 2025 juvenile:adult age ratio was 0.94 (95% CI = 0.76–1.12), which was less than the observed 1997–2024 average (1.27). Average temperature during May 2025 at Kuujuaq, Québec was  $-0.5^{\circ}\text{C}$  ( $\bar{x}_{1997-2024} = 1.6^{\circ}\text{C}$ ), and the proportion of snow/ice cover on the Ungava Peninsula on 15 June 2025 was 0.44 ( $\bar{x}_{1997-2024} = 0.39$ ). In 2024, the out-year (2025) median breeding pair prediction from the IPM was 133,500 (95% CI = 93,000–187,500), which was -11% less than the observed 2025 aerial survey breeding pair estimate of  $149,770 \pm 15,749$  (SE; Lefebvre et al. 2025).

## LITERATURE CITED

- Dooley, J. L. 2019. Atlantic Population Canada Goose Integrated Population Model. Unpubl. Report to Atlantic Flyway Technical Section. U. S. Fish and Wildlife Service, Laurel, MD. November 2019.
- Lefebvre, J., F. St-Pierre, and R. Spangler. 2025. A breeding pair survey of Canada Geese in Nunavik - 2025. Canadian Wildlife Service, Québec Region. Report to the Atlantic Flyway Technical Section. July 2024.

**Table 1. Current Atlantic Population Canada goose harvest strategy showing population abundance thresholds and hunting regulations.**

Abundance threshold (IPM out-year prediction of breeding pairs)	Package	Regulations (Days/Bag)
>160K	Liberal	Chesapeake (45/2), New England/Mid-Atlantic (45/3), NC (30/2), Canada (full season length/5)
Between 125–160K	Moderate	Chesapeake (30/2), New England/Mid-Atlantic (30/3), NC (30/1), Canada (25% decrease from liberal)
Between 60–125K	Restrictive	All U.S. AP harvest zones (30/1), Canada (50% decrease from liberal)
<60K and negative trend	Potential Closure	All areas (0/0)

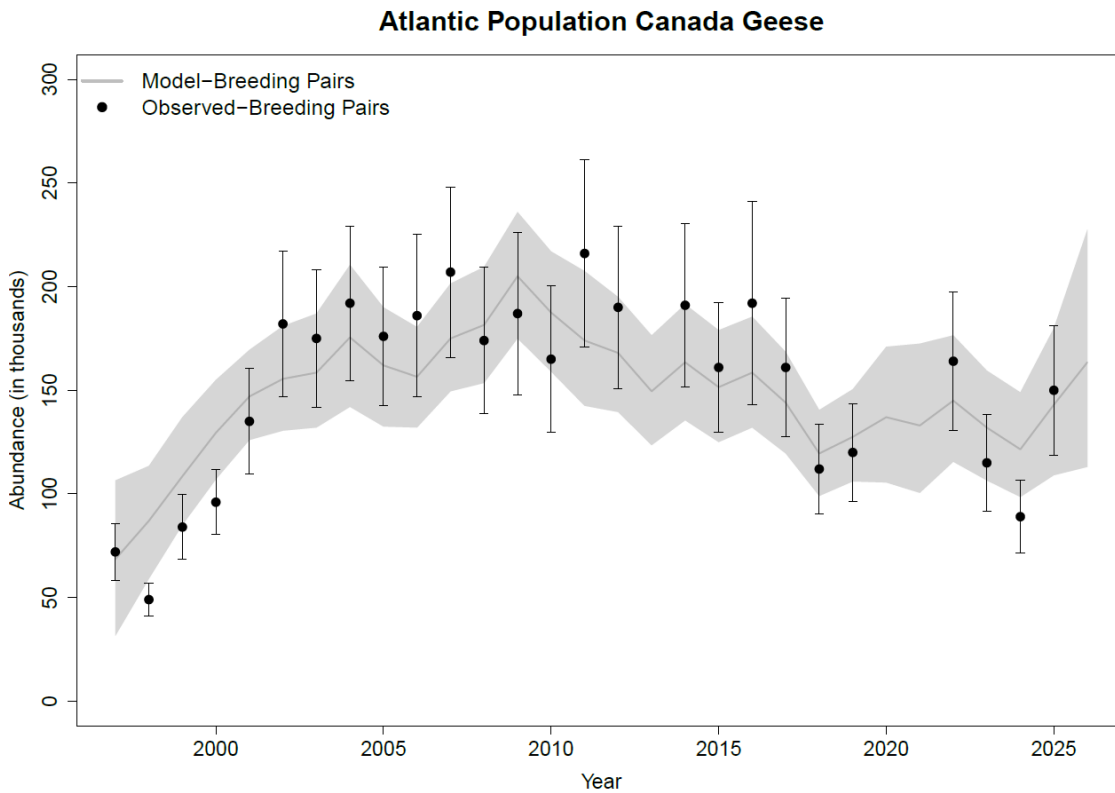
**Table 2. Input data included in the Atlantic Population Canada goose integrated population model and summarized band-recovery data, 1997–2025.**

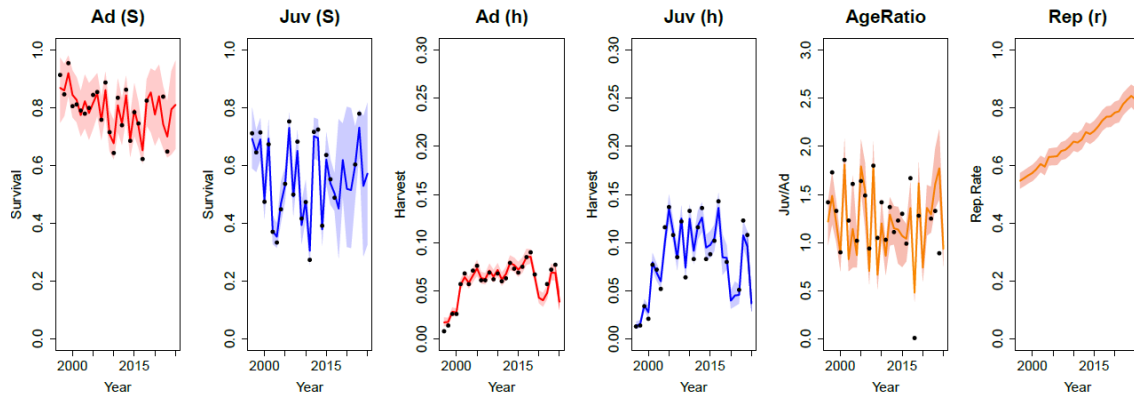
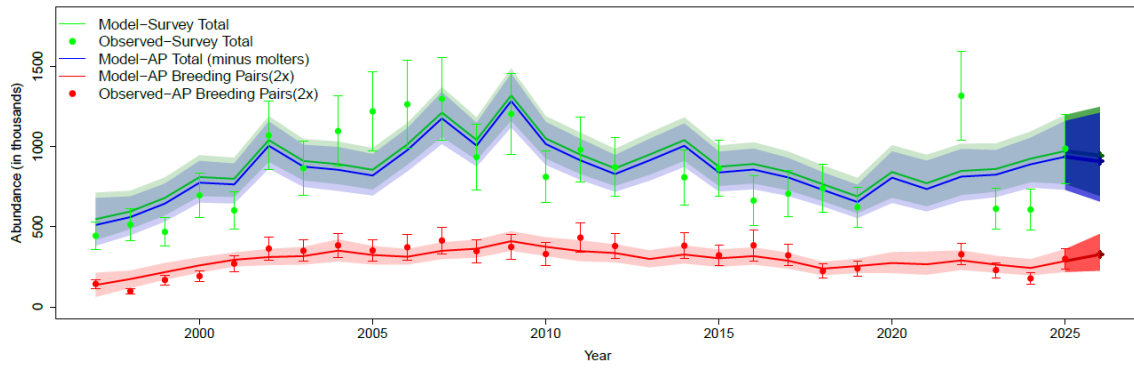
Year	Survey abundance (in thousands)				Banding age ratio	Env. Covariate	Harvest Regulations (days, bag)								
	Breeding Pairs		Total				Ches.		MidAtl/NE		Canada		Total		
	Est	SE	Est	SE			d	b	d	b	d	b	d	b	
1997	72	7	444	44	1.42	1.5	0.25	0	0	0	0	0	0	0	0
1998	49	4	513	51	1.73	2.9	0.09	0	0	0	0	0	0	0	0
1999	84	8	468	45	1.33	2.8	0.61	6	1	15	1	20	3	41	5
2000	96	8	695	71	0.90	0.8	0.83	6	1	15	1	20	3	41	5
2001	135	13	602	60	1.86	4.8	0.07	30	1	30	2	30	5	90	8
2002	182	18	1,069	108	1.23	-1.1	0.65	45	1	45	2	45	5	135	8
2003	175	17	864	87	1.61	4.7	0.18	45	1	45	2	45	5	135	8
2004	192	19	1,096	112	1.02	-0.6	0.76	45	1.5	45	3	45	5	135	9.5
2005	176	17	1,219	126	1.64	4.7	0.08	45	2	45	3	45	5	135	10
2006	186	20	1,263	141	1.49	5.3	0.26	45	2	45	3	45	5	135	10
2007	207	21	1,297	132	0.94	-1.7	0.84	45	2	45	3	45	5	135	10
2008	174	18	934	104	1.80	5.5	0.09	45	2	45	3	45	5	135	10
2009	187	20	1,203	128	1.05	-1.9	0.90	45	2	45	3	45	5	135	10
2010	165	18	811	82	1.42	1.2	0.28	45	2	45	3	60	5	150	10
2011	216	23	980	104	1.03	-1.0	0.46	45	2	45	3	60	5	150	10
2012	190	20	871	93	1.37	1.9	0.10	50	2	50	3	60	5	160	10
2013	—	—	—	—	1.11	0.8	0.28	50	2	50	3	60	5	160	10
2014	191	20	808	87	1.23	1.7	0.13	50	2	50	3	60	5	160	10
2015	161	16	864	89	1.30	1.5	0.34	50	2	50	3	60	5	160	10
2016	192	25	663	80	0.99	0.9	0.45	50	2	50	3	60	5	160	10
2017	161	17	706	73	1.67	2.1	0.18	50	2	50	3	60	5	160	10
2018	112	11	739	77	0.01	-5.1	0.99	50	2	50	3	60	5	160	10
2019	120	12	622	64	1.28	4.3	0.18	30	1	30	2	60	5	120	8
2020	—	—	—	—	—	-0.8	0.94	30	1	30	2	30	3	90	6
2021	—	—	—	—	—	3.4	0.42	30	1	30	1	30	3	90	5
2022	164	17	1,316	142	1.25	1.3	0.12	30	1	30	1	30	3	90	5
2023	115	12	612	65	1.33	2.4	0.11	45	2	45	3	30	3	120	8
2024	89	9	607	65	0.89	3.7	0.29	30	2	30	3	30	3	90	8
2025	150	16	986	110	—	-0.5	0.44	30	1	30	1	30	3	90	5

Year	Bandings	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1997	1299	6	6	14	15	28	29	16	19	17	14	7	6	8	5	1	2	0	2	0	3	1	0	0	0	0	0	0	0
1998	1981	0	17	21	25	44	47	18	33	36	11	14	9	11	14	8	6	3	1	3	0	1	0	0	0	0	0	0	0
1999	2987	0	0	43	45	97	65	60	48	40	38	18	27	19	11	8	5	6	2	5	4	2	0	1	1	0	0	0	0
2000	2312	0	0	0	34	69	63	42	39	37	24	19	16	21	13	9	5	4	3	2	3	0	2	0	0	0	0	0	0
2001	2706	0	0	0	0	79	83	72	61	56	37	24	28	22	15	18	10	15	4	3	4	3	1	1	0	1	0	1	0
2002	3098	0	0	0	0	0	137	98	80	67	49	35	30	33	23	12	19	18	14	3	4	6	1	1	0	0	0	0	0
2003	2040	0	0	0	0	0	0	70	73	55	42	32	40	23	21	13	11	9	8	5	8	2	3	2	1	1	1	0	0
2004	1116	0	0	0	0	0	0	0	54	43	25	20	26	16	26	7	7	2	8	2	5	3	0	1	0	0	0	0	0
2005	1127	0	0	0	0	0	0	0	0	61	34	30	28	23	18	6	12	8	6	6	5	4	4	0	0	0	1	1	0
2006	2906	0	0	0	0	0	0	0	0	0	121	83	92	59	52	32	25	31	23	24	16	8	8	6	2	3	3	2	0
2007	2091	0	0	0	0	0	0	0	0	0	0	0	97	63	56	44	23	19	18	19	17	14	13	4	6	3	1	2	1
2008	2179	0	0	0	0	0	0	0	0	0	0	0	0	116	59	70	24	45	31	26	13	14	19	7	5	3	1	1	2
2009	1390	0	0	0	0	0	0	0	0	0	0	0	0	63	39	27	23	21	18	13	7	7	4	7	3	2	2	5	1
2010	1824	0	0	0	0	0	0	0	0	0	0	0	0	0	98	34	32	44	42	22	23	13	6	5	7	6	2	2	2
2011	1010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	35	30	25	22	10	15	13	6	4	3	3	4	3
2012	1416	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	49	45	25	26	25	12	10	13	3	5	5	6
2013	1688	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102	68	54	39	31	24	19	9	6	4	13	7
2014	1773	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96	49	53	43	22	27	14	9	11	9	10
2015	1314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	50	40	22	30	12	13	10	11	10
2016	1922	0																											

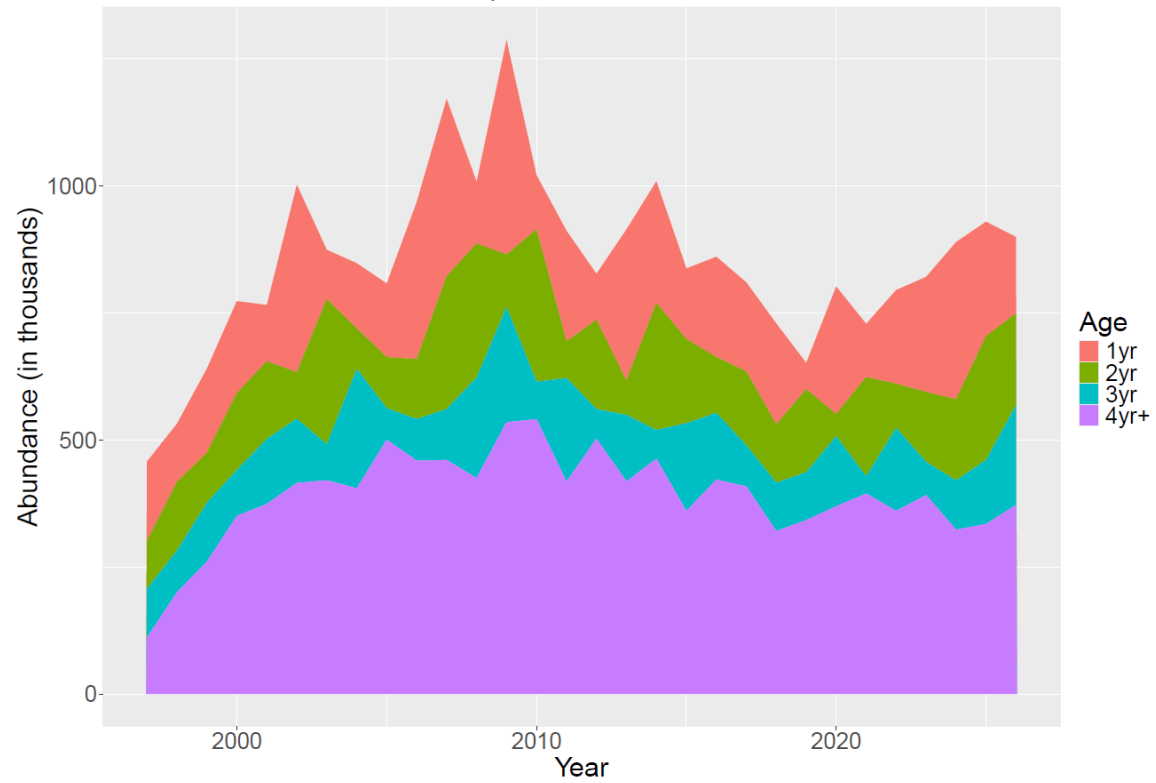
Year	Bandings	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1997	1676	12	12	16	7	22	30	17	12	18	13	10	8	4	10	3	2	3	1	3	1	1	0	1	0	0	0	0	0
1998	3502	0	28	41	28	46	44	37	35	32	29	26	16	12	18	12	9	11	6	3	5	0	1	0	0	0	1	0	1
1999	4303	0	0	84	54	82	71	46	65	47	25	30	28	19	12	9	14	9	11	1	2	6	3	3	0	0	0	0	2
2000	2214	0	0	0	27	39	31	16	19	21	18	12	10	7	8	5	2	4	5	6	2	2	0	1	1	0	0	0	0
2001	5389	0	0	0	0	244	166	84	79	82	45	49	38	39	35	23	20	19	14	14	12	11	3	3	2	0	0	0	1
2002	4007	0	0	0	0	0	172	63	54	36	27	15	26	21	18	8	8	7	3	3	4	8	2	1	0	0	2	0	0
2003	6143	0	0	0	0	0	0	193	105	68	50	44	33	34	24	13	13	17	13	12	8	5	6	3	0	1	0	1	1
2004	2428	0	0	0	0	0	0	0	175	59	28	30	26	20	15	8	9	6	7	5	9	5	5	4	2	1	0	0	0
2005	3909	0	0	0	0	0	0	0	0	338	103	73	54	37	42	26	22	15	11	8	7	13	6	6	1	1	0	1	0
2006	4673	0	0	0	0	0	0	0	0	0	324	197	111	82	72	42	39	29	18	22	12	14	12	18	2	1	2	2	0
2007	2131	0	0	0	0	0	0	0	0	0	0	118	66	33	23	13	10	13	11	8	13	6	5	0	2	0	1	1	1
2008	4289	0	0	0	0	0	0	0	0	0	0	0	346	182	80	44	37	39	36	18	18	18	12	8	8	4	4	2	0
2009	1539	0	0	0	0	0	0	0	0	0	0	0	0	66	32	21	11	15	15	5	4	5	1	3	3	1	3	0	0
2010	2774	0	0	0	0	0	0	0	0	0	0	0	0	0	251	82	46	30	14	17	13	9	9	3	2	1	7	5	0
2011	1116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	20	12	12	7	4	4	1	1	1	1	1	0	0
2012	2134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	173	97	61	42	26	38	26	17	5	5	9	9	6	0
2013	2052	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	198	102	42	44	35	18	15	8	4	3	15	2
2014	2345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	140	61	39	30	24	15	4	3	8	2	3
2015	1851	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119	82	52	43	11	8	6	10	16	5
2016</																													

**Figure 1 and Table 3. Atlantic Population Canada goose integrated population model posterior estimates (median/95% credible limits [line/shading]) of breeding pairs (top plot), total and breeding abundance indices (with 2026 out-year prediction in darker shading), other model parameters (middle plot; ad=adult; juv=juvenile; S=survival; h=harvest probability; AgeRatio=juvenile:adult at banding; r=reporting probability), and abundance indices by age class (bottom plot). Observed data (abundance, age ratios) and estimates of survival and harvest probabilities from other band-recovery analyses (i.e., fitting a global model in Program MARK) were included as points.**





### Atlantic Population Canada Geese



Year	Abundance						Survival				Harvest				Juv:Adult	
	<u>Breeding Pairs</u>		<u>Breeding Pairs (2X)</u>		<u>Total</u>		<u>Adult</u>		<u>Juvenile</u>		<u>Adult</u>		<u>Juvenile</u>		<u>Age Ratio</u>	
	median	95% CI	median	95% CI	median	95% CI	median	95% CI	median	95% CI	median	95% CI	median	95% CI	median	95% CI
1997	68,500	(31,500-106,500)	137,000	(63,000-213,000)	547,000	(417,000-713,000)	0.869	(0.749-0.974)	0.693	(0.591-0.800)	0.017	(0.013-0.022)	0.014	(0.010-0.018)	1.22	(0.98-1.43)
1998	87,000	(59,000-113,500)	174,000	(118,000-227,000)	595,000	(486,000-724,000)	0.860	(0.772-0.952)	0.646	(0.578-0.721)	0.018	(0.014-0.022)	0.015	(0.012-0.020)	1.49	(1.20-1.73)
1999	108,500	(85,000-137,000)	217,000	(170,000-274,000)	680,000	(572,000-807,000)	0.920	(0.842-0.981)	0.691	(0.622-0.764)	0.028	(0.024-0.033)	0.035	(0.029-0.041)	1.20	(1.01-1.42)
2000	129,500	(107,000-155,000)	259,000	(214,000-310,000)	809,500	(691,000-946,000)	0.845	(0.767-0.929)	0.482	(0.416-0.556)	0.027	(0.024-0.031)	0.028	(0.022-0.035)	0.89	(0.71-1.05)
2001	147,000	(126,000-169,500)	294,000	(252,000-339,000)	799,000	(686,000-930,000)	0.828	(0.751-0.906)	0.694	(0.633-0.758)	0.056	(0.050-0.062)	0.080	(0.071-0.089)	1.81	(1.53-2.08)
2002	155,500	(130,500-181,000)	311,000	(261,000-362,000)	1,040,000	(906,000-1,189,000)	0.775	(0.702-0.858)	0.374	(0.329-0.425)	0.064	(0.058-0.071)	0.069	(0.060-0.078)	0.83	(0.70-1.01)
2003	158,500	(132,000-187,000)	317,000	(264,000-374,000)	910,000	(789,000-1,046,000)	0.823	(0.730-0.915)	0.354	(0.315-0.400)	0.058	(0.052-0.065)	0.060	(0.052-0.068)	1.14	(0.74-1.70)
2004	175,500	(142,000-210,500)	351,000	(284,000-421,000)	890,000	(766,000-1,031,000)	0.782	(0.690-0.885)	0.469	(0.404-0.546)	0.066	(0.059-0.073)	0.101	(0.088-0.114)	0.87	(0.74-1.11)
2005	162,000	(132,500-190,000)	324,000	(265,000-380,000)	855,000	(733,000-990,000)	0.817	(0.729-0.902)	0.533	(0.477-0.593)	0.073	(0.065-0.082)	0.135	(0.121-0.150)	1.80	(1.54-2.07)
2006	156,500	(132,000-180,500)	313,000	(264,000-361,000)	1,013,000	(887,000-1,146,000)	0.850	(0.773-0.920)	0.731	(0.670-0.783)	0.063	(0.057-0.070)	0.111	(0.100-0.124)	1.54	(1.15-1.83)
2007	175,000	(149,500-201,500)	350,000	(299,000-403,000)	1,211,000	(1,061,000-1,370,000)	0.756	(0.689-0.835)	0.493	(0.425-0.569)	0.062	(0.057-0.069)	0.084	(0.071-0.097)	0.71	(0.57-0.83)
2008	181,500	(153,500-209,500)	363,000	(307,000-419,000)	1,041,000	(917,000-1,181,000)	0.862	(0.772-0.925)	0.651	(0.581-0.722)	0.071	(0.065-0.078)	0.125	(0.113-0.139)	1.81	(1.42-2.05)
2009	205,000	(175,000-236,000)	410,000	(350,000-472,000)	1,318,000	(1,162,000-1,487,000)	0.709	(0.650-0.791)	0.394	(0.329-0.472)	0.065	(0.059-0.072)	0.074	(0.062-0.088)	0.67	(0.52-0.78)
2010	187,500	(159,000-217,000)	375,000	(318,000-434,000)	1,050,000	(926,000-1,189,000)	0.677	(0.622-0.757)	0.478	(0.417-0.550)	0.072	(0.065-0.079)	0.125	(0.112-0.140)	1.20	(1.04-1.45)
2011	174,000	(142,500-207,500)	348,000	(285,000-415,000)	949,000	(829,000-1,086,000)	0.809	(0.717-0.901)	0.305	(0.256-0.363)	0.062	(0.055-0.069)	0.091	(0.078-0.107)	0.86	(0.67-1.00)
2012	168,000	(139,500-195,000)	336,000	(279,000-390,000)	864,000	(755,000-985,000)	0.745	(0.672-0.832)	0.702	(0.627-0.766)	0.067	(0.061-0.075)	0.117	(0.103-0.133)	1.29	(0.97-1.47)
2013	149,500	(123,500-176,500)	299,000	(247,000-353,000)	950,000	(825,000-1,086,000)	0.844	(0.761-0.910)	0.696	(0.617-0.761)	0.079	(0.072-0.087)	0.126	(0.112-0.142)	1.15	(0.98-1.38)
2014	163,500	(135,500-191,500)	327,000	(271,000-383,000)	1,040,000	(911,975-1,181,000)	0.690	(0.630-0.774)	0.379	(0.324-0.444)	0.077	(0.070-0.084)	0.095	(0.082-0.108)	1.14	(0.78-1.37)
2015	151,500	(125,000-179,000)	303,000	(250,000-358,000)	874,000	(755,000-1,006,000)	0.793	(0.703-0.885)	0.621	(0.537-0.714)	0.072	(0.065-0.080)	0.098	(0.084-0.112)	1.07	(0.75-1.25)
2016	158,500	(132,000-185,500)	317,000	(264,000-371,000)	891,000	(770,000-1,026,000)	0.737	(0.663-0.821)	0.539	(0.466-0.622)	0.076	(0.069-0.084)	0.105	(0.091-0.119)	1.04	(0.81-1.19)
2017	144,000	(119,500-168,500)	288,000	(239,000-337,000)	842,000	(728,000-969,025)	0.653	(0.607-0.719)	0.504	(0.443-0.572)	0.085	(0.077-0.094)	0.136	(0.122-0.152)	1.36	(1.18-1.63)
2018	119,500	(99,000-140,500)	239,000	(198,000-281,000)	765,000	(660,000-882,000)	0.825	(0.738-0.898)	0.451	(0.280-0.761)	0.085	(0.078-0.093)	0.085	(0.067-0.108)	0.48	(0.39-0.58)
2019	127,500	(106,000-150,500)	255,000	(212,000-301,000)	689,000	(585,000-804,000)	0.854	(0.716-0.937)	0.620	(0.496-0.746)	0.065	(0.058-0.072)	0.084	(0.072-0.097)	1.62	(1.28-1.83)
2020	137,000	(105,500-171,000)	274,000	(211,000-342,000)	841,000	(682,000-1,008,000)	0.777	(0.670-0.927)	0.520	(0.319-0.804)	0.043	(0.037-0.050)	0.040	(0.031-0.051)	0.74	(0.60-0.89)
2021	133,000	(100,500-172,500)	266,000	(201,000-345,000)	771,000	(628,000-948,000)	0.841	(0.701-0.949)	0.515	(0.315-0.799)	0.040	(0.034-0.048)	0.045	(0.034-0.060)	1.36	(1.07-1.60)
2022	145,000	(115,500-176,500)	290,000	(231,000-353,000)	848,000	(698,000-1,018,000)	0.743	(0.661-0.873)	0.601	(0.483-0.735)	0.048	(0.041-0.056)	0.046	(0.037-0.056)	1.29	(1.11-1.58)
2023	132,000	(106,500-159,500)	264,000	(213,000-319,000)	860,000	(719,000-1,019,000)	0.701	(0.629-0.822)	0.732	(0.638-0.793)	0.069	(0.061-0.078)	0.108	(0.094-0.123)	1.61	(1.36-1.98)
2024	121,500	(98,500-149,000)	243,000	(197,000-298,000)	924,000	(778,000-1,093,000)	0.795	(0.639-0.928)	0.530	(0.286-0.771)	0.069	(0.061-0.077)	0.096	(0.083-0.112)	1.77	(1.45-2.18)
2025	143,000	(109,000-180,000)	286,000	(218,000-360,000)	972,000	(768,000-1,197,000)	0.811	(0.659-0.964)	0.573	(0.327-0.818)	0.039	(0.031-0.049)	0.037	(0.029-0.048)	0.94	(0.76-1.12)
2026	163,500	(113,000-227,500)	327,000	(226,000-455,000)	944,000	(692,000-1,247,000)										