Table of Filtering Software Effectiveness Tests

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Included in this database are filtering tests that describe statistical methods, and were conducted by testing labs, organizations, or affiliated researchers. Many tests of filtering effectiveness were conducted by advocacy groups or researchers hired by attorneys in filtering legal cases, or researchers sponsored by filtering vendors. These affiliations are noted in the "author" column when appropriate.

Filtering research literature is diverse, and not all researchers agree upon appropriate methodology and sampling techniques. Most filtering studies attempt to measure effectiveness by replicating user behavior, such as searching for websites that a filter should block, then measuring the degree of "under blocking." Some filtering studies also measure "over blocking" by searching for content that should not be blocked by the filter.

University of Michigan Professor Paul Resnick, one of the authors of the regarded Kaiser Family Foundation study, "See No Evil", has written a helpful article on the topic of filtering research in the journal *Communications of the ACM* entitled "Calculating Error Rates for Filtering Software."

Date	Author	Title	Filters tested * = 1st place	Scoring	Methodology	Sample Size	Conclusion
Dec 2008	EU Safer Internet	Protecting children on the Net with content filtering	AOL Brightfilter ClarkConnect CyberSieve DansGuardian eScan Ethershield Internet Sec. Internet Sec. Barrier X5 Internet Sec. Kidsnet Magic Desktop Norman Norton Parental Filter Poesia SafeEyes School Guard. Secure Content Surfpass 4 Total Protect Vista Ultimate Web Filter PC		To conduct the benchmark, Deloitte has collected and constructed more than 3,000 test cases based on suggestions from the SIP-Bench Steering Board. Even though we included test data based on manually constructed content and references from Hotlines, e.g. Jugendschutz and Child Focus, most of the test data has been manually searched for. Sample contains 1,800 web pages (600 porn, 600 "harmful", 600 non-harmful); 600 e-mails (same 1/3 each breakdown); 300 MSN IM; 150 FTP; 150 IRC; 150 NNTP.	3,150	The trend lines are moving towards 0% mistakes (no overblocking, no underblocking) meaning that overall the tools have made significant improvements in the filtering accuracy.
July 2008	Australian Communicat	Closed environment	Alpha Beta	90% 98%		1,000 illegal porn urls	Successful blocking (the proportion of illegal and inappropriate content that should have been blocked

	ions and Media Authority	testing of ISP-level internet content filtering	Gamma Delta Theta Omega	87% 91% 94% 94%		933 legal porn urls 1,997innocu ous urls	that was successfully blocked) was between 88% and 97% with most achieving over 92%. Overblocking (the proportion of content that was blocked that should not have been blocked) was between 1% and 6%, with most falling under 3%.
April 2008	Untangle	Deep Throat Fight Club	*FortiGuard WatchGuard Websense SonicWall Barracuda	Porn: 97.7% Porn: 97.3% Porn: 97.0% Porn: 96.1% Porn: 94.0%	We googled 50 pornographic search terms and tested each product against each search term 100 links deep Each product was graded against the site list qualified by humans.	5000 urls from ~50 google search terms	All products performed within a small range, probably within the margin of error. If you are expecting to block all porn, all these products will not be effective, however if you're looking to control and monitor porn usage as much as possible these products make great candidates.
Sep 2007	Paul Resnick (for NCRL)	Expert report of Paul Resnick	FortiGuard	Error: .04 % of all URLs Error: 5.3% of blocked URLs	Sample of NCRL log files during one week of 55,439 distinct URLs. 289 of the distinct URLs were blocked, each was examined by two raters for overblocking	55,439 distinct URLs; 289 blocked URLs	In this study, I found that less than 1/3 of 1% of patron requests for web pages resulted in incorrect blocks.
Aug 2007	Bennett Haselton (for the ACLU)	Report on the Accuracy Rate of FortiGuard	*FortiGuard	Error:11.9 % (for. Com) Error:23.6% (for .org)	Random sample from domain registration lists of 100,000 .com and 100,000 .org sites run against the FortiGuard filter. 1,366 .com and 207.org were blocked	200,000 1,573 blocked	Extrapolating the results, the number of wrongly blocked websites would be about 76,000.
May 2006	Philip B. Stark (For the Dept of Justice)	Expert Report of Philip B. Stark, PhD.	*AOL Mature MSN Porn MSN Teen ContentProtect ContentProtect. CyberPatrol CyberSitter CyberSitter: McAfee Net Nanny Norton Default Norton Custom Verizon	porn 94/98% porn 79/97% porn 80/97% porn 82/92% porn 80/92% porn 65/96% porn 89/95% porn 90/97% porn 86/97% porn 72/87% porn 58/90% porn 67/90% porn 77/96%	The government obtained 50,000 random websites from the Google index and 1million random websites from the MSN index. CRA International viewed random samples of 11,100 of the Google websites and 39,999 of the MSN websites and categorized their content. CRA International also processed 685 of the top Wordtracker queries	51,099 URLs	Of the sexually explicit Wordtracker search results, 1.4 percent to 12.8 percent were not blocked by filters. Filters blocked 2.9 percent to 32.8 percent of the clean Wordtracker results. I estimate that 8.8 percent to 60.2 percent of the sexually explicit websites in the Google and MSN indexes are not blocked by the filters. Of the clean websites cataloged by Google or MSN, I estimate that 0.4 percent to 23.6 percent are blocked by filters.
Jan 2006	Broadband testing (For Blue Coat)	URL Filtering Databases Accuracy Test	*Blue Coat Websense SmartFilter SurfControl InterSafe	urls: 5,168 urls: 2,171 urls: 3,551 urls: 3,882 urls: 1,359	We chose to use the application Win Web Crawler to generate our lists and produced a list of around 74,000 URLs (both top-level and subdirectories). We then created a test bed that enabled us to pass this list through each URL filtering database	44,506	We found that Blue Coat's WebFilter categorized significantly more URLs than any of the other databases, and more than twice as many as either Websense or Intersafe.
Jan	Veritest	Websense:	*Websense	92	We generated a database of URLs	100 URLs	In our testing, we found that that Websense provided

2006	(For Websense)	Web Filtering Effectiveness Study	SmartFilter SurfControl	59 65	by passing a list of keywords from each individual category to a search engine and then saving the URLs provided in the search results… we tested for blocking effectiveness testing, specific malicious and spyware URL testing and non-HTTP protocol	selected from 400,000 sampled	the greatest selection of predefined categories, the most accurate and diverse category filtering, and the most accurate security categorization.
Jun 2005	Broadband testing (For Blue Coat)	Comparing URL Filtering Databases	Blue Coat *Blue Coat w/drtr Webwasher Websense SmartFilter SurfControl	913, 327 822,703 713,370 654,980 595,884 569,311	Having sourced our URL list using Win Web Crawler, we then created a test bed which enabled us to pass this list through each URL filtering database under test, under exactly the same test conditions.	1,000,000 URLs	Blue Coat Web Filter (BCWF), especially with DRTR enabled, came out the clear winner, notching up 11 category firsts along the way.
Mar 2004	Net-Protect.org	Report on the evaluation of the final version of the NetProtect Product	* Surf-mate CyberPatrol Net Nanny CYBERsitter Cyber Snoop	85% 43% 16% 23% 4%	The benchmark was conducted on the four categories (pornography, bomb making, violence, drugs) and eight languages (English, French, German, Greek, Spanish, Italian, Portuguese, Dutch)	17,857	Compared to the other tools, Surf-mate achieved a good score about flexibility aspects, a medium score about security aspects and the best result in filtering accuracy.
June 2003	Online Policy Group	Internet Blocking in Public Schools	N2H2 *SurfControl	Err: 98.98% Err: 97.22%	Search strings related to school curricula generated RLs which were tested against the filters. Researchers examined a sample of the pages blocked by each blocking product and checked block code assignments.	973,215 web pages	Blocking software overblocks and underblocks, that is, the software blocks access to many web pages protected by the First Amendment and does not block many of the web pages that CIPA would likely prohibit.
Mar, 2002	eTesting Labs (For Websense)	Corporate Content Filtering Performance and Effectiveness Testing	*Websense SmartFilter SurfControl	Porn: 95% Porn: 90% Porn: 90%	To generate the URL lists for the positive blocking effectiveness testing, we used the Google search engine and searched for content using search criteria	569 URLs	Websense Enterprise v4.3 generated the best positive blocking effectiveness compared to SuperScout and SmartFilter.
Dec, 2002	Kaiser Family Foundation	See No Evil: How Internet Filters Affect the Search for Health Info	SmartFilter 8e6 Websense CyberPatrol Symantec * N2H2	Porn: 89.0% Porn: 92.1% Porn: 93.8% Porn: 87.2% Porn: 90.5% Porn: 94.0%	"Researchers simulated young people's searches for health information on 24 health topics, on each of six different search engines that are popular among young people."	3,053 health Web sites and 516 pornography sites	"At the least restrictive or intermediate configurations, the filters tested do not block a substantial proportion of general health information sites; however, at the most restrictive configuration, one in four health sites are blocked"

Sept 2001	Australian Broadcasting Company	Effectiveness of Internet Filtering Software Products	* AOL Cyber Patrol Cyber Guard Cyber Sitter EyeGuard Internet Sheriff I-Gear N2H2 Net Nanny Norton Security Smart Filter Too Cool	Porn: 100% Porn: 50% Porn: 85% Porn: 91 % Porn: 81% Porn: 92% Porn: 97% Porn: 97% Porn: 30% Porn: 68% Porn: 83% Porn: 100% Porn: 64%	Filtering effectiveness was tested by installing the product under test and then attempting to access all of the Web pages on our standard test list. This list includes 895 sites covering 27 content categories, and includes both sites that could be expected to be blocked and sites that should be passed through.	895 in 27 categories	
Oct 2001	Ben Edelman, Berkman Center (for the ACLU)	Sites Blocked by Internet Filtering Programs	N2H2 SmartFilter CyberPatrol Websense	4,961 1,590 1,982 2,188	I conducted site testing via an automated site system that I developed for this purpose, designed to efficiently determine whether particular URLs were blocked by particular blocking programs.	6,777	I have concluded that installation in libraries of Internet blocking programs configured to block particular categories of Internet content will inevitably block Internet content that does not meet the programs' self-defined category definitions
Oct 2001	Dr. Joseph Janes, Univ. of Washinton (For the ACLU)	Expert report of Dr. Joseph Janes	N2H2 CyberPatrol Websense	Aggregated Over blocking by all three products: 68%	A group of 16 each evaluated 80 sites, placing them in one of two categories, either a. Contains information similar to that already found in libraries, or b. Contains information a librarian would want in the library or c. You would be willing to refer a patron (of any age) to the site if the patron appeared at a reference desk	699	Overall, then, 165 of the 699 sites evaluated were found not to be of any value or use in a library context, 23.6% of the total. 60, or 8.6% could not be found, and therefore 474 of the sites, or 67.8% are examples of overblocking on the part of these blocking packages. Based on this analysis, I conclude that the blocking programs tested block a significant amount of content that would be appropriate in a library setting.
Oct 2001	Certus Consulting Group (For the DOJ)	Internet Filtering Accuracy Review	CyberPatrol Websense N2H2	Err: 6.34% Err:14.59% Err: 5.41%	To test for over blocking, data pertaining to each blocked was extracted from the usage logs for each of the three filtering products. Each host was then reviewed by a team of human reviewers to determine if the content of the host was consistent with the filtering rule in place for each library.	2,812 1,211 34,485	The estimated error rate for the Cyber-Patrol product was estimated lie within the range of 4.69% to 7.99%. The estimated error rate for Websense was 5.25% to 11.03%; N2H2 6.92% to 9.36%.
Oct 2001	eTesting Labs (For the DOJ)	U.S. Department of Justice: Web Content Filtering	SmartFilter Cyber Patrol Websense *N2H2	Porn: 94.4% Porn: 82.7% 92.4% 98%	A list of 200 distinct, randomly selected URL's generated using a variety of searching techniques available to the general public spanning many different adult related categories.	200 Adult URLs 100 sex-related non-porn URLs	Four primary content filtering applications tested correctly blocked an average of approximately 92 percent of objectionable content. Four primary content filtering applications tested incorrectly blocked an average of 4 percent of content not matching the test criteria.

		Software Comparison				
Mar 2001	Consumer Reports	"Digital Chaperones for Kids"	AOL Cyber Patrol 4 CyberSitter CyberSnoop Internet Guard Net Nanny 4 Norton Sec.	Very Good Good Good Poor Fair Poor Good	"We pitted them all against a list of 86 easily located web sites that contain [inappropriate material]..we pitted them against a list of 53 web sites that featured serious content on controversial subjects."	86 URLs under blocking sample; 53 URLs over blocking sample.	Filtering software is no substitute for parental supervision. Most of the products we tested failed to block one objectionable site in five."
Oct 2000	PeaceFire (Submitted to COPA Commission)	Study of Average Error Rates for Censorware Programs	Cyber Patrol SurfWatch Bess *AOL SafeServer	81% error 82% error 27% error 20% error 34% error	Using "zone files" from Network Solutions (which list all .com domains in existence), we obtained a list of the first 1,000 active .com domains on the Internet as of June 14, 2000. We tested this list of 1,000 domains using five popular blocking programs.	1,000 web sites	We conclude that any one of the given products blocks large amounts of innocuous material -- and that most of the sites blocked by these products have not been reviewed by staff to ensure that the sites meet the company's criteria.
Mar 2000	Family Research Council (by David Burt)	Dangerous Access 2000	CyberPatrol Bess	8% error 2% error	Using log files from the Tacoma Public Library and the Cincinnati Public Library, examined blocked sites and checked for accuracy.	22,364 and 35,701 blocked pages.	[Tacoma Library] nonsexual sites accounted for 0.07 percent. In other words, 99.93 percent of the time the filter functioned properly. [Cincinnati library] only 2 percent of the blocked sites were nonsexual in nature, and that this accounted for only 0.01 percent of all web accesses—or that 99.99 percent of the time the filter did not block innocent sites.
Mar 1999	Censor ware Project	Censored Internet Access in Utah Schools and Libraries	SmartFilter	Error 4.56%-5.24%	Log files from the state of Utah for one month revealed 122,700 webpages blocked in 5,601 cases, the block was applied wrongly. Thus, one in 21.9 blocks was performed wrongly.	122, 700 blocked web pages	
Sept, 1999	University of Penn. – Christopher Hunter	Internet Filter Effectiveness:	**CyberSitter** CyberPatrol SurfWatch Net Nanny	Blocking: 69% 55% 44% 17%	100 web pages randomly selected; 100 purposefully selected pages	200 web pages	"Put simply, taken all together, filters failed to block objectionable content 25 percent of the time, while on the other hand, they improperly blocked 21percent of benign content."
Dec 1997	EPIC	Faulty Filters	Net Shepherd	Error: 95.1 – 99.7%	Conducted 100 searches using a traditional search engine and then conducted the same 100 searches using a new search engine that is advertised as the "world's first family-friendly earch site."	100 searches	Our research showed that a family-friendly search engine typically blocked access to 95-99 percent of the material available on the Internet that might be of interest to young people.