



REFINEMENT OF GAO ESTIMATE OF CY 2000 AIRLINE COSTS TO PROVIDE PASSENGER AND PROPERTY SCREENING

Prepared for:



**Transportation
Security
Administration**

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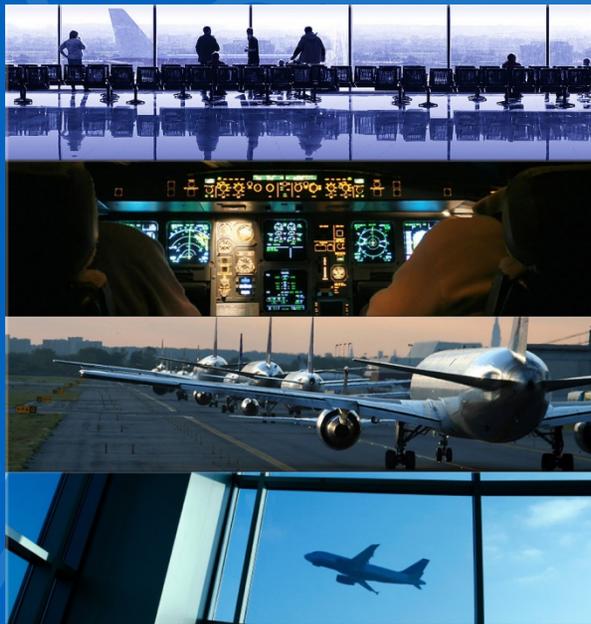
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PROJECT OVERVIEW

PART I



Project Overview

Part I

- 1. BACKGROUND AND GOALS OF THE ASSIGNMENT**
- 2. Project Approach and Lines of Analysis**

Background

- ◆ **The Transportation Security Administration (TSA) took over passenger and property screening at U.S. airports in February 2002**
- ◆ **TSA was authorized, within certain limits, to collect two separate fees to help cover the costs of passenger and property screening**
 - A fee of \$2.50 per enplanement
 - If needed, an annual fee of unspecified dollar amount to be charged directly to U.S. and international airlines operating at U.S. airports (the Aviation Security Infrastructure Fee, or ASIF)
- ◆ **The annual ASIF charge was to be set by TSA based on the amount that airlines incurred to provide screening of passengers and property at U.S. airports in Calendar Year (CY) 2000**
- ◆ **To determine the costs incurred by airlines to provide passenger and property screening in CY 2000, TSA required each carrier to complete and submit a detailed cost questionnaire known as “Appendix A.”**

Background, *Cont'd.*

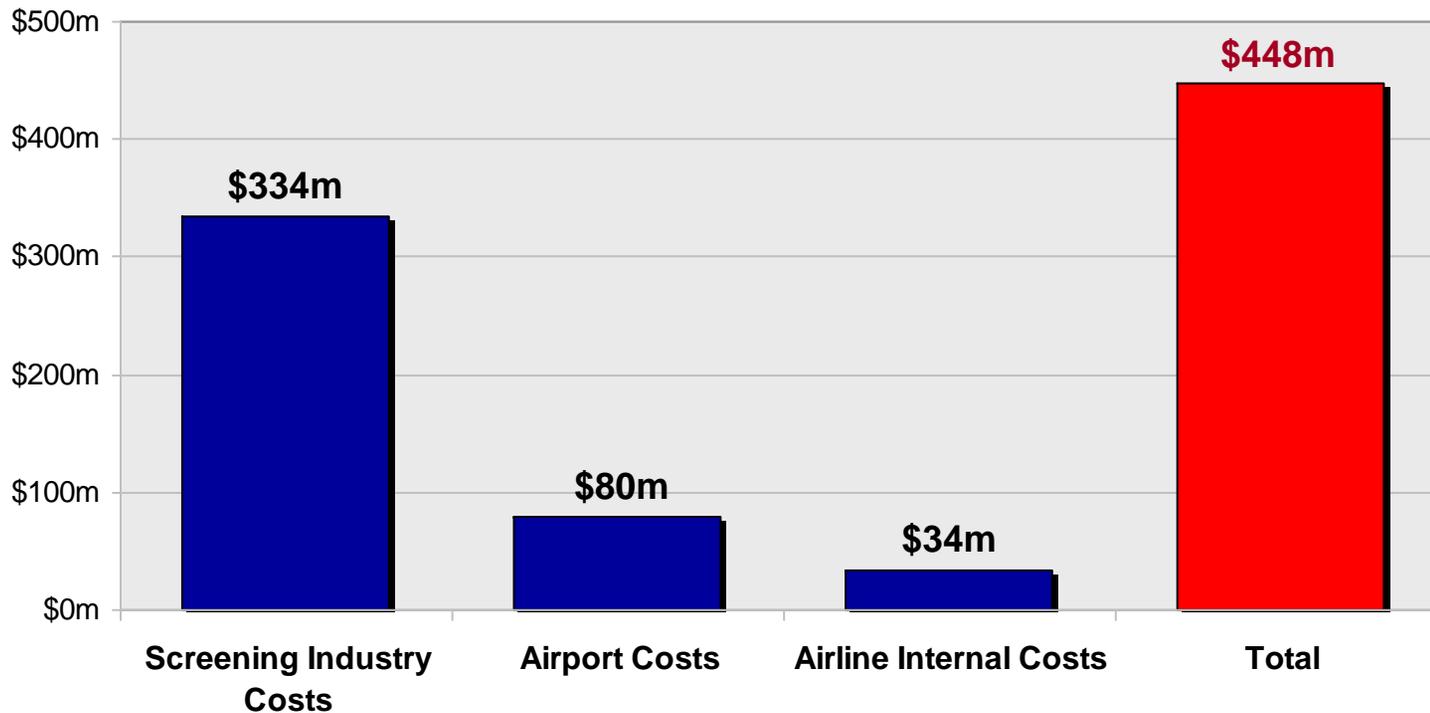
- ◆ **While TSA initially estimated that airlines had incurred screening costs of approximately \$750 million in CY 2000, the cost information submitted by airlines on Appendix A totaled \$319 million**
- ◆ **Because of this discrepancy, Congress asked the Government Accountability Office (GAO) to develop an independent estimate of the costs incurred by airlines to provide passenger and property screening in CY 2000**
- ◆ **The GAO study estimated that airlines had incurred costs of approximately \$448 million to provide passenger and property screening at U.S. airports in CY 2000**
- ◆ **The TSA has used the GAO estimate, with certain adjustments, as the basis for determining the annual ASIF funding obligation of individual airlines since 2005**

Airline Appeal and Court Decision

- ◆ **The airlines objected to various aspects of the GAO study and TSA’s use of the GAO analysis and brought their objections to the U.S. Court of Appeals**
- ◆ **In February 2009, the Court of Appeals upheld an airline objection and required the TSA to adjust the ASIF assessment to exclude the costs of screening non-passengers (such as meeters and greeters) who were allowed through security at most U.S. airports in CY 2000**
 - the Court also determined that all costs associated with the screening of property (whether belonging to passengers or non-passengers) were correctly included in the ASIF assessments and do not require adjustment
- ◆ **TSA retained SH&E to conduct an industry study to estimate the costs attributable to the screening of only passengers and property at U.S. airports in CY 2000.**

Previous 2005 GAO Estimate of Airline Passenger and Property Screening Costs at U.S. Airports in CY 2000 was \$448 Million

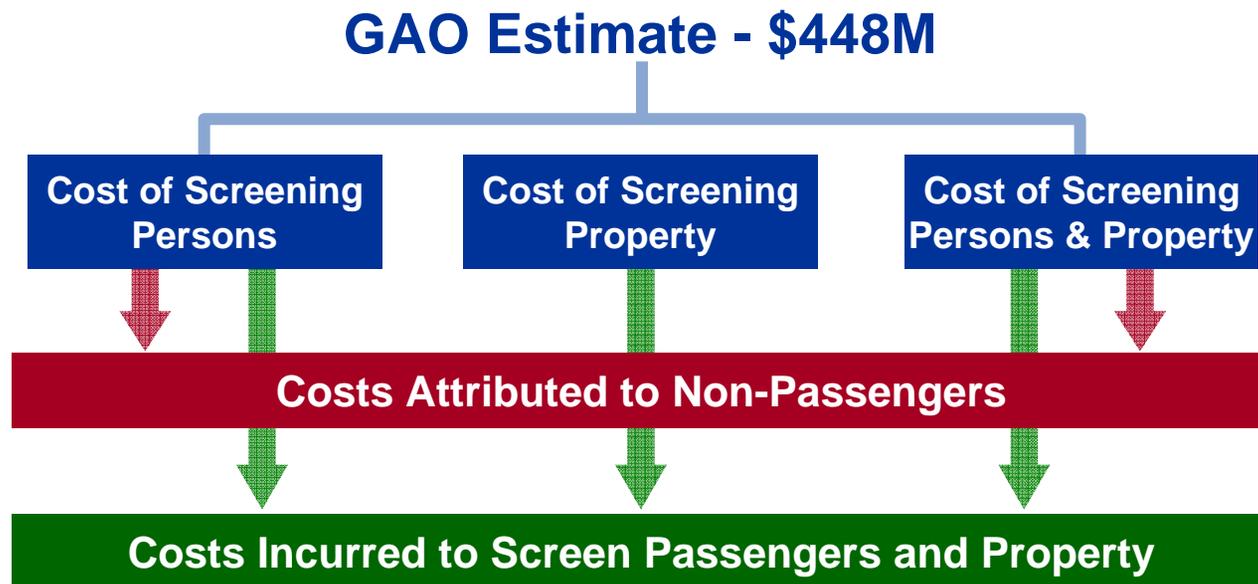
Independent Estimate of Airline Costs in CY 2000
(\$ Millions)



Description of Costing Methodology

- ◆ **The 2005 GAO industry-wide cost estimates were taken as the starting point for this analysis**
- ◆ **Within each cost category—screening contractor costs, airport costs, and airline internal costs—individual cost elements were isolated and separately evaluated**
- ◆ **For each cost element (at individual airports) a determination was made as to:**
 - Whether the cost element pertained to screening of property, screening of persons, or both
 - *If the cost pertained to property screening, it was isolated and fully included in the ASIF fee*
 - Whether the cost element represented a fixed cost, or a cost that varied based on the volume of screenings
 - *If the cost element was fixed and did not vary based on the number of persons screened, it was fully included in the ASIF fee because the presence of non-passengers did not result in any additional cost*
- ◆ **For cost elements that varied based on the volume of persons screened, analysis was conducted to estimate how this cost varied, and how the exclusion of non-passengers would have impacted costs incurred**
- ◆ **The original GAO industry-wide cost estimate was then adjusted to include only those costs attributable to the screening of passengers and property**

Illustration of the Costing Methodology



The Cost of Screening Only Passengers and Property in CY 2000 is Estimated at Just Under \$420 Million

Cost Components	GAO Estimate (\$ Million)	Cost of Screening Only Passengers & Property	Cost Attributable to Non-Passengers
Contract Screening Costs	\$ 334.0	\$ 309.8	\$ 24.2
Airport Costs	\$ 80.1	\$ 77.8	\$ 2.3
Airline Internal Costs	\$ 33.6	\$ 32.1	\$ 1.5
Total	\$ 447.7	\$ 419.7	\$ 28.0



Project Overview

Part I

1. Background and Goals of the Assignment
2. **PROJECT APPROACH AND LINES OF ANALYSIS**

Estimating the Cost of Screening Non-Passengers Required Several Complementary Lines of Analysis



Interviews with airport officials



Interviews with airport Federal Security Directors and staff



Collection and analysis of airport passenger surveys



Outreach to A&E firms and career terminal planners



Interviews with subject matter experts



Analysis of Appendix A and estimates of airline, airport and concession employee screenings

1

Interviews with Airport Officials

Description

Telephone interviews with airport officials from a cross-section of U.S. airports were conducted during the study. Representatives from 63 airports were interviewed from the stratified sample of 70 U.S. airports developed during the 2005 GAO study

Major Objectives

- ◆ Determine whether non-passengers such as meeters and greeters were allowed through security checkpoints, and estimate the ratio of non-passengers to passengers at airport checkpoints in CY 2000
- ◆ Understand common practices of airport, airline, and concession company employees for entering the post-security airport gate areas
- ◆ Identify the physical layout and staffing of security checkpoints including number of checkpoints, screening lanes, exit lanes, operating procedures and hours of operation
- ◆ Define how Law Enforcement Officers, checkpoint supervisors and exit lane monitors were deployed to meet screening related responsibilities

2

Interviews with Airport Federal Security Directors and Staff

Description

Telephone interviews were conducted with Airport Federal Security Staff who were employed at one of the sample airports in CY 2000 in order to supplement and clarify information provided in the airport interviews

Approach

- ◆ A request for assistance was sent from TSA Headquarters to Federal Security Directors (FSDs) at the 70 sample airports
- ◆ FSDs and staff were also contacted based on referrals obtained during airport interviews
- ◆ Interviews were focused on checkpoint operations and staffing at the sample airports
- ◆ Interviews were utilized to supplement and refine information gathered during airport interviews

3

Collection and Analysis of Airport Passenger Surveys

Description

Collect and analyze U.S. airport passenger surveys from our sample set of airports which provide information regarding the ratio of meeters and greeters and well wishers to screened passengers

Approach

- ◆ **Review existing passenger surveys or other analysis conducted by airports in CY 2000 (or similar years) to identify the ratio of non-passengers to passengers in post-security airport gate areas**
- ◆ **Determine whether non-passengers who accompanied or met ticketed passengers simply entered the airport terminal, or actually went through security checkpoints to the gate areas**
- ◆ **Compare survey results with airport interviews to determine presence of any systematic bias**

4

Outreach to A&E Firms and Career Terminal Planners

Description

Interviews were conducted with representatives of airport A&E firms (airport architects, engineers and planners) regarding infrastructure or planning projects at U.S. airports in CY 2000 and prior. Focus was on obtaining information regarding ratios of passengers to non-passengers, airport passenger surveys, and planning factors used for terminal and gate area sizing purposes

Approach

- ◆ Review available data that supports the development of estimates regarding the ratio of passengers to non-passengers in the gate area
- ◆ Determine if consultants/architects/engineers have knowledge or estimates of ratio of passengers to non-passengers in the post-checkpoint gate areas and the basis for these estimates
- ◆ Collect and review relevant planning and/or survey reports to identify information related to ratios of passengers to non-passengers passing through security checkpoints in or around CY 2000

5

Interviews with Subject Matter Experts

Description

Interviews with TSA/FAA subject matter experts to define airline security requirements and procedures in CY 2000

Approach

- ◆ **Interview TSA/FAA officials who were directly involved with airport security in CY 2000**
- ◆ **Obtain relevant source documents**
- ◆ **Define procedures laid out by the FAA pertaining to security at US airports**
 - particularly checkpoint staffing
- ◆ **Determine requirements, procedures and staffing for checked baggage screening, checkpoint supervisors and exit lanes**

6

Analysis of Appendix A and Estimates of Airline, Airport and Concession Employee Screenings

Description

Analysis of Appendix A data to quantify costs of specific checkpoint functions. Estimate ratio of employees (airline, airport and concession) to screened passengers

Approach

- ◆ Use Appendix A to break out specific functions performed by security companies such as checked baggage screening and checkpoint supervisors
- ◆ Draw on airport interviews to understand the behavior and procedures of airline, airport and concession employees and their access to the sterile area in airports
- ◆ Using various data sources, estimate the staffing and employee numbers for airline station employees, airline crew and concession employees to estimate the number of people who would have passed through security



METHODOLOGY

PART II



Methodology **Part II**

1. AIRPORT INTERVIEWS

2. Estimating the Ratio of Passengers to Non-Passenger

Objectives of the Airport Interviews

Interviews were conducted with officials from 63 airports representing a cross-section of U.S. airports that conducted screening of passengers and property in CY 2000

The objectives of these interviews was to develop information regarding:

- ◆ **The ratio of passengers to non-passengers who were screened at security checkpoints during CY 2000**
- ◆ **Whether all concourses were open to meeter/greeters and well-wishers who accompanied passengers to/from the post-security gate areas**
- ◆ **The physical layout, staffing, and operating procedures of security checkpoints and related security functions during CY 2000**
- ◆ **Common practices of airline, concession and airport authority employees for entering the airport gate areas**

Key Findings of the Airport Interviews

- ◆ **Overall, approximately 54% of checkpoint screeners performed property screening functions with the remaining screeners dedicated to screening of individuals through the magnetometer**
- ◆ **Most airport interviews indicated that meeter/greeters and well-wishers accounted for 40% or less of total checkpoint screenings**
- ◆ **At most major airports in CY 2000, there were controlled access doors that enabled employees stationed at the airport to reach the secure gate areas and bypass security checkpoints**
 - These controlled access doors were utilized by a substantial percentage of airline station personnel and airport authority employees to access the post-security gate areas
- ◆ **The great majority of U.S. airport checkpoints had four or fewer screening lanes. Screening capacity was adjusted by opening or closing lanes, and the percentage increments by which capacity could be adjusted were substantial**

Key Findings of the Airport Interviews (con't)

- ◆ **Most frequently, a single supervisor was stationed at an individual checkpoint**
 - At only a few airports did the number of checkpoint supervisors vary based on traffic peaking patterns over the day

- ◆ **A single exit lane monitor was generally positioned at the end of the exit lane to prevent “reverse flow” that would result in people bypassing the checkpoint to access the gate area**
 - Staffing of exit lane monitors did not vary based on fluctuations in daily traffic volume

- ◆ **Law Enforcement Officers (LEOs) were required to be positioned to respond to checkpoint incidents**
 - At most surveyed airports, a single LEO was assigned to provide flexible response for an individual checkpoint or terminal – In most cases, flexible response staffing was constant across the day and did not vary based on fluctuations in traffic volume

Key Topics of the Airport Interviews

- ◆ The physical lay-out and staffing of airport checkpoints in CY 2000
- ◆ The estimated ratio of non-passengers to passengers who passed through security checkpoints in CY 2000
- ◆ Whether all concourses were open to non-passengers who were accompanying or meeting ticketed passengers
- ◆ Common practices of airline, airport, and vendor employees for entering the airport gate areas

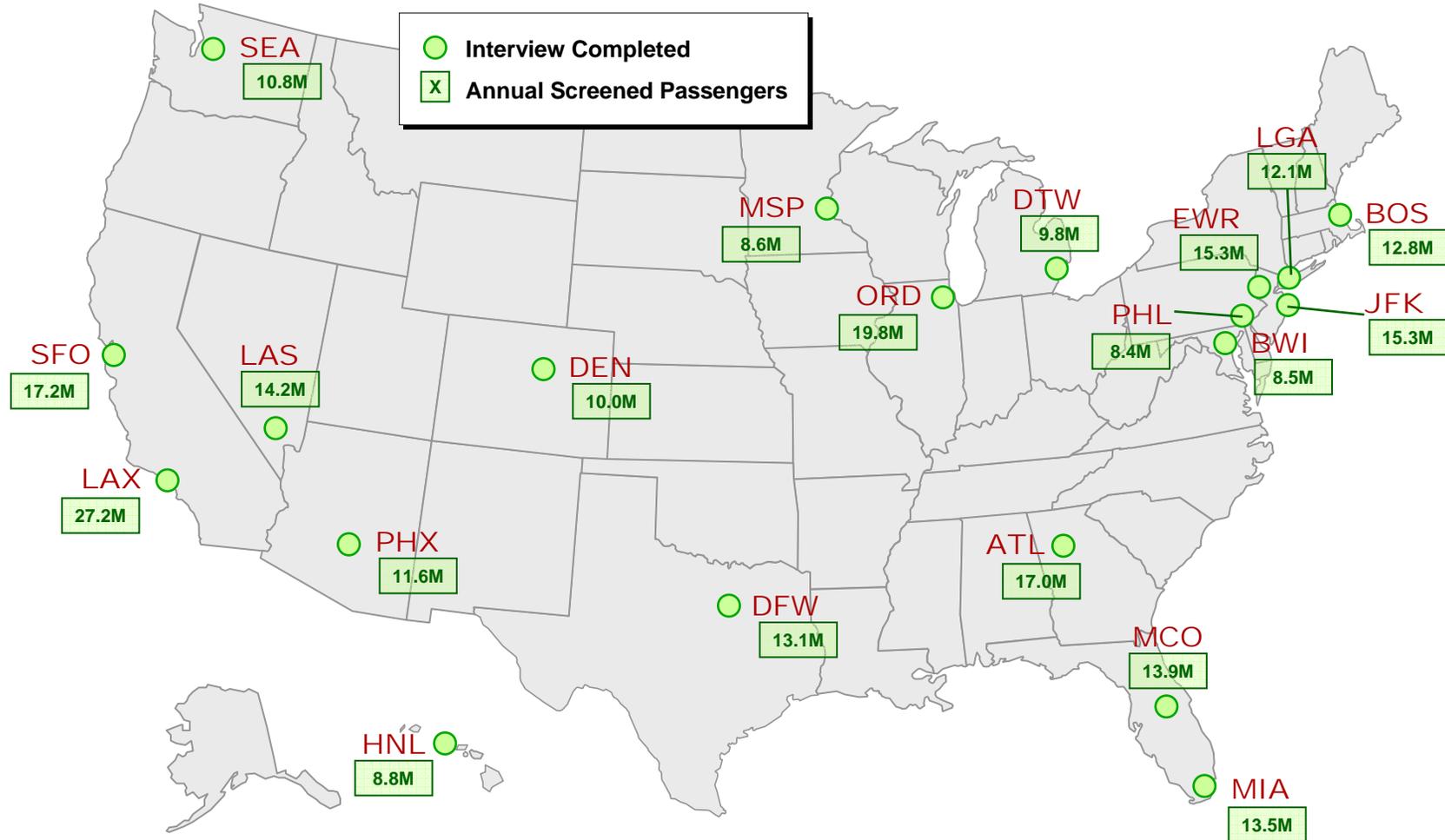
Information developed in the airport interviews was combined with other research to produce the estimate of CY 2000 costs incurred to screen passengers and property

A Stratified Sample of U.S. Airports was Adopted from the 2005 GAO Study

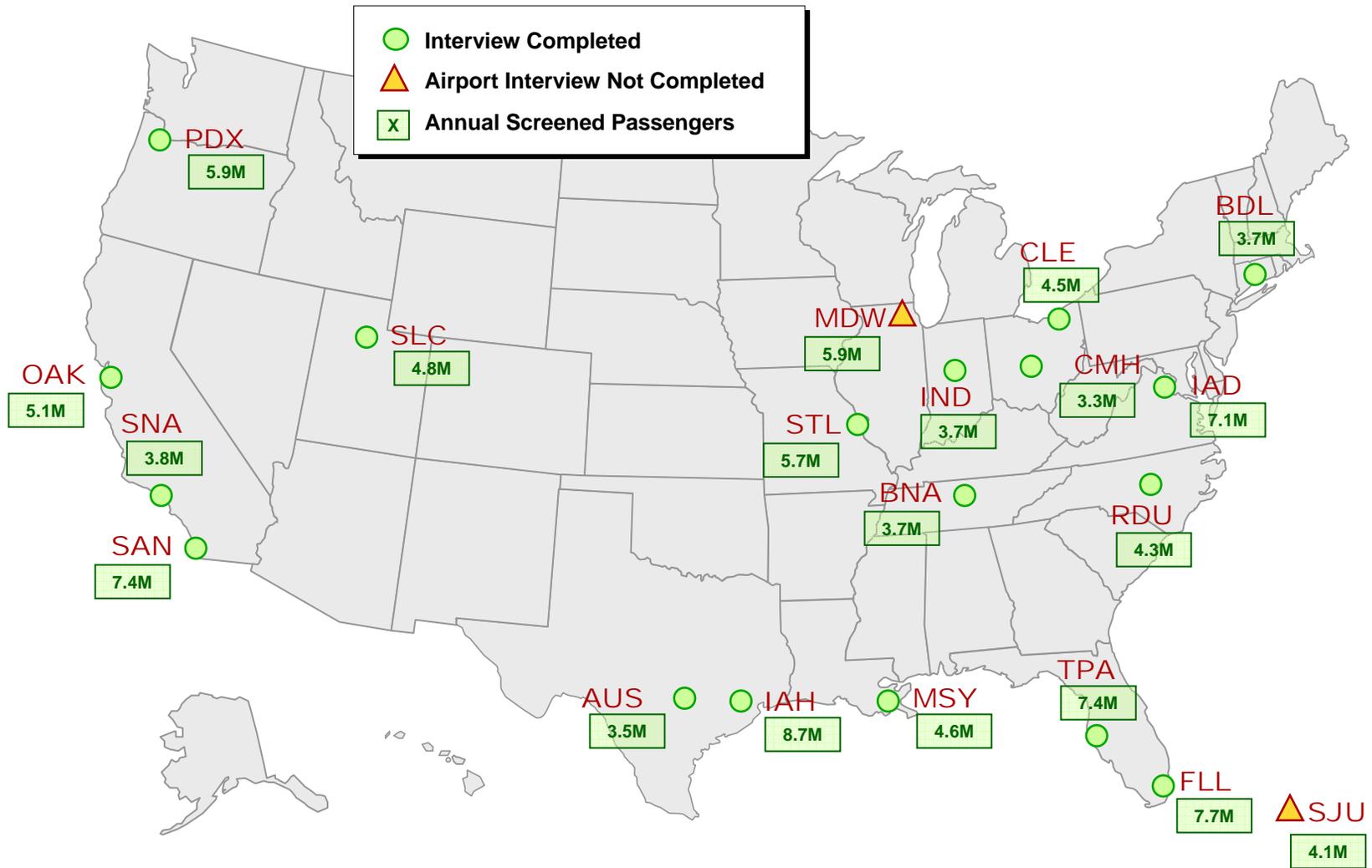
- ◆ The sample included five stratum of U.S. airports based on estimated screened passengers in CY 2000
- ◆ Stratum 1 included each of the top 20 U.S. airports; Stratum 2 through 5 contained a total of 50 additional airports grouped by size classification
- ◆ Interviews were attempted with all 70 airports, and 63 interviews were completed
- ◆ Airports with completed interviews accounted for 76% of total U.S. screened passengers in CY 2000
- ◆ Seven airports were not included in the interviews because officials were unreachable or there were no appropriate officials who had worked at the airport in CY 2000

Stratum	Est. Screened Passengers	Percent of Total	U.S. Airports	Airports in Sample	Airports Interviewed	Percent Interviewed
1	267,869,820	50.8%	20	20	20	100%
2	136,430,321	25.9%	27	20	18	90%
3	69,101,048	13.1%	34	10	8	80%
4	33,278,939	6.3%	60	10	9	90%
5	20,305,473	3.9%	289	10	8	80%
Total	526,985,600 *	100.0%	430	70	63	90%

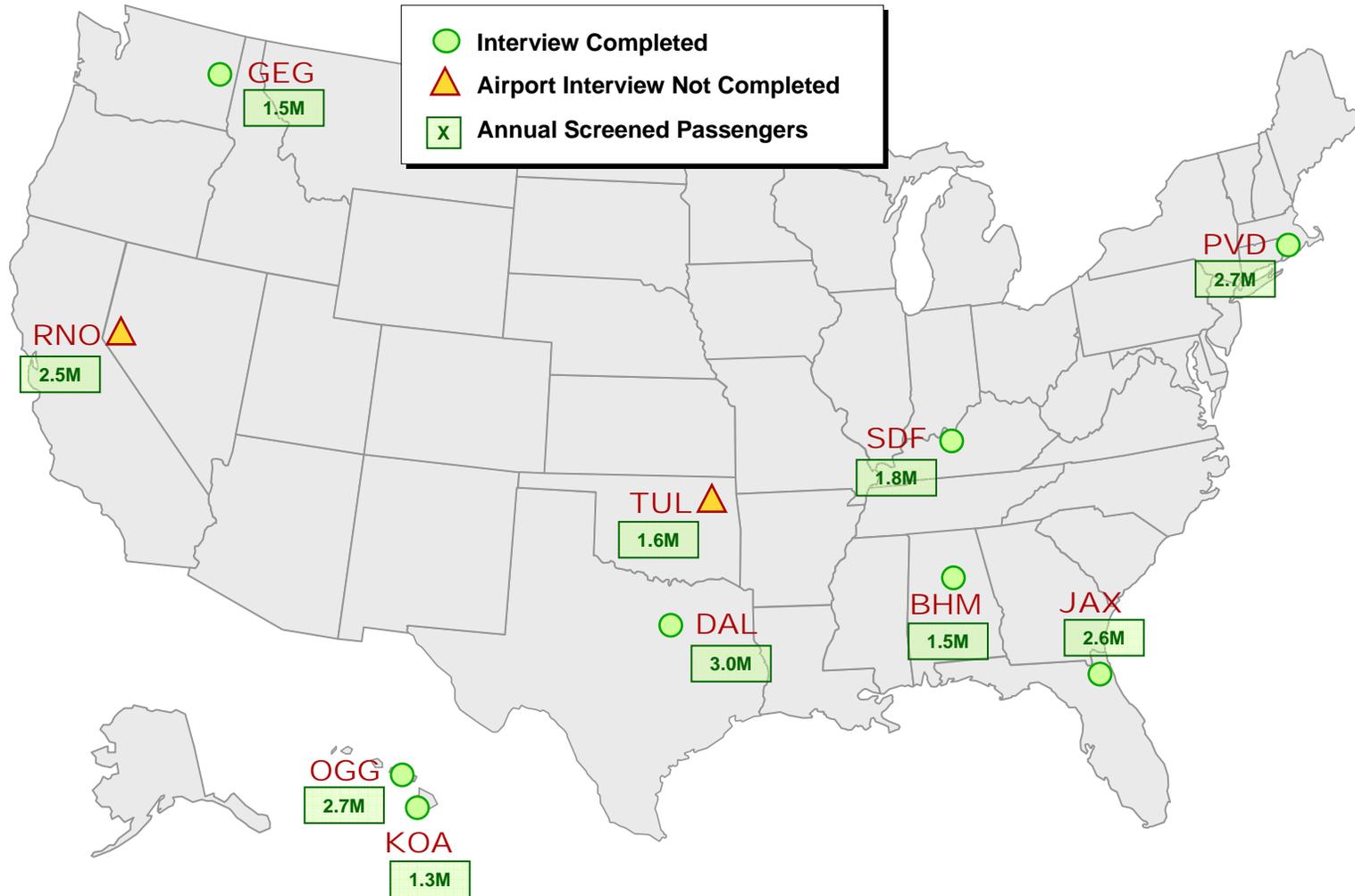
Interviews were Conducted at 100% of the Twenty Stratum 1 Airports



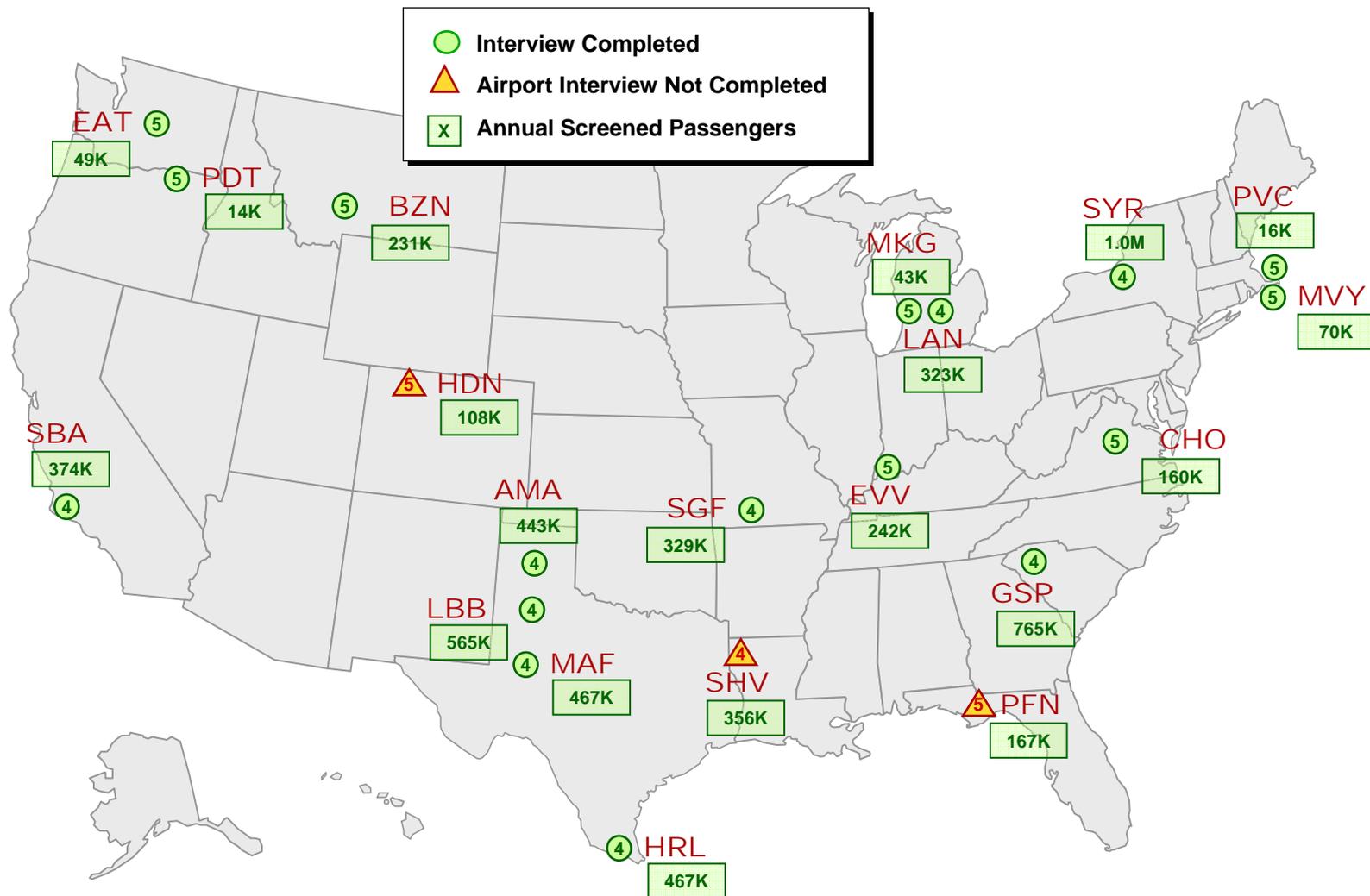
Interviews were Conducted at 90% of the Twenty Stratum 2 Airports



Interviews were Conducted at 80% of the Ten Stratum 3 Airports



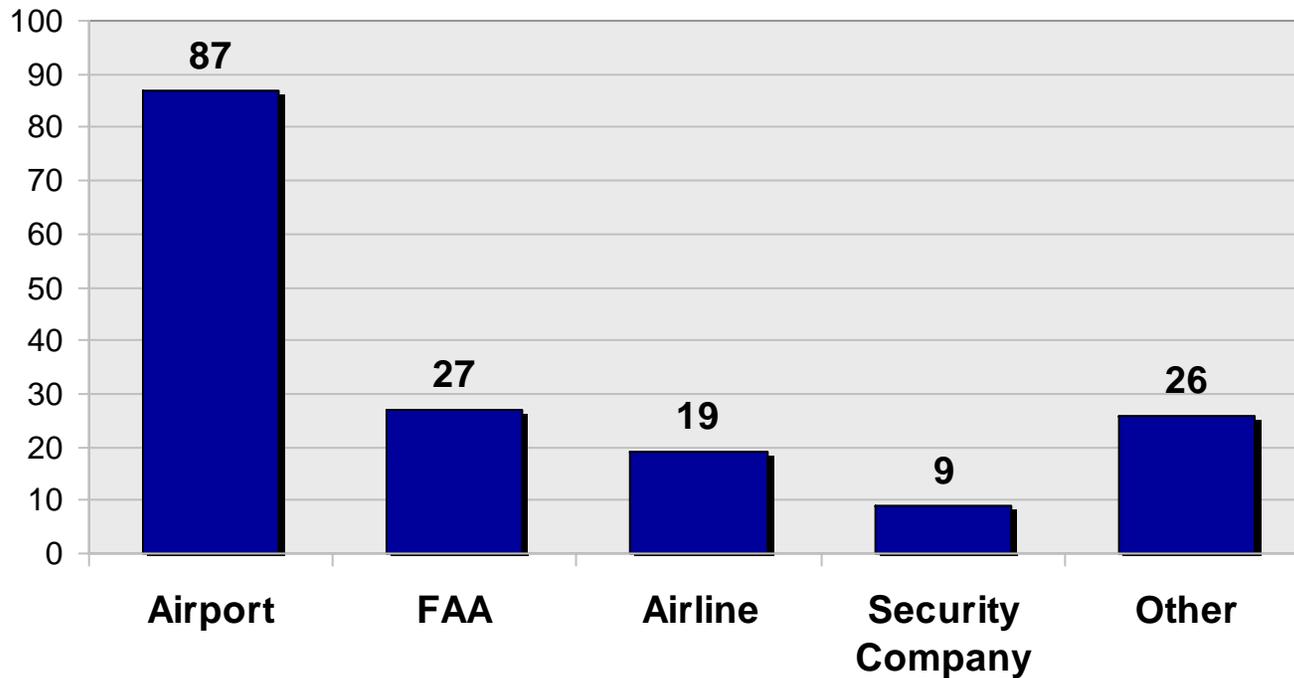
Interviews were Conducted at 90% of the Ten Stratum 4 Airports and 80% of the Ten Stratum 5 Sample Airports



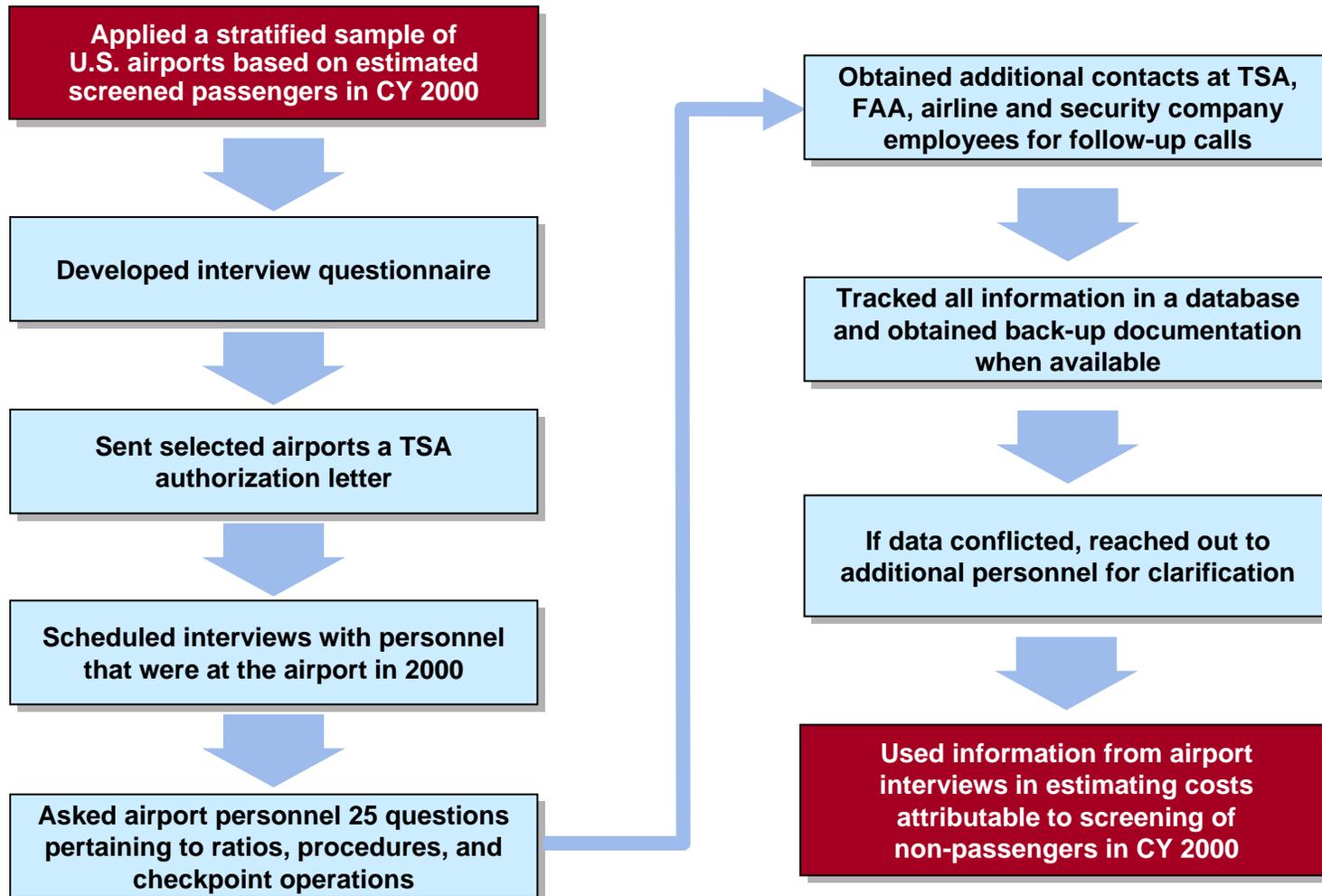
We Conducted Approximately 120 Interviews During the Project, Interviewing More Than 165 Individuals

Persons interviewed included individuals who worked in key segments of the aviation industry in CY 2000

Number of Interviewees by the Job Position They Held in CY 2000



A Thorough Airport Interview Process was Conducted

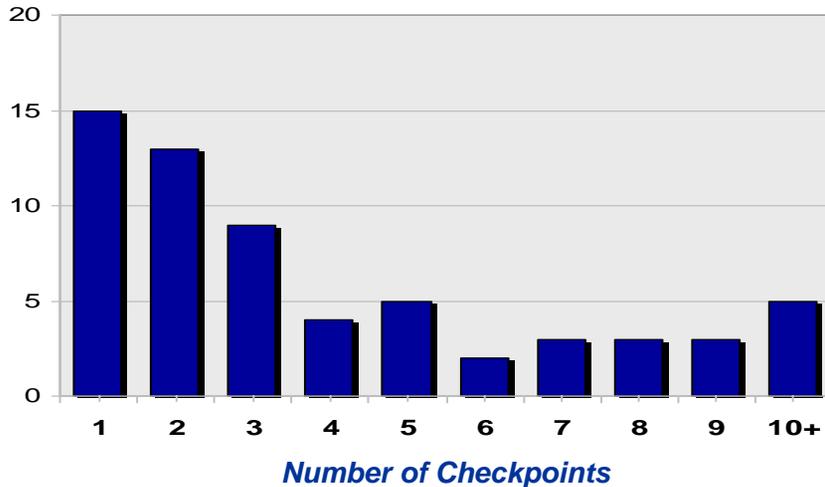


Information Targeted in the Airport Interviews was Used in the Cost Analysis

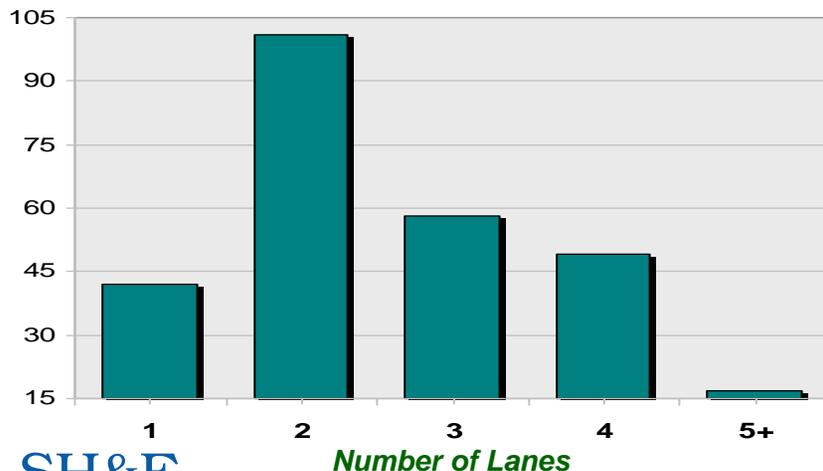
- ◆ **Estimated traffic mix of passengers vs. meeter/greeters and well-wishers (MGWW)**
- ◆ **Number of checkpoints and lanes per checkpoint**
- ◆ **Whether number of open checkpoint lanes varied to accommodate traffic peaking**
- ◆ **Normal hours of checkpoint operations and whether checkpoints remained open after normal operating hours**
- ◆ **Number of exit lanes and whether controlled by monitors (personnel) or mechanical means**
- ◆ **LEO deployment for flexible response to checkpoint incidents**
- ◆ **Whether all concourses were open to meeter/greeters and well-wishers**
- ◆ **Employee use of checkpoints vs. other controlled access methods**
- ◆ **Ratio of magnetometers to x-rays at standard lane**
- ◆ **Description of typical checkpoint staffing patterns**
- ◆ **Whether checked baggage was screened at airport**

Key Finding in the Airport Interviews: The Vast Majority of Sampled Airport Checkpoints Had Four or Fewer Lanes

Airports Airports by Number of Checkpoints



Checkpoints Checkpoints by Number of Lanes



- ◆ At single lane checkpoints, no costs could have been avoided by eliminating non-passengers since the lane had to be staffed and remain open to screen ticketed passengers
- ◆ At checkpoints with 2-4 lanes, screening capacity could be adjusted by opening or closing lanes and the increments by which capacity could be added or reduced were quite substantial
- ◆ During many hours of the day, the same number of lanes would have been needed to screen only ticketed passengers as was required to screen the total flow of passengers and non-passengers

Key Finding in the Airport Interviews: More than 50% of Screeners Were Dedicated to Property Screening at the Checkpoint

Average Number of Screeners per Lane and by Function for Sampled Airports
CY 2000

Stratum	Screeners per Lane	Screeners by Function	
		Property	People
1	3.1	55.6%	44.4%
2	3.3	52.6%	47.4%
3	2.0	50.0%	50.0%
4	2.6	57.6%	42.4%
5	2.2	51.3%	48.7%
Scaled National Total:		53.8%	46.2%

Screeners assigned to property screening functions included x-ray operators, bag checkers/unloaders. Screeners assigned to screening of persons included the magnetometer operator and hand wanders. Because slightly more than 50% of screeners performed property screening functions, property screening accounted for more than one-half of the cost incurred for normal checkpoint operations

Because Data was Obtained from Several Sources, We Established a Methodology to Handle the Treatment of Conflicting Information

- ◆ **At many airports, the team received information from multiple sources**
 - Airport personnel, current TSA employees, former employees
- ◆ **In certain instances, conflicting information was provided**
- ◆ **The following criteria were applied in these circumstances**
 - Precedence was given to actual airport passenger surveys (from circa CY 2000) over the recollection or estimates of interviewees
 - If two parties presented conflicting information, we attempted to identify additional sources to reconcile differences
 - At certain airports, estimates provided from different sources were averaged



Methodology **Part II**

1. Airport Interviews

**2. ESTIMATING THE RATIO OF
PASSENGERS TO NON-PASSENGERS**

Estimating the Ratio of Passengers to Non-Passengers is a Key Input for Determining Costs Associated with Screening Passengers Only

Objective:

To estimate the mix of passengers vs. non-passengers passing through screening at U.S. Airports in CY 2000

Key Findings:

- ◆ The traffic mix varied by airport stratum, and by individual airport within each stratum
- ◆ On a national basis, passengers comprised an estimated 61% of total screenings while non-passengers represented approximately 39%
- ◆ Three Stratum 1 airports excluded meeter/greeters and well-wishers from the concourse without special gate passes
 - Checkpoints at two Stratum 4 airports and six Stratum 5 airports were also closed to meeter/greeters and well-wishers
- ◆ Seven major airports in our sample conducted passengers surveys in the CY 2000 timeframe. The average mix of ticketed passengers vs. meeter/greeters and well-wishers through security was 74.3% passengers to 25.7% to meeter/greeters and well-wishers

There Were Three Major Categories of Non-Passengers

1. **Persons accompanying departing passengers**
(*“Well Wishers”*)
2. **Persons meeting arriving passengers**
(*“Meeters & Greeters”*)
3. **Employees**
 - Airline station employees
 - Airline flight crew members
 - Concession employees
 - Airport employees

Several Sources were Used to Estimate the Ratio of Passengers to Non-Passengers Passing Through Airport Checkpoints

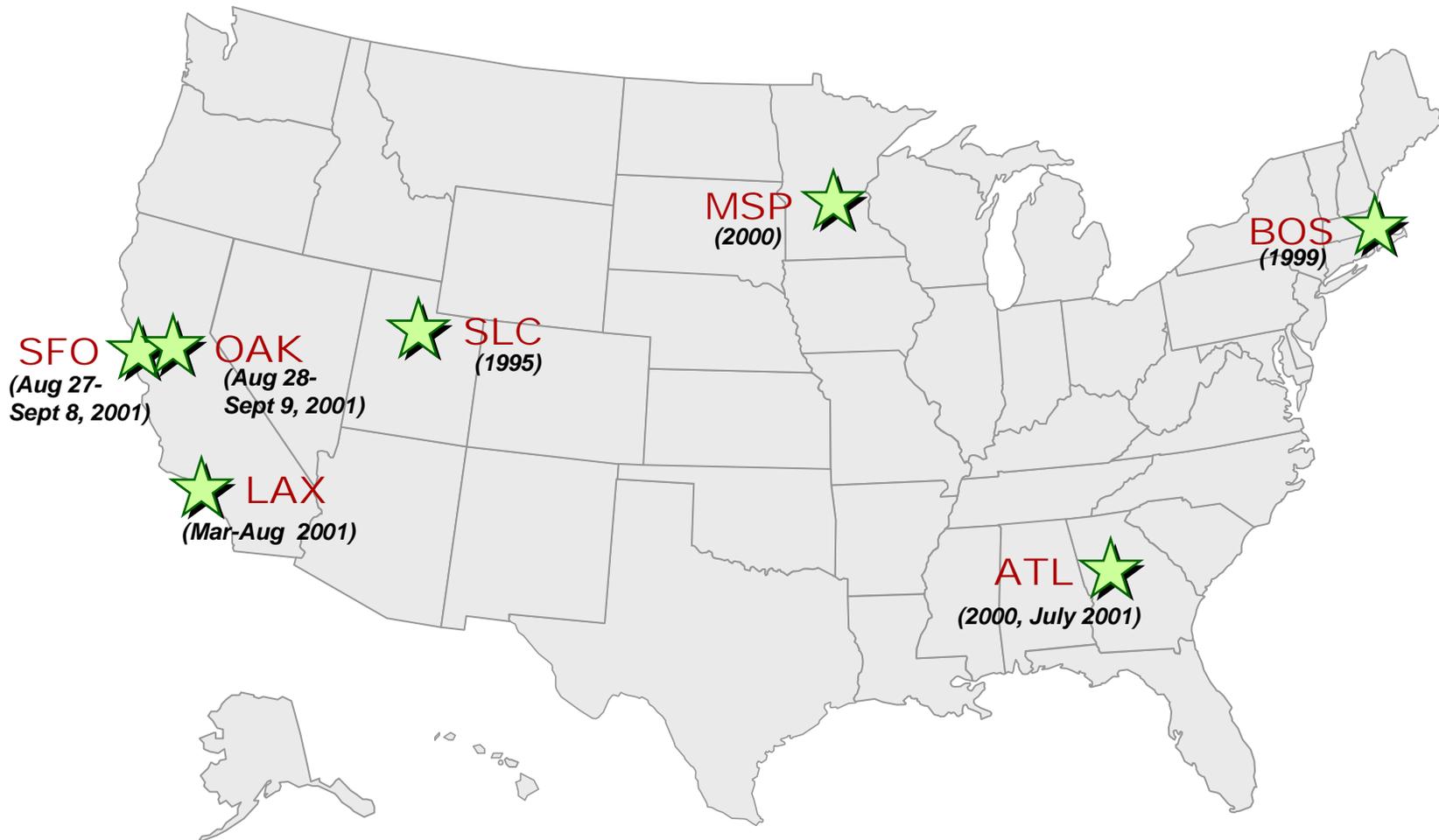
- ◆ **Airport Interviews**
- ◆ **Airport Passenger Surveys**
- ◆ **A&E Planning Factors¹**
- ◆ **Employee Analyses**
 - Airline employees
 - Concession employees
 - Airport employees

How Data from Different Sources was Applied to Estimate the Ratio of Passengers to Non-Passengers Passing Through Checkpoints

- ◆ **To develop ratios of meeters and greeters/well-wishers to screened passengers, we used airport passenger surveys where available**
- ◆ **For other airports, we used estimates of CY 2000 ratios provided by airport representatives¹**
- ◆ **We compared the airport responses to passenger survey results for the same airports**
 - We found that the average rates from airport interviews were somewhat higher than those calculated from airport passenger surveys
- ◆ **Where airports were unable to provide an estimate, we used the average for the stratum**

Several Passenger Surveys Conducted in the CY 2000 Timeframe Addressed the Ratio of Passengers to Non-Passengers

Passenger surveys were obtained for seven large U.S. airports



Analysis of Passenger Survey Results

- ◆ **Surveys conducted at Atlanta (2000 and July 2001) and Minneapolis (2000) were the most detailed**
 - The ATL and MSP surveys quantified the ratio of both well-wishers and meeters/greeters to departing and arriving passengers
 - The ATL and MSP surveys also identified whether well-wishers accompanied passengers through security to the gate area, and whether meeter/greeters met arriving passengers at the gate, baggage claim, etc.
- ◆ **The passenger surveys conducted at the other major airports (Los Angeles, San Francisco, Oakland, Boston, Salt Lake City) surveyed departing passengers and typically identified the ratio of well-wishers to departing passengers¹**
 - These surveys did not identify the parting location of well-wishers (pre- or post-security) nor the ratio of meeter/greeters to departing passengers
- ◆ **The results of the ATL and MSP surveys were used to expand the results of the other major airport surveys² to include meeter/greeters and to estimate the percentage of both well-wishers and meeter/greeters that passed through airport security checkpoints**

Airport Interviewees Reported Slightly Higher Average Percentages of Meeter/Greeters and Well-Wishers than Airport Passenger Surveys

Comparison of Meeter/Greeters and Well-Wishers Percent of Screenings¹
Between Airport Interviews and Airport Passenger Surveys

Stratum	Airport	MGWW as a % of Total (Pax/MGWW) Screenings		Interview Estimate Higher or Lower Than Survey (Pct)
		Interview Results	Survey Results	
1	Los Angeles	22.0%	25.4%	-3.4%
1	San Francisco	10.0%	25.4%	-15.4%
1	Atlanta	40.0%	19.4%	20.6%
1	Boston	37.0%	16.7%	20.3%
1	Minneapolis/St. Paul	33.0%	32.0%	1.0%
2	Salt Lake City	64.0%	35.4%	28.6%
2	Oakland	NA	25.2%	NA
Average²		34.3%	25.7%	8.6%

No systematic bias was shown between surveys and interview responses

¹ Screenings do not include employees screened through the checkpoint

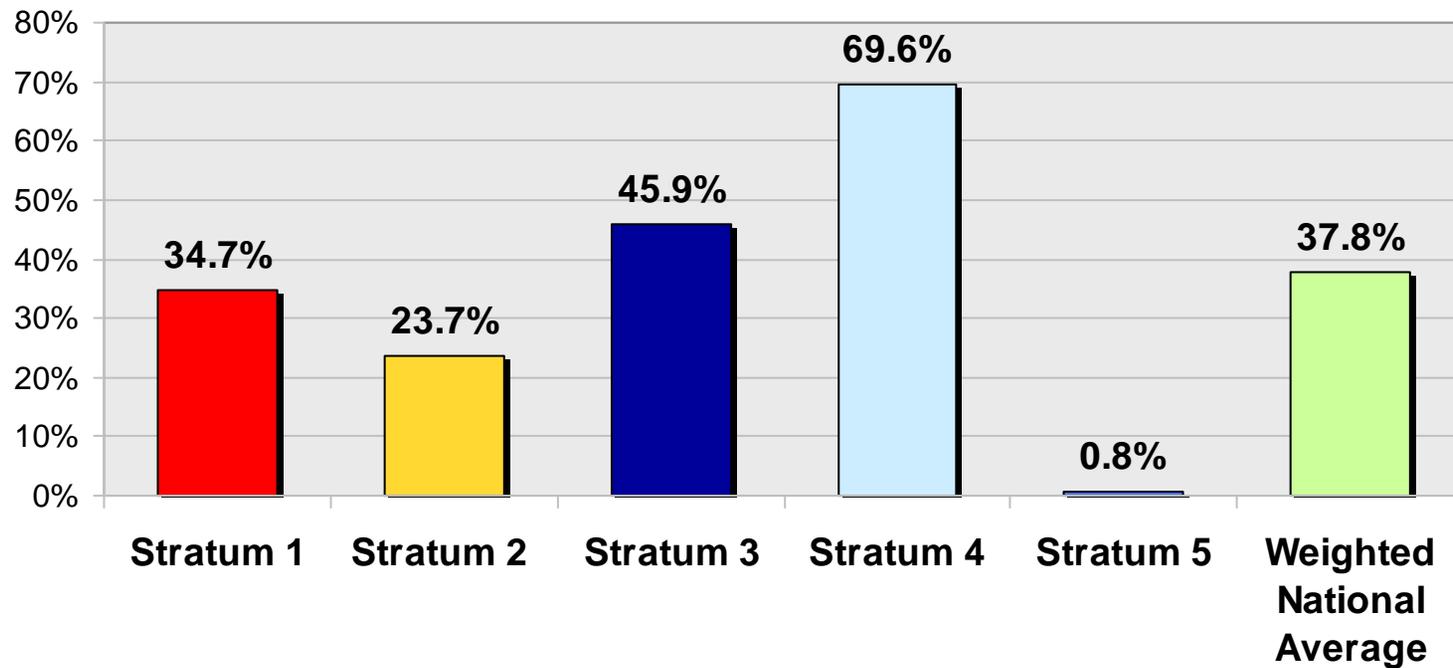
² Average excludes Oakland where no estimate was provided in the airport interview

Concourses or Gate Areas at Several Airports were Reported as Closed to Meeter/Greeters and Well-Wishers

- ◆ **Newark (EWR)** – Terminals A and B were reported closed; Terminal C (Continental) was open
- ◆ **New York JFK (JFK)** – all terminals were reported closed
- ◆ **Miami (MIA)** – all terminals were reported closed
- ◆ **Two Stratum 4 airports:** Santa Barbara (SBA), Springfield (SGF)
- ◆ **Six Stratum 5 airports:** Evansville (EVV), Bozeman (BZN), Martha's Vineyard (MVY), Wenatchee (EAT), Muskegon (MKG) and Pendleton (PDT)

On a National Basis, Meeter/Greeters and Well-Wishers Accounted for an Estimated 37.8% of Total Non-Employee Screenings

Meeter/Greeters and Well-Wishers as Percentage of Total Non-Employee Screenings
CY 2000



SH&E Performed Analysis to Estimate the Number of Employees Passing Through Airport Screening Checkpoints

- ◆ ***Airline crew analysis*** – estimated the number of crew who would enter the secure area on a given day and the percent who would be screened
- ◆ ***Airline station employees*** – estimated the number of gate agents who passed into the secure area and the percent who would be screened
- ◆ ***Concession employees*** – estimated the number of concession employees who worked in the secure area and the percent who would be screened
- ◆ ***Airport employees*** – estimated the number of airport employees who entered the secure area and the percent who would be screened

Assumptions and Methodology to Estimate Flight Crew Members Flying on a Representative Day in CY 2000

- ◆ **Based on published flight schedules from the Official Airline Guide (OAG) for a May 2000 weekday**
 - All domestic and international flight departures at the 430 airports where screening was conducted in CY 2000
 - Included departing airport, destination, aircraft type, seat capacity and scheduled block time
- ◆ **Estimate flight crew requirement for each flight**
 - Pilot, Co-pilot, Flight Engineer (for certain aircraft), and Flight Attendants (based on aircraft seat capacity)
- ◆ **Estimate number of flight crew members flying on the representative day**
 - Apply assumptions of crew block hour utilization per day
- ◆ **Allocate flight crew members to individual airports based on the airline category, aircraft size and block hours flown**

Estimated Flight Crew Members Flying on a Typical Day in CY 2000

Flight Crew Members Flying on a Typical Day in 2000

Flight Crew Position	Estimated Flight Crew		
	Domestic	International	Total
Pilots	19,865	2,408	22,272
Flight Engineers	647	97	744
Flight Attendants	<u>26,147</u>	<u>5,624</u>	<u>31,770</u>
Total	46,658	8,129	54,787

- ◆ We estimate there were 54,800 flight crew members reporting for duty on a typical day in CY 2000
- ◆ However, only a portion of crew members were screened, while many accessed secure areas through controlled access entrances

Methodology to Estimate Flight Crew Member Screenings

- ◆ **All flight crew members were assumed to go from an unsecured area of the airport to the secured area one time per day – when reporting for their first flight of the day**
- ◆ **Based on the airport surveys we conducted, estimates were obtained for individual airports on the percentage of flight crew members that accessed the secured area of the airport through screening checkpoints, and the percentage that gained entry through controlled access points**
- ◆ **The estimates for the sampled airports were then expanded to a national total**

Assumptions and Methodology to Estimate Screenings of Gate Agents

- ◆ **SH&E's estimation of CY 2000 screenings of gate agents was performed for both hub and spoke operations for each of the airports in the sample set**
- ◆ **Scheduled flight departures for mid-week in May 2000 were used along with assumptions regarding number of departures worked per gate agent, number of gates agents per flight and daily transitions between ticket counters and gates**
- ◆ **Our analysis determines gate agents required per day and total number of times these gate agents would enter the post-security gate area per day**
- ◆ **Gate agent screenings were estimated based on airport responses regarding the percentage of gate agents who were screened versus using other controlled access methods**

Assumptions and Methodology to Estimate Screenings of Concession Employees

- ◆ **We estimated the number of daily CY 2000 concession employees working in post-security areas at 24 airports in our sample**
 - Post security concession units were identified at each airport
 - Concession employees were estimated based on unit square footage and estimated CY 2000 sales for each location

- ◆ **For each of these 24 airports:**
 - We assumed that each concession employee would enter the post-security gate area once per day
 - Airport representatives estimated the percentage of concession employees who were screened (versus using other controlled access methods)

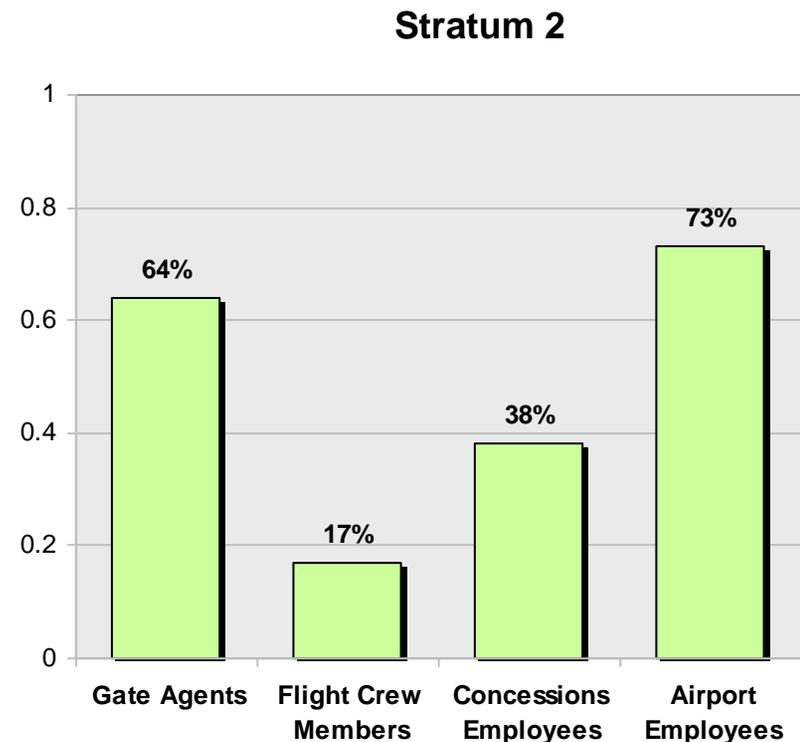
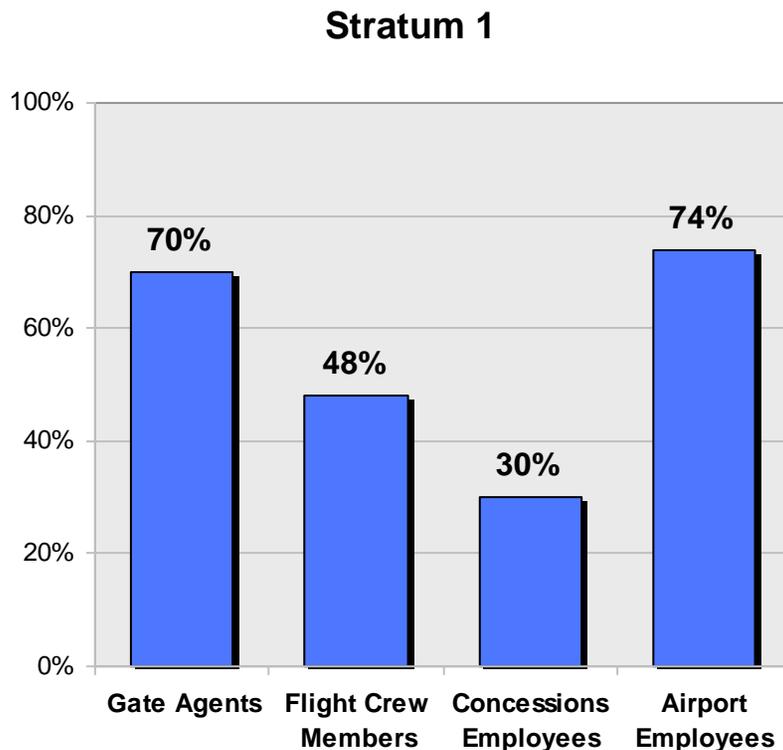
- ◆ **For all other sample airports in each stratum, the number of screenings was imputed based on the sample airports in each stratum**

Estimated Screenings of Airport Authority Employees

- ◆ **Airport employees with reason to access the post-security concourses included custodial staff, maintenance, operations and commercial management**
- ◆ **We estimated the number of airport employees entering the secure gate areas at 1% of screened passengers, similar to the level of concession employees**
- ◆ **Airport employee screenings were computed by applying the percentage of airport employees who were screened vs. using other controlled access methods based on the airport interviews**

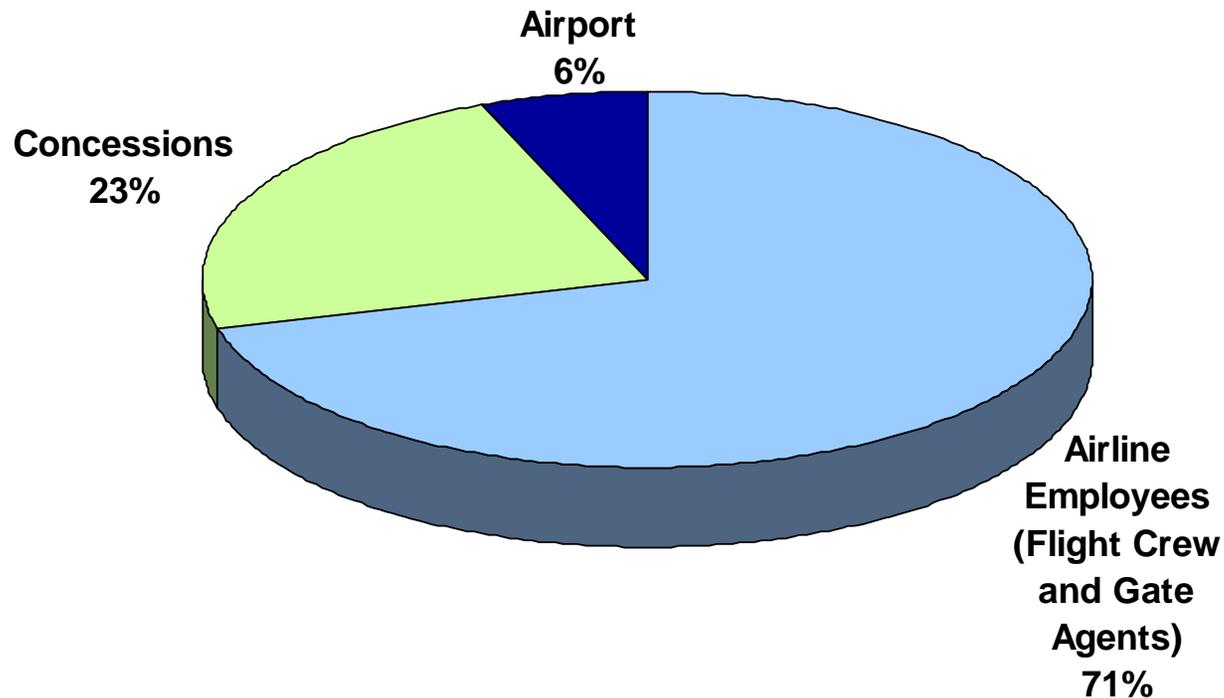
A Large Percentage of Employees Were Reported to Have Bypassed Checkpoints by Using Controlled Access Doors to Reach Concourses During CY 2000

Percent of Employees Using Controlled Access Doors to Reach Concourses



An Estimated 19 Million Employees were Screened at Airport Checkpoints in CY 2000

Percent of Employees by Type who were Screened at Airport Checkpoints
CY 2000

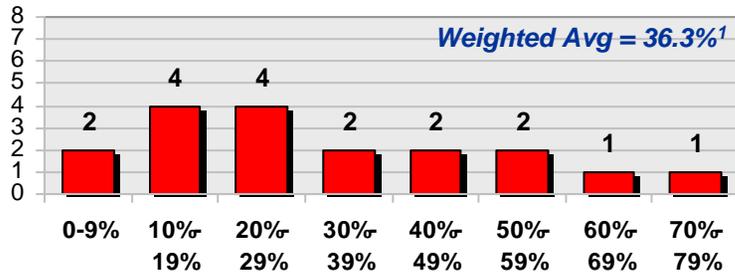


The Estimate of CY 2000 Employee Screenings is Generally Consistent with a More Recent Estimate Contained in a 2007 GAO Report

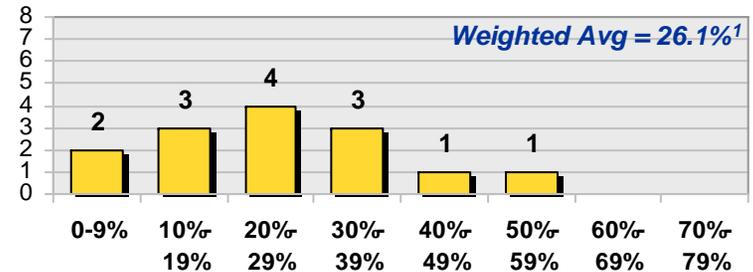
- ◆ **This study estimates that employees¹ comprised 2.2% of total nationwide screenings in CY 2000**
- ◆ **A February 2007 GAO report² reported that non-passengers defined as flight crews and other airport employees, vendors, and other airport personnel comprised 4% of total checkpoint screenings in 2005/2006**
 - The 4% value identified in the GAO represented an assumption in the TSA Staffing Allocation Model used for 2005 and 2006
 - The value was based on discussions with TSA leadership and estimates by industrial engineers
- ◆ **The 2.2% estimated for CY 2000 is, as expected, less than the 4% used in the TSA Staffing Allocation model because of changes in the post-9/11 environment**
 - The exclusion of meeters and greeters/well-wishers after 9/11 has reduced total screenings, increasing the percentage of screenings attributable to employees
 - Screening requirements have intensified since 9/11/2001 and employee use of alternative controlled access methods to bypass airport checkpoints has been reduced

Non-Passengers, Including Meeter/Greeters, Well-Wishers and Employees, Accounted for 39% of Total Nationwide Screenings

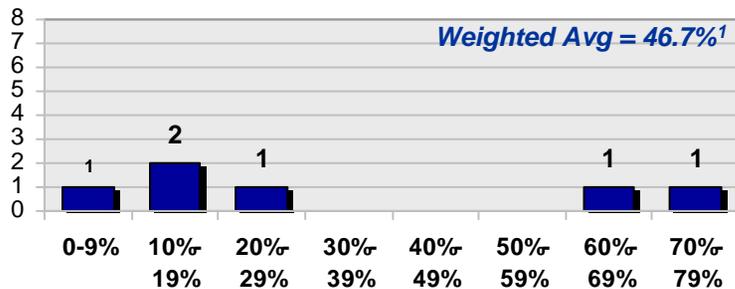
Stratum 1: 18 Airports



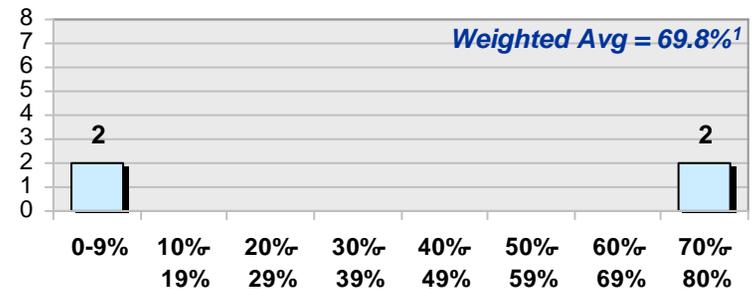
Stratum 2: 14 Airports



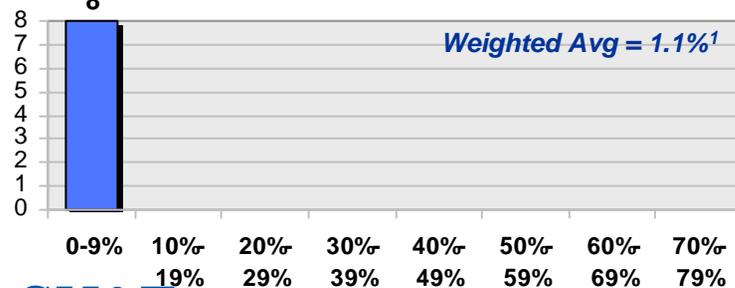
Stratum 3: 6 Airports



Stratum 4: 4 Airports



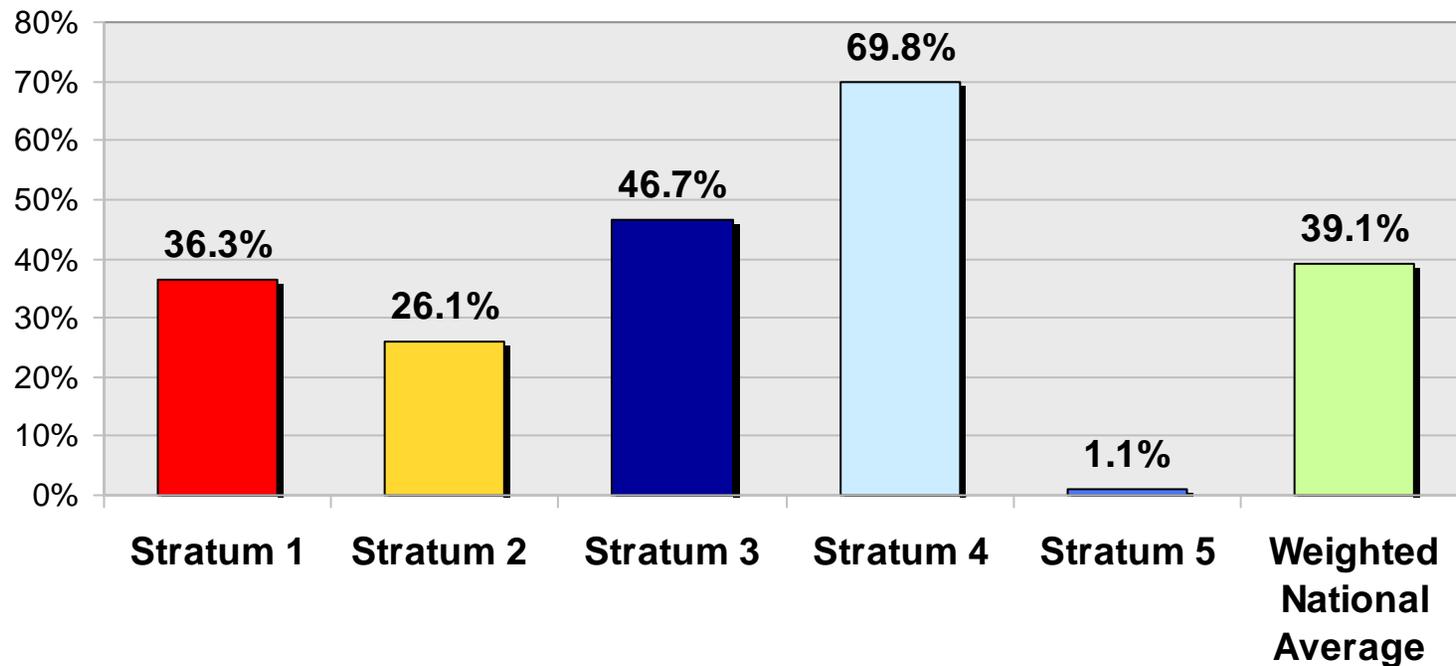
Stratum 5: 8 Airports



¹ Weighted averages includes sample airports in each stratum where non-passenger percentages were imputed based on averages from other sampled airports in stratum. If an imputed airport was known to be open to meeter/greeters and well-wishers, the imputed value reflected the average of other open airports in that stratum. The bars shown in each stratum reflect only those airports where estimates of the non-passenger percentage were obtained.

On a National Basis, the Non-Passenger Share of Total Screenings is Estimated at 39.1%

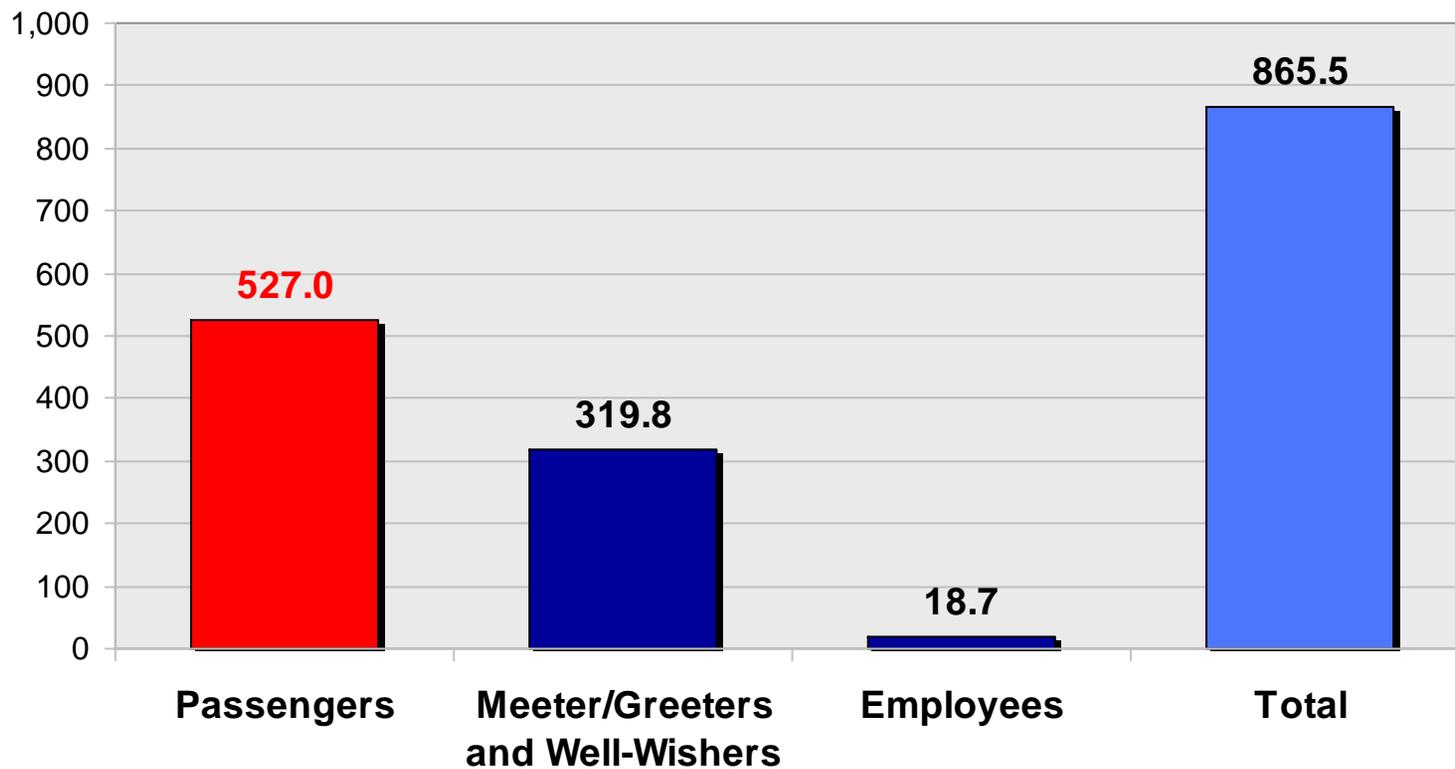
Non-Passengers as a Percent of Total Checkpoint Screenings
CY 2000



Ticketed Passengers Accounted for an Estimated 61% of Total Screenings at U.S. Airports in CY 2000

Estimated Distribution of Total Screenings in CY 2000

in Millions





COST ANALYSIS

PART III



Cost Analysis **Part III**

1. ANALYSIS OF SCREENING COMPANY COSTS

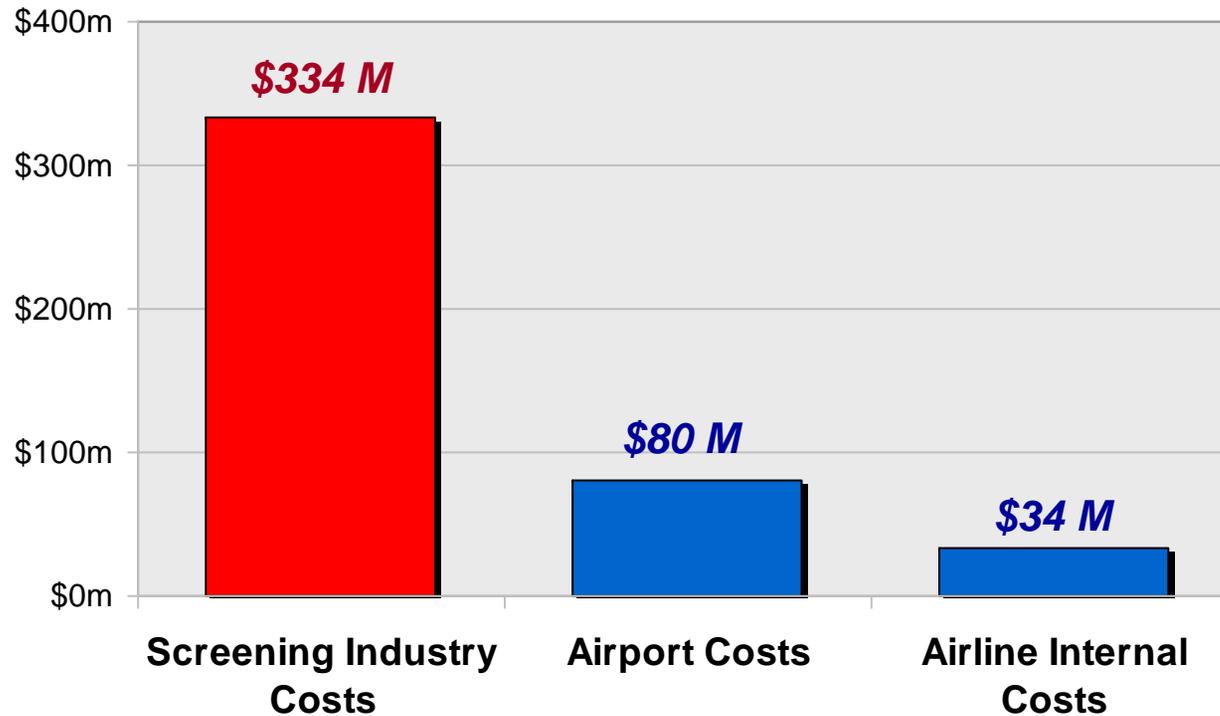
2. Analysis of Airport Costs

3. Analysis Of Airline Internal Costs

4. Conclusion

Screening Company Costs Represented 75% of the Overall GAO Cost Estimate

GAO Estimate of Screening Costs by Category in CY 2000



Objectives and Key Findings of the Screening Company Cost Analysis

Objective

To breakdown the \$334 million screening company cost estimate into individual cost components and determine the portion of costs attributable to the screening of non-passengers

Key Findings:

- ◆ Several cost elements pertained either to property screening or represented largely fixed costs that did not vary, or varied only slightly, due to the added screening volume associated with non-passengers (checked baggage screening, checkpoint supervisors, exit lane monitors)
- ◆ The largest component of screening company costs related to normal checkpoint operations (\$258 million)
- ◆ Slightly more than half of this cost (\$138.5 million) was for property screening at the checkpoint
- ◆ Of the remaining \$119 million incurred to screen individuals, a simulation analysis determined that the exclusion of non-passengers would have reduced the cost incurred by approximately \$20 million

The GAO Identified a Range of Passenger and Property Screening Functions that Were Included in the \$334 Million Cost Estimate

Typical Screening Services

- ◆ Pre-departure screening
- ◆ Pre-board screening
- ◆ Checkpoint security supervisor
- ◆ X-ray services
- ◆ Checkpoint supervisors
- ◆ Baggage screener
- ◆ CTX bag runner
- ◆ CTX operator
- ◆ Checked baggage screening
- ◆ Exit lane monitors

Costs Related to Checked Baggage Screening, Checkpoint Supervisors, and Exit Lane Monitors Were Separately Estimated

Screening Company Cost Estimates by Function
CY 2000



Checked baggage screening, checkpoint supervisors and exit lane monitors were isolated from the total screening company costs for two reasons:

1. The cost element pertained strictly to screening of property (checked baggage screening); or
2. The cost element largely represented a fixed cost that was necessary whether or not non-passengers were present. The cost did not vary, or varied only slightly, with the volume of persons screened at the checkpoint (checkpoint supervisors and exit lane monitors)

Checked Baggage Screening Costs

- ◆ **In CY 2000, airlines were required to perform screening and/or clearance procedures for checked baggage of passengers designated as “selectees”**
 - For domestic flights, this requirement was normally satisfied by ensuring that passengers and checked bags were on the same flight
 - For international flights, air carriers were required to either screen the checked baggage with authorized equipment, or manually search the selected bags
 - In practice, most checked baggage screening costs were associated with international flights
- ◆ **Checked Baggage Screening costs were requested to be reported on Line 4 of the “Appendix A” submissions, but carriers were permitted to aggregate these costs into reported screening costs elsewhere in Appendix A**
- ◆ **26 airlines (9 U.S. and 17 Foreign Flag) reported Checked Baggage Screening costs on Line 4 of Appendix A, and all other airlines either aggregated costs with other screening costs categories or had no checked baggage screening costs**

Checked Baggage Cost Estimation Methodology

- ◆ **We estimated checked baggage screening costs for non-reporting airlines that operated international flights based on the unit cost experience of the airlines that reported this cost**
 - The unit cost basis was “checked baggage screening cost per outbound international passenger”
- ◆ **U.S. and foreign airlines were grouped mainly related to size, and the average unit costs for reporting carriers within each group were applied to the international passenger traffic of non-reporting airlines in the same group**
- ◆ **For any airline, the cost estimate using the unit cost method was not allowed to exceed a maximum amount in relation to its total Appendix A costs**
 - This cap was 7% for U.S. airlines and 33% for foreign airlines

Checked Baggage Screening Costs for All Airlines are Estimated at \$17.3 Million

Item	Checked Baggage Screening Costs
Total Appendix A Reported Cost	\$ 6,642,931
Estimated Costs for Non-Reporting Carriers	<u>\$ 10,689,599</u>
Total Estimated Checked Baggage Screening Costs	\$ 17,332,530

Checkpoint Supervisor Costs

- ◆ **Requirement** – there had to be a minimum of one supervisor per checkpoint¹ and the supervisor could not perform any standard screening functions
- ◆ **Findings** – the majority of airports reported that individual checkpoints were staffed with a single supervisor, and this did not vary with traffic peaking over the day or by time of year
 - At several airports the number of supervisors at a checkpoint varied based on the number of security lanes that were open, with each supervisor generally responsible for two to four lanes
- ◆ **Cost Implications** – the cost of the checkpoint supervisor was generally fixed, and did not increase due to added traffic volume represented by meeters and greeters and other non-passengers
 - At the airports where supervisor costs were variable, a portion of those costs was attributed to non-passengers

Checkpoint Supervisors Cost Estimation Methodology

- ◆ **The costs of Checkpoint Supervisors were requested to be reported on Line 6 of Appendix A, but carriers were permitted to aggregate these costs into reported screening costs elsewhere in Appendix A**
 - Checkpoint Supervisors do not include airline supervisors, unless the airline performed the screening function, rather than screening companies
- ◆ **We estimated Checkpoint Supervisors Costs for non-reporting airlines based on the unit cost experience of airlines that reported this cost**
 - The unit cost basis was “Checkpoint Supervisors costs as a percentage of Total Screening Personnel and Supervisors cost” (i.e., Appendix A, Section A total costs)
 - The Total Appendix A, Section A costs were adjusted to exclude Checked Baggage Screening costs
- ◆ **Average unit costs of reporting airlines were used to estimate costs for non-reporting airlines based on airline classification**
- ◆ **Total reported and estimated Checkpoint Supervisors costs were then adjusted to deduct the portion attributable to non-passengers at airports where the number of supervisors per checkpoint varied with volume**

Allocation of Variable Checkpoint Supervisor Costs to Passengers and Non-Passengers

- ◆ **While most airports reported that each checkpoint had a single supervisor on duty whenever open, supervisor staffing was reported as variable at five major airports**
- ◆ **At airports for which data was unavailable, we assumed that supervisor staffing was variable and that one supervisor was needed for every two lanes open at each checkpoint**
- ◆ **The number of supervisor hours were calculated with and without non-passenger screenings using an airline schedule-based simulation of checkpoint lanes**
 - The difference between the total checkpoint supervisor hours needed for passengers and those needed for total screenings represented the amount of checkpoint supervisor hours attributable to non-passengers
 - The total daily checkpoint supervisor hours attributable to non-passengers were annualized and scaled from the sample airports to a national total, then multiplied by an assumed hourly cost of \$12.50
 - The flight schedule based approach to the simulation analysis is described in a following section of this report

The Total Costs of Checkpoint Supervisors for All Airlines are Estimated at \$27.5 Million, of which \$1.4 Million was Attributable to Non-Passengers

Item	Checkpoint Supervisor Screening Costs
Total Appendix A Reported Cost	\$ 5,894,349
Estimated Costs for Non-Reporting Carriers	<u>\$ 22,929,177</u>
Total Estimated Checkpoint Supervisor Costs	\$ 28,823,526
Assigned to Screening of Passengers & Property	\$ 27,469,262
Assigned to Non-Passengers	\$ 1,354,264

Note: Estimated costs for airlines that did not report any Checkpoint Supervisors costs on Line 6 of Appendix A. Estimates are based on Checkpoint Supervisors costs as a percent of total Screening Personnel and Supervisors costs (i.e., Appendix A, Section A total costs) less Checked Baggage Screening costs.
 Source: SH&E Analysis

Exit Lane Monitors

- ◆ **Requirement** – Exit lanes had to be controlled to prevent unauthorized access to the sterile area
 - This could be accomplished by posting an individual at the point of access or through mechanical means

- ◆ **Findings** – A large majority of exit lanes at surveyed airports were staffed with a single exit lane monitor, and in most cases exit lanes closed shortly after the last flight arrival
 - The number and cost of exit lane monitors did not vary to accommodate fluctuations in traffic volume

- ◆ **Cost Implications** – The total cost of exit lane monitoring staff in CY 2000 is estimated at \$25.4 million¹
 - \$0.5 million is attributable to exit lanes open after-hours for use by non-passengers such as airport and airline employees
 - The remaining \$24.9 million is attributable to the screening of passengers and property

Calculation of Exit Lane Monitor Costs

- ◆ **SH&E’s estimate of exit lane staffing costs is based on the individual terminal configurations, staffing rules and exit lane schedules of each airport in the study sample**
- ◆ **For each concourse/checkpoint, we calculated the hours that exit lanes were open based on airline schedule data and individual exit lane operating policies, and these hours were assigned to “normal” and “after-hours” operations**
 - Normal hours: 90 minutes before a concourse’s first departure until 30 minutes after the last scheduled arrival (or 30 minutes after the last departure if that was later than the last arrival), as detailed in published airline schedules from CY 2000¹
 - After-hours: periods when a checkpoint was kept open after both the last flight departure and the last arrival of the day at a given concourse
- ◆ **For each airport, both normal and after-hours exit lane hours were multiplied by the number of monitors per exit lane (usually one, but sometimes zero or two)**
- ◆ **For each sample airport, normal and after-hours exit lane monitor hours were annualized and multiplied by an estimated cost of \$9.00 per hour (fully loaded)² per monitor, then divided 50/50 between the screening of property and people**
- ◆ **The non-property portion of the after-hours exit lane monitoring costs, \$0.5 million, was attributable to non-passengers**

Exit Lane Monitors (ELMs)

Annual Exit Lane Monitor Costs *Stratum Averages and Scaled National Total*

Stratum	<u>Exit Lanes per Airport</u>		<u>Average per Airport</u>		<u>Scaled Total</u>	
	Lanes	% Staffed	Normal	After-Hours	Normal	After-Hours
1	8.4	85.6%	\$ 478,815	\$ 37,999	\$ 9,576,295	\$ 759,985
2	3.6	89.2%	\$ 208,818	\$ 7,512	\$ 5,638,079	\$ 202,821
3	1.6	81.8%	\$ 99,888	-	\$ 3,396,196	-
4	1.4	72.7%	\$ 57,926	-	\$ 3,475,580	-
5	1.1	12.5%	\$ 8,162	-	\$ 2,358,691	-
Scaled National Total:					\$ 24,444,841	\$ 962,806

After-Hours Checkpoint Screening

- ◆ **Some checkpoints were kept open beyond the time needed for passenger screening, either to give employees after-hours access to the sterile area or for meeters/greeters awaiting inbound passengers**
- ◆ **The cost of after-hours checkpoint operations was calculated based on the difference between the hours each checkpoint had to be open to handle passenger screening and the hours that the checkpoint was actually kept open**
 - Normal checkpoint operating hours were defined as opening 90 minutes before the first flight departure and closing 30 minutes after the last flight departure (to account for delays), as detailed in published airline schedules from CY 2000¹
 - After-hours operations were the difference between normal operating hours and hours the checkpoint was actually kept open
- ◆ **After-hours checkpoint hours were converted to screener hours under the following assumptions:**
 - When a checkpoint was open after-hours, it was assumed to operate with a single lane open²
 - During after-hours periods, lanes were staffed with 1 screener on magnetometer and 1 on x-ray
- ◆ **After-hours checkpoint lane hours were annualized and multiplied by an estimated cost of \$9.00 per hour (fully loaded)³ per screener, for an estimated cost of \$4.8 million in CY 2000**
 - Half of this total (\$2.4 million) was assigned to the screening of persons and the other half to the screening of property

¹ Schedule: OAG schedules, Wednesday in May of 2000

² At Atlanta, three lanes were open during after hours operations

³ Fully loaded hourly screener cost estimate based on airport interview survey responses

The Separate Analyses of Checked Baggage, Checkpoint Supervisors, Exit Lane Monitors and After Hours Operations Leaves \$258M for Normal Checkpoint Operations

Cost Component	\$ Million
Total Contract Screening Cost	\$334.0
Checked Baggage Screening	\$17.3
Checkpoint Supervisors	\$28.8
Exit Lane Monitors	\$25.4
After-Hour Checkpoint Operations	\$ 4.8
Subtotal	\$76.4
Remaining Costs Normal Checkpoint Operations	\$257.6
Screening of Property (53.8%)¹	\$138.5
Screening of Individuals (46.2%)	\$119.1

Analyses Used to Determine the Portion of Remaining \$119 million for Screening Persons that was Attributable to Non-Passengers

- ◆ **Simulation Analysis:** Calculation of checkpoint lanes needed for total screenings and screenings of only passengers in one hour increments at each sample airport based on published flight schedules and estimated passenger/non-passenger flows
- ◆ **Conclusion:** The total incremental lane hours required for the screening of non-passengers were always less than proportionate to their share of total persons screened, but the percentage moves toward a directly proportionate share as the number of lanes at a checkpoint increases
 - The percentages of lane hours attributable to non-passengers at sample airports were converted into a scaled national figure of 16.7%
- ◆ **Application:** 16.7% of the remaining checkpoint operating costs were assigned to non-passengers, for a total of \$19.9 million
- ◆ **Corroboration:** Atlanta case study using linear regression of passengers and non-passengers screened and number of checkpoint lanes opened on an hourly basis for a normal day

Simulation: The Checkpoint Simulation Used Average Daily Screenings of Passengers, Well-Wishers, Meeter/Greeters and Employees

- ◆ **Estimated annual screenings of passengers, meeter/greeters, well-wishers and employees were converted into average daily volumes at each sample airport**
- ◆ **Estimated meeter/greeters, well-wishers screenings were disaggregated into meeter/greeters and well-wishers under the following assumptions:**
 - The ratio of domestic well-wishers to domestic meeter/greeters was 1:1
 - The ratios of international well-wishers to international passengers was the same as the ratio of domestic well-wishers to domestic passengers
 - The ratio of international to domestic well-wishers was the same as the ratio of international to domestic seats
- ◆ **For two airports where highly detailed survey data was available, Atlanta and Minneapolis, the survey results were used to determine the breakdown of meeter/greeters and well-wishers in 2000**

Simulation: Screenings of Each Type were Distributed Across a Sample Day at Each Airport Based on Departing and Arriving Seats

- ◆ **Passengers and non-passengers were distributed across the day based on published airline schedules and estimated screening time relative to flight departure and arrival times**
- ◆ **Using a sample day of a Wednesday in May of 2000, we calculated the percentage of total daily seats that departed or arrived in each 15-minute period**
- ◆ **Two separate seat distributions were developed, one for combined domestic and international departing seats and the other for domestic arriving seats**
 - Departing seats were the basis for distributing screened passengers and well-wishers
 - Domestic arriving seats were the basis for distributing meeter/greeters; no international meeter/greeters were included in the model, as passengers arriving on international flights could not be met in the gate area

Simulation: Seat Distributions Were Converted to Screening Distributions Using Estimated Screening Times Relative to Flight Departures and Arrivals

- ◆ **Seat distributions were converted into screening time distributions by applying the following curves to the seat distributions:**

Time of Screening Relative to Flight Departure/Arrival

Minutes Before Flight Departure	Departing Pax & Wellwishers		Minutes Before Flight Arrival	Meeters/Greeters
	Domestic	International		Domestic
0-15	10%	2%	0-15	25%
15-30	20%	8%	15-30	45%
30-45	20%	20%	30-45	20%
45-60	15%	20%	45-60	10%
60-75	15%	15%	60-75	0%
75-90	10%	15%	75-90	0%
90-105	10%	10%	90-105	0%
105+	0%	10%	105+	0%

- ◆ **Screened well-wishers were assumed to go through checkpoint screening at the same time as the departing passengers they were accompanying**
- ◆ **For screened passengers and well-wishers, the domestic and international curves were weighted by the ratio of domestic to international departing seats at each airport**

Simulation: Employee Screenings were Assumed to Follow the Time of Day Distribution of Passengers, Meeter/Greeters and Well-Wishers

- ◆ **After applying the time distributions of passenger and meeter/greeter and well-wisher screenings to their respective daily volumes, the resulting screenings in each 15-minute interval were combined into a single blended distribution of non-employee screenings**
- ◆ **Employee screenings were then distributed over the day using the same curve as the non-employee screening distribution**
- ◆ **Screenings conducted in 15-minute intervals were aggregated into one hour intervals to reflect typical checkpoint staffing patterns**

Simulation: Lane Hours Needed For Passenger Screenings and Total Screenings Were Calculated for Each Sample Airport Checkpoint

- ◆ **At each sample airport checkpoint, we calculated the number of lanes needed for passenger screenings and total screenings (passengers plus non-passengers) in each one hour period using the following assumptions:**
 - Screenings were spread evenly across the combined lanes at each airport
 - At peak times, all checkpoint lane capacity at a given airport was fully utilized
- ◆ **For each one hour period, passenger and total screening volumes were calculated as a percentage of the airport's peak volume of total screenings**
- ◆ **For each period, the number of lanes needed for passenger screening and total screenings was calculated based on the ratio of passenger and total screenings during the period to the peak total screening volume at the checkpoint**
 - Since partial lanes could not be operated, results were rounded up to the next whole lane
- ◆ **By subtracting the daily lane hours needed for passenger screening from the total daily lane hours needed for screening all individuals, we calculated the daily lane hours attributable to non-passengers at each airport**

Simulation: Lane Hours Attributable to Passengers and Non-Passengers at Each Sample Airport were Converted to a Scaled National Ratio

- ◆ **Results for the 70 sample airports were scaled to a national total based on the percentage of estimated screeners¹ represented at the sample airports**
- ◆ **The scaled national total of 16.7% of lane hours attributable to non-passengers was applied to the \$119 million in normal checkpoint operating costs² for a total of \$19.9 million attributable to non-passengers**

¹ Estimated screener counts by airport were based on data developed by the FAA prior to 9/11/2001, when certification of screening companies was under consideration. An alternative expansion methodology using only lane hours was tested through sensitivity analysis and is described on the following page.

² Excludes portion of normal checkpoint operating costs associated with property screening

Simulation: Sensitivity Analyses Were Performed to Test the Impact of Different Assumptions and Analytical Approaches

- ◆ Different Assumptions Regarding Last-Lane Utilization Would Not Significantly Affect Screening Cost Allocation¹

Utilization of Last Lane at Multi-Lane Checkpoints	Screening Costs Assigned to Passengers
0%	89.9%
25%	84.2%
50%	82.4%
75%	82.7%
100%	83.3%

- ◆ A Different Approach to Rounding Partial Lanes Would Not Significantly Affect Screening Cost Allocation

Rounding Point for Lane Rounding	Screening Costs Assigned to Passengers
>0	83.3%
0.1	82.7%
0.2	81.7%
0.3	81.0%
0.4	81.1%
0.5	81.5%

- ◆ Expanding results to a nationwide total using only lane hours would increase the percentage of screening costs attributable to passengers from 83.3% to 84.2%
- ◆ Considering the results of all three sensitivity analyses, we believe that the baseline assumptions provide a reasonable basis for estimating the shares of normal CY 2000 checkpoint operating costs attributable to passengers and non-passengers

Atlanta Airport – Case Study

Hourly Screening Lanes Open in Relation to Passengers and Non-Passengers Screened

- ◆ **Objective** – The availability of detailed schedule data for Atlanta’s checkpoint operations in CY 2000 and its distribution of passengers and non-passengers provide the opportunity to analyze how screening lane capacity varied during the day with the flow of passengers and non-passengers
- ◆ **Analysis** – We conducted regression analyses to estimate the screening lanes required to handle passengers and non-passengers on an hourly basis throughout the day
- ◆ **Finding** – Non-passengers accounted for 22% of the persons screened, but only 15.5% of the screening lane-hours and associated operating costs

The results of the Atlanta case study support the simulation analysis and assign a slightly lower percentage of overall checkpoint costs to non-passengers (15.5% vs. 18.7% in the simulation analysis)

Methodology to Estimate Passenger and Non-Passenger Screenings by Hourly Intervals at Atlanta

- ◆ **Estimated originating and terminating passengers on all domestic and international flights at Atlanta by time interval for a representative day in 2000**
 - OAG Schedule Data; O&D and connecting passenger ratios from Atlanta Airport studies; Load Factors by carrier and segment from DOT T-100 data
- ◆ **Estimated the ratio and number of meeter/greeter and well-wishers that go through screening**
 - Atlanta Airport passenger surveys (2000 and 2001¹)
- ◆ **Estimated the “time before flight” distribution that departing passengers and well-wishers go through screening and the same for meeters and greeters**
 - Generic distribution from aviation literature, adjusted for more detailed time intervals and people meeting arriving passengers
- ◆ **Estimated the number of airline, airport and concession employees that go through screening and allocated to time periods**
- ◆ **Calculated passengers and non-passengers screened in 15-minute intervals for entire day and aggregated into one hour periods**

Analysis of the Proportion of Checkpoint Screening Lanes Required for Non-Passengers at Atlanta

- ◆ **Schedule of checkpoint screening lanes open by hourly intervals on normal days at Atlanta in 2000**
 - Provided by Atlanta Airport; ranges from 3 to 18 lanes
- ◆ **Ran a linear regression of total persons screened (passengers and non-passengers) by hour against the number of screening lanes open by hour**
- ◆ **Applied the regression relationship to estimate the number of screening lanes needed to handle: 1) the total persons screened and 2) the number of passengers screened**
 - The difference by hour is the estimated number of screening lanes attributable to non-passengers
- ◆ **The result of the analysis shows that while non-passengers accounted for 22% of the persons screened, only 15.5% of the “screening lane hours” were attributable to non-passengers**
- ◆ **Screening lane staffing costs are determined mainly by the number of hours that screening lanes are open and staffed**

Summary of Contract Screening Company Costs

Contract Screening Costs	Total Cost (\$ million)	Attributable to Non-Passengers
Checked Baggage Screening	17.3	-
Checkpoint Supervisors	28.8	1.3
Exit Lane Monitors	25.4	0.5
After-Hour Checkpoint Operations	4.8	2.4
Normal Checkpoint Operation Costs	257.6	19.9
Total Contract Screening Costs	334.0	24.2

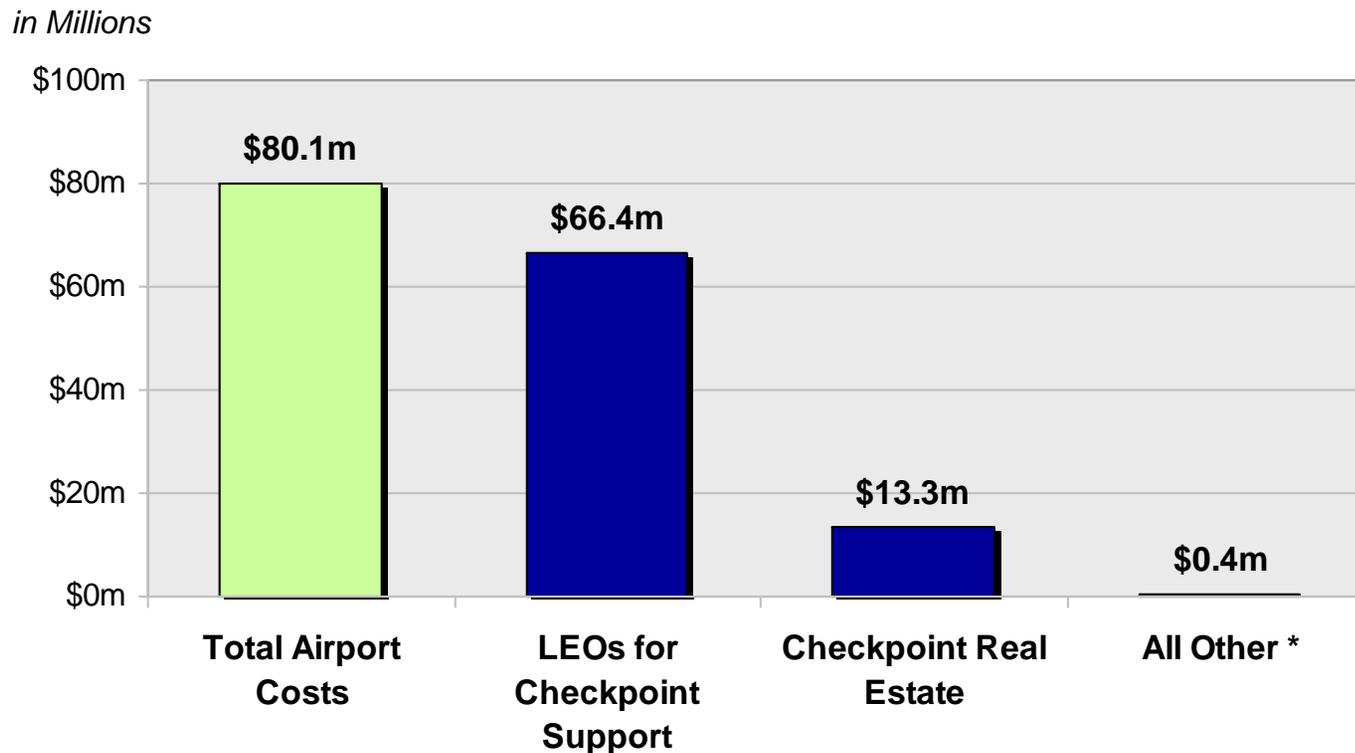


Cost Analysis **Part III**

1. Analysis of Screening Company Costs
- 2. ANALYSIS OF AIRPORT COSTS**
3. Analysis Of Airline Internal Costs
4. Conclusion

The 2005 GAO Study Estimated That Airlines Incurred \$80 Million in Passenger and Property Screening Costs at U.S. Airports in CY 2000

Estimated Passenger and Property Screening Costs Incurred by Airlines at U.S. Airports, CY 2000



Objectives and Key Findings of the Airport Cost Analysis

Objective

To determine the portion of the \$80 million in airport costs that was incurred for the screening of only passengers and property

Key Findings:

- ◆ **LEO staffing to meet the flexible response requirement typically did not vary with fluctuations in traffic volume over the day**
 - Many airports reported that one LEO per checkpoint or terminal was designated to respond to checkpoint incidents
 - At other airports, more than one LEO was designated to provide flexible response, but the number did not vary based on traffic volume
 - At a few airports, the number of LEOs assigned to provide flexible response did vary based on traffic fluctuations

- ◆ **Real Estate costs (for the checkpoint) were related to checkpoint square footage and the number of lanes**

Law Enforcement Officers (LEO)

- ◆ **Requirement** – Airports were required to provide Law Enforcement Officers to respond to potential incidents at the screening checkpoints (FAR 107.15)
- ◆ **Findings** – The majority of airports reported having a Flexible Response plan to meet this requirement
 - Most interviewed airports indicated that LEO staffing for flexible response was constant across the day
- ◆ **Cost Implications** – Because LEO staffing did not vary with traffic volume at most airports, the cost of LEOs was generally fixed, and did not increase due to added traffic volume represented by meeter/greeters and other non-passengers
 - At airports where staffing varied based on traffic volume, analysis was conducted to estimate the percentage of costs associated with screening of only passengers and property

LEO Costs were Defined as a Fixed or Variable Based on the Results of the Airport Interviews

Methodology

- ◆ Flexible response is designed to deal with checkpoint incidents which could involve property (weapons, explosives, etc.) or persons
- ◆ For those airports where flexible response LEOs were determined to be a fixed cost (the majority of interviewed airports), there is no incremental cost associated with the screening of non-passengers
- ◆ For those airports where flexible response LEOs varied according to traffic volume (seven of the interviewed airports), this cost was impacted by the presence of non-passengers¹
- ◆ In these instances, variable LEO cost was first distributed between property and persons, and only the portion associated with persons was allocated between passengers and non-passengers

Calculation of Variable LEO Cost Associated With the Screening of Non-Passengers

Analysis of LEO Costs at Airports With Variable Staffing

Stratum	Airport	Flexible Response LEO Costs		Non-Passenger Pct of Total Screenings	LEO Costs for Screening of Non-Passengers
		2005 GAO Estimate	Screening of Persons at 50%		
1	Dallas (DFW)	\$3,172,260	\$1,586,130	42.5%	\$674,795
1	Honolulu	\$0	\$0	18.7%	\$0
1	Las Vegas	\$818,495	\$409,248	33.2%	\$144,633
3	Spokane	\$266,500	\$133,250	40.3%	\$53,746
3	Kona	\$0	\$0	19.8%	\$0
3	Maui	\$0	\$0	19.7%	\$0
4	Lubbock	\$144,744	\$72,372	75.8%	\$54,858
National Estimate					\$1,859,969

Airport Real Estate Costs

- ◆ **Requirement** – restrict access to the pre-boarding sterile area. This entailed the provision of space to physically accommodate the passenger and property screening function. (FAR 107.20)
- ◆ **Findings** – Airports leased terminal space to air carriers for the security screening checkpoints
- ◆ **Cost Implications** – The cost of checkpoint real estate space is allocated 50% to the screening of property and 50% to the screening of persons
 - For the screening of persons, the number of lanes and associated costs required to screen the peak volume of passengers was determined, with remaining costs attributable to non-passengers

Real Estate Cost Methodology

- ◆ **Real estate costs in this analysis included the security checkpoint space at each airport**
- ◆ **It was assumed that 50% of CY 2000 checkpoint real estate costs was associated with the cost of screening property and 50% was associated with the cost of screening persons**
- ◆ **At individual checkpoints, it was assumed that all lanes were required to screen the peak level of passengers plus non-passengers**
 - The number of lanes required to screen only passengers was estimated based on the ratio of the peak passenger flow to the peak flow of total screenings (from simulation analysis)
 - Since partial lanes could not be operated, fractional lanes were rounded up to the nearest whole lane
- ◆ **The cost of lanes above and beyond what was necessary to screen passengers was attributable to screening non-passengers, and non-passengers were assigned the associated percentage of checkpoint real estate costs**

Calculation of the Real Estate Cost Associated With the Screening of Non-Passengers

Summary of Airport Real Estate Costs

Stratum	Checkpoint Space Cost		Real Estate Costs for Screening of Non-Passengers
	2005 GAO Estimate	Screening of Persons at 50%	
1	\$4,373,751	\$2,186,876	\$273,124
2	\$3,899,573	\$1,949,787	\$37,511
3	\$129,059	\$64,530	\$0
4	\$297,946	\$148,973	\$6,213
5	\$37,372	\$18,686	\$0
National Estimate	\$13,300,000	\$6,650,000	\$361,042

Summary of Airport Costs

Airport Costs	GAO Estimate (\$ Million)	Attributable to Non-Passengers
Law Enforcement Officers	\$66.4	\$1.9
Real Estate	\$13.3	\$0.4
Other ¹	\$0.4	\$0.05
Subtotal	\$80.1	\$2.3



Cost Analysis **Part III**

1. Analysis of Screening Company Costs
2. Analysis of Airport Costs
3. **ANALYSIS OF AIRLINE INTERNAL COSTS**
4. Conclusion

Airline Costs of \$33.6m were Divided into Fixed and Variable Costs, and Variable Costs Allocated to Screening Property and Persons

Airline Internal Costs by Function in CY 2000

Airline Internal Cost Component	Amount ¹	Allocation
Screening Equipment Installation	\$4.9m	Variable based on lanes
Screening Equipment Maintenance & Testing	\$10.8m	Variable based on lanes
Ground Security Coordinators	\$6.6m	Non-variable
Security Program Management	\$3.3m	Non-variable
Security Contract Administration & Oversight	\$1.8m	Non-variable
Legal Support	\$0.1m	Non-variable
Accounting Support	\$0.4m	Non-variable
Other Administrative Support	\$0.2m	Non-variable
Insurance	\$0.2m	Non-variable
Mgmt. Fees - Consortium Contracts Oversight	\$1.2m	Non-variable
Other / Fines	\$4.1m	Variable based on non-passenger percentage
Total:		\$33.6m

Methodology for Allocating Airline Internal Costs

- ◆ **The costs of program management, contracts, administrative/legal and other support functions, and insurance did not vary with regard to the volume of people screened at a given checkpoint, and they are classified as non-variable costs**

- ◆ **50% of equipment-related costs were assigned to screening of persons and 50% to screening of property**
 - The portion assigned to the screening of persons was distributed to passengers based on the estimated percentage of installed lanes required to screen peak-hour passengers
 - The remaining cost was attributed to non-passengers

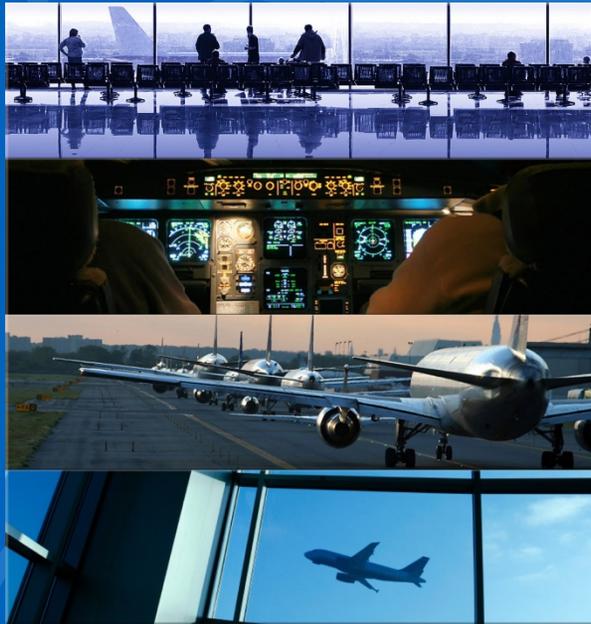
- ◆ **Costs in the “Other” category were composed largely of fines paid for security violations and were assumed to include costs that increased with screening volume**
 - We assigned 50% of this element to property screening and 50% to screening of persons
 - The portion assigned to screening persons was allocated between passengers and non-passengers based on the estimated national ratio of persons screened (passengers 60.9%, non-passengers 39.1%)

\$9.9 Million of the Airline Internal Costs are Variable Costs of Screening Individuals, and \$1.5m of this is Attributable to Non-Passengers

Allocation of CY 2000 Airline Internal Costs

Airline Internal Cost Component	Total	Fixed	Screening Equipment		Non-Passengers	
			Property	People	%	Amount
			50%	50%		
Screening Equipment Installation	\$4.9m		\$2.5m	\$2.5m	9.2%	\$0.2m
Screening Equipment Maint. & Testing	\$10.8m		\$5.4m	\$5.4m	9.2%	\$0.5m
Ground Security Coordinators	\$6.6m	\$6.6m				
Security Program Management	\$3.3m	\$3.3m				
Security Contract Administration & Oversight	\$1.8m	\$1.8m				
Legal Support	\$0.1m	\$0.1m				
Accounting Support	\$0.4m	\$0.4m				
Other Administrative Support	\$0.2m	\$0.2m				
Insurance	\$0.2m	\$0.2m				
Mgmt. Fees - Consortium Contracts Oversight	\$1.2m	\$1.2m				
Other	\$4.1m		\$2.1m	\$2.1m	39.1%	\$0.8m
Total	\$33.6m	\$13.8m	\$9.9m	\$9.9m		\$1.5m

Note: The 9.2% of non-property equipment costs attributed to non-passengers was based on the estimated percentage of all checkpoint lanes that were attributed to the screening of non-passengers. The 39.1% applied to the non-property portion of "Other Costs" is the estimated percent of nationwide screened individuals that were non-passengers.



Cost Analysis **Part III**

- 1. Analysis of Screening Company Costs**
- 2. Analysis of Airport Costs**
- 3. Analysis Of Airline Internal Costs**
- 4. CONCLUSION**

The Cost of Screening Non-Passengers in CY 2000 is Estimated at \$28.0 Million

Cost Components	GAO Estimate (\$ Million)	Attributable to Passengers & Property	Attributable to Non-Passengers
Contract Screening Cost	\$ 334.0	\$ 309.8	\$ 24.2
Airport Costs	\$ 80.1	\$ 77.8	\$ 2.3
Airline Internal Costs	\$ 33.6	\$ 32.1	\$ 1.5
Total	\$ 447.7	\$ 419.7	\$ 28.0