United States Government Accountability Office

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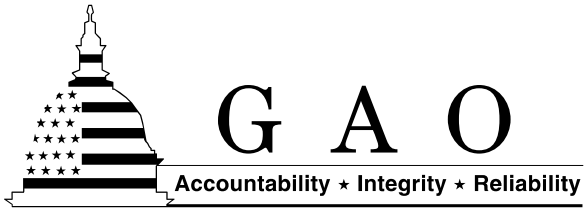
Report to Congressional Committees

April 2005

AVIATION FEES

Review of Air Carriers' Year 2000 Passenger and Property Screening Costs



GAO-05-558

April 2005

AVIATION FEES

Review of Air Carriers' Year 2000 Passenger and Property Screening Costs

GAO Accountability·Integrity·Reliability

Highlights

Highlights of GAO-05-558, a report to congressional committees

Why GAO Did This Study

The Aviation and Transportation Security Act (ATSA) authorized the Transportation Security Administration (TSA) to impose an Aviation Security Infrastructure Fee (ASIF) on air carriers to help pay for the costs of aviation security services. To impose the ASIF, TSA issued an Interim Final Rule (IFR) and required air carriers to report their passenger and property screening costs incurred in 2000 on an attachment to the IFR referred to as Appendix A. The 2000 screening costs reported by air carriers were going to be used to establish the ASIF. Based on industry estimates of $1 billion, TSA had estimated that the costs incurred by air carriers in 2000 were $750 million, but the amounts reported by air carriers totaled $319 million, significantly less than expected. To provide the Congress with an independent assessment, the Department of Homeland Security Appropriations Act, 2005 required GAO to review the amount of passenger and property screening costs incurred by air carriers in 2000.

What GAO Recommends

We recommend that the Secretary of Homeland Security direct the Assistant Secretary, TSA to consider the analysis and estimates in this study in determining the limitation on the aggregate air carrier fee consistent with ATSA. TSA concurred with our recommendation. TSA indicated that it will consider the analysis and estimates in our study, as we recommended.
www.gao.gov/cgi-bin/getrpt?GAO-05-558.

To view the full product, including the scope and methodology, click on the link above. For more information, contact McCoy Williams at (202) 512-6906 or williamsm1@gao.gov.

What GAO Found

We estimate at a 95 percent confidence level that the amount of passenger and property screening costs incurred by air carriers in 2000 for the 3 major cost components were between $425 million and $471 million, with a midpoint estimate of $448 million. The difference between our midpoint estimate and what the air carriers reported on the Appendix A and subsequently paid to TSA is $129 million, as shown in the table.

GAO Estimate of 2000 Passenger and Property Screening Costs

Dollars in millions

Cost component	Air carrier's Appendix A costs	GAO estimate[a]	Difference
Private screening contractors costs[b]	$293	$334	$41
Airport costs	5	80	75
Air carriers' internal costs	21	34	13
Total	**$319**	**$448**	**$129**

Source: GAO analysis.

[a]See app. I, table 9, for confidence intervals.
[b]Includes airline employee costs if they performed the screening function directly.

Determining exact cost amounts was not feasible and assumptions were required for several reasons including the following: (1) 5 years have passed since the costs were incurred, (2) the air carriers' accounting systems were not designed to capture specific passenger and property screening costs, and (3) certain cost categories required the application of assumptions to identify, categorize, or allocate cost. We focused on estimating for 2000 the three primary screening cost components listed below.

- Costs associated with the use of private screening contractors (or airline employees if they performed the screening function directly)—these were the most significant costs to the air carriers in 2000. Air carriers typically contracted with private screening companies to perform screening on their behalf, and the rates charged combined costs such as background checks, training, and uniforms. We estimated that air carriers incurred $334 million for this cost component, compared to $293 million reported by air carriers on the Appendix A.
- Airport costs related to passenger and property screening—the two major screening-related cost categories that airports charged air carriers, were costs for law enforcement officers and real estate costs for security checkpoints. Based on information obtained from a sample of airports, we estimated that air carriers incurred $80 million for this cost component, compared to $5 million reported on the Appendix A.
- Air carriers' internal costs—these include, among other things, installation, operation, maintenance, and testing of screening equipment; ground security coordinators; security program management and contract administration; and legal and accounting support. Based on an analysis of the Appendix A and on information obtained through interviews, we estimated that the air carriers incurred $34 million in screening costs, compared to $21 million reported in the Appendix A.

Contents

Abbreviations

ASIF	Aviation Security Infrastructure Fee
ATA	Air Transport Association of America, Inc.
ATSA	Aviation and Transportation Security Act
CAPPS	Computer Assisted Passenger Prescreening System
CEO	Chief Executive Officer
DHS	Department of Homeland Security
DOT	Department of Transportation
FAA	Federal Aviation Administration
GSC	Ground Security Coordinator
IFR	Interim Final Rule
O&D	Origin and Destination
OIG	Office of Inspector General
SH&E	Simat, Helliesen & Eichner, Inc.
TSA	Transportation Security Administration

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United States Government Accountability Office
Washington, D.C. 20548

April 18, 2005

Congressional Committees

The terrorist attacks of September 11, 2001, revealed serious long-standing weaknesses in the nation's aviation security system and underscored the need for improvements in order to restore public confidence in air travel and to protect our homeland from future potential threats. Prior to September 11, 2001, providing aviation security was the responsibility of air carriers and airports as part of their cost of doing business. However, after September 11, 2001, aviation security changed substantially in the United States and the responsibility for passenger and property screening shifted to the federal government.

In an effort to make improvements to the aviation security system, President Bush signed the Aviation and Transportation Security Act (ATSA)[1] on November 19, 2001. ATSA created the Transportation Security Administration (TSA) whose duties included assuming responsibility for the certain aviation security functions previously performed by air carriers. To help pay for the costs associated with providing these functions, ATSA required TSA to impose a uniform fee on passengers. ATSA limited the passenger fee, known as the September 11th Security Fee, to $2.50 per passenger enplanement to a maximum of $5.00 for a one-way trip. To the extent collections from the passenger fee did not cover TSA's costs to provide specified aviation security services, ATSA authorized TSA to impose a fee on air carriers, called the Aviation Security Infrastructure Fee (ASIF).[2] However, ATSA[3] required TSA to determine a statutory cap for the ASIF in the aggregate equal to the total amount air carriers had paid for passenger and property screening during calendar 2000, the last full calendar year prior to September 11, 2001.[4]

[1] Pub. L. No. 107-71, 115 Stat. 597 (Nov. 19, 2001).

[2] 49 U.S.C. § 44940(a)(1), (2)(A).

[3] 49 U.S.C. § 44940(a)(2)(B)(i).

[4] For purposes of this review and the calculation of the ASIF, property is defined as mail, cargo, carry-on and checked baggage and any other articles transported by an air carrier excluding property transported under the "Known Shipper Program."

To establish the ASIF, TSA issued an Interim Final Rule (IFR)[5] in February 2002, requiring air carriers to complete and submit an attachment to the IFR, titled "Calendar Year 2000 Costs Paid for Passenger and Property Screening" (referred to as Appendix A), in which they were to itemize costs incurred for passenger and property screening during 2000. TSA planned to use the information from Appendix A to assist it in determining the statutory cap for the ASIF in the aggregate. TSA also planned to use the information to establish each air carrier's fee, which air carriers were required to remit to TSA each month beginning in 2002.

At the time the IFR was being developed, TSA forecasted that total airline-incurred industry costs for passenger and property screening for calendar year 2000 would be $750 million. This estimate was based on information that the Air Transport Association of America, Inc. (ATA)[6] and other airline industry representatives provided to the Congress and GAO in 2001. That information indicated that before September 11, 2001, the airline industry was spending approximately $1 billion annually on all airline security. However, when TSA reviewed the cost information submitted by air carriers on Appendix A, the sum of the airline reported costs totaled approximately $319 million, significantly less than what TSA had expected.

Today, funding for aviation security programs remains a central issue because passenger and air carrier security fees are not sufficient to fully cover TSA's costs to provide aviation security. TSA's fiscal year 2004 appropriations for aviation security provided over $3.7 billion for civil aviation security services, of which over $3.1 billion was for screening activities.[7] By contrast, TSA only collected about $1.8 billion from passenger security fees and the $319 million from the airlines that was credited to the appropriation, meaning the federal government funded the remaining $1.6 billion out of general revenues. In order to provide the Congress with an independent assessment of calendar year 2000 costs paid for passenger and property screening, the Department of Homeland Security (DHS) Appropriations Act, 2005[8] required that we review the

[5] Aviation Security Infrastructure Fees, 67 Fed. Reg. 7926 (Feb. 20, 2002).

[6] ATA is the largest trade organization of U.S. air carriers, representing 23 U.S airline members and 5 foreign-based airlines in 2000.

[7] Department of Homeland Security Appropriations Act, 2004, Pub. L. No. 108-90, 117 Stat. 1137, 1141 (Oct. 1, 2003).

[8] Pub. L. No. 108-334, 118 Stat. 1298, 1303 (Oct. 18, 2004).

amount of passenger and property screening costs incurred in calendar year 2000 by domestic and foreign carriers departing from U.S. airports and report on the results of our work within 6 months of the passage of the act.

To assist us in evaluating these costs within this time frame, we contracted with Simat, Helliesen & Eichner, Inc. (SH&E), a consulting firm with significant aviation industry expertise, through a competitive award process. SH&E subcontracted with PricewaterhouseCoopers LLP for additional accounting and finance expertise and with Abt Associates for additional statistical capabilities. To provide a basis for the contractors' work, we developed an audit strategy to independently determine a reasonable estimate of the 2000 passenger and property screening costs incurred by the airlines. We oversaw the project and worked closely with contractors as they planned and executed their work. To ensure a sound approach to the study, we reviewed the contractors' work plans, sampling plans, questionnaires, and workpapers. We participated in significant meetings, provided continual oversight and feedback, and received periodic briefings from the contractors. We performed our work in accordance with generally accepted government auditing standards from October 2004 through April 2005. Additional details regarding our scope and methodology are in appendix I.

Results in Brief

We estimate at a 95 percent confidence level that passenger and property screening costs in 2000 for the major cost components were between $425 million and $471 million, with a midpoint estimate of $448 million. The difference between this midpoint estimate and the amount the air carriers reported on the Appendix A and subsequently paid to TSA is $129 million, as shown in table 1.

Table 1: GAO Estimate of 2000 Passenger and Property Screening Costs

Dollars in millions

Cost component	Air carrier's Appendix A costs	GAO estimate[a]	Difference
Private screening contractors costs[b]	$293	$334	$41
Airport costs	5	80	75
Air carriers' internal costs	21	34	13
Total	**$319**	**$448**	**$129**

Source: GAO analysis.

[a]See app. I, table 9, for related confidence intervals.

[b]Includes airline employee costs if they performed the screening function directly.

During our review, we considered certain prior estimates of total security costs that had been made by ATA and other airline officials. These estimates suggested that annual security costs totaled approximately $1 billion prior to September 11, 2001. ATA stated that the amounts were generalized estimates for all domestic and international industry security costs, not just passenger and property screening. ATA further explained that they were "best guesses" that reflected security costs for functions in addition to passenger and property screening. We determined that there was no documented basis for these estimates and instead developed our estimate for 2000 based on a review of the three primary cost components for passenger and property screening shown in table 1.

We are recommending that the Secretary of Homeland Security direct the Assistant Secretary, TSA to consider the analysis and estimates in this study in determining the limitation on the aggregate air carrier fee consistent with ATSA (49 U.S.C. § 44940(a)(2)(B)(i)).

TSA indicated from reviewing a draft of this report that it will consider the analysis and estimates in our study, as we recommended.

Background

ATSA established TSA as an agency within the Department of Transportation and transferred responsibility for civil aviation security from the Federal Aviation Administration (FAA) to this newly created agency. As mandated by ATSA, TSA is responsible for security in all modes of transportation, including conducting the day-to-day operations related to security screening for passenger air transportation previously conducted by air carriers.

Prior to the creation of TSA, air carriers were responsible for conducting passenger and property screening at U.S. airports. Typically air carriers carried out the screening function through contracts with security companies. The screening process in place at that time included identifying certain passengers for more intense scrutiny with the use of Computer Assisted Passenger Prescreening System (CAPPS). In addition, passengers were asked a series of questions, such as whether they packed their own bags, to help prevent attacks in which passengers unknowingly carry dangerous items onto an aircraft. At the security checkpoint, passengers were screened by walk-through metal detectors and with metal-detecting hand wands if the walk-through metal detectors' alarms were activated. Passenger carry-on baggage was screened with X-ray equipment. Other procedures that were sometimes performed included screening checked baggage for bulk quantities of explosives using X-ray computed tomography equipment and the use of positive passenger-bag matching to remove bags not owned by those aboard the aircraft.

According to data provided by FAA, prior to September 11, 2001, screening procedures were performed at U.S. airports by approximately 19,500 screeners. Passenger and property screening was one of the most substantial aviation security responsibilities assumed by TSA with the passage of ATSA. ATSA required that screening of individuals and property at U.S. airports be conducted by federal employees and companies under contract with TSA. In February 2002, the agency assumed the responsibility for passenger and property screening at all U.S. commercial airports, except at five airports participating in a pilot program, which would operate with private security contractor personnel. To continue the daily operations until a federal screener workforce was hired, trained, and deployed, TSA contracted with incumbent screener companies. On March 1, 2003, pursuant to the Homeland Security Act of 2002,[9] TSA began

[9] Pub. L. 107-296, 116 Stat. 2135 (Nov. 25, 2002).

to perform its transportation security functions as an agency of the Department of Homeland Security.

Prior to September 11, 2001, we were conducting work at the request of the Subcommittee on Aviation, House Committee on Transportation and Infrastructure, to assess the screening operations of air carriers and to determine who should be responsible for screening.[10] One of the areas under evaluation was the cost of passenger and property screening under various alternatives, including how much it would cost to have the federal government take over screening functions. In April 2001, we contacted ATA to obtain information on screening costs incurred by air carriers. ATA contacted member carriers and requested that they provide information on their costs associated with the security screening of passengers and checked baggage. Based on the information it said was provided by its members, ATA sent us a memo dated August 22, 2001, stating that "ATA believes that the estimated costs of implementing federal security requirements and conducting required security programs amounts to nearly $1 billion per year for the entire industry." In addition, the memo included some detail on the direct security costs incurred by ATA members annually, which reportedly totaled $511.8 million.

During a congressional hearing held on September 19, 2001, Delta's then Chief Executive Officer (CEO) corroborated the $1 billion security cost estimate when he stated in response to a question raised by a member of Congress that "relative to the security measures, we as an industry probably spend on the order of a billion dollars or so per year now on security."[11] Subsequently, responding to TSA's proposal to increase the ASIF, ATA stated that the amounts cited by airline executives were generalized estimates for all domestic and international industry security costs; not just passenger and property screening. ATA further explained that the estimates were "best guesses" that reflected security costs for functions in addition to passenger and property screening.

[10] GAO, *Aviation Security: Weaknesses in Airport Security and Options for Assigning Screening Responsibility,* GAO-01-1165T (Washington, D.C.: Sept. 21, 2001).

[11] Statement of Leo F. Mullin, Chairman and CEO of Delta Airlines at congressional hearing held on September 19, 2001, before the House Committee on Transportation and Infrastructure, H.R. 2891, *To Preserve the Continued Viability of the United States Air Transportation System*.

When we requested documentation supporting this estimate as part of our current review, ATA responded that the estimate provided in its August 2001 memo to us was a rough estimate of security costs based on limited information provided by a handful of air carriers in response to a less-than-rigorous survey. ATA added that it did not have and could not obtain detailed and consistent cost data due to the various ways in which air carriers provided security services. Further, ATA stated that air carriers were not consistent in recording and accounting for the security-related costs in their internal systems. The substantial difference between costs reported earlier by the aviation industry and those reported by air carriers in their Appendix A submissions precipitated the legislative mandate that GAO review passenger and property screening costs. Details of our review and our estimate of calendar year 2000 passenger and property screening costs follow.

Overall Estimate of Passenger and Property Screening Costs

With the assistance of our contractors, we estimate at a 95 percent confidence level that the airline industry's costs to provide passenger and property screening in calendar year 2000 for the 3 major cost components was between $425 million and $471 million, with a midpoint estimate of $448 million. This amount is $129 million more than the $319 million reported and paid by the air carriers to TSA.

We found that determining exact cost amounts was not feasible for several reasons, including the following:

- Five years had passed since the costs were incurred.
- The air carriers' accounting systems were not designed to capture specific passenger and property screening costs at the level of detail TSA had requested.
- Certain cost categories required the application of assumptions to identify, categorize, or allocate cost.

Given this, we focused on estimating for 2000 the 3 primary screening cost components covered in Appendix A: (1) costs associated with the use of private screening contractors (or airline employees if they performed the screening function directly), (2) airport costs related to passenger and property screening that were passed on to air carriers, and (3) air carrier internal costs associated with screening functions. Our estimate of each of these costs components is shown in table 2.

Table 2: Comparison of 2000 Passenger and Property Screening Costs Reported in the Appendix A to GAO Estimate

Dollars in millions			
Cost component	**Air carrier's Appendix A costs**	**GAO estimate[a]**	**Difference**
Private screening contractors costs[b]	$293	$334	$41
Airport costs	5	80	75
Air carriers' internal costs	21	34	13
Total	**$319**	**$448**	**$129**

Source: GAO analysis.

[a]See app. I, table 9, for related confidence intervals.

[b]Includes airline employee costs if they performed the screening function directly.

In 2000, air carriers were responsible for providing and paying for the costs associated with screening passengers and property prior to boarding aircraft. Air carriers typically contracted with private companies to perform these services on their behalf. Airports were required to restrict access to the preboarding sterile area and to provide law enforcement officers to respond to potential incidents at the screening checkpoints within a certain time frame. To varying degrees, such airport-incurred costs were passed on to air carriers through airport rates and charges. In addition, air carriers incurred certain internal costs in carrying out these functions, such as the costs of managing and providing legal support for the security company contracts.

Costs Associated with the Use of Private Screening Contractors

Table 3: Costs Associated with the Use of Private Screening Contractors

Dollars in millions			
Calendar year 2000 cost component	**Air carrier's Appendix A costs**	**GAO estimate[a]**	**Difference**
Private screening contractors costs[b]	$293	$334	$41

Source: GAO analysis.

[a]See app. I, table 9, for related confidence intervals.

[b]Includes airline employee costs if they performed the screening function directly.

Labor costs associated with screening passengers and property were the most significant screening-related cost to the air carriers in 2000. Air carriers typically contracted with private screening companies to perform these services on their behalf, and the rates charged combined many costs, such as background checks, training, and uniforms. In some instances, air carrier employees performed the screening. We estimate at a 95 percent confidence level that the costs associated with the use of private screening contractors (or air carrier employees if they performed the screening function directly) during 2000 were between $313 million and $355 million, with a midpoint estimate of $334 million. This is about $41 million more than the $293 million reported on Appendix A by the air carriers for this cost component.

To estimate these direct screening costs, we identified the major companies providing screening services in 2000 and requested their billing records. Over 70 companies provided screening services in 2000, with 10 companies representing over 80 percent of the industry and 2 companies comprising almost half of the industry. We asked the top 10 companies how much they had billed for screening services by air carriers and received usable information from 9 of them. Although we received over 7,000 invoices from the remaining and largest company during 2000, the data were incomplete and could not be used to project estimates for the remaining companies. For the 9 companies that did provide useable data, we determined that they had billed the air carriers approximately $208 million for screening-related services in 2000. These companies also provided numerous non-screening-related services (for example, wheelchair assistance and skycap service), which we excluded from our

estimate. Using a regression analysis[12] from the useable data, we estimate total screening company costs are $334 million. We performed two other tests on the data to assess whether our overall assumptions used to estimate these costs were reasonable. Both of these methods yielded results that were within the range provided by the regression analysis.

Airport Costs Related to Passenger and Property Screening

Table 4: Airport Costs Related to Passenger and Property Screening

Dollars in millions

Calendar year 2000 cost component	Air carrier's Appendix A costs	GAO estimate[a]	Difference
Airport costs	$5	$80	$75

Source: GAO analysis.

[a]See app. I, table 9, for related confidence intervals.

Regarding the second cost category—airport costs related to passenger and property screening that were passed on to the air carriers—we estimate at a 95 percent confidence level that air carriers incurred costs between $71 million and $89 million, with a midpoint estimate of $80 million. This was well above the $5 million reported by the air carriers.

[12] Regression analysis is a statistical method of measuring the extent to which variations in one variable are associated with variations in other variables.

The two major cost categories that airports charged to the air carriers as screening-related costs were costs for law enforcement officers and real estate costs associated with security checkpoints. To estimate these airport costs, we selected a representative sample of the approximately 430 U.S. airports that screened passengers in 2000 and extrapolated[13] the information obtained to the whole industry. The stratified sample included the 20 airports with the largest number of estimated screened passengers plus an additional 50 airports. The 70 sampled airports accounted for approximately 75 percent of the total estimated 530.4 million screened passengers during 2000 at U.S. airports.

For each airport in the sample, we attempted to interview the appropriate airport officials and collect (1) specific screening-related costs charged to or incurred by the air carriers, (2) airport rate-making methodologies, and (3) air carrier use agreements. We used the information obtained to estimate total airport charges and believe that our methodology and underlying data provide a reasonable basis for our estimate. Fifty-nine of the 70 airports, including 19 of the 20 largest airports, and 40 of the 50 additional airports, provided data that we used to extrapolate to the remaining airports.

Costs for Law Enforcement Officers

Based on the review of information from the 59 airports, we estimate at a 95 percent confidence level that air carriers incurred costs for law enforcement officers with screening-related responsibilities between $56 million and $76 million, with a midpoint estimate of $66 million. This is significantly higher than the $1.5 million reported by the air carriers. According to the air carriers, they did not report these costs for two main reasons: (1) information on law enforcement officers' costs and time spent completing specific duties was not readily available; thus many air carriers did not attempt to estimate these costs and (2) they contend that they are still paying law enforcement officers' costs.

The estimate for this cost component would have been even higher if all airports had passed on law enforcement officers' charges to the air carriers. For example, at Los Angeles International Airport, the largest U.S. airport in terms of screened passengers, none of the costs associated with providing law enforcement officers were passed on to the air carriers. These costs were covered by nonairline revenues, such as concession

[13] See our scope and methodology in app. I for an explanation on how we extrapolated the results of our sample evaluation.

revenues. In contrast, at Dallas Fort Worth and many other airports, 100 percent of law enforcement officer costs associated with checkpoint security were directly billed to the air carriers. In these cases, 100 percent of the charge was used in calculating our estimate. Other sampled airports combined law enforcement officers' costs with other terminal costs and varied in how they passed costs on to air carrier tenants. If the airport allocated a portion of its airportwide law enforcement officers' budget to the terminal cost center, we estimated the share of terminal law enforcement officer costs related to passenger and property screening, and then included in our estimate only the share of such costs that was passed on to the airlines based on the airports' rates and charges methodology.

Costs for Security Checkpoint Space

Airport charges for the leased space where screening checkpoints were located varied greatly among the sampled airports. However, we observed some general tendencies. If the checkpoint was located in space that was rented by air carrier tenants, we calculated the real estate cost based on square footage and the applicable rental rate. On the other hand, if the checkpoint was located in airport space for which air carrier tenants were not directly charged, we estimated the cost based on the airport's rate structure. Specifically, if the costs for public space were absorbed by the airport or were not factored into the cost pool used to determine air carrier space rental rates, we did not assign any cost to the airlines to calculate our estimate. Whereas, if the costs for public space were rolled into the cost pool to determine airline rental rates, then the air carrier indirectly paid for the space and we included the cost in our estimate. Based on the sample of 59 airports, we estimate at a 95 percent confidence level that air carriers incurred security real estate costs between $11 million and $15 million, with a midpoint estimate of $13 million compared to the $3.4 million reported on Appendix A by the air carriers.

Air Carrier Internal Costs Related to Passenger and Property Screening

Table 5: Air Carrier Internal Costs Related to Passenger and Property Screening

Dollars in millions			
Calendar year 2000 cost component	**Air carrier's Appendix A costs**	**GAO estimate[a]**	**Difference**
Air carriers' internal costs	$21	$34	$13

Source: GAO analysis.

[a]See app. I, table 9, for related confidence intervals.

Air carrier internal costs include, among other things, installation, operation, maintenance, and testing of screening equipment; ground security coordinators; security program management and contract administration; and legal and accounting support. To estimate the air carrier internal costs, we first grouped the air carriers into categories based on types of operations as shown in table 6.

Table 6: Air Carrier Groupings

Type	Description	Examples
Legacy	Major hub and spoke carriers	American, Delta, United
Low cost	Primarily nonhub carriers	Southwest, JetBlue
Regional	Carriers operating regional jet and commuter aircraft	Comair, Mesa, Skywest
Foreign	Non-U.S. airlines	Air Canada, British Airways
Other	Niche carriers	Hawaiian, U.S. Airways Shuttle

Source: GAO analysis.

We then reviewed and analyzed the air carrier Appendix A cost submissions, interviewed 12 air carriers that together account for 63 percent of total estimated screened passengers in 2000. In addition, we reviewed workpapers prepared by independent auditors as part of the audit of certain air carriers' Appendix A submissions. Based on the information obtained from these sources, we designed cost-estimating methodologies and applied them to air carriers based on their grouping, relying on the assumption that air carriers of the same type would have similar cost structures. For example, legacy carriers with major hubs would likely incur certain costs, such as operational maintenance of screening equipment,

which other regional or low-cost carriers might not typically incur. This estimation resulted in approximately $13 million more in air carrier internal costs in our estimate than the air carriers reported in the Appendix A.

Conclusion

We estimate that passenger and property screening costs incurred by air carriers in calendar year 2000 for the major cost components were $448 million, resulting in a difference of $129 million from air carrier-reported costs of $319 million. As such, TSA is not obtaining all of the proceeds of the ASIF authorized by ATSA.

Recommendation for Executive Action

We are making one recommendation for executive action that will allow TSA to more fully collect the ASIF, as authorized by ATSA. Specifically, we recommend that the Secretary of Homeland Security direct the Assistant Secretary, Transportation Security Administration, to consider the analysis and estimates in this study in determining the limitation on the aggregate air carrier fee consistent with ATSA (49 U.S.C. § 44940(a)(2)(B)(i)).

Agency Comments

We requested comments on a draft of this report from the Secretary of Homeland Security or his designee. TSA indicated that it will consider the analysis and estimates in our study as we recommended. TSA also provided us with techincal comments, which we incorporated where appropriate.

We are sending copies of this report to the Secretary of Homeland Security and the Assistant Secretary, Transportation Security Administration. We will also make copies available to others upon request. In addition, the report is available at no charge on the GAO Web site at http://www.gao.gov.

Should you or your staff have any questions on matters discussed in this report, please contact me at (202) 512-6906 or williamsm1@gao.gov or Casey Keplinger, Assistant Director, at (202) 512-9323 or keplingerc@gao.gov. Other major contributors to this report were Sharon Byrd, Heather Dunahoo, Jeff Jacobson, Carla Lewis, Gloria Medina, Zakia Simpson, and Bethany Smith.

McCoy Williams
Director, Financial Management and Assurance

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Scope and Methodology

To assist us in evaluating passenger and property screening costs incurred by air carriers in 2000, we contracted with Simat, Helliesen & Eichner, Inc. (SH&E), a consulting firm with significant aviation industry expertise, through a competitive award process. SH&E subcontracted with PricewaterhouseCoopers LLP for additional accounting and finance expertise and with Abt Associates for additional statistical capabilities. To provide a basis for the contractors' work, we developed an audit strategy to independently determine a reasonable estimate of the 2000 passenger and property screening costs incurred by the airlines. We oversaw the project and worked closely with contractors as they planned and executed their work. To ensure a sound approach to the study, we reviewed the contractors' work plans, sampling plans, questionnaires, and workpapers. We participated in significant meetings, provided continual oversight and feedback, and received periodic briefings from the contractors.

Develop an Understanding

To develop an understanding of the passenger and property screening process and the issues involved in measuring associated costs, we conducted numerous interviews and informational meetings with key stakeholders, including representatives of the Transportation Security Administration (TSA); the Department of Transportation's (DOT) Office of Inspector General (OIG); the Department of Homeland Security's (DHS) OIG; and the Air Transportation Association of America, Inc., as well as current and former Federal Aviation Administration (FAA) security officials. We also interviewed subject matter experts, current and former airline officials with security-related responsibilities at both the corporate headquarters and airport station levels, finance and operations officials at major airports, and other individuals.

We reviewed numerous documents that were publicly available or made available to us for the purposes of this study. These included public and airline industry comments on the imposition of the Aviation Security Infrastructure Fee; regulatory documents concerning FAA requirements for passenger and property screening in calendar year 2000 and other regulatory documents; prior studies and testimonies on passenger and property screening; TSA analyses of passenger and property screening costs; and the workpapers of the DHS OIG, which was conducting a separate review of airline passenger and property screening costs in 2000.

We thoroughly reviewed and analyzed cost data that had been submitted by airlines on Appendix A submissions to understand the types of costs that were identified, the relative magnitude of those costs, and how the costs

were determined. We also used the Appendix A submissions to perform an initial benchmarking analysis to identify obvious outliers and potential gaps in certain cost categories.

Design of Analytical Framework

We determined the primary cost drivers for providing passenger and property screening services in 2000 and designed an approach to measure these costs. Based on the understanding of the screening process acquired during the planning stage of our review, we identified three primary cost components:

1. Costs associated with the use of private screening contractors (or airline employees if they performed the screening function directly).
2. Airport costs related to passenger and property screening.
3. Internal airline costs.

Data Collection and Cost Estimation

A database of screened passengers by airport and airline in calendar year 2000 was prepared to provide the basis for developing unit cost rates for use in the expansion of sampled results to an overall U.S. system total. These data were estimated using publicly available airline passenger traffic data sources, including the DOT Passenger Origin-Destination Survey; the DOT T-100 Flight Segment database; the DOT Part 298C Passenger Data; and origin-destination passenger data as adjusted by Database Products, Inc.

We determined that an origin and destination (O&D) measure was the most appropriate metric for use in the analysis, since other traffic measures, such as enplanements, include a substantial number of connecting passengers at hub airports who do not pass through screening. However, we did include inbound international passengers who connect to domestic flights and are re-screened at U.S. gateway airports. The screened passenger estimates also include certain domestic to international connecting passengers who require a second screening because they change terminals when connecting to their international flights. The database identifies calendar year 2000 screened passengers by airport, airline, and traffic category. As possible, the database was validated by analysis and reconciliation with other data sources. The screened

passenger database was used as a basis for expansion of sample data in each of the three primary cost analyses.

Project Work Plan

Our project work plan included three major work elements designed to independently quantify the costs incurred by airlines within each of three identified primary cost areas, which are explained below.

Screening Industry Cost Analysis

We compiled and classified billing records from nine private screening companies that generated over $200 million in calendar year 2000 screening revenues and represented approximately 62 percent of the overall U.S. passenger and property screening market. We assumed that companies provided full billing records and could not independently verify the data. A summary of these data is provided in table 7.

Table 7: Screening Company Billings and Number of Screeners Prior to September 11, 2001

Screening company	Billings	Screening employees
1	$67,151,628	4,201
2	41,975,478	2,833
3	57,312,687	2,426
4	9,606,700	615
5	8,196,675	565
6	3,334,114	509
7	7,528,050	477
8	6,961,848	275
9	6,318,085	174
Total	**$208,385,265**	**12,075**

Source: GAO analysis.

Using the data collected for the nine screening companies, we used a regression model to estimate total screening costs. The basic form of a simple linear regression model is as follows:

$$\hat{Y}_i = \hat{\beta}_0 + \hat{\beta}_1 x_i$$

where:

$\hat{Y}_i = the\ i^{th}\ value\ of\ the\ Variable\ to\ be\ estimated$

$\hat{\beta}_0 = the\ estimated\ value\ of\ Y\ when\ x = 0$

$\hat{\beta}_1 = the\ slope\ of\ the\ line\ (the\ increase\ in\ Y\ when\ x = 1)$

$x_i = the\ i^{th}\ value\ of\ the\ predictor\ Variable$

Since it is reasonable to assume that a company with zero employees would have zero screening costs, we have used a model that assumes the intercept term (beta zero) is zero.[1] Based on the data for the nine screening companies, the estimated beta 1 parameter is 17,014. In other words, for every employee, the model predicts $17,014 in screening costs.

Thus, screening costs can be estimated through the following:

Screening costs per company = $17,014 × number of screening employees

This model shows a strong correlation between the number of screening employees and the screening costs per company and provides a statistically significant relationship between the number of screening employees and screening costs per company. A comparison of the predicted values and the actual values shows a difference of about 1.4 percent for the 9 screening companies. In addition, model diagnostics indicate that the model provides a reasonable fit to the data.

Using this model, we calculated a predicted value for each of the 10 screening companies with no billing data and the remaining screening employees not identified within the top 19 screening companies.

[1] We considered a regression model including an intercept parameter; however, the estimated parameter is not statistically significant from zero.

A 95 percent confidence interval around the estimate ranges from $313 million to $355 million.

We considered several options for estimating total screening costs, such as a simple ratio of billings to employees and a regression model based on number of passengers rather than number of employees. However, we used the regression method based on number of employees because it provided the most precise estimate (i.e., the narrowest confidence interval).

Airport Cost Analysis

We interviewed, collected financial data, and analyzed screening-related costs at 59 U.S. airports, including 19 of the 20 largest airports and a cross section of other airports of different sizes. These 59 airports accounted for approximately 70 percent of total U.S. screened passengers in 2000. Through the interviews, we collected information on airport rate-making methodologies, airline use agreements, and specific screening-related costs that were recovered from the airlines in calendar year 2000. The data obtained were used to quantify screening costs at the sample airports and then extrapolated to the total U.S. airport system. An overview of the approach to estimating airport costs is summarized below.

- Developed an understanding of airport responsibilities for passenger and property screening and identified the types of screening-related costs were incurred at airports that may have been passed on to the airlines.
- Conducted informational interviews with senior officials at selected airports.
- Designed a stratified sample of U.S. airports.
- Developed interview protocol and guidelines.
- Scheduled interviews with airport officials.
- Conducted interviews.
- Obtained backup documentation and clarification.
- Quantified costs by airport and calculated unit cost rates.
- Extrapolated sample results to U.S. airport system total.

The stratified sample of airports used to develop our estimate was drawn from the 400 largest U.S. airports, based on outbound O&D passengers,[2] which represented 99.9 percent of total estimated screened passengers at U.S. airports in calendar year 2000. The 400 airports were divided into 5 strata based on the volume of outbound O&D passengers. Because the 20 largest airports accounted for approximately one-half of total U.S. O&D passengers, all 20 of these major airports were included in the airport sample.

Fifty airports were randomly sampled from strata 2 to 5. The sample contained 20 airports from Stratum 2, and 10 airports each from strata 3 to 5. Airports in strata 2 to 5 were then divided into 10 groups, each with 5 airports from the various strata, to ensure that a representative, unbiased sample would be interviewed, even if there were not enough time to interview all of the sample airports. However, interviews were ultimately attempted with all sample airports in strata 2 to 5 as shown in table 8.

Table 8: Number of Airports in Stratified Sample

Stratum	Estimated screened passengers	Percentage of total	No. of airports	Sample airports
1	270,557,510	51.0%	20	20
2	136,932,121	25.8%	27	20
3	69,321,908	13.1%	34	10
4	33,284,409	6.3%	60	10
5	20,305,673	3.8%	289	10
Total	**530,401,621**	**100.0%**	**430[a]**	**70**

Source: SH&E.

[a]After the sample design was completed, a complete list of airports that had passenger and property screening in 2000 was provided by former FAA officials now with TSA. That list identified 430 airports, compared to the 400 airports from which the stratified sample was drawn. The additional 30 airports accounted for only 0.1 percent of estimated screened passengers.

The goal of the airport survey was to collect cost information for at least 50 of 70 sample airports (including Stratum 1 airports) in order to extrapolate the results to the total population of U.S. airports. We interviewed representatives from 59 of the 70 sample airports. Airports

[2] Outbound O&D passengers were used as a proxy of screened passengers to develop the airport sample, which proceeded in parallel with the estimation of the number of screened passengers in calendar year 2000.

whose representatives were not interviewed were generally unable to participate because of schedule issues. For two airports, we relied on DHS OIG workpapers, in lieu of a study team interview.

The estimated airport screening costs borne by airlines were correlated with airport size. Our sampling and analysis strategy was designed to use this relationship to obtain the highest possible precision from the sample airport observations. Sixty of the 68 airports we attempted to contact provided usable responses within the time limits of this study. Across the strata, response rates ranged from 70 percent to 95 percent. Accordingly, we assigned each responding airport a sampling weight equal to the number of airports in its stratum (N) divided by the number of responding airports (n) to extrapolate to the total airport population.

Airline Internal Cost Analysis

The objective of the airline internal cost analysis was to prepare an independent estimate of airline internal costs related to passenger and property screening that were not captured through the separate analyses of contract screener industry costs and airport costs. To develop an understanding of airline responsibilities for passenger and property screening and to identify internal cost functions, we reviewed FAA regulations and the Air Carrier Standard Security Plan for calendar year 2000. We also interviewed airline officials who had been in security-related positions in calendar year 2000.

The analysis is based on several sources of information, including the airline Appendix A submissions and accompanying notes. We relied on information obtained from interviews that were conducted with officials from 12 airlines that accounted for 63 percent of total estimated calendar year 2000 screened passengers at U.S. airports. Finally, we reviewed and relied upon workpapers prepared by the airlines' independent auditors and information compiled by the DHS OIG during its recent review.

The airline internal cost analysis focused on 11 cost categories from Appendix A:

- Line 16—Screening Equipment Installation
- Line 17—Operating, Maintenance and Testing of Screening Equipment
- Line 24—Ground Security Coordinators

- Line 25—Security Program Management
- Line 26—Security Contract Administration and Oversight
- Line 28—Legal Support
- Line 29—Accounting Support
- Line 30—Other Administrative Support
- Line 31—Insurance
- Line 34—Fees for Oversight of Consortium Contracts
- Line 35—Other (includes fines)

In performing the analysis, airlines were classified into five groups to identify potential differences in operating and cost characteristics:

- **Legacy:** Major hub and spoke carriers (e.g., American, Delta, and United).
- **Low Cost:** Primarily nonhubbing carriers (e.g., Southwest and JetBlue).
- **Regional:** Carriers operating regional jet and commuter aircraft (e.g., Comair, Mesa, and Skywest).
- **Foreign:** Non-U.S. airlines (e.g., Air Canada, British Airways, and Mexicana).
- **Other:** Niche carriers (e.g., Hawaiian, Midwest Express, and US Airways Shuttle).

We developed two analytical approaches for estimating airline internal costs. The first approach applies to 6 of the Appendix A costs categories (Lines 16, 17, 25, 26, 28, and 29) and utilizes information reported in Appendix A and the accompanying footnotes to estimate total industrywide airline internal costs. Airline interviews and auditor workpaper reviews indicated that the air carriers that submitted costs for these six line items generally followed reasonable and logical methodologies to develop their estimates. Therefore, we relied on average unit cost rates for airlines that did identify these line item costs and applied those to nonreporting and

nonfiling carriers within individual carrier groupings to estimate the unreported costs.

A separate bottom-up approach was used to estimate costs for Line 24-Ground Security Coordinators (GSC) and Line 35-Other Costs (including FAA fines). Costs for GSC functions were developed from study team estimates of the total number of qualified GSCs in 2000, applicable training requirements, the total number of checkpoints at U.S. airports in 2000, the average amount of time spent on monthly checkpoint audits and daily tasks, and an average fully burdened wage rate for GSC airline employees. For Line 35-Other Costs (including FAA fines), we used the midpoint of Appendix A costs, which were known to be understated, and FAA Quarterly Enforcement Reports to estimate industry costs for this category.

Independent estimates were not prepared for 3 costs categories (Lines 30, 31, and 34), since it was concluded that the amounts reported in Appendix A were representative of overall airline industry costs.

Confidence Intervals

The confidence intervals for each of the statistically derived estimates referred to throughout the report are presented in table 9.

Table 9: Summarization of Cost Estimate Point Estimates and Confidence Intervals

Dollars in millions

Cost estimate	Point estimate	Confidence interval at a 95% confidence level +(-)
Private screening contractors costs[a]	$334	$21
Airport costs	80	9
Law enforcement officers	66	10
Security checkpoint space	13	2
Air carriers' internal costs	34	0
Overall estimate and confidence interval of passenger and property screening costs	**$448**	**$23**

Source: GAO analysis.

Note: Numbers may not add due to rounding.

[a]Includes airline employee costs if they performed the screening function directly.

Limitations to the Analysis

In preparing the cost estimates, we generally relied upon representations and information provided by air carriers, government agencies, airports, and screening companies. Procedural limitations were encountered related to (1) the amount of time that has passed since calendar year 2000, (2) access and availability of cost or accounting records, (3) access and availability of individuals due to employee turnover, (4) corporate structural changes (i.e., bankruptcy, acquisitions, etc.), and (5) record retention policies. Certain cost categories required the application of assumptions to identify, categorize, or allocate cost due to the structure, limitations, or both of the air carrier, airport, or screening company accounting systems. While nearly all entities contacted were cooperative, the following information or documents requested were not provided consistently from all air carriers and other stakeholders: (1) air carrier calendar year 2000 Section 108 Security Plans, (2) identification or allocation of time and expense related to ground security coordinators, (3) full and complete billing records and supporting documentation for all screening companies, and (4) full and complete information on airport rates and charges structures at individual airports and records on airport rental payments received from airlines.

We also identified certain security-related functions for which we were not able to measure the cost given the lack of available information and the limited time frame to complete the work. Examples of such costs include (1) security-related real estate costs for airline-owned terminals; (2) costs associated with Computer Assisted Passenger Prescreening System (CAPPS); and (3) costs related to Positive Passenger Bag Match. Although analyzing the costs of these additional functions would likely increase our estimate, we were unable to determine costs associated with these functions within our time frame and believe that we have captured the primary cost components.

We requested comments on a draft of this report from the Secretary of Homeland Security or his designee, as discussed in the Agency Comments section.

We performed our work in accordance with generally accepted government auditing standards from October 2004 through April 2005.

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