

U. S. Software

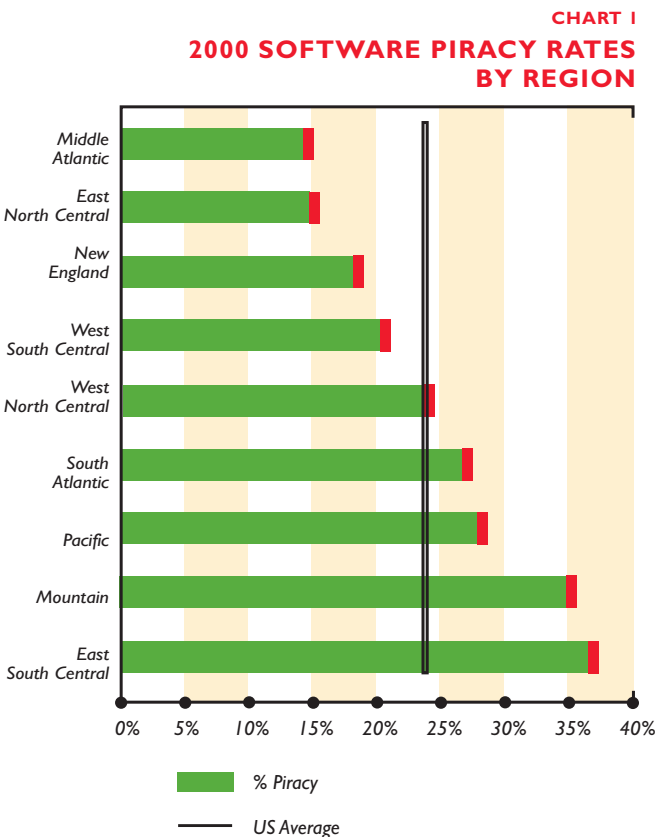
State Piracy Study

November 2001

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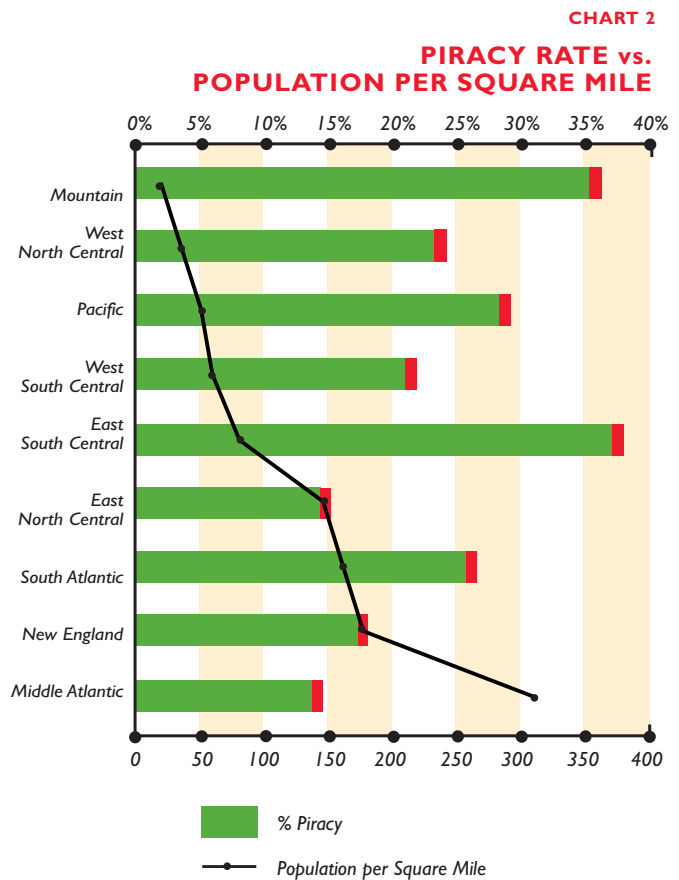
In 2001, International Planning and Research (IPR) completed a detailed review of the software piracy rates in the U.S. by state and the implied economic impacts. The purpose of this study was to expand the work completed for the “2000 Global Software Piracy Study” published by the Business Software Alliance (BSA). In addition, the economic analysis used in this study builds on several papers, published by BSA and its member companies, analyzing the job and tax impacts of software piracy, including the 1996 study, “Building an Information Economy: Software Industry Positions U.S. for New Digital Era” by Nathan Associates.

A. OVERVIEW



Within the United States, software piracy varies significantly, as shown in Chart 1. The regions with the highest percentages of piracy are East South Central (Alabama, Kentucky, Mississippi, and Tennessee) and the Mountain region (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico,

Utah, and Wyoming). The regions with the lowest piracy percentage are the regions with some of the largest population centers: Middle Atlantic (New Jersey, New York, and Pennsylvania), and East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin).



Conversely, the regions with the lowest population density tended to have the highest piracy rates, as illustrated in Chart 2. This chart compares the piracy rate to population per square mile. As PCs and software users increase in an area, the tendency to pirate software applications declines. The exceptions to this trend are the East South Central region (Alabama, Kentucky, Mississippi, and Tennessee) and the South Atlantic region (DC, Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia). These regions had higher piracy than indicated by population density alone, so clearly other factors are involved besides population density.

CHART 3

RETAIL DOLLAR LOSSES (billions)

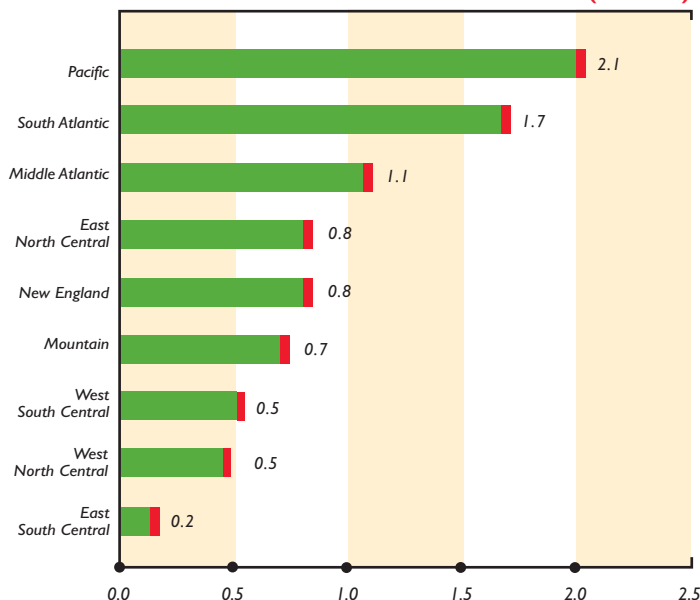


Chart 3 compares the dollar losses by region. The Pacific region, with both California and Washington State, has the greatest loss of any region and accounts for \$2.1 billion or 25% of the total losses nationwide. The South Atlantic region (with both Florida and Virginia) ranks number two in dollar losses at \$1.7 billion or 20% of the U.S. total. The Middle Atlantic, New England and East North Central regions also show high dollar losses at \$1.1 billion or 13% for the Middle Atlantic region, and \$800 million or 9% for both the New England and East North Central regions.

Retail dollar losses have the opposite relationship to population as the piracy rate. The retail dollar losses are the largest in the regions with the largest population centers with the largest demand for software.

The Pacific region and the New England region experienced higher dollar losses than the general trend. Both of these areas have a higher percentage of employees in the software industry than the national average and are therefore more sensitive to negative impacts on this industry. Nevertheless, every region is impacted by software piracy.

B. SUMMARY

Table I in Section D provides the detailed piracy estimates and economic impacts by state. Below is a summary of this information for the states in each region.

NEW ENGLAND

New England ranks well below the U.S. average software piracy rate of 24%. Massachusetts, the largest state in the region, had a piracy rate of 15%, while Connecticut was even lower at 14%. Within the region however Maine, New Hampshire, and Vermont have piracy rates of 30% or more. New England suffered significant losses due to piracy with Massachusetts alone measuring the third worst retail losses of any state, an estimated \$562 million in 2000. Overall, the region lost \$785 million in retail sales. In addition, almost 7,300 jobs were lost to piracy.

MIDDLE ATLANTIC

The Middle Atlantic, comprising three very populous states, is below the 24% national average software piracy rate as a region and by state. Pennsylvania and New Jersey experienced the second and third lowest piracy rate of any state in 2000, with 14% each. Still, the region lost a collective \$1.1 billion in retail sales to piracy, with New York losing over \$431 million. In addition, these states lost more than 15,300 jobs to piracy, at least 6,700 of them in New York State alone.

SOUTH ATLANTIC

The South Atlantic region is a large and varied area, including states with high population such as Florida, Virginia and Maryland, and states with low population such as Delaware and West Virginia. Software piracy ranges from 18% in Virginia to 39% in West Virginia. This region is above the 24% national average software piracy rate as a whole, with only Virginia, Delaware, and Washington, D.C., below the national average.

Virginia suffered the most dollar losses from piracy with losses estimated at \$613 million. Maryland was second with \$300 million in losses. Georgia lost over \$261 million and Florida lost almost \$232 million. The South Atlantic region lost over 23,000 jobs to piracy in 2000, more than any other region. Florida suffered the most job losses in the region, with an estimated 5,500 lost jobs.

EAST SOUTH CENTRAL

Each state in the East South Central region is well above the 24% U.S. average rate for software piracy. In fact, this region has the highest software piracy of any region in the country, ahead of the Mountain region. Mississippi, with a 44% piracy rate, was second highest of any state nationally.

The region suffered over 6,400 lost jobs to software piracy. Retail losses almost outweigh wage and salary losses in this region, indicating the small number of software industry jobs in the area. Tennessee lost \$88 million, and Alabama lost \$76 million in retail sales. Tennessee had the eighth worst piracy rate in the nation.

WEST SOUTH CENTRAL

This growing region had mixed results in 2000. Texas with 18% and Arkansas with 23% piracy had rates just below the national average of 24%, while Oklahoma and Louisiana, each with rates over 30%, were well above the national average.

Texas suffered the most, with almost \$440 million in retail sales losses, the fourth highest loss in the nation. It also lost almost 7,500 jobs to software piracy, well above any other states in the region. Together, the region lost 11,000 jobs due to piracy. Louisiana, with a 32% piracy rate, has the highest rate in the region.

EAST NORTH CENTRAL

Michigan leads the East North Central region with a piracy rate of 15%, which is the fourth lowest of any state nationally, while Wisconsin ranked sixth lowest nationally at 16%. Illinois experienced the largest retail software dollar losses in the region, with \$285 million. Michigan and Ohio also suffered large retail software dollar losses of \$204 million and \$174 million, respectively. This region lost 17,300 jobs to piracy in 2000 with Illinois losing almost 5,000 jobs — the most in the region, and the fifth largest nationally.

WEST NORTH CENTRAL

The West North Central region is fairly diversified. Minnesota and Missouri, the two biggest states in the region, had piracy rates below the 24% national average. Iowa, Kansas, Nebraska, and North and South Dakota are well above the national average, each with piracy rates of over 30%.

As a region, it lost \$462 million in retail software sales to piracy. Minnesota alone lost \$183 million despite its lower piracy rate. The state also lost an estimated 2,500 jobs, out of 8,700, for the region.

MOUNTAIN

Every state in the Mountain region has a higher piracy rate than the 24% U.S. average, and the region has the second highest rate nationally. Colorado had the lowest piracy rate in the region with 29%, but experienced the highest retail sales losses in the region, totaling \$316 million, which accounts for almost half of the region's \$664 million in retail sales losses. The state also leads in job losses with 2,700 jobs lost to software piracy, out of 8,500 for the region.

PACIFIC

The Pacific region as a whole had a piracy rate above the 24% national average. Washington State was the only state below the national average in 2000 with a piracy rate of 21%. Hawaii experienced the highest piracy rate at 44%. California, the largest state in the region, had a piracy rate of 31%.

California led the nation with \$1.5 billion in retail sales losses. Washington State was fifth in the nation with \$434 million in retail sales losses. Oregon lost a substantial \$106 million. California lost 14,900 jobs to piracy in 2000, while Washington State lost 3,000. The region as a whole lost over 20,000 jobs, second only to the South Atlantic region in job losses due to piracy.

C. METHODOLOGY

The “2000 BSA U.S. Software State Piracy Study,” similar to the “2000 BSA Global Software Piracy Study,” consists of comparing two sets of data, the demand for new software applications, and the legal supply of new software applications. IPR developed the following method to estimate piracy by state as an extension of the country-level work developed earlier. In addition, the economic impacts of software piracy were developed to be consistent with BSA’s published studies of these impacts written by Nathan Associates. This study is for the calendar year 2000.

DEMAND

PC shipments by state were estimated from a detailed review of the employment and population of each state and market research that surveyed the PC penetration rate of each state. From this basis, estimates of PC shipments could be made for each state. PC shipments could be further segmented into four groups. First, PC shipments could be split between Home and non-Home purchasers. Second, PC shipments were compared to the change in the installed base of PCs. The part of PC shipments that represents growth in the installed base is called “new shipments” and is separated from the “replacement shipments,” which represents PCs replacing older PCs.

From additional market research, IPR determined the number of software applications installed per PC shipment and developed these ratios for the four groups for which PC shipments were estimated:

1. Home — New Shipments
2. Non-Home — New Shipments
3. Home — Replacement Shipments
4. Non-Home — Replacement Shipments

Piracy rates can vary among applications. To model this, IPR followed the grouping of software applications used in the global BSA piracy study and developed compatible estimates in three tiers.

The tiers used were General Productivity Applications, Professional Applications, and Utilities. These were chosen because they represent different target markets, different price levels, and it is believed, different piracy rates.

At the end of this study, software applications installed per PC shipped have been researched and estimated using these dimensions:

1. Home vs. Non-Home
2. New PCs vs. Replacement PCs
3. Software Application Tier

These estimates of software applications installed to PCs shipped were developed at the national level and applied across state. Where market research warranted, the estimates were allowed to vary slightly by state. They were then applied to the state PC shipment estimates to form state-specific software demand estimates.

SUPPLY

To estimate the supply of legal software by state, IPR relied on detailed industry sales data. This data was compiled only for software applications that were studied in the “2000 BSA Global Software Piracy Study.” For that study, only business software applications that correspond to the three Software Application Tiers were used.

The resulting shipment data was uplifted to reflect shipments for the entire software industry. Total industry shipment estimates for each Tier had been developed earlier for the BSA piracy study. By tying to these estimates, we believe we minimized any state biases within the sales data.

In spite of this, certain states had a disproportionate amount of software sales. Some of these excess software sales were reallocated to other states. IPR attempted to minimize the impact of this judgmental data correction by keeping all reallocations to the contiguous states within each of the nine census regions. This reallocation of software sales represents transshipments, or software sold in one state but consumed in another. As this is believed to be a phenomenon of retail store software sales, retail sales data were used to help corroborate the reallocation assumptions.

PIRACY RATE ESTIMATES

The difference between software applications installed (demand) and software applications legally shipped (supply) equals the estimate of software applications pirated. These were calculated by state for 2000. The piracy rate was defined as the amount of software pirated as a percent of total software installed in each state in 2000, both legal and pirated.

This methodology includes enhancements in modeling transshipments and the variation of software usage by state from earlier studies. Table V includes a revised set of estimates for 1999 using this improved approach.

RETAIL DOLLAR LOSSES

By using the average price information from the “2000 BSA Global Software Piracy Study,” the legal and pirated software revenue was calculated. This is a wholesale price estimate weighted by the amount of shipments within each software application category. To estimate retail revenue, a flat 22% markup was used. This markup is consistent with the global BSA piracy study. The national total is a loss of \$2.6 billion and is consistent with the “2000 BSA Global Software Piracy Study.” These estimates were derived from analyzing business software applications, excluding recreational software, operating systems and client-server applications. For the purpose of consistency with earlier Nathan and Associates studies, the 24% U.S. piracy rate estimate was used to extrapolate beyond the types of software studied to the larger packaged software industry. For the total industry, the total loss is estimated at \$8.3 billion. Table I contains the state-by-state estimates of software piracy’s impact on business software applications and the impact of this level of piracy on the industry as a whole.

The first estimate of dollar losses due to piracy by state were based on a “where consumed” definition; it allocates all of the piracy loss in the state where it is measured. To more correctly allocate the retail losses, IPR split the losses into the wholesale and retail markup components, and allocated the wholesale losses with a “where produced” definition, by using the employment distribution of software industry employees (SIC Codes 7371-7373). The retail markup portion was presumed to be “lost” in the “consumed” state. The “where produced” definition are the losses used in the study.

DIRECT, INDIRECT AND TOTAL LOSSES

The impacts on receipts, employment, wages and taxes paid, which stem directly from sales lost due to piracy, are termed the direct impacts. In this study, the impacts on two industry sectors were studied: the software industry defined by SIC Codes 7371-7373 and the retail sector identified by SIC Code 5730. The direct employment, wage, and tax impacts were estimated separately for each sector and the sum of these impacts constitutes the total direct impacts.

By applying data from the Bureau of Economic Analysis (BEA) Input/Output Model and estimates from the previous Nathan Associates studies, “multipliers” were estimated from the direct employment and wage losses to quantify the impact on the rest of the economy. These losses are termed “indirect,” impacting industries not directly producing or selling software.

DIRECT JOB AND WAGE LOSSES

The direct impact on industry employment was estimated by applying employment/output elasticities consistent with the input/output analyses. The direct employment impact was estimated to be a national loss of 33,000 jobs, just under 15% of the employment in the packaged business software market. A similar analysis was applied to the subset of the retail market engaged in selling packaged software. The direct employment impact was estimated to be a loss of 11,000 jobs, or about 3.0% of the employment in these retail establishments. The distribution by state follows the distribution of the employment in these industrial sectors.

The average salary in the packaged business software industry is estimated to be \$77,800, significantly higher than for the economy as a whole in 2000. The part of the retail sector engaged in selling software also enjoys a modest advantage in earnings over the rest of retail. These industry averages and the variation in wages in these industries by state were used to compute the losses in wages and salaries associated with the estimated direct job losses by state.

INDIRECT JOB AND WAGE LOSSES

Consistent with the BEA Input/Output Model of the economy and previous studies, impact multipliers were used to estimate the impact of reduced employment and wages in the packaged software production and distribution sectors. In this study, the respective “total direct-effect” multipliers for employment and wages are 2.71 and 1.986 respectively. This means that for every person directly employed in the packaged business software production and distribution sectors, there are more than 2.7 persons employed throughout the U.S. economy. Further, for every dollar of wages spent in wages in the packaged business software production and distribution sectors, more than \$1.90 is paid in wages throughout the U.S. economy. The indirect multipliers would be the direct multipliers less one (1.71 and .986 respectively). These national indirect multipliers and the distribution by state of employment and wage and salary disbursements outside of the direct industries were used to estimate the indirect impacts by state. The total of direct and indirect losses are over 118,000 jobs and \$5.7 billion in wage losses for the U.S. economy.

TAX LOSSES

The type of reduction in taxes paid (considered in this study) include state sales taxes, state corporate income taxes, federal corporate income taxes, federal personal income taxes, and state and local personal income taxes. Local sales taxes were not estimated.

FEDERAL AND STATE CORPORATE INCOME TAXES

Corporate Income taxes were calculated for the software production and distribution industries. Federal corporate income tax losses were estimated by applying national ratios of tax receipts to industry revenue developed in previous Nathan Associates studies for BSA. These were distributed across state by industry employment. State corporate income tax losses were estimated using BEA data on state and local tax collections by industry, and compilations of state corporate tax rates. Over \$100 million less in federal and state corporate income taxes is estimated to be collected due to piracy in this industry.

FEDERAL AND STATE PERSONAL INCOME TAXES

Previous Nathan Associates studies used an average tax rate of 16.5% of wages to estimate reductions in personal income tax paid by persons employed in the production or distribution of packaged business software. Using this rate implies \$936 million less in total federal personal income taxes would be collected from both the software production and distribution industries and the indirect job losses. State personal income tax losses were estimated from state personal income tax rates and BEA data on past state personal income tax collections. The state personal income tax estimates are also for total job losses.

STATE SALES TAXES

State sales tax rates were collected for individual states and applied to the estimated retail losses ("where consumed") to estimate the loss in state sales tax collections. Further, these implied a reasonable relationship between collections and receipts as compared with the BEA state sales tax collection data. The estimated national loss to state sales tax collections is almost \$453 million.

D. ESTIMATES — 2000 U.S. SOFTWARE STATE PIRACY STUDY

Table I — Piracy by State

STATE	Business Software Applications Studied		Total Packaged Software Industry			
	Piracy Rate	Retail Dollar Losses (Where Produced)	Retail Dollar Losses (Where Produced)	Total Employment	Total Wage and Salary Losses	Total Tax Losses
Alabama	35.2%	\$23,964,993	\$75,646,722	1,786	\$61,027,879	\$15,549,290
Alaska	36.0%	\$2,155,059	\$6,802,552	228	\$8,572,284	\$1,537,816
Arizona	35.7%	\$36,292,919	\$114,560,449	1,876	\$76,206,858	\$27,417,172
Arkansas	23.1%	\$6,947,769	\$21,930,987	887	\$26,290,778	\$4,920,790
California	30.7%	\$487,520,682	\$1,538,883,897	14,869	\$869,131,935	\$322,136,001
Colorado	29.2%	\$100,149,942	\$316,128,400	2,740	\$155,588,056	\$51,119,781
Connecticut	14.0%	\$38,543,368	\$121,664,108	1,484	\$91,188,781	\$21,907,402
DC	16.8%	\$9,366,571	\$29,566,059	554	\$31,199,234	\$5,767,075
Delaware	23.6%	\$4,791,409	\$15,124,327	351	\$14,258,675	\$2,145,375
Florida	29.5%	\$73,386,026	\$231,646,734	5,563	\$200,866,470	\$60,426,076
Georgia	24.4%	\$82,739,346	\$261,170,965	3,637	\$168,116,694	\$49,182,706
Hawaii	43.6%	\$5,968,774	\$18,840,741	538	\$17,378,761	\$5,117,191
Idaho	35.5%	\$5,172,959	\$16,328,708	485	\$13,801,902	\$4,554,098
Illinois	17.2%	\$90,294,904	\$285,020,468	4,958	\$242,090,919	\$58,977,180
Indiana	16.1%	\$16,575,904	\$52,322,688	2,140	\$77,953,870	\$11,000,145
Iowa	32.7%	\$15,719,237	\$49,618,573	1,271	\$41,431,829	\$11,916,037
Kansas	31.8%	\$16,311,503	\$51,488,090	1,155	\$40,289,586	\$12,069,982
Kentucky	34.0%	\$13,335,944	\$42,095,587	1,439	\$45,489,725	\$12,516,246
Louisiana	32.3%	\$11,534,091	\$36,407,947	1,473	\$45,293,081	\$9,150,615
Maine	29.5%	\$4,237,729	\$13,376,607	473	\$13,954,335	\$4,218,398
Maryland	34.3%	\$95,185,755	\$300,458,690	2,782	\$156,733,549	\$55,213,125
Massachusetts	14.8%	\$178,267,039	\$562,709,000	4,030	\$288,680,614	\$93,997,660
Michigan	14.7%	\$64,730,285	\$204,324,446	3,739	\$184,580,097	\$35,960,237
Minnesota	16.6%	\$57,826,076	\$182,530,957	2,452	\$121,125,066	\$33,511,088
Mississippi	43.8%	\$7,153,631	\$22,580,802	981	\$24,774,383	\$9,499,550
Missouri	20.9%	\$33,355,509	\$105,288,366	2,317	\$90,070,325	\$19,510,540
Montana	41.9%	\$3,293,598	\$10,396,410	347	\$8,642,563	\$993,970
Nebraska	33.1%	\$16,320,204	\$51,515,556	870	\$32,630,686	\$10,854,962
Nevada	46.5%	\$15,004,255	\$47,361,695	888	\$32,075,342	\$14,970,163
New Hampshire	33.5%	\$13,972,869	\$44,106,072	577	\$26,517,596	\$5,782,223
New Jersey	14.3%	\$122,827,011	\$387,709,723	3,854	\$242,979,415	\$62,741,774
New Mexico	32.2%	\$6,786,026	\$21,420,437	618	\$19,573,717	\$5,731,070
New York	16.3%	\$136,686,529	\$431,458,000	6,710	\$388,324,213	\$81,109,323
North Carolina	26.2%	\$48,744,725	\$153,865,212	3,321	\$126,653,932	\$28,575,020
North Dakota	35.0%	\$4,049,717	\$12,783,137	328	\$9,026,804	\$3,007,728
Ohio	16.2%	\$55,139,256	\$174,049,873	4,402	\$180,314,403	\$31,455,226
Oklahoma	31.4%	\$13,026,051	\$41,117,395	1,225	\$37,712,148	\$9,784,932
Oregon	26.9%	\$33,628,420	\$106,149,824	1,578	\$68,097,043	\$14,512,408
Pennsylvania	14.3%	\$84,116,323	\$265,517,463	4,779	\$218,200,350	\$45,712,666
Rhode Island	26.2%	\$9,054,150	\$28,579,887	445	\$19,515,655	\$6,113,708
South Carolina	34.8%	\$14,267,659	\$45,036,593	1,496	\$46,051,293	\$12,613,835
South Dakota	31.9%	\$2,698,977	\$8,519,460	312	\$7,856,865	\$2,070,764
Tennessee	36.8%	\$27,749,785	\$87,593,612	2,268	\$78,764,648	\$24,843,981
Texas	17.9%	\$139,348,616	\$439,861,012	7,464	\$338,638,285	\$84,423,731
Utah	37.5%	\$41,634,767	\$131,422,266	1,375	\$64,401,073	\$24,492,905
Vermont	35.9%	\$4,742,055	\$14,968,537	276	\$10,086,357	\$3,019,132
Virginia	18.4%	\$194,167,441	\$612,899,430	4,774	\$294,835,036	\$94,814,703
Washington	20.8%	\$137,463,350	\$433,910,073	3,028	\$215,384,842	\$66,249,522
West Virginia	39.5%	\$5,628,829	\$17,767,687	611	\$17,832,006	\$6,460,045
Wisconsin	15.8%	\$18,642,809	\$58,846,977	2,066	\$74,476,964	\$11,965,379
Wyoming	42.2%	\$1,917,207	\$6,051,761	208	\$5,563,415	\$1,583,737
Total U.S.	24.0%	\$2,632,438,051	\$8,309,424,963	118,026	\$5,670,250,334	\$1,593,204,483

E. DETAILED ESTIMATES — 2000 U.S. SOFTWARE STATE PIRACY STUDY

Table II — Piracy by Rate

STATE	Piracy Rate	Retail Dollar Losses (Where Consumed)	Retail Dollar Losses (Where Produced)	Population
Connecticut	14.00%	\$53,547,260	\$121,664,108	3,284,000
New Jersey	14.30%	\$158,141,771	\$387,709,723	8,178,000
Pennsylvania	14.30%	\$159,414,790	\$265,517,463	12,202,000
Michigan	14.70%	\$131,050,931	\$204,324,446	9,679,000
Massachusetts	14.80%	\$137,172,917	\$562,709,000	6,199,000
Wisconsin	15.80%	\$84,010,027	\$58,846,977	5,326,000
Indiana	16.10%	\$83,448,752	\$52,322,688	6,045,000
Ohio	16.20%	\$169,071,166	\$174,049,873	11,319,000
New York	16.30%	\$368,873,530	\$431,458,000	18,146,000
Minnesota	16.60%	\$124,347,993	\$182,530,957	4,830,000
DC	16.80%	\$23,546,721	\$29,566,059	523,000
Illinois	17.20%	\$270,506,790	\$285,020,468	12,051,000
Texas	17.90%	\$426,053,132	\$439,861,012	20,119,000
Virginia	18.40%	\$208,882,266	\$612,899,430	6,997,000
Washington	20.80%	\$162,926,970	\$433,910,073	5,858,000
Missouri	20.90%	\$143,768,820	\$105,288,366	5,540,000
Arkansas	23.10%	\$50,422,275	\$21,930,987	2,631,000
Delaware	23.60%	\$26,973,693	\$15,124,327	768,000
Georgia	24.40%	\$265,045,272	\$261,170,965	7,875,000
North Carolina	26.20%	\$216,200,627	\$153,865,212	7,777,000
Rhode Island	26.20%	\$30,844,860	\$28,579,887	998,000
Oregon	26.90%	\$120,837,064	\$106,149,824	3,397,000
Colorado	29.20%	\$198,807,567	\$316,128,400	4,168,000
Florida	29.50%	\$510,938,886	\$231,646,734	15,233,000
Maine	29.50%	\$46,184,595	\$13,376,607	1,259,000
California	30.70%	\$1,470,678,123	\$1,538,883,897	32,521,000
Oklahoma	31.40%	\$113,130,529	\$41,117,395	3,373,000
Kansas	31.80%	\$111,894,944	\$51,488,090	2,668,000
South Dakota	31.90%	\$31,283,800	\$8,519,460	777,000
New Mexico	32.20%	\$59,482,749	\$21,420,437	1,860,000
Louisiana	32.30%	\$130,618,612	\$36,407,947	4,425,000
Iowa	32.70%	\$119,279,577	\$49,618,573	2,900,000
Nebraska	33.10%	\$85,622,107	\$51,515,556	1,705,000
New Hampshire	33.50%	\$69,034,961	\$44,106,072	1,224,000
Kentucky	34.00%	\$129,032,649	\$42,095,587	3,995,000
Maryland	34.30%	\$292,750,314	\$300,458,690	5,275,000
South Carolina	34.80%	\$152,058,923	\$45,036,593	3,858,000
North Dakota	35.00%	\$30,344,694	\$12,783,137	662,000
Alabama	35.20%	\$145,360,494	\$75,646,722	4,451,000
Idaho	35.50%	\$57,231,700	\$16,328,708	1,347,000
Arizona	35.70%	\$242,035,378	\$114,560,449	4,798,000
Vermont	35.90%	\$29,604,787	\$14,968,537	617,000
Alaska	36.00%	\$28,607,887	\$6,802,552	653,000
Tennessee	36.80%	\$245,584,054	\$87,593,612	5,657,000
Utah	37.50%	\$120,106,898	\$131,422,266	2,207,000
West Virginia	39.50%	\$63,642,199	\$17,767,687	1,841,000
Montana	41.90%	\$44,518,618	\$10,396,410	950,000
Wyoming	42.20%	\$25,948,691	\$6,051,761	525,000
Hawaii	43.60%	\$76,450,554	\$18,840,741	1,257,000
Mississippi	43.80%	\$106,285,241	\$22,580,802	2,816,000
Nevada	46.50%	\$157,817,803	\$47,361,695	1,871,000
Total U.S.	24.0%	\$8,309,424,963	\$8,309,424,963	274,635,000

Table III — Direct and Indirect Losses

STATE	Direct Losses Software Production and Distribution SIC Codes 7371-3 and 5730		Total Direct and Indirect Losses	
	Employment Loss	Wage and Salary Loss	Employment Loss	Wage and Salary Loss
Alabama	612	\$23,921,056	1,786	\$61,027,879
Alaska	45	\$1,689,548	228	\$8,572,284
Arizona	702	\$35,575,782	1,876	\$76,206,858
Arkansas	194	\$6,689,035	887	\$26,290,778
California	6,977	\$530,785,412	14,869	\$869,131,935
Colorado	1,578	\$112,106,857	2,740	\$155,588,056
Connecticut	513	\$43,827,326	1,484	\$91,188,781
DC	155	\$10,337,697	554	\$31,199,234
Delaware	112	\$4,844,678	351	\$14,258,675
Florida	1,754	\$71,296,266	5,563	\$200,866,470
Georgia	1,453	\$89,623,009	3,637	\$168,116,694
Hawaii	159	\$4,762,162	538	\$17,378,761
Idaho	163	\$4,395,364	485	\$13,801,902
Illinois	1,498	\$98,363,956	4,958	\$242,090,919
Indiana	395	\$17,053,321	2,140	\$77,953,870
Iowa	416	\$14,979,375	1,271	\$41,431,829
Kansas	372	\$15,896,666	1,155	\$40,289,586
Kentucky	375	\$11,881,238	1,439	\$45,489,725
Louisiana	307	\$9,710,883	1,473	\$45,293,081
Maine	122	\$3,621,515	473	\$13,954,335
Maryland	1,446	\$103,466,340	2,782	\$156,733,549
Massachusetts	2,151	\$205,988,334	4,030	\$288,680,614
Michigan	1,079	\$72,382,540	3,739	\$184,580,097
Minnesota	967	\$64,446,000	2,452	\$121,125,066
Mississippi	260	\$5,272,012	981	\$24,774,383
Missouri	710	\$35,033,792	2,317	\$90,070,325
Montana	115	\$2,558,478	347	\$8,642,563
Nebraska	351	\$16,687,445	870	\$32,630,686
Nevada	358	\$12,991,953	888	\$32,075,342
New Hampshire	223	\$14,414,208	577	\$26,517,596
New Jersey	1,616	\$140,036,826	3,854	\$242,979,415
New Mexico	169	\$6,229,270	618	\$19,573,717
New York	1,803	\$150,107,870	6,710	\$388,324,213
North Carolina	1,071	\$51,016,058	3,321	\$126,653,932
North Dakota	129	\$3,870,547	328	\$9,026,804
Ohio	1,164	\$59,951,290	4,402	\$180,314,403
Oklahoma	364	\$11,988,500	1,225	\$37,712,148
Oregon	654	\$36,036,649	1,578	\$68,097,043
Pennsylvania	1,469	\$94,383,710	4,779	\$218,200,350
Rhode Island	170	\$9,752,735	445	\$19,515,655
South Carolina	437	\$12,295,063	1,496	\$46,051,293
South Dakota	80	\$2,250,985	312	\$7,856,865
Tennessee	726	\$25,403,431	2,268	\$78,764,648
Texas	2,326	\$151,546,059	7,464	\$338,638,285
Utah	792	\$45,492,735	1,375	\$64,401,073
Vermont	97	\$4,708,355	276	\$10,086,357
Virginia	2,797	\$222,594,426	4,774	\$294,835,036
Washington	1,452	\$157,141,605	3,028	\$215,384,842
West Virginia	174	\$4,742,100	611	\$17,832,006
Wisconsin	439	\$19,472,213	2,066	\$74,476,964
Wyoming	63	\$1,488,272	208	\$5,563,415
Total U.S.	43,552	\$2,855,110,943	118,026	\$5,670,250,334

Table IV — Federal vs. State Tax Losses

STATE	Total Federal Corporate Income Tax Loss	Total State Corporate Income Tax Loss	Total Federal Personal Income Tax Loss	Total State Personal Income Tax Loss	Total State Sales Tax Loss	Total of Federal Tax Loss	Total of State Tax Loss	Total Federal and State Tax Loss
Alabama	\$726,209	\$219,826	\$7,838,691	\$950,144	\$5,814,420	\$8,564,899	\$6,984,390	\$15,549,290
Alaska	\$65,305	\$35,894	\$553,648	\$167,772	\$715,197	\$618,952	\$918,863	\$1,537,816
Arizona	\$1,099,780	\$438,190	\$11,657,828	\$2,119,605	\$12,101,769	\$12,757,608	\$14,659,564	\$27,417,172
Arkansas	\$210,537	\$89,907	\$2,191,930	\$159,413	\$2,269,002	\$2,402,467	\$2,518,323	\$4,920,790
California	\$14,773,285	\$7,885,385	\$173,933,072	\$18,920,095	\$106,624,164	\$188,706,357	\$133,429,644	\$322,136,001
Colorado	\$3,034,833	\$176,199	\$36,736,296	\$5,208,226	\$5,964,227	\$39,771,129	\$11,348,652	\$51,119,781
Connecticut	\$1,167,975	\$379,756	\$14,361,776	\$2,918,927	\$3,078,967	\$15,529,752	\$6,377,650	\$21,907,402
DC	\$283,834	\$169,612	\$3,387,560	\$513,267	\$1,412,803	\$3,671,394	\$2,095,681	\$5,767,075
Delaware	\$145,194	\$123,983	\$1,587,553	\$288,646	\$0	\$1,732,746	\$412,629	\$2,145,375
Florida	\$2,223,809	\$263,837	\$23,363,073	\$3,919,024	\$30,656,333	\$25,586,882	\$34,839,194	\$60,426,076
Georgia	\$2,507,241	\$224,775	\$29,368,564	\$6,480,315	\$10,601,811	\$31,875,805	\$17,306,901	\$49,182,706
Hawaii	\$180,871	\$100,259	\$1,560,513	\$217,526	\$3,058,022	\$1,741,384	\$3,375,807	\$5,117,191
Idaho	\$156,756	\$8,148	\$1,440,317	\$87,292	\$2,861,585	\$1,597,072	\$2,957,025	\$4,554,098
Illinois	\$2,736,196	\$176,465	\$32,232,885	\$6,248,693	\$17,582,941	\$34,969,081	\$24,008,099	\$58,977,180
Indiana	\$502,298	\$140,206	\$5,588,203	\$597,001	\$4,172,438	\$6,090,500	\$4,909,645	\$11,000,145
Iowa	\$476,338	\$210,140	\$4,908,591	\$356,988	\$5,963,979	\$5,384,930	\$6,531,107	\$11,916,037
Kansas	\$494,286	\$220,679	\$5,209,179	\$662,986	\$5,482,852	\$5,703,464	\$6,366,518	\$12,069,982
Kentucky	\$404,118	\$193,652	\$3,893,363	\$283,154	\$7,741,959	\$4,297,481	\$8,218,765	\$12,516,246
Louisiana	\$349,516	\$162,765	\$3,182,159	\$231,430	\$5,224,744	\$3,531,675	\$5,618,939	\$9,150,615
Maine	\$128,415	\$60,250	\$1,186,734	\$71,923	\$2,771,076	\$1,315,150	\$2,903,249	\$4,218,398
Maryland	\$2,884,403	\$195,691	\$33,904,885	\$3,590,630	\$14,637,516	\$36,789,288	\$18,423,836	\$55,213,125
Massachusetts	\$5,402,006	\$2,982,840	\$67,500,317	\$11,253,850	\$6,858,646	\$72,902,324	\$21,095,336	\$93,997,660
Michigan	\$1,961,515	\$81,278	\$23,719,035	\$2,335,354	\$7,863,056	\$25,680,549	\$10,279,688	\$35,960,237
Minnesota	\$1,752,297	\$344,696	\$21,118,310	\$2,834,905	\$7,460,880	\$22,870,607	\$10,640,481	\$33,511,088
Mississippi	\$216,776	\$10,519	\$1,727,586	\$104,702	\$7,439,967	\$1,944,361	\$7,555,188	\$9,499,550
Missouri	\$1,010,768	\$249,545	\$11,480,223	\$695,771	\$6,074,233	\$12,490,992	\$7,019,549	\$19,510,540
Montana	\$99,806	\$4,965	\$838,388	\$50,811	\$0	\$938,193	\$55,776	\$993,970
Nebraska	\$494,549	\$279,586	\$5,468,309	\$331,413	\$4,281,105	\$5,962,858	\$4,892,104	\$10,854,962
Nevada	\$454,672	\$0	\$4,257,333	\$0	\$10,258,157	\$4,712,006	\$10,258,157	\$14,970,163
New Hampshire	\$423,418	\$291,894	\$4,723,392	\$343,519	\$0	\$5,146,810	\$635,413	\$5,782,223
New Jersey	\$3,722,013	\$305,230	\$45,888,667	\$3,337,358	\$9,488,506	\$49,610,681	\$13,131,093	\$62,741,774
New Mexico	\$205,636	\$349,200	\$2,041,269	\$160,827	\$2,974,137	\$2,246,906	\$3,484,164	\$5,731,070
New York	\$4,141,997	\$647,059	\$49,188,848	\$8,687,743	\$18,443,676	\$53,330,845	\$27,778,479	\$81,109,323
North Carolina	\$1,477,106	\$313,987	\$16,717,452	\$1,418,450	\$8,648,025	\$18,194,558	\$10,380,462	\$28,575,020
North Dakota	\$122,718	\$61,001	\$1,268,340	\$38,435	\$1,517,235	\$1,391,058	\$1,616,670	\$3,007,728
Ohio	\$1,670,879	\$256,591	\$19,645,438	\$1,428,759	\$8,453,558	\$21,316,317	\$10,138,909	\$31,455,226
Oklahoma	\$394,727	\$132,728	\$3,928,511	\$238,092	\$5,090,874	\$4,323,238	\$5,461,694	\$9,784,932
Oregon	\$1,019,038	\$253,145	\$11,808,849	\$1,431,376	\$0	\$12,827,888	\$1,684,521	\$14,512,408
Pennsylvania	\$2,548,968	\$383,053	\$30,928,598	\$2,287,161	\$9,564,887	\$33,477,566	\$12,235,101	\$45,712,666
Rhode Island	\$274,367	\$251,900	\$3,195,874	\$232,427	\$2,159,140	\$3,470,241	\$2,643,467	\$6,113,708
South Carolina	\$432,351	\$256,552	\$4,028,969	\$293,016	\$7,602,946	\$4,461,320	\$8,152,514	\$12,613,835
South Dakota	\$81,787	\$0	\$737,625	\$0	\$1,251,352	\$819,412	\$1,251,352	\$2,070,764
Tennessee	\$840,899	\$338,174	\$8,324,450	\$605,415	\$14,735,043	\$9,165,349	\$15,678,632	\$24,843,981
Texas	\$4,222,666	\$0	\$49,660,128	\$3,912,616	\$26,628,321	\$53,882,794	\$30,540,937	\$84,423,731
Utah	\$1,261,654	\$183,274	\$14,907,514	\$1,084,183	\$7,056,280	\$16,169,168	\$8,323,737	\$24,492,905
Vermont	\$143,698	\$8,100	\$1,542,881	\$140,262	\$1,184,191	\$1,686,579	\$1,332,554	\$3,019,132
Virginia	\$5,883,835	\$201,692	\$72,941,968	\$6,387,508	\$9,399,702	\$78,825,802	\$15,988,901	\$94,814,703
Washington	\$4,165,537	\$0	\$51,493,733	\$0	\$10,590,253	\$55,659,269	\$10,590,253	\$66,249,522
West Virginia	\$170,570	\$794,573	\$1,553,939	\$122,432	\$3,818,532	\$1,724,508	\$4,735,536	\$6,460,045
Wisconsin	\$564,931	\$316,364	\$6,380,849	\$502,734	\$4,200,501	\$6,945,780	\$5,019,599	\$11,965,379
Wyoming	\$58,097	\$0	\$487,692	\$0	\$1,037,948	\$545,789	\$1,037,948	\$1,583,737
Total U.S.	\$79,770,480	\$20,773,563	\$935,591,305	\$104,252,177	\$452,816,959	\$1,015,361,785	\$577,842,698	\$1,593,204,483

Table V — 1999/2000 Comparison**Business Software Applications Studied,
Compared 1999-2000**

STATE	Piracy Rate		Retail Dollar Losses (Where Consumed)	
	1999	2000	1999	2000
Alabama	32.1%	35.2%	\$43,572,249	\$46,050,418
Alaska	31.7%	36.0%	\$8,627,262	\$9,063,021
Arizona	33.7%	35.7%	\$73,944,696	\$76,677,164
Arkansas	27.4%	23.1%	\$21,049,454	\$15,973,851
California	28.5%	30.7%	\$465,118,829	\$465,912,993
Colorado	30.1%	29.2%	\$76,735,444	\$62,982,530
Connecticut	22.1%	14.0%	\$48,187,475	\$16,963,851
DC	23.7%	16.8%	\$14,595,182	\$7,459,636
Delaware	21.1%	23.6%	\$9,690,701	\$8,545,306
Florida	32.1%	29.5%	\$195,886,208	\$161,866,191
Georgia	26.0%	24.4%	\$97,357,293	\$83,966,732
Hawaii	33.1%	43.6%	\$14,574,843	\$24,219,648
Idaho	31.1%	35.5%	\$17,050,762	\$18,131,087
Illinois	19.7%	17.2%	\$125,767,529	\$85,696,949
Indiana	22.3%	16.1%	\$52,638,649	\$26,436,688
Iowa	28.0%	32.7%	\$37,139,048	\$37,787,946
Kansas	30.5%	31.8%	\$34,857,242	\$35,448,483
Kentucky	35.7%	34.0%	\$44,647,768	\$40,877,733
Louisiana	34.2%	32.3%	\$40,419,154	\$41,380,169
Maine	29.5%	29.5%	\$13,963,637	\$14,631,348
Maryland	27.5%	34.3%	\$73,176,439	\$92,743,730
Massachusetts	20.8%	14.8%	\$95,839,313	\$43,456,582
Michigan	20.0%	14.7%	\$95,538,844	\$41,517,128
Minnesota	21.4%	16.6%	\$70,093,651	\$39,393,627
Mississippi	40.6%	43.8%	\$27,657,511	\$33,671,321
Missouri	23.5%	20.9%	\$60,460,170	\$45,546,174
Montana	37.0%	41.9%	\$10,381,708	\$14,103,564
Nebraska	25.5%	33.1%	\$21,345,119	\$27,125,209
Nevada	37.1%	46.5%	\$27,601,759	\$49,996,912
New Hampshire	31.0%	33.5%	\$20,385,610	\$21,870,377
New Jersey	16.8%	14.3%	\$79,082,560	\$50,099,546
New Mexico	32.5%	32.2%	\$22,114,219	\$18,844,222
New York	18.6%	16.3%	\$164,409,635	\$116,859,677
North Carolina	26.4%	26.2%	\$86,153,412	\$68,492,677
North Dakota	34.1%	35.0%	\$9,317,351	\$9,613,244
Ohio	19.7%	16.2%	\$100,367,806	\$53,561,994
Oklahoma	32.3%	31.4%	\$36,438,339	\$35,839,918
Oregon	25.3%	26.9%	\$41,174,091	\$38,281,360
Pennsylvania	18.2%	14.3%	\$96,331,169	\$50,502,840
Rhode Island	24.2%	26.2%	\$10,720,498	\$9,771,697
South Carolina	29.9%	34.8%	\$39,781,197	\$48,172,490
South Dakota	30.2%	31.9%	\$8,508,550	\$9,910,754
Tennessee	28.3%	36.8%	\$56,734,619	\$77,801,390
Texas	25.2%	17.9%	\$231,096,762	\$134,974,259
Utah	35.2%	37.5%	\$36,335,708	\$38,050,042
Vermont	30.2%	35.9%	\$6,765,118	\$9,378,840
Virginia	16.3%	18.4%	\$74,326,646	\$66,174,209
Washington	23.9%	20.8%	\$83,191,487	\$51,615,504
West Virginia	36.1%	39.5%	\$15,516,408	\$20,161,942
Wisconsin	19.5%	15.8%	\$48,739,511	\$26,614,500
Wyoming	35.6%	42.2%	\$5,702,272	\$8,220,583
Total U.S.	25.1%	24.0%	\$3,191,110,908	\$2,632,438,051

APPENDIX: STATES BY REGION

NEW ENGLAND

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

MIDDLE ATLANTIC

New Jersey
New York
Pennsylvania

SOUTH ATLANTIC

DC
Delaware
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

EAST SOUTH CENTRAL

Alabama
Kentucky
Mississippi
Tennessee

WEST SOUTH CENTRAL

Arkansas
Louisiana
Oklahoma
Texas

EAST NORTH CENTRAL

Illinois
Indiana
Michigan
Ohio
Wisconsin

WEST NORTH CENTRAL

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

MOUNTAIN

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

PACIFIC

Alaska
California
Hawaii
Oregon
Washington