

Herring (*Clupea harengus*) in subareas 1, 2, and 5, and in divisions 4.a and 14.a, Norwegian spring-spawning herring (Northeast Atlantic and Arctic Ocean)

ICES advice on fishing opportunities

ICES advises that when the long-term management strategy agreed by UK, the Faroe Islands, Iceland, Norway, the Russian Federation, and the European Union is applied, catches in 2027 should be no more than 588 004 tonnes.

Non-fisheries conservation considerations

Conservation aspects and associated management measures may exist at a national or regional level but were not reviewed by ICES.

Stock development over time

Fishing pressure on the stock is below F_{MSY} . Spawning-stock size is below $MSY B_{trigger}$ and between B_{PA} and B_{lim} .

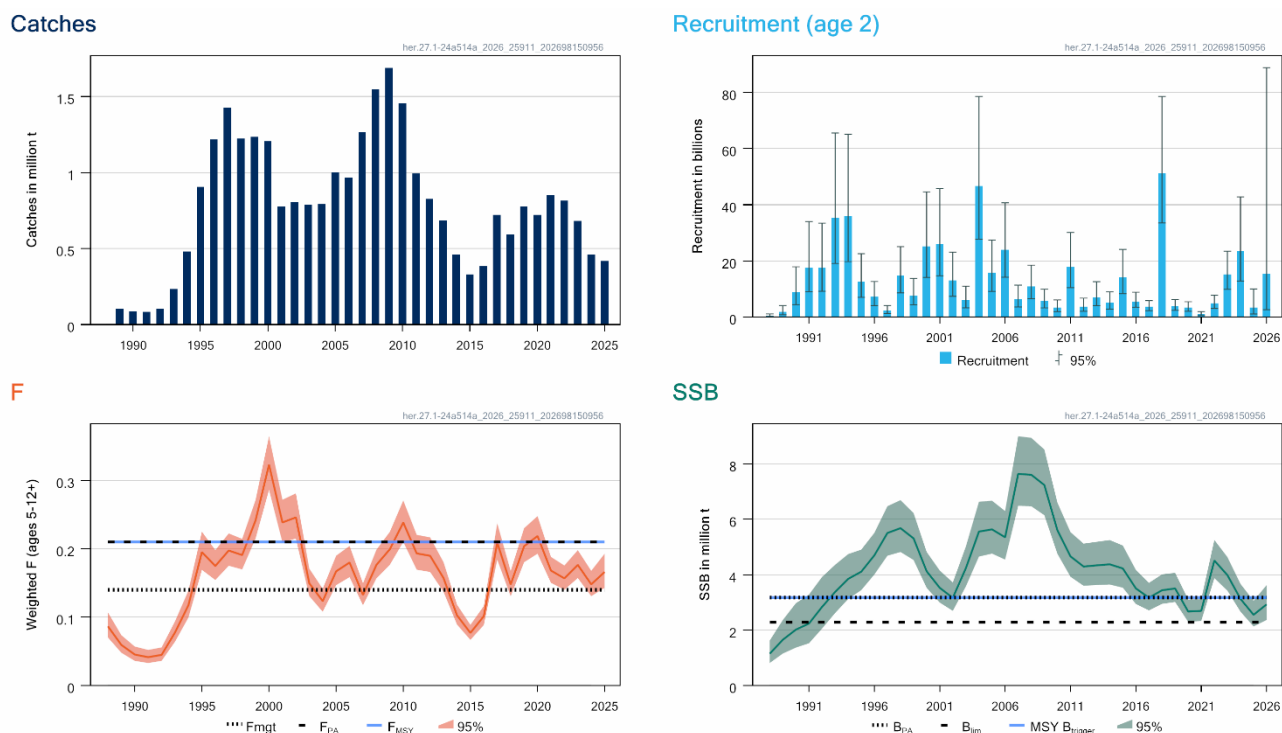


Figure 1 Herring in subareas 1, 2, and 5, and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Summary of the stock assessment.

Catch scenarios

Table 1 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Values in the forecast and for the interim year.

Variable	Value	Notes
F _{ages 5–12+} (2026)	0.164	Based on assumed catches in 2026
Spawning-stock biomass (SSB; 2027)	3.223	From the assessment model; million tonnes
R _{age 2} (2026)	15.270	Point estimate from the assessment model; billions
R _{age 2} (2027)	9.005	Median stochastic recruitment based on the years 1988–2025; billions
Catch (2026)	584025	Sum of declared unilateral quotas from coastal states; tonnes

Table 2 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2027)	F (2027)	Spawning-stock biomass (SSB; 2028)	% SSB change*	% catch change**	% advice change***	% probability of falling below B _{lim} in 2028
ICES advice basis							
Agreed management strategy	588004	0.140	3341564	3.7	0.70	10.1	4.1
Other scenarios							
Maximum sustainable yield (MSY) approach: F _{MSY}	847221	0.21	3119560	–3.2	45	59	8.3
F = 0	0	0.00	3816781	18.4	–100	–100	0.10
F _{PA}	847221	0.21	3119560	–3.2	45	59	8.3
SSB ₂₀₂₈ = B _{lim}	1857023	0.55	2286000	–29	218	248	50
SSB ₂₀₂₈ = B _{PA} = MSY B _{trigger}	776626	0.188	3177000	–1.45	33	46	8.4
F = F ₂₀₂₆	679132	0.164	3267552	1.38	16.3	27	5.1

* SSB₂₀₂₈ relative to SSB₂₀₂₇ (3 223 000 tonnes)

** Catch in 2027 relative to ICES assumed catch in 2026 (584 025 tonnes).

*** Advice value 2027 relative to advice value 2026 (533 914 tonnes).

The advice for 2027 is higher than the advice for 2026 because the 2021 and 2022 year classes, which are stronger than average, are recruiting to the spawning stock. Spawning-stock biomass (SSB) is predicted to be above the long-term management strategy B_{trigger} at the start of 2027, so F_{mgt} is applied without reduction.

Basis of the advice

Table 3 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). The basis of the advice.

Advice basis	Management strategy
Management strategy	A long-term management strategy was agreed by the European Union, the Faroe Islands, Iceland, Norway, and Russian Federation in 2018 (Agreed record of conclusions..., 2018) and subsequently by UK (Agreed record of conclusions..., 2020). ICES has evaluated the long-term management strategy and found it to be precautionary (ICES, 2018a). ICES has not conducted a full management strategy evaluation (MSE) with the updated reference points (B _{trigger} and B _{lim}), but, provided the harvest control rule (HCR) advice is below that arising from ICES maximum sustainable yield (MSY) approach, then precaution is assured.
	According to the management strategy the advice fishing mortality for year $y+1$ is calculated as: $F_{advice} = \begin{cases} F_{mgt} & B_{trigger} < SSB_{y+1} \\ 0.05 + (F_{mgt} - 0.05) \cdot \frac{SSB_{y+1} - B_{lim}}{B_{trigger} - B_{lim}} & B_{lim} < SSB_{y+1} \leq B_{trigger} \\ 0.05 & SSB_{y+1} \leq B_{lim} \end{cases}$

	where SSB_{y+1} is the SSB at the beginning of the advice year estimated in the short-term forecast and current values for of the control parameters are: $F_{mgt} = 0.14$, $B_{trigger} = 3\,177\,000$ tonnes, $B_{lim} = 2\,286\,000$ tonnes. This fishing mortality is then transformed into the TAC using the catch equation in the short term forecast model, $TAC_{y+1} = C[F_{advice}]$. Finally, a stability clause applies with a maximum 25% increase or 20% decrease in advised TAC between years.
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Quality of the assessment

The 2021 and 2022 year classes are both estimated to be above average. With another year of radio-frequency identification (RFID) tagging data, the 2021 year class has been revised downward and the 2022 year class slightly upward. SSB in 2020 and 2021 has been revised downward because maturity at age has now been recalculated for the 2016 and 2017 year classes and is lower than previously assumed.

The 2026 recruitment estimate from the model is above average but remains highly uncertain. This has, however, only a negligible impact on the advised catches for 2027, as at age 3 its contribution to the fishery and SSB is negligible.

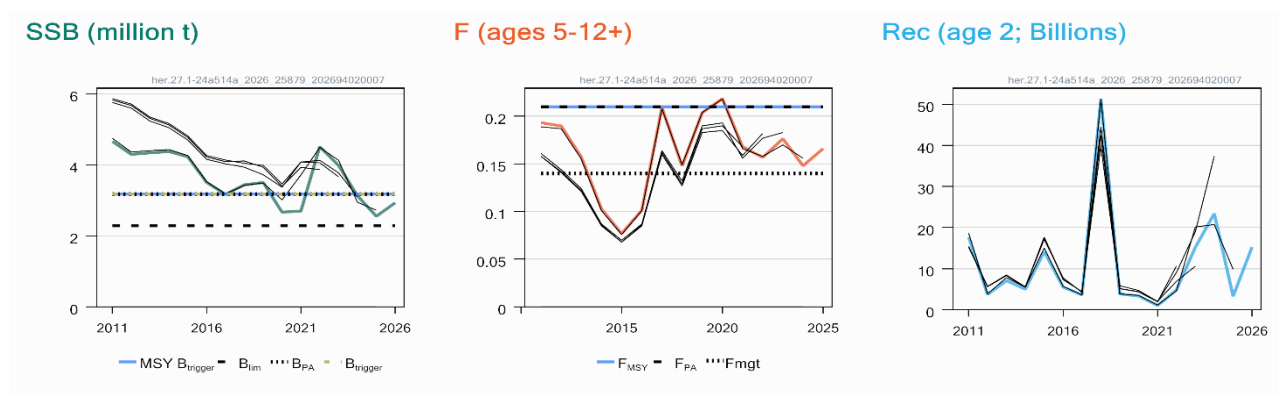


Figure 2 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Historical assessment results. The reference points were revised in 2025 following a benchmark, and only assessment results from the last two years should be compared to the reference points indicated.

Issues relevant for the advice

Since 2013, catches have been consistently above the levels advised by ICES. The advice for 2027 is based on the target fishing mortality in the long-term management strategy agreed by the European Union, the Faroe Islands, Iceland, Norway, UK, and the Russian Federation; it does not consider the deviations from the long-term management strategy as evident from the sum of declared unilateral quotas. During the evaluation of the long-term management strategy (ICES, 2018a), a consistent overshooting of the total allowable catch (TAC) was not included in the simulations. Therefore, failing to adhere to the advised catches as derived from the application of the long-term management strategy may not be precautionary. Specifically, this may result in an increased risk for the stock to fall below B_{lim} and loss of catch in the long term.

An appraisal of the management strategy evaluation (MSE) with the updated reference points has not been undertaken. Nevertheless, for the 2027 advice the management strategy is more precautionary than the ICES maximum sustainable yield (MSY) approach (the probability of SSB falling below B_{lim} in 2028 is 4.1% for the management strategy and 8.3% for the MSY approach). Thus, the advice for 2027 derived from the management strategy is considered appropriate.

Reference points

Table 4 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Reference points, values, and their technical basis. F values correspond to fishing mortality weighted by the population numbers, for ages 5–12+.

Framework	Reference point	Value	Technical basis	Source
Maximum sustainable yield (MSY) approach	MSY $B_{trigger}$	3.177	B_{PA} ; in million tonnes	ICES (2025a)
	F_{MSY}	0.21	Stochastic simulations, capped to F_{P05}	ICES (2025a)
Precautionary approach	B_{lim}	2.286	Lowest spawning-stock biomass (SSB) that produced large recruitment, determined as the value corresponding to the SSB in 1991; in million tonnes	ICES (2025a)
	B_{PA}	3.177	Based on B_{lim} and assessment uncertainties. $B_{lim} \times \exp(1.645 \times s)$, with $s = 0.2$; in million tonnes	ICES (2025a)
	F_{PA}	0.21	F_{P05} ; the F that leads to $SSB \geq B_{lim}$ with 95% probability	ICES (2025a)
EU–Faroes–Iceland–Norway–UK–Russian Federation long-term management strategy	B_{lim}	2.286	Precautionary harvest control rule (HCR) evaluated by management strategy evaluation (MSE) in 2018. Note it has not been fully tested whether it remains precautionary with the reference points updated in 2025; SSB values in million tonnes.	ICES (2018a, 2025a) Agreed record of conclusions... (2020)
	$B_{trigger}$	3.177		
	F_{mgt_lower}	0.05		
	F_{mgt}	0.14		

Basis of the assessment

Table 5 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2025b)
Assessment type	Age-based analytical model (SAM)*
Input data	Commercial catches-at-age (stock weight-at-age from surveys and, since 2009, from catch sampling). Four survey indices: Norwegian acoustic survey on spawning grounds in February/March (NASF [A7918]; 1988–1989, 1994–1996, 1998–2000, 2005–2008, 2015–2026); International Ecosystem Survey in the Nordic Seas (IESNS; A3675) covering the adult stock in the Nordic seas (1996–2026), and the juvenile stock in the Barents Sea (1991–2002, 2005–2007, 2009–2019, 2021, 2024, 2026) the Norwegian and Russian Barents Sea ecosystem surveys in August–October (BESS [A5216]; 2004–2025) covering the juvenile stock in the Barents Sea and a time series of tagging indices based on RFID (TAGHER [S8417]; 2017–2025). Maturity ogive variable by year-class strength. Natural mortalities are fixed values from historical analyses (age 2 = 0.9; ages greater than 2 = 0.15).
Discards and bycatch	Not included, considered negligible
Indicators	None
Other information	This stock was benchmarked in 2025, reference points were updated (ICES, 2025a). A re-evaluation of the current long-term management strategy took place in 2018 (ICES, 2018a, 2018b), however, it has not yet been evaluated whether the HCR is precautionary with the updated reference points.
Working group	Working Group on Widely Distributed Stocks (WGWISE ; ICES, 2026)

*[View assessment in Transparent Assessment Framework \(TAF\)](#).

History of the advice, catch, and management

Table 6 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). ICES advice and landings. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Sum of agreed quotas	ICES catch
1987	Total allowable catch (TAC)	150000	115000	127306
1988	TAC	120000–150000	120000	135301
1989	TAC	100000	100000	103830
1990	TAC	80000	80000	86411
1991	No fishing from a biological point of view	0	76000	84683
1992	No fishing from a biological point of view	0	98000	104448
1993	No increase in F	119000	200000	232457

Year	ICES advice	Catch corresponding to advice	Sum of agreed quotas	ICES catch
1994	Gradual increase in F towards $F_{0.1}$; TAC suggested	334000	450000	479228
1995	No increase in F	513000	900000*	905501
1996	Keep spawning-stock biomass (SSB) above 2.5 million tonnes	-	1425000*	1220283
1997	Keep SSB above 2.5 million tonnes	-	1500000	1426507
1998	Do not exceed the harvest control rule	-	1300000	1223131
1999	Do not exceed the harvest control rule	1263000	1300000	1235433
2000	Do not exceed the harvest control rule	≤ 1500000	1250000	1207201
2001	Do not exceed the harvest control rule	753000	850000	766136
2002	Do not exceed the harvest control rule	853000	850000	807795
2003	Do not exceed the harvest control rule	710000	711000*	789510
2004	Do not exceed the harvest control rule	825000	825000*	794066
2005	Do not exceed the harvest control rule	890000	1000000*	1003243
2006	Do not exceed the harvest control rule	732000	967000*	968958
2007	Do not exceed the harvest control rule	1280000	1280000	1266993
2008	Do not exceed the harvest control rule	1518000	1518000	1545656
2009	Do not exceed the harvest control rule	1643000	1643000	1687371
2010	Do not exceed the harvest control rule	1483000	1483000	1457015
2011	See scenarios in the 2010 advice	988000–1170000	988000	992997
2012	Follow the management plan	833000	833000	826000
2013	Follow the management plan	619000	692000*	684743
2014	Follow the management plan	418487	436893*	461306
2015	Follow the management plan	283013	328206*	328740
2016	Follow the management plan	≤ 316876	376612*	383174
2017	Follow the management plan	≤ 437364	805142*	721566
2018	Follow the management plan	≤ 384197	546448*	592899
2019	Follow the management strategy, $F_{\text{mgt}} = 0.14$ and $B_{\text{mgt}} = 3.184$ million tonnes	≤ 588562	773750*	777165
2020	Follow the management strategy, $F_{\text{mgt}} = 0.14$ and $B_{\text{mgt}} = 3.184$ million tonnes	≤ 525594	693915*	720937
2021	Follow the management strategy, $F_{\text{mgt}} = 0.14$ and $B_{\text{mgt}} = 3.184$ million tonnes	≤ 651033	881097*	851813
2022	Follow the management strategy, $F_{\text{mgt}} = 0.14$ and $B_{\text{mgt}} = 3.184$ million tonnes	≤ 598588	827963*	813834
2023	Follow the management strategy, $F_{\text{mgt}} = 0.14$ and $B_{\text{mgt}} = 3.184$ million tonnes	≤ 511171	692942*	680552
2024	Follow the management strategy	≤ 390010	446928*	460226
2025	Follow the management strategy	≤ 401794	435010*	419205
2026	Follow the management strategy	≤ 533914	584025*	
2027	Follow the management strategy	≤ 588004		

* There was no agreement on the TAC; the number is the sum of the declared unilateral quotas.

History of the catch and landings

Table 7 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Catch distribution by fleet in 2025 as estimated by ICES. All weights are in tonnes.

Catch (2025)	Landings		Discards
419 205	55% purse-seine	45% pelagic trawl	Discarding is considered to be negligible, but some slippage is known to occur
	419 205		

Table 8 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). History of commercial landings; ICES estimated values are presented for each country participating in the fishery. All weights are in tonnes.
Note: due to some discrepancies in past reporting, some historic totals do not perfectly match the sum of countries.

Year	Norway	Russian Federation*	Denmark	Faroes	Iceland	Ireland	Netherlands	Greenland	UK	Germany	France	Poland	Sweden	Total
1986	199256	26000	-	-	-	-	-	-	-	-	-	-	-	225256
1987	108417	18889	-	-	-	-	-	-	-	-	-	-	-	127306
1988	115076	20225	-	-	-	-	-	-	-	-	-	-	-	135301
1989	88707	15123	-	-	-	-	-	-	-	-	-	-	-	103830
1990	74604	11807	-	-	-	-	-	-	-	-	-	-	-	86411
1991	73683	11000	-	-	-	-	-	-	-	-	-	-	-	84683
1992	91111	13337	-	-	-	-	-	-	-	-	-	-	-	104448
1993	199771	32645	-	-	-	-	-	-	-	-	-	-	-	232457
1994	380771	74400	-	2911	21146	-	-	-	-	-	-	-	-	479228
1995	529838	101987	30577	57084	174109	-	7969	2500	881	556	-	-	-	905501
1996	699161	119290	60681	52788	164957	19541	19664	-	46131	11978	-	-	22424	1220283
1997	860963	168900	44292	59987	220154	11179	8694	-	25149	6190	1500	-	19499	1426507
1998	743925	124049	35519	68136	197789	2437	12827	-	15971	7003	605	-	14863	1223131
1999	740640	157328	37010	55527	203381	2412	5871	-	19207	-	-	-	14057	1235433
2000	713500	163261	34968	68625	186035	8939	-	-	14096	3298	-	-	14749	1207201
2001	495036	109054	24038	34170	77693	6070	6439	-	12230	1588	-	-	9818	766136
2002	487233	113763	18998	32302	127197	1699	9392	-	3482	3017	-	1226	9486	807795
2003	477573	122846	14144	27943	117910	1400	8678	-	9214	3371	-	-	6431	789510
2004	477076	115876	23111	42771	102787	11	17369	-	1869	4810	400	-	7986	794066
2005	580804	132099	28368	65071	156467	-	21517	-	-	17676	0	561	680	1003243
2006	567237	120836	18449	63137	157474	4693	11625	-	12523	9958	80	-	2946	968958
2007	779089	162434	22911	64251	173621	6411	29764	4897	13244	6038	0	4333	0	1266993
2008	961603	193119	31128	74261	217602	7903	28155	3810	19737	8338	0	0	0	1545656
2009	101667	210105	32320	85098	265479	10014	24021	3730	25477	14452	0	0	0	1687371
2010	871113	199472	26792	80281	205864	8061	26695	3453	24151	11133	0	0	0	1457015
2011	572641	144428	26740	53271	151074	5727	8348	3426	14045	13296	0	0	0	992997
2012	491005	118595	21754	36190	120956	4813	6237	1490	12310	11945	0	0	705	826000
2013	359458	78521	17160	105038	90729	3815	5626	11788	8342	4244	0	0	23	684743
2014	263253	60292	12513	38529	58828	706	9175	13108	4233	669	0	0	0	461306
2015	176321	45853	9105	33031	42625	1400	5255	12434	55	2660	0	0	0	328740
2016	197501	50455	10384	44727	50418	2048	3519	17508	4031	2582	0	0	0	383174
2017	389383	91118	19037	98170	90400	3495	6679	12569	4358	5201	0	1	1155	721566
2018	332028	64185	17052	82062	83393	2428	4290	2465	2582	1989	0	0	425	592899
2019	430507	84364	21207	113945	108045	2775	5111	3190	1801	4188	0	1327	705	777165
2020	409436	74936	16523	103029	98173	2704	5060	3546	143	2969	0	1352	3065	720937
2021	489632	92841^	15854	114291	114299	1793	10939	6456	0	3365	0	1242	1101	851813
2022	445938	85870	15014	122083	112739	3209	3783	6818	9620	5600	0	0	3160	813834
2023	389306	74145	10237	90371	92197	1016	6119	6647	7607	2158	0	0	750	680552
2024	259002	49790	7422	58584	62967	2141	3097	5662	5843	2142	0	0	3575	460226
2025	258254	48023	4224	35888	65859	0	45	1648	5254	7	0	3	0	419205

* USSR before 1992.

^ From ICES preliminary catch database.

Table 9 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Catches inside and outside the NEAFC regulatory areas (RAs), as estimated by ICES, as well as total landings. Weights are in tonnes.

Year	Inside the NEAFC RAs	Outside the NEAFC RAs	Total catches	Percentage inside the NEAFC RAs
2019	281092	496073	777165	36
2020	95322	625615	720937	13
2021*	20347	738626	758972	3
2022*	65015	662949	727964	9
2023	45342	635211	680552	7
2024	48462	411764	460226	11
2025	18946	400258	419205	5

* Without catches from the Russian Federation, which did not report catches inside/outside the NEAFC RAs for 2021 or 2022. In the past, around 50% of Russian catches were taken inside the NEAFC RAs.

Summary of the assessment

Table 10 Herring in subareas 1, 2, and 5 and in divisions 4.a and 14.a (Norwegian spring-spawning herring). Assessment summary. All weights are in tonnes and recruitment in thousands. F is the fishing mortality weighted by population numbers.

Year	Recruitment (age 2)			Spawning-stock biomass (SSB)			Total catch	Weighted F (ages 5–12+)		
	Low	Value	High	Low	Value	High		Low	Value	High
1988	191403	461287	1111719	813524	1149987	1625608	135301	0.07	0.087	0.107
1989	837062	1848766	4083252	1154461	1652655	2365838	103830	0.048	0.059	0.074
1990	4403346	8878199	17900571	1369788	2017970	2972871	86411	0.036	0.045	0.057
1991	9032485	17529357	34019249	1526164	2238636	3283716	84683	0.033	0.041	0.052
1992	9161116	17507524	33458086	2055485	2838523	3919858	104448	0.036	0.045	0.056
1993	19091026	35386495	65591235	2618446	3378794	4359933	232416	0.064	0.078	0.094
1994	19740945	35866748	65165250	3123948	3850530	4746104	479228	0.1	0.118	0.139
1995	7004090	12571253	22563445	3443826	4110495	4906220	905501	0.169	0.195	0.225
1996	4026785	7144668	12676685	4007815	4700026	5511793	1216615	0.154	0.175	0.198
1997	1231795	2247919	4102258	4685887	5507947	6474224	1426507	0.175	0.198	0.223
1998	8589928	14681114	25091609	4821003	5680817	6693978	1223124	0.17	0.191	0.215
1999	4301741	7688008	13739894	4530870	5311339	6226250	1235433	0.215	0.242	0.271
2000	14129899	25104488	44602960	3527244	4124365	4822570	1207471	0.286	0.323	0.365
2001	14682302	25927856	45786669	2995177	3526920	4153065	776136	0.209	0.239	0.272
2002	7367051	13051625	23122539	2695925	3167315	3721129	807795	0.215	0.246	0.281
2003	3296647	6016053	10978698	3579671	4239535	5021037	789510	0.131	0.15	0.171
2004	27784178	46737177	78618982	4656243	5558694	6636055	793666	0.108	0.124	0.142
2005	9127031	15821054	27424663	4762668	5637350	6672671	1003243	0.147	0.167	0.19
2006	14175589	24020622	40703091	4546475	5351622	6299354	968958	0.159	0.18	0.204
2007	3600548	6396294	11362876	6488416	7641221	8998846	1266993	0.117	0.133	0.15
2008	6454281	10920304	18476580	6472254	7608326	8943813	1545656	0.157	0.176	0.199
2009	3268269	5702104	9948382	6148415	7238155	8521041	1687371	0.177	0.199	0.225
2010	1896869	3402854	6104489	4755025	5602558	6601154	1457015	0.21	0.238	0.271
2011	10463287	17754088	30125107	3925560	4662553	5537911	992996	0.17	0.193	0.22
2012	2048146	3710954	6723728	3601911	4295402	5122414	826000	0.166	0.19	0.217
2013	4005171	7106950	12610881	3628666	4338864	5188062	684744	0.137	0.157	0.18
2014	2780036	4999923	8992413	3646188	4376036	5251975	461306	0.089	0.103	0.118
2015	8330678	14173331	24113682	3533015	4226241	5055489	328739	0.067	0.077	0.089
2016	3477602	5543779	8837550	2944248	3505435	4173586	383173	0.089	0.102	0.116
2017	2242215	3613858	5824582	2712846	3170906	3706307	721566	0.184	0.209	0.237
2018	33550021	51358202	78618877	2947968	3439923	4013975	592899	0.131	0.148	0.167
2019	2394288	3872790	6264283	3017112	3504000	4069461	777165	0.18	0.204	0.23
2020	2048598	3343342	5456382	2295897	2669956	3104959	720936	0.193	0.219	0.248
2021	577292	1051265	1914384	2334529	2698488	3119190	851813	0.15	0.168	0.188
2022	3040786	4872270	7806865	3876539	4513472	5255057	813834	0.14	0.157	0.176
2023	9882360	15224481	23454400	3424846	3985423	4637754	680553	0.157	0.176	0.198
2024	12812236	23423649	42823696	2664877	3127211	3669755	460225	0.131	0.148	0.168
2025	1090826	3301923	9994898	2132326	2553445	3057732	419205	0.143	0.166	0.193
2026	2623902	15269710	88861561	2368418	2930910	3626992				

Sources and references

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