

Appendix table 5-66

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Citation of U.S. S&E articles in U.S. patents, by field and sector: 1995–2004

Field and sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All fields.....	16,633	23,531	32,583	44,466	42,317	39,360	42,766	39,675	37,138	31,154
Academic	9,399	13,557	18,665	25,824	24,983	23,728	25,557	23,348	22,193	19,074
Industry.....	4,155	5,522	7,288	9,602	8,799	8,234	8,648	8,493	7,870	6,573
Federal government.....	1,168	1,690	2,419	3,396	3,151	2,505	2,707	2,375	2,284	1,634
Nonprofit institutions	1,322	2,045	3,297	4,400	4,155	3,806	4,445	4,056	3,465	2,622
FFRDCs	432	476	604	810	830	727	990	980	957	922
State/local government.....	70	125	155	186	184	161	162	138	125	101
Other	86	115	155	248	215	199	256	285	244	229
Clinical medicine	4,461	6,679	10,063	14,133	13,240	11,805	12,961	11,776	10,748	8,322
Academic	2,659	3,908	5,820	8,308	7,763	6,953	7,738	6,827	6,322	4,960
Industry.....	777	1,199	1,905	2,670	2,439	2,174	2,252	2,135	1,977	1,495
Federal government.....	390	598	870	1,199	1,209	979	1,059	975	891	549
Nonprofit institutions	522	804	1,248	1,647	1,535	1,465	1,641	1,591	1,345	1,125
FFRDCs	39	51	87	110	116	69	77	68	73	78
State/local government.....	42	72	78	95	102	83	85	66	61	54
Other	32	47	66	115	84	83	108	115	79	62
Biomedical research.....	5,943	9,620	14,386	21,006	19,776	17,717	19,334	17,250	14,856	11,401
Academic	3,541	5,761	8,493	12,646	12,163	11,141	11,909	10,560	9,159	7,169
Industry.....	1,132	1,787	2,610	3,759	3,391	3,029	3,325	3,111	2,631	1,976
Federal government.....	499	780	1,168	1,697	1,449	1,092	1,186	947	857	642
Nonprofit institutions	648	1,078	1,815	2,469	2,350	2,117	2,427	2,116	1,780	1,260
FFRDCs	87	144	192	288	280	205	326	344	279	209
State/local government.....	24	44	64	81	73	67	68	57	44	36
Other	12	27	43	68	70	65	93	115	106	108
Biology	399	585	705	940	1,185	1,041	1,045	873	721	499
Academic	247	409	469	602	819	695	682	543	440	340
Industry.....	69	63	101	143	149	149	141	140	111	71
Federal government.....	59	76	87	129	141	128	156	137	129	55
Nonprofit institutions	16	24	37	53	64	63	55	44	32	25
FFRDCs	4	6	6	9	6	5	4	6	3	3
State/local government.....	2	1	3	2	2	1	2	0	2	2
Other	2	6	3	2	4	0	3	2	4	3
Chemistry.....	2,106	2,633	3,254	3,567	3,472	3,943	4,666	4,726	4,557	4,113
Academic	1,379	1,680	1,995	2,120	1,990	2,510	2,741	2,869	2,844	2,683
Industry.....	501	709	949	1,047	1,020	1,028	1,263	1,261	1,132	903
Federal government.....	55	80	89	134	164	113	102	77	122	123
Nonprofit institutions	77	84	107	140	126	107	266	247	237	148
FFRDCs	79	65	97	115	158	169	268	236	182	231
State/local government.....	1	6	7	4	5	2	5	9	15	5
Other	14	8	9	8	9	14	21	25	26	21
Physics.....	2,152	2,172	2,237	2,470	2,440	2,513	2,534	2,686	3,584	3,741
Academic	853	932	985	1,050	1,151	1,216	1,341	1,358	2,033	2,285
Industry.....	979	971	899	1,024	937	985	831	944	1,039	1,027
Federal government.....	111	83	144	137	113	101	117	130	172	141
Nonprofit institutions	34	24	51	40	42	16	21	19	30	22
FFRDCs	168	157	151	210	191	189	221	227	301	257
State/local government.....	0	0	0	0	0	0	0	0	0	0
Other	7	6	6	10	6	5	3	8	9	10
Engineering/technology	1,460	1,713	1,783	2,119	1,995	2,051	2,005	2,160	2,375	2,824
Academic	644	791	812	956	959	1,007	1,001	1,069	1,206	1,487
Industry.....	682	767	806	943	839	841	799	879	921	1,049
Federal government.....	44	64	49	72	54	69	72	85	92	101
Nonprofit institutions	22	21	28	38	32	25	22	28	30	33
FFRDCs	48	51	64	72	75	82	87	85	108	131
State/local government.....	0	0	0	1	0	5	0	0	0	1
Other	19	18	24	36	35	22	25	12	17	23

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Field and sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Other ^a	113	128	157	229	208	290	220	205	299	253
Academic.....	75	78	92	142	137	205	144	121	189	151
Industry.....	15	27	18	17	24	28	37	22	60	52
Federal government.....	10	10	13	29	20	23	16	23	22	23
Nonprofit institutions.....	3	9	11	12	4	13	11	11	10	9
FFRDCs.....	7	1	5	7	4	8	6	13	10	12
State/local government.....	1	2	3	3	2	3	2	5	4	3
Other.....	1	2	3	9	7	9	4	8	3	1

FFRDC = federally funded research and development center

^aFields of earth and space sciences, mathematics, social sciences, psychology, health sciences, and professional fields.

NOTES: Citations are references to U.S. S&E articles in journals referenced by *Science Citation Index (SCI)* and *Social Sciences Citation Index (SSCI)*. Citations on fractional-count basis, i.e., for cited articles with collaborating institutions from more than one sector, each sector receives fractional credit on basis of proportion of its participating institutions. Citation counts based on a 6-year window with 2-year lag, e.g., citations for 2002 are references in U.S. patents issued in 2002 to articles published in 1995–2000. Sector determined by cited paper's institutional address. Scientific field determined by iplQ's classification. Computer sciences included in engineering/technology. Detail may not add to total because of rounding.

SOURCES: U.S. Patent and Trademark Office; Thomson ISI, *SCI* and *SSCI*, <http://www.isinet.com/products/citation/>; iplQ, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.